



Title: Minneapolis Thriving Waters Partnership and Long-Range Planning Update

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Purpose: At the March 12, 2026 Operations and Programs Committee (OPC) meeting, staff will provide an overview of the Minneapolis Thriving Waters Partnership, including progress to date and the current status of the Cedar Avenue Stormwater Project. Staff will also provide an overview of the long-range planning approach being implemented in Minneapolis, beginning with the recently completed Cedar Lake Management Unit Plan draft.

Background:

Partnership formation

The Minneapolis Thriving Waters Partnership (TWP or “Partnership”) was established through a Cooperative Agreement (Agreement, Attachment 1) executed in 2024 between the Minnehaha Creek Watershed District (MCWD), the Minneapolis Park and Recreation Board (MPRB), and the City of Minneapolis. The Agreement formalizes a collaborative approach to integrated land and water resource planning that aligns agency priorities, capital investments, and watershed improvement activities within the Minnehaha Creek subwatershed.

To support coordination and successful implementation, the Cooperative Agreement established a multi-tiered governance structure:

- **Technical Team:** Comprised of designated technical representatives from each partner agency. The Technical Team collaborates to identify and advance projects.
- **Coordinating Team:** Made up of senior staff from MCWD (Administrator), the City of Minneapolis (Director of Surface Water and Sewers), and MPRB (Assistant Superintendent). The Coordinating team provides strategic guidance to the Technical Team and helps shape shared priorities.
- **Policy Steering Committee:** Comprised of representatives from each partner governing body (two to three MCWD Board Managers, two to three MPRB Commissioners, and City-appointed officials including council members and a mayoral designee). The Steering Committee offers policy-level guidance, support, and direction of TWP initiatives.

The Agreement identifies three foundational elements of the Partnership’s work:

1. **Partnership Structure and Process:** Provides a clear governance structure for the partnership to ensure the goals of the Agreement are appropriately pursued.
2. **Phase I Partnership Implementation Plan:** Maps the partnership approach to advancing water quality improvement project opportunities identified in the Minnehaha Parkway Regional Trail Master Plan. This includes a Phase I feasibility study of three project opportunities (Attachment 2).
 - a. Penn/Newton/Morgan focus area
 - b. Nicollet focus area
 - c. Cedar Avenue focus area
3. **Long-Range Planning Framework:** Identifies a planning framework to guide future, coordinated capital investment.

The Partnership builds on a long history of collaborative watershed work among these agencies, including earlier efforts such as the 1990s Minneapolis Chain of Lakes Clean Water Partnership, and demonstrates a renewed commitment to coordinated investment, shared strategy, and aligned implementation of improved water and community outcomes.

Phase I Project Update: Cedar Avenue Stormwater Project

In 2024, MCWD led the procurement and management of the Phase I feasibility study (Attachment 3), with the cost split evenly between the three partners. The study assessed three projects selected from the Minnehaha Parkway Regional Trail Master Plan for technical feasibility, ease of implementation, and opportunity for creating recreational and community amenities. The partners completed the study in 2025 and the Policy Steering Committee selected the Cedar Avenue Stormwater project as the first partnership effort to advance into design. Nicollet was assessed to be feasible, but implementation would occur on a longer timeline, while a portion of the Penn/Newton/Morgan project was determined to be feasible, but ranked as a lower priority than Cedar Avenue.

Advancing the Cedar Avenue Stormwater project represents the first major capital implementation step under the Partnership framework. The partners are currently finalizing a Request for Proposals for project design and engineering and negotiating a project agreement that memorializes roles, decision-making processes, asset ownership, and long-term operations and maintenance. MCWD will again lead procurement and management of the design contract, with the partners splitting the cost of design. Staff are working to release the RFP during Spring 2026, with design commencing by Summer 2026.

Long-Range Planning

In parallel with Phase I feasibility work, the Technical Team initiated the Partnership's long-range planning framework through the development of surface-water management units (Management Unit approach). This effort, built from the success of MCWD subwatershed planning efforts in both Six Mile Creek-Halsted Bay and Long Lake Creek, creates a framework for characterizing detailed watershed needs based on the receiving waterbody, and identifying opportunities to align partnership resources around priorities, roles, actions, and funding.

While each partner maintains its own capital improvement planning processes, the Management Unit planning framework is intended to support alignment across agencies, facilitate coordinated investment, and guide future amendments to MCWD's Watershed Management Plan (WMP).

Cedar Lake Management Unit

Cedar Lake was selected as the first Management Unit due to its position at the top of the Chain of Lakes watershed, its influence on downstream waterbodies, and its status as a high priority for the Minneapolis Park and Recreation Board (MPRB). Cedar Lake has experienced recurring harmful algal blooms, beach closures, and associated public health concerns. In 2023, MPRB independently completed harmful algal bloom studies that further documented water quality challenges in the lake. Coupled with the recent adoption of MPRB's Cedar-Isles Master Plan and identified opportunities for watershed retrofits, such as improvements to the Cedar Meadows Stormwater Facility, partners aligned around development of the Cedar Lake Management Unit (MU) Plan to guide both near-term implementation and long-term watershed strategy.

The draft Cedar Lake MU Plan was recently distributed to partners for review (Attachment 4). The document includes an introductory section that serves as the foundation for a broader long-range planning framework, within which individual Management Units will be nested over time. The Cedar Lake MU represents the first application of this framework. The Plan provides a concise, action-oriented assessment of the Cedar Lake drainage area, including: a summary of water quality history; past and ongoing projects; identification of key issues and contributing drivers; and evaluation of implementation strategies to address both external nutrient loading (e.g., upstream watershed projects and regional stormwater facility retrofits) and internal nutrient loading (e.g., alum treatment).

The document is intended to serve as:

- A detailed, actionable plan for Cedar Lake and its drainage area;
- A replicable model for subsequent Management Units across Minneapolis, which will help support the development of MCWD's 2027 Watershed Management Plan update; and

- A management framework that strengthens eligibility and competitiveness for Clean Water Fund (CWF) grant funding.

Minor Plan Amendment and Public Hearing

One of the strategies identified in the Cedar Lake Management Unit Plan is addressing internal phosphorus loading through alum treatment to reduce harmful algal blooms and improve water quality. MPRB has expressed interest in pursuing external funding, including CWF grants, to support this work. Because eligibility for certain state CWF grants requires that projects be identified in an approved water management plan, partners have requested that MCWD pursue a Minor Plan Amendment to incorporate internal nutrient load management as a potential strategy within the Minnehaha Creek Subwatershed Capital Improvement Plan.

At the February 12, 2026 Board Meeting, the Board of Managers adopted Resolution 26-023, authorization to distribute a proposed Minor Plan Amendment for review. This amendment does not commit MCWD to project implementation or funding; rather, it ensures that the District's Watershed Management Plan reflects the full range of strategies identified through joint planning and maintains flexibility to respond to evolving grant timelines and partner priorities. A public hearing for the Minor Plan Amendment will take place at the March 12, 2026 Board of Managers Meeting. Additional information is available in the March 12, 2026 Board packet under section 10.1.

Summary

The March 12, 2026 Operations and Programs Committee (OPC) meeting will cover an overview of the Minneapolis Thriving Waters Partnership, project updates, and an overview of the long-range planning approach being implemented in Minneapolis.

Supporting documents:

Attachment 1: Partnership Cooperative Agreement

Attachment 2: Phase I PIP One-pagers

Attachment 3: Phase I Feasibility Report

Attachment 4: Draft Cedar Lake Management Unit Plan

Attachment 1

Cooperative Agreement for Integrated Planning and Water Resource Projects in the Minnehaha Creek Watershed in Minneapolis

April 24, 2024

This Cooperative Agreement (“Agreement”) is entered into effective as of the date of the last signature on this document (“Effective Date”) by and between the City of Minneapolis (“City”), a Minnesota municipal corporation; the Minneapolis Park and Recreation Board (“MPRB”), a body corporate and politic under the laws of the State of Minnesota; and the Minnehaha Creek Watershed District (“MCWD”), a watershed district duly established pursuant to Minnesota Statutes Chapter 103D.

Partnership Recitals and Statement of Purpose

- A. The parties share responsibility for improving environmental quality within the Minnehaha Creek subwatershed of the City of Minneapolis and recognize the benefit of working in close partnership at the intersection of the vision and mission of the respective organizations.
 1. The Minneapolis Park and Recreation Board (MPRB) exists to provide places and recreation opportunities for all people and is committed to protecting and improving its natural resources, parkland, and recreation opportunities for current and future generations.
 2. The Minnehaha Creek Watershed District (MCWD) has a vision of a landscape of vibrant communities where the natural and built environments exist in balance to create value and enjoyment, and is committed to protecting and improving land and water through public and private partnerships.
 3. The Surface Water and Sewers Division of the City of Minneapolis, Public Works Department provides stormwater and wastewater management for the City of Minneapolis in support of clean water, a thriving community, and environmental stewardship.
- B. The parties share a history of successful collaboration having cooperated on projects such as:
 1. The Minneapolis Chain of Lakes Regional Park Clean Water Partnership Project, one of the largest urban water-quality restoration projects to date in the United States;

2. The Lake Nokomis Surface and Groundwater Evaluation in Minneapolis, a multi-agency effort to diagnose the cause of high-water issues in neighborhoods surrounding Lake Nokomis; and
 3. The development of the Minnehaha Parkway Regional Trail Master Plan, which provides a long-range roadmap for the evolution of park spaces and activities, natural resources, and shared capital investment in the Minnehaha Creek Corridor in Minneapolis.
- C. The parties recognize that their mutual goals are best achieved through integrated land and water resource planning and wish to memorialize their commitment to working together to identify opportunities for shared investment in improving regional water quality, mitigating flooding, and enhancing natural resources.
 - D. To support the level of integration and alignment desired across respective plans, policies and investments, the parties wish to establish a framework to actively seek opportunities to coordinate and align their respective work on an ongoing basis, at a policy, planning, and technical level.

1. Partnership Goals

- A. The parties will work together to seek opportunities for aligning planning efforts, investment in capital improvements, and programs to improve the natural and built environments within the Minnehaha Creek subwatershed of the City of Minneapolis.
- B. The parties will work together to develop and pursue a shared water resource management strategy that identifies multi-jurisdictional initiatives for improving regional water quality, enhancing natural resources, and mitigating flooding, and balances the costs of built infrastructure supporting urban development and downstream receiving waterbodies and park land.
- C. Wherever practicable, the shared natural resource goals of the partners will integrate across disciplines with planned improvements to parks and open space, infrastructure improvements, and private development, to optimize cost and public benefit.
- D. The parties will achieve the desired integration through a predictable and repeatable process to deliver a Partnership Implementation Plan (PIP), identifying the nexus of shared agency priorities that may subsequently be incorporated into respective long-range planning efforts, capital improvement plans, budgets, policies, and other agency-specific plans and initiatives.

- E. The parties intend for these shared agency priorities to benefit from collaborative planning, cost sharing, and the development of investment strategies that may attract additional outside funding through the coordinated pursuit of grant funds, legislation, and other partnerships.
- F. The parties will work collaboratively to promote public understanding of this shared water resource management strategy to improve water quality, enhance natural resources and mitigate flooding.

2. Partnership Structure and Process

- A. The parties commit to work together through a Technical Team, a Coordinating Team, and a Policy Steering Committee, the structure, role, and process of which are detailed below.
- B. The parties agree that MCWD will serve as the lead coordinating agency and will provide lead staff support to convene partnership meetings of the Technical Team, Coordinating Team, and Policy Steering Committee.

1. Technical Team.

- i. Each party will designate a representative to the Technical Team and provide additional staff as project needs and expertise require.
- ii. The Technical Team will meet and collaborate at least quarterly to identify potential opportunities for shared agency priorities across long range planning, capital improvement planning, and potential future planning initiatives.
- iii. By March of each year of this Agreement, the Technical Team will be responsible for jointly recommending to the Coordinating Team a draft Partnership Implementation Plan, including:
 - a. Opportunities for shared agency priorities.
 - b. Tentative timelines for implementation, including quarterly milestones.
 - c. Estimated project costs, including up-front and capital costs, and staffing needs.
 - d. Potential cost share across the parties and sources of outside funding and financing.

2. Coordinating Team.

- i. The Coordinating Team shall be comprised of the MCWD Administrator; the City Director of Surface Waters and Sewers; and the MPRB Assistant Superintendent for Planning Services.

- ii. The Coordinating Team will meet at least three times annually to provide input and direction to the Technical Team, guide the identification of shared agency priorities, make final adjustments to the Partnership Implementation Plan as it deems appropriate, review work accomplished during the previous year, and prepare briefings of Partnership Implementation Plan recommendations to the Policy Steering Committee.
- iii. The Coordinating Team will develop and adopt a communications plan to coordinate external communication on Partnership initiatives, and to promote public understanding of the parties' aligned efforts to address challenges in water quality, flooding and natural resources protection.

3. Policy Steering Committee.

- i. The parties will designate representatives to serve on the Policy Steering Committee as follows: The City: mayor/designate and two or three council members; MPRB: president/designate and two commissioners, provided however if three commissioners are appointed not all three shall serve at the same time on the same committee; and MCWD: two or three managers.
- ii. The Policy Steering Committee will identify a member to serve as chair on an annual basis.
- iii. The Policy Steering Committee will meet at least twice a year, and additionally as deemed necessary by its members, to receive briefings from the Coordinating Team on the Partnership Implementation Plan recommendations, including updated project priorities, costs, partner sources and outside investment strategy. The Policy Steering Committee will provide policy level feedback and support as appropriate and support community engagement and outreach efforts.
- iv. Annually, on a timeline that aligns with each party's budgeting process, the Policy Steering Committee, with support from the Coordinating and Technical Teams, will present the Partnership Investment Plan recommendations and seek support as appropriate from each party's respective governing bodies.

3. Phase One Partnership Implementation Plan

A. Phase One Partnership Implementation Plan.

- 1. The Technical Team and the Coordinating Team have developed a Phase One Partnership Implementation Plan (PIP) focused on the Minnehaha Creek

Corridor, to guide shared agency capital project priorities and investments for the next five years, as feasible, attached as Exhibit A to this Agreement.

2. The Policy Steering Committee will provide policy level feedback and support as appropriate for the Minnehaha Creek Corridor Partnership Implementation Plan.
3. Each party will utilize the Minnehaha Creek Corridor PIP in the preparation of capital improvement plans or programs and requests for budget allocations according to processes particular to each party.
 - i. The Minnehaha Creek Corridor PIP is intended as a shared capital improvement plan, and, as such, serves as a planning guide for coordinated project planning and implementation. It does not formally obligate any party to implementation of any specific project. Such commitments are to be addressed in specific project agreements as set forth below.
4. The Coordinating Team will utilize the Phase One Partnership Implementation Plan (Attached) cycle to evaluate the partnership performance and success of implementation, to inform and support subsequent rounds of PIP development and budgeting, and to make recommended adjustments in the structure and process of the partnership, to the Policy Steering Committee

B. Phase One Capital Improvement Projects.

1. The Phase One Partnership Implementation Plan (Exhibit A) identifies three capital improvement projects, previously prioritized within the co-developed MPRB Minnehaha Parkway Regional Trail Master Plan, to address regional runoff volumes and pollutant loads tributary to Minnehaha Creek and downstream Lake Hiawatha, to serve as the focus for the parties' initial work between approximately 2024-2028.
2. The parties agree that, pursuant to the Phase One Minnehaha Creek Corridor PIP, the following three projects will be evaluated for feasibility as an initial focus of the parties' work over approximately the next five years:
 - i. Penn Newton Morgan Focus Area
 - ii. Nicollet Focus Area
 - iii. Bloomington Cedar Focus Area
3. Should the three identified projects occur in less than five years, or should any of the three identified projects be determined infeasible, the parties will work to identify other similarly scaled projects as additional or replacement projects. Acceptance of additional or replacement projects will be the

responsibility of the Coordinating Team, which shall seek support from the Policy Steering Committee.

C. Phase One Project Feasibility Evaluation and Implementation Process.

1. The parties agree that MCWD will lead the feasibility evaluation process for the three Phase One projects, and generally thereafter for future projects, as follows:
 - i. MCWD agrees to serve as the lead agency for the Phase One project feasibility and will prepare a request for proposals (RFP), attached as Exhibit B, and retain a consultant to conduct feasibility studies for all three projects, provided that the consultant will be selected through an objective selection process closely coordinated among the partners and with consensus of the Coordinating Team.
 - ii. The feasibility evaluation will generally assess project benefits, the recommended order of construction, estimated capital costs, operational costs, partner and outside funding sources, and community engagement needs.
 - iii. The cost of this consultant is estimated to be \$150,000, with costs shared equally among the parties. The City and MPRB will reimburse MCWD accordingly.
 - iv. MCWD will facilitate review and comment of the Phase One project feasibility evaluation by the City and MPRB with the Technical Team and Coordinating Team respectively, at project milestones as defined in the consultants approved scope of work.
 - v. The Coordinating Team will provide a briefing to the Policy Steering Committee on the findings of the feasibility study.

D. Phase One Project Design and Construction Process.

1. Following the completion of the feasibility study, MCWD will update the Phase One Minnehaha Creek Corridor PIP to reflect findings and recommendations regarding project sequence, timeline, design and capital costs, and funding sources.
2. To advance the Phase One projects into design and construction, the parties anticipate separate cooperative agreements for each selected project(s), which agreements shall generally provide as follows:
 - i. The Coordinating Team will use the information from the Phase One project feasibility evaluation, and for other projects advanced to final

design and implementation under this agreement, to determine the lead agency and support agency roles for final design, engineering and permitting, stakeholder engagement, construction and construction oversight, operations and maintenance, and the proportional share of funding for each Phase One project(s). Any updates to costs and roles as determined through design and final engineering will be integrated into existing or subsequent agreements for design and construction, construction oversight, and maintenance.

- ii. Consideration in the determination of lead agency and support agency roles will include but not be limited to:
 - Capacity of the agency to conduct the work on a timely basis, and the relative proportion of agency funding;
 - Knowledge of agency staff relative to the preparation of a design and supporting documents relative to the project scope;
 - Relationship between the implemented project and any ongoing maintenance and operations required for the perpetuation of the project;
 - The degree of integration of project elements across natural systems like Minnehaha Creek, municipal infrastructure like storm sewers, and recreational features like trails.
 - The ownership of the land and infrastructure affected by the project proposed to be constructed; and
 - The legal responsibility and liability that attaches to the project and its construction, operation and maintenance.
- iii. The lead agency will prepare materials constituting a solicitation for consultant services and retain a consultant to conduct design, engineering, and permitting work, as well as coordinating work supporting public bidding and construction oversight for the selected project(s), provided that the work and consultant selection process is closely coordinated among the partners, the Technical Team and with consensus of the Coordinating Team at project milestones, as defined in the project's cooperative agreement.
- iv. The Coordinating Team will provide a briefing and information as needed to the Policy Steering Committee regarding key milestones of design, public bid, and construction.

4. Long-Range Partnership Implementation Planning Framework

- A. The parties recognize that achieving their mutual water resource goals, particularly in the face of a changing climate, is best accomplished through integrated planning.
- B. The parties wish to establish a framework under which their respective water resource work, and future Partnership Implementation Plans, can be integrated into a clear shared water resources management strategy that addresses the needs of the future by aligning and coordinating priorities, roles, actions, and funding.
- C. To develop subsequent Partnership Implementation Plans and deliver an integrated water resource management strategy, the parties agree to undertake a collaborative scope of work, including:
 - 1. Characterizing Water Management Units
 - i. Mapping water management units based on receiving waters, including data regarding water quality and quantity, land use, and proposed improvements to the built and natural environment.
 - 2. Exploring Partner Priorities
 - i. Inventory existing priorities and strategies across the partners, from flood mitigation to water quality, and the projects, policies, programs, and funding that currently support implementation.
 - 3. Gaining Strategic Alignment
 - i. Cultivating role clarity, identifying areas of overlap and shared goals, recommending areas for strategic alignment and partnership, and areas of independent water resource implementation.
 - 4. Defining Partnership Implementation Plans
 - i. Develop recommendations and an action plan for the next round of implementation by the partners.
- D. MCWD agrees to serve as the lead agency for the Long-Range Partnership Implementation Planning Framework and will lead coordination amongst the Partners as the framework is developed.
- E. MCWD will facilitate the engagement, review, and comment of the Partnership Implementation Planning Framework process by the City and MPRB through the Technical Team and Coordinating Team respectively, at mutually agreed upon milestones.

- F. Each organization may proceed with additional capital projects within its respective jurisdiction, in addition to projects identified in the Partnership Implementation Plan.
- G. The Coordinating Team will provide briefings and recommendations as needed on the Long-Range Partnership Implementation Planning Framework at the Policy Steering Committee meeting.

5. General Terms

- A. **Independent Relationships; Liability:** This Agreement does not create a joint powers board or organization within the meaning of Minnesota Statutes section 471.59, and no party agrees to be responsible for the acts or omissions of another pursuant to subdivision 1(a) of the statute. Only contractual remedies are available for the failure of a party to fulfill the terms of this Agreement. The parties enter this Agreement solely for the purposes of improving the ecological health and condition of water resources in the City of Minneapolis. Accordingly, with respect to any and all activity undertaken pursuant to this Agreement, each party agrees to hold the others harmless, and defend and indemnify the others, their officers, employees and agents from and against any and all liability, loss, claim, damage or expense (including reasonable attorney fees, costs and disbursements) that the indemnified party may incur as a result of the activities under this Agreement due to any negligent or willful act or omission by the indemnifying party or the indemnifying party's breach of any specific contractual duty. Notwithstanding the foregoing or any other provision of this Agreement, the parties' obligations under this paragraph will survive the termination of the Agreement. This Agreement creates no right in and waives no immunity, defense or liability limitation with respect to any third party. As between the parties, only contract remedies are available for a breach of this Agreement.
- B. **Publicity, Sponsorship:** Any publicity regarding projects undertaken through this Agreement must identify all three parties as the sponsoring entities. For purposes of this provision, publicity includes notices, informational pamphlets, press releases, research, reports, signs, and similar public notices prepared by or for the parties individually or jointly with others, or any subcontractors, with respect to the project. The parties will collaborate on the development of educational and informational signage pertinent to the project, and each party, at its cost, may develop, produce and, after approval of the other party, distribute educational, outreach and publicity materials related to the project.

- C. **Data Management:** All designs, written materials, technical data, research or any other work-in-progress will be shared between the parties to this agreement on request, except as prohibited by law. As soon as is practicable, the party preparing plans, specifications, contractual documents, materials for public communication or education will provide them to the other parties for recordkeeping and other necessary purposes. All data created, collected, received, maintained or disseminated for any purpose in the course of this agreement is governed by the Data Practices Act, Minnesota Statutes chapter 13, any other applicable state statute, or any state rules adopted to implement the Act.

- D. **Complete Agreement, Severability:** This Agreement, as it may be amended in writing, constitutes the entire agreement between the Parties. Any amendment to this Agreement must be in writing and will not be effective until it has been executed and approved by the same parties who executed and approved the original agreement or their successors in office. If any provision of this Agreement is held invalid or unenforceable, such invalidity or unenforceability shall not affect any other provision, and this Agreement shall be construed and enforced as if such provision had not been included.

- E. **Applicable Law, Venue:** The laws of the State of Minnesota shall govern all interpretations of this Agreement, and the appropriate venue and jurisdiction for any litigation which may arise hereunder will be in those courts located within the County of Hennepin, State of Minnesota.

- F. **Waivers:** The waiver by any party of any breach or failure to comply with any provision of this Agreement by the other parties will not be construed as nor will it constitute a continuing waiver of such provision or a waiver of any other breach of or failure to comply with any other provision of this Agreement.

- G. **Notices:** The parties designate the following authorized representatives, each to serve as the liaison to the other party for purposes of coordinating activities under this Agreement. Any written communication required under this Agreement will be addressed to the other parties as follows, except that any party may change its address for notice by so notifying the other parties in writing:

City of Minneapolis
Angie Craft, Director of Surface Waters and Sewers
Public Service Center
250 South 4th St, Room 300
Minneapolis, MN 55415
612-673-5625
angie.craft@minneapolismn.gov

Minneapolis Park & Recreation Board
Michael Schroeder, Assistant Superintendent for Planning Services
2117 West River Road North
Minneapolis, Minnesota 55411
612-230-6467
mschroeder@minneapolisparcs.org

Minnehaha Creek Watershed District
James Wisker, Administrator
15320 Minnetonka Blvd.
Minnetonka, MN 55345
952-641-4509
jwisker@minnehahacreek.org

- H. **Term, Termination:** This Agreement is effective on execution by all parties and will terminate five years from the date on which it is fully executed and will renew automatically for five-year terms unless terminated by the parties. Any responsibility or obligation that has come into being before expiration will survive expiration.
- I. **Counterparts:** This Agreement may be executed in counterparts each of which shall be deemed to be an original and all of which, taken together, shall constitute one and the same agreement.

IN WITNESS WHEREOF the parties execute this Agreement by their authorized officers.

CITY OF MINNEAPOLIS

APPROVED AS TO FORM

DocuSigned by:
By: Lee Wolf
Assistant City Attorney

DocuSigned by:
By: Angie Craft
Department Head (or Designee) Authorized to Sign this Contract and/or
Responsible for Administering and Monitoring Contract

DocuSigned by:
By: Dushani Dye
Finance Officer or Designee/Purchasing Agent

MINNEAPOLIS PARK AND RECREATION BOARD

By: Margret Forney
Margret Forney
Its: President of the Board of Commissioners

By: Jennifer B. Ringold
Jennifer B. Ringold
Its: Secretary to the Board of Commissioners

Approved as to form:

Brian F. Rice
Brian F. Rice
Legal Counsel to the Minneapolis Park
and Recreation Board

MINNEHAHA CREEK WATERSHED DISTRICT

Approved for Form & Execution

Janis N. Smith

MCWD Attorney

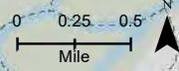
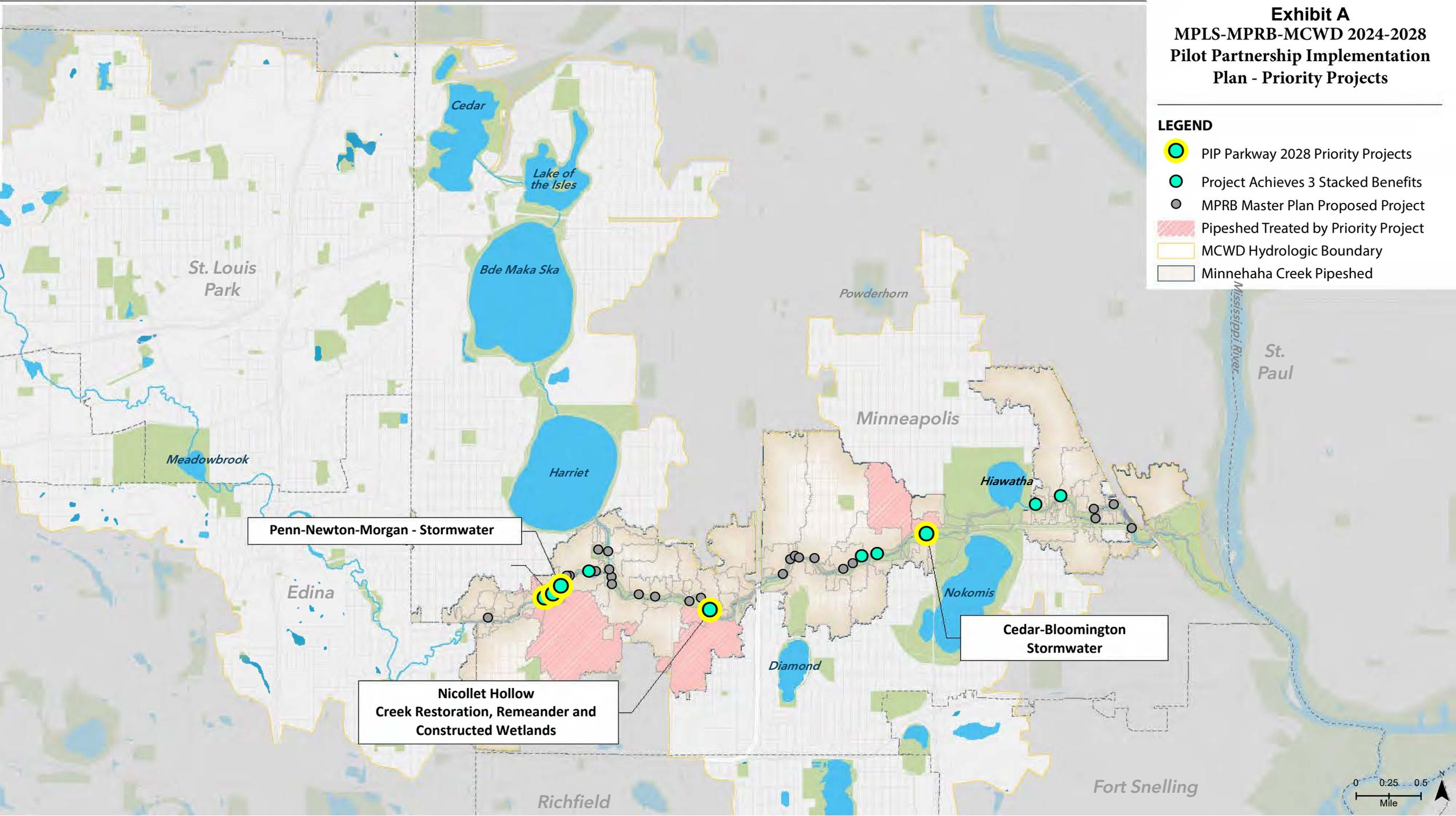
Sherry Davis White Date: *June 27, 2021*

Sherry Davis White, President

Exhibit A
MPLS-MPRB-MCWD 2024-2028
Pilot Partnership Implementation
Plan - Priority Projects

LEGEND

-  PIP Parkway 2028 Priority Projects
-  Project Achieves 3 Stacked Benefits
-  MPRB Master Plan Proposed Project
-  Pipedshed Treated by Priority Project
-  MCWD Hydrologic Boundary
-  Minnehaha Creek Pipedshed



DRAFT

MCWD-MPLS-MPRB 2024-2028 PILOT PARTNERSHIP INVESTMENT PLAN

Minnehaha Parkway Project Priorities	Capital Costs*	Acres Treated	Water Quality (lbs TP)	Floodplain (CY)
Bloomington-Cedar	\$ 350,000	115	52	11,121
Penn-Newton-Morgan	\$ 818,000	248	81	1,554
Nicollet	\$ 1,600,000	152	44	1,684
TOTAL	\$ 2,768,000	515	177	14,359

*Costs estimates from MPRB Master Plan. 2018 costs adjusted for inflation. Capital costs only. To be refined through Feasibility

Internal Sources*	Year					
	2024	2025	2026	2027	2028	
Minneapolis Funds Encumbered by MCWD	\$ 1,000,000	\$ -	\$ -	\$ -	\$ -	
Minneapolis Capital Plan Funds	\$ -	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	
MPRB Parkway Capital Plan Funds	\$ -	\$ -	\$ 1,600,000	\$ -	\$ -	
MCWD Capital Plan Funds	\$ 325,000	\$ 2,749,993	\$ -	\$ -	\$ -	
Total Internal Sources	\$ 1,325,000	\$ 2,999,993	\$ 1,850,000	\$ 250,000	\$ 250,000	\$ 6,674,993

Sources based on initial commitments of partners, and capital plans. MCWD capital funds and Minneapolis encumbered funds are secured.

Project Costs	2024	2025	2026	2027	2028	
Pilot Project Feasibility Study	\$ 150,000					
Bloomington-Cedar Design		\$ 134,880				
Bloomington-Cedar Construction			\$ 314,720			
Penn-Newton-Morgan Design		\$ 284,368				
Penn-Newton-Morgan Construction			\$ 331,762	\$ 331,762		
Nicollet Design			\$ 568,800			
Nicollet Construction					\$ 1,327,200	
Total Project Costs	\$ 150,000	\$ 419,248	\$ 1,215,282	\$ 331,762	\$ 1,327,200	\$ 3,443,492

*Costs estimates from MPRB Master Plan. 2018 costs adjusted for inflation. Capital costs only. To be refined through Feasibility

Annual Cash Flow						TOTAL 5 YEAR DELTA SOURCES - COSTS
Annual Sources + Prior Year Balance - Annual Costs	\$ 1,175,000	\$ 3,755,745	\$ 4,390,463	\$ 4,308,701	\$ 3,231,501	\$ 3,231,501

MINNEHAHA PARKWAY PARTNERSHIP IMPLEMENTATION PLAN

2024-2028



OVERVIEW

PROJECT NAME

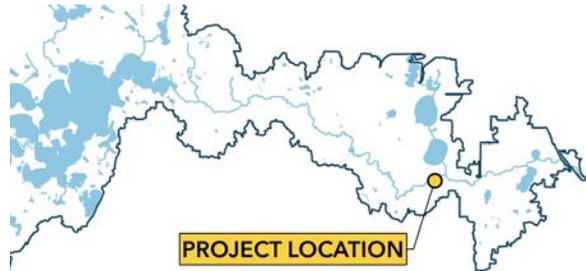
Segment 1 Penn/Newton/Morgan Focus Area

LOCATION

Minneapolis (Minnehaha Creek)

TARGET WATERBODY

Minnehaha Creek and Lake Hiawatha



BENEFITS

Treats 248 acres, 81 pounds of Total Phosphorus reduction, 154 cubic yards of floodplain restoration

DESCRIPTION

SCOPE

The scope of work for Segment 1 includes the feasibility, design, and construction of a stormwater basin for the 1.1-E Stormwater BMP East of Penn project, remeandering of the creek with floodplain restoration for the 1.1-F Creek Restoration West of Newton project, the replacement of existing concrete spillway with multi-cell BMP, and associated interpretation for the 1.1-L Stormwater Treatment at 52nd Street Outfall project.

GOALS

Improve water quality, water quantity, and ecological integrity by capturing stormwater runoff, restoring Minnehaha Creek, and replacing the concrete spillway. Additionally, enhance community sense of place through the installation of interpretative signage.

JUSTIFICATION

The Partnership is prioritizing the implementation of Projects 1.1-E, 1.1-F, and 1.1-L, from the co-created Minnehaha Parkway Regional Trail Master Plan as pilot projects of the Partnership Implementation Framework with the City of Minneapolis Surface Water and Sewers Division and Minneapolis Park and Recreation Board (MPRB) to enhance recreation, improve ecological function of the creek corridor, improve public safety, address flooding, and improve water quality in the Minneapolis segment of the Minnehaha Creek corridor.

WORKPLAN SUMMARY

The focus for 2024 will be on conducting feasibility, including engineering, site design, policy, and regulatory feasibility, as well as cost and benefit estimates for the selected projects in the Segment 1 Penn/Newton/Morgan Focus Area.

SCHEDULE + BUDGET

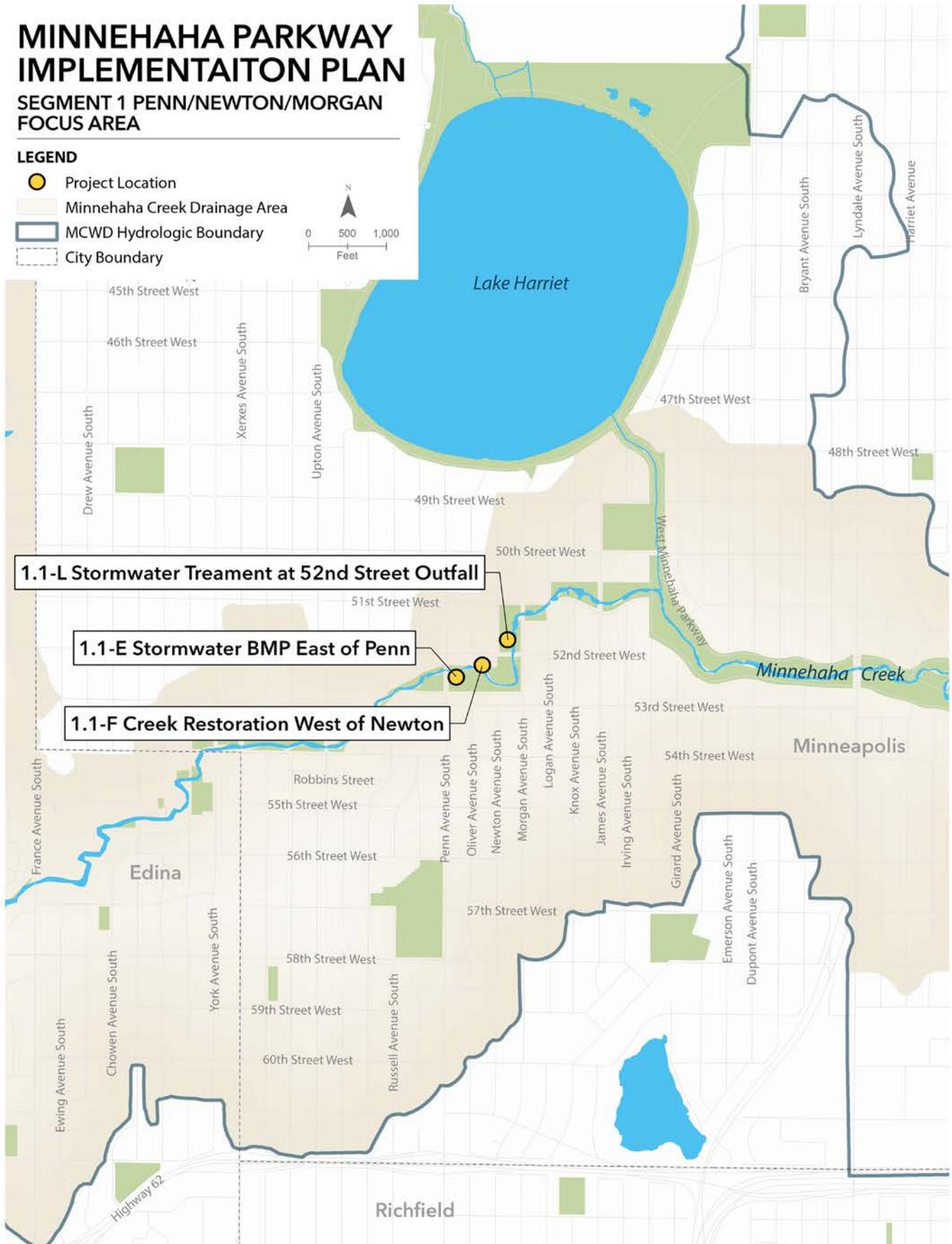
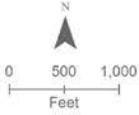


MINNEHAHA PARKWAY IMPLEMENTATION PLAN

SEGMENT 1 PENN/NEWTON/MORGAN FOCUS AREA

LEGEND

-  Project Location
-  Minnehaha Creek Drainage Area
-  MCWD Hydrologic Boundary
-  City Boundary



MINNEHAHA PARKWAY PARTNERSHIP IMPLEMENTATION PLAN

2024-2028



MINNEHAHA CREEK
WATERSHED DISTRICT



Minneapolis
Park & Recreation Board



Minneapolis
City of Lakes

OVERVIEW

PROJECT NAME

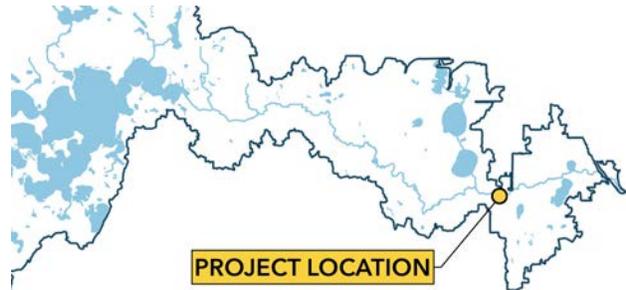
Segment 2 Nicollet Focus Area

LOCATION

Minneapolis (Minnehaha Creek)

TARGET WATERBODY

Minnehaha Creek and Lake Hiawatha



BENEFITS

Treats 152 acres, 44 pounds of Total Phosphorus reduction, 1,684 cubic yards of floodplain restoration

DESCRIPTION

SCOPE

The scope of work for Segment 2 includes the feasibility, design, construction, and site interpretation for creek restoration and remeandering in Nicollet Hollow, including all associated streambank restoration, wetland restoration, and wetland construction identified in the 2.1-H Creek Restoration, Remeander and Constructed Wetlands, Nicollet Hollow project.

GOALS

Improve water quality, water quantity, and ecological integrity through the restoration of Minnehaha Creek, the streambank, and associated wetlands. Additionally, enhance community sense of place through the installation of interpretative signage.

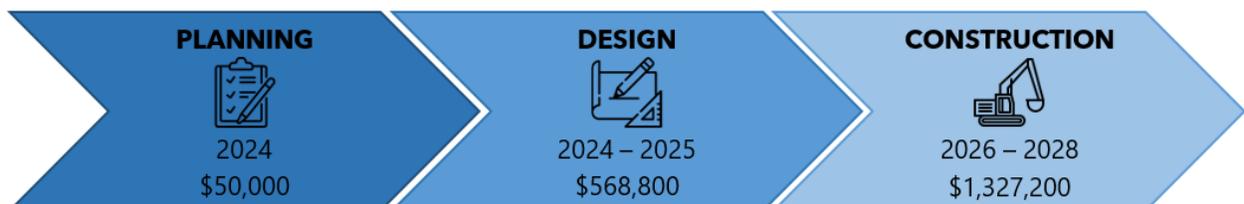
JUSTIFICATION

The Partnership is prioritizing the implementation of Project 2.1-H from the co-created Minnehaha Parkway Regional Trail Master Plan as a pilot project of the Partnership Implementation Framework with the City of Minneapolis Surface Water and Sewers Division and Minneapolis Park and Recreation Board (MPRB) to enhance recreation, improve ecological function of the creek corridor, improve public safety, address flooding, and improve water quality in the Minneapolis segment of the Minnehaha Creek corridor.

WORKPLAN SUMMARY

The focus for 2024 will be on conducting feasibility, including engineering, site design, policy, and regulatory feasibility, as well as cost and benefit estimates for the selected project in the Segment 2 Nicollet Focus Area.

SCHEDULE + BUDGET

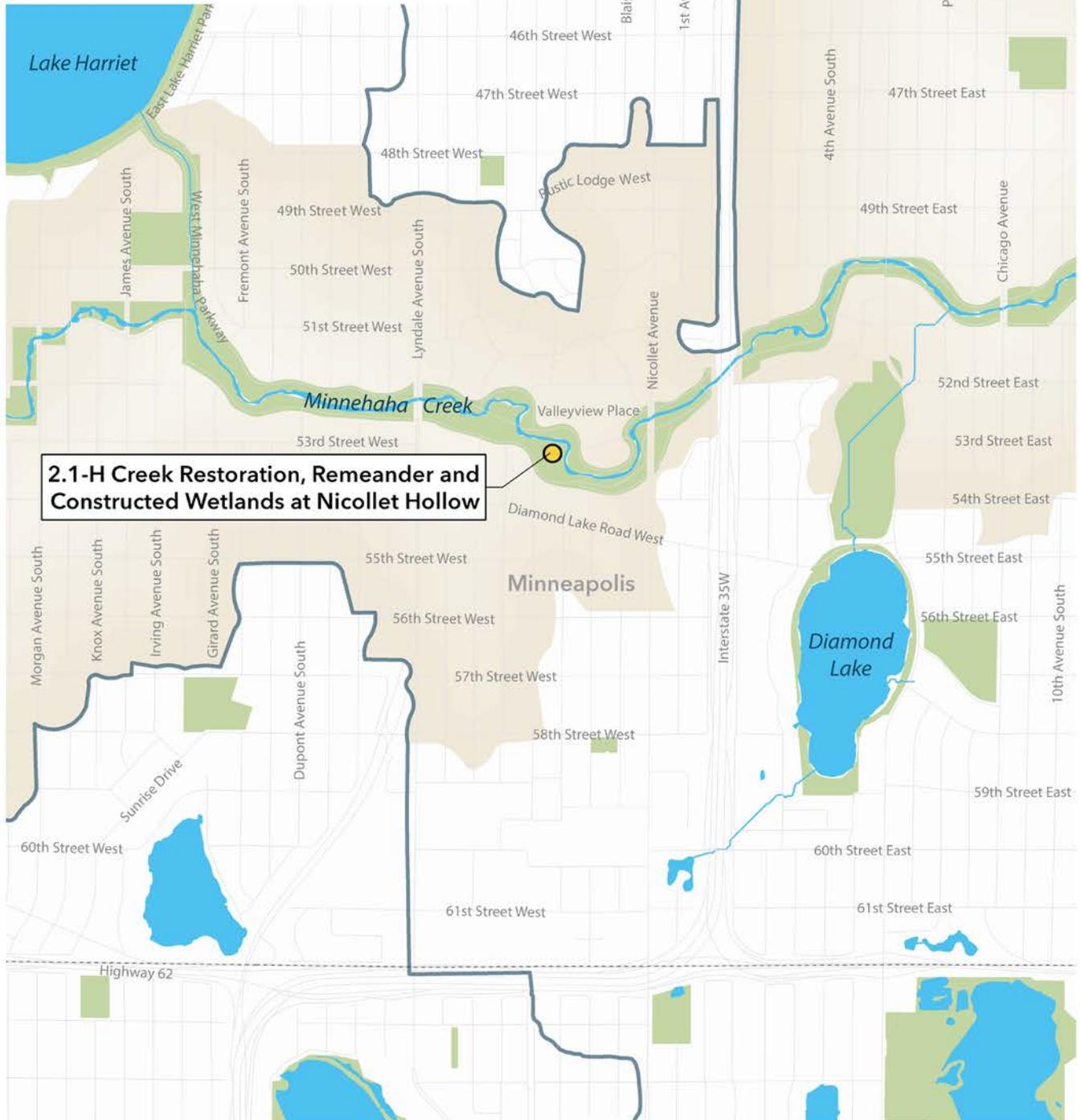
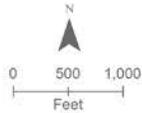


MINNEHAHA PARKWAY IMPLEMENTATION PLAN

SEGMENT 2 NICOLLET FOCUS AREA

LEGEND

-  Project Location
-  Minnehaha Creek Drainage Area
-  MCWD Hydrologic Boundary
-  City Boundary



MINNEHAHA PARKWAY PARTNERSHIP IMPLEMENTATION PLAN

2024-2028



MINNEHAHA CREEK
WATERSHED DISTRICT



Minneapolis
Park & Recreation Board



Minneapolis
City of Lakes

OVERVIEW

PROJECT NAME

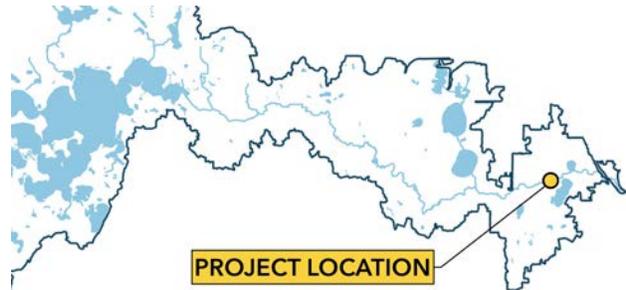
Segment 3 Cedar/Bloomington

LOCATION

Minneapolis (Minnehaha Creek)

TARGET WATERBODY

Minnehaha Creek and Lake Hiawatha



BENEFITS

Treats 115 acres, 52 pounds of Total Phosphorus reduction, 11,121 cubic yards of floodplain restoration

DESCRIPTION

SCOPE

The scope of work for Segment 3 includes feasibility, design, and construction for creek restoration and remeandering with stormwater BMP as identified in the 3-P Stormwater BMP (with restored wetland) project.

GOALS

Improve water quality, water quantity, and ecological integrity through the remeandering and restoration of Minnehaha Creek, and installation of a stormwater BMP and restored wetland area.

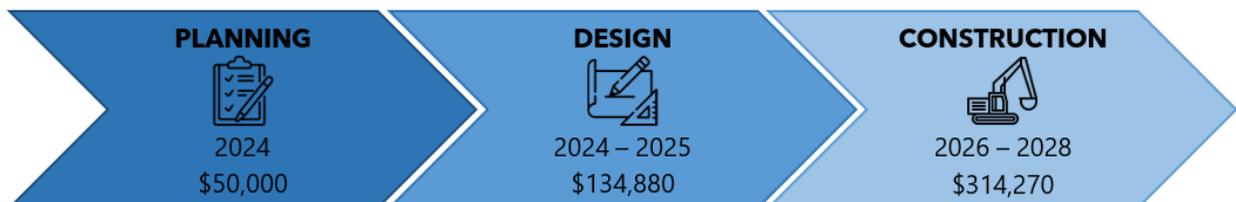
JUSTIFICATION

The Partnership is prioritizing the implementation of Project 3-P from the co-created Minnehaha Parkway Regional Trail Master Plan as a pilot project of the Partnership Implementation Framework with the City of Minneapolis Surface Water and Sewers Division and Minneapolis Park and Recreation Board (MPRB) to enhance recreation, improve ecological function of the creek corridor, improve public safety, address flooding, and improve water quality in the Minneapolis segment of the Minnehaha Creek corridor.

WORKPLAN SUMMARY

The focus for 2024 will be on conducting feasibility, including engineering, site design, policy, and regulatory feasibility, as well as cost and benefit estimates for the selected project in the Segment 3 Cedar/Bloomington.

SCHEDULE + BUDGET

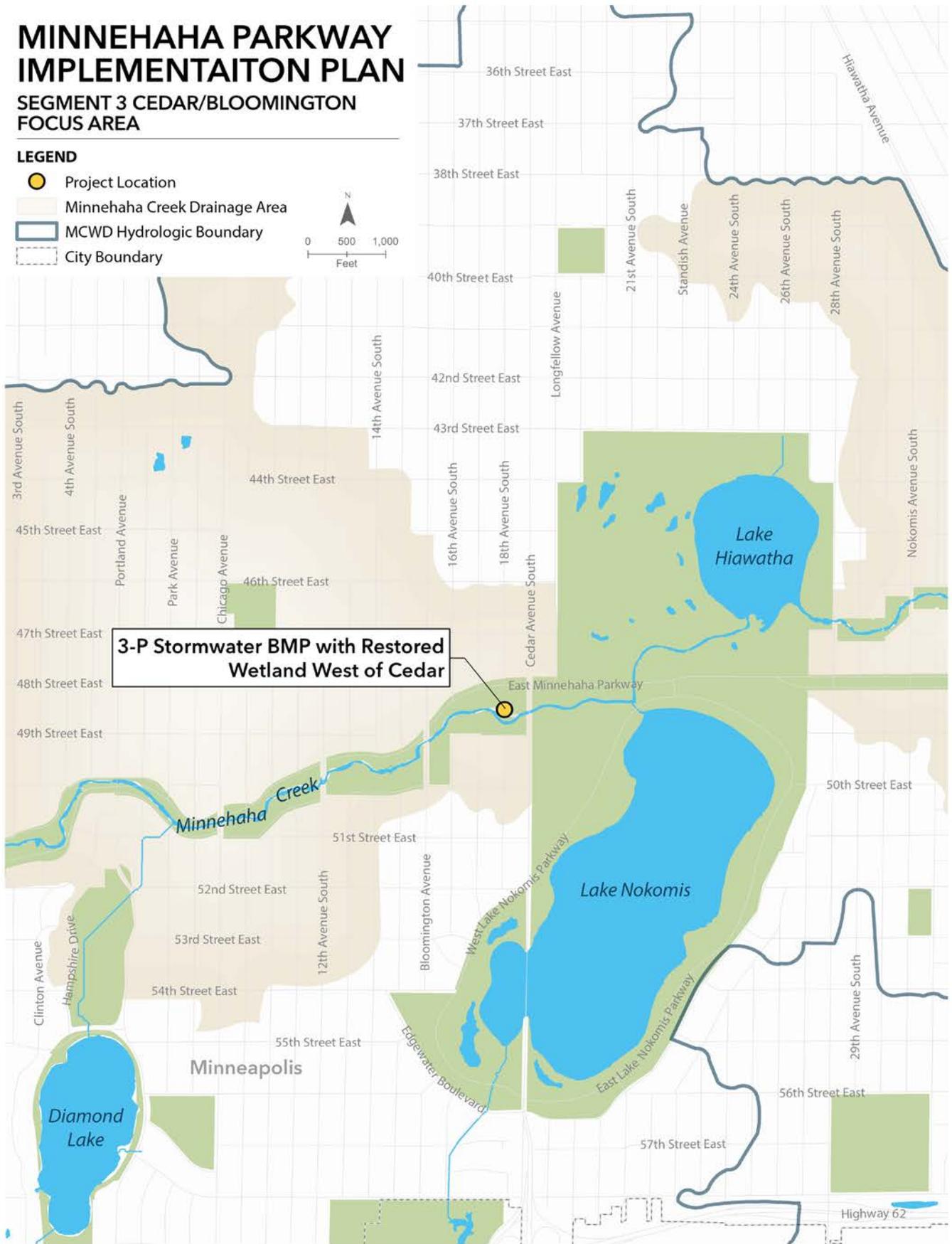
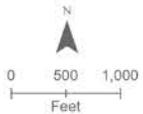


MINNEHAHA PARKWAY IMPLEMENTATION PLAN

SEGMENT 3 CEDAR/BLOOMINGTON FOCUS AREA

LEGEND

-  Project Location
-  Minnehaha Creek Drainage Area
-  MCWD Hydrologic Boundary
-  City Boundary



3-P Stormwater BMP with Restored Wetland West of Cedar

Minnehaha Parkway Phase I Feasibility Report

Minnehaha Creek Watershed District
Feasibility Report



Prepared for:
Minneapolis Thriving Waters Partnership

October 31, 2025

Minnehaha Creek Watershed District
15320 Minnetonka Blvd.
Minnetonka, MN 55345

Project/File:
227707285

Minneapolis Parks and Recreation Board
2177 West River Road
Minneapolis, MN 55414

The City of Minneapolis Surface Water and Sewers
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Prepared by:
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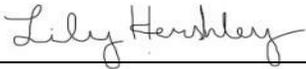


Disclaimer

The conclusions in the Report titled Minnehaha Parkway Phase I Feasibility Report are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not consider any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

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Executive Summary

Stantec Consulting Services (Stantec), Hoisington Koegler Group, Inc. (HKGI), Inter-Fluve, Inc. (Inter-Fluve), and 106 Group collaborated to provide a Phase One Feasibility Analysis for the Minnehaha Creek Parkway corridor. The consultant team worked closely with the project Partners including Minnehaha Creek Watershed District (MCWD), Minneapolis Park and Recreation Board (MPRB), and the City of Minneapolis / Surface Water & Sewers (City/SWS). The partnership, named Minneapolis Thriving Waters Partnership (MTWP), between MCWD, MPRB, and City/SWS was created to address water quality issues within the overlapping boundaries of the City of Minneapolis and MCWD and is based on the Clean Water Partnership (CWP) developed in the 1990's to address significant water quality issues in the Minneapolis Chain of Lakes. The CWP was initially a joint effort involving MPRB, the City of Minneapolis, MCWD, and the Minnesota Pollution Control Agency (MPCA). The partnership's preliminary focus was to develop highly impactful projects along the Minnehaha Creek Parkway corridor. Through the collaborative partnership the Partners have identified leveraging of the Minnehaha Parkway Regional Trail Master Plan (2020) as a catalyst framework to initiate implementation of impactful projects. The Partners requested the development of a feasibility analysis focused on metrics such as water quality, water quantity, and ecological integrity by investigating stormwater Best Management Practices (BMPs), re-meandering of the creek, and floodplain restoration. In addition, passive and active recreational amenities, accessibility upgrades, and interpretive elements were considered.

The feasibility analysis assessed projects that were originally outlined in the Minnehaha Parkway Regional Trail Master Plan. The Master Plan was adopted in November 2020 and guides improvements for parkland and trails surrounding Minnehaha Creek over the next 20 to 30 years. The Master Plan breaks up the regional trail into four segments and multiple focus areas for improvements. The MTWP collaborated to identify high impact projects introduced in the Master Plan which could move to implementation within a 1–2-year time frame. The specific projects from the Master Plan that are assessed in the Feasibility Analysis include the Penn-Newton-Morgan Focus Area located in Segment 1, the Nicollet Hollow Focus Area located in Segment 2, and an area near Cedar Avenue located in Segment 3. See Figure 1 in Section 1.0 for a graphic including Segments 1-3 and focus areas from the Master Plan.

The consultant team worked closely with MCWD, MPRB, and the City/SWS to collaborate on the potential benefits for multiple approaches or “options” at each of the three project sites along the Minnehaha Creek corridor. The three project locations and options along the corridor include the following:

- Site 1 - Area between Bloomington Avenue and Cedar Avenue which will be referred to as the “Cedar” site in this report. Two alternatives (options) were assessed for this site which incorporate multiple projects for each alternative: Option 1, smaller multi-cell stormwater footprint with no major circulation adjustments, and Option 2, larger multi-cell stormwater footprint with major circulation adjustments.
- Site 2 - Area just west of Nicollet Avenue which will be referred to as the “Nicollet” site in this report. Two alternatives were assessed for this site which incorporate multiple projects for each alternative: Option 1, creek re-meander with a smaller stormwater basin, and Option 2, one larger stormwater and flood storage basin.



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- Site 3 - Area east of Penn Avenue and an area between Newton Avenue and Morgan Avenue where the creek meanders in the north-south direction which will be referred to as the “Penn-Newton” site in this report. This location physically includes two sites within one larger area in terms of BMP feasibility. This report will generally discuss both sites together and will discuss the site-specific elements as appropriate. Two alternatives with multiple projects were assessed for this site: Option 1, stormwater treatment train and stormwater treatment basin, and Option 2, check dams and stormwater basin with filtration basin.

Several meetings were conducted with project stakeholders including a kickoff meeting (September 23rd, 2024) and two workshop engagement meetings (November 13th and December 18th, 2024). The findings and discussions of these meetings will be discussed in conjunction with the feasibility analysis to help memorialize the decisions made, and to provide a baseline understanding of items that will need to be considered as the project enters the design phase.

The feasibility analysis considered each project option to identify project benefits such as improvements to water quality, ecological lift, user experience, and ease of implementation. A prioritization matrix was created to compare the benefits of each option for each site. The prioritization matrix was also used to assess the feasibility of implementing the projects at each site to help determine a recommended phased approach. The full prioritization matrix is included in Appendix C and a summary is included in section 4 of the report. The feasibility analysis has resulted in the following recommended Phase I Project sequence:

1. Cedar (design anticipated 2025-2026)
2. Penn-Newton (the project would be split into sub elements):
 - a. Spillway repair and creek stabilization (design anticipated 2025-2026)
 - b. 53rd Street and Penn stormwater (lowest priority. To be evaluated against other projects)
3. Nicollet (concept planning and community engagement anticipated 2026-2027 given the project complexities)



Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
BMP	Best Management Practice
CSO	Combined Sewer Overflow/System
CWA	Clean Water Act
CWP	Clean Water Partnership
EAW	Environmental Assessment Worksheet
EOPCC	Engineer's Opinion of Probable Construction Cost
FEMA	Federal Emergency Management Agency
H&H	Hydraulic and Hydrologic Modeling
MCES	Metropolitan Council Environmental Services
MCWD	Minnehaha Creek Watershed District
MDNR	Minnesota Department of Natural Resources
MPCA	Minnesota Pollution Control Agency
MPRB	Minneapolis Park & Recreation Board
MTWP	Minneapolis Thriving Waters Partnership
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetland Inventory
O&M	Operations and Maintenance
RPBB	Rusty-patched bumble bee
SWS	City of Minneapolis Surface Water & Sewers division of the Public Works Department
TCB	Tri-colored bat
TP	Total Phosphorous
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Services
WCA	Wetland Conservation Act

Glossary

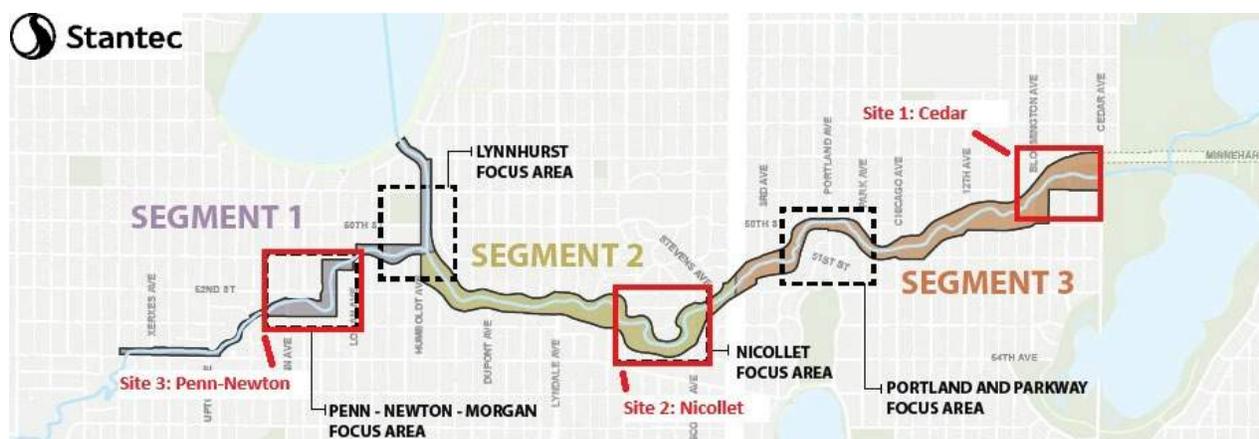
Term	Definition
Best Management Practice (BMP)	Techniques or control measures used to manage the quantity and improve the quality of stormwater runoff.
Floodplain Storage	The capacity of a floodplain to temporarily store excess stormwater during high-flow events, reducing downstream flooding and improving water quality.
Hydrologic and Hydraulic (H&H)	Computer modeling used to analyze how water moves through a watershed and how it flows through channels.
Re-meandering	The process of restoring a stream to a more natural, winding path to improve ecological function, reduce erosion, and enhance floodplain connectivity.
Total Phosphorous (TP)	A key water quality metric representing the total concentration of phosphorous in water.



1.0 Introduction

Stantec Consulting Services (Stantec), Hoisington Koegler Group, Inc. (HKGI), Inter-Fluve, Inc. (Inter-Fluve), and 106 Group have conducted a Phase One Feasibility Analysis for the Minnehaha Creek Parkway corridor. The three project locations are outlined in Section 3.0 including Section 3.1 pertaining to the Cedar location, Section 3.2 pertaining to the Nicollet location, and Section 3.3 pertaining to the Penn-Newton location. Figure 1 is a diagram of segments and focus areas shown in the Minnehaha Parkway Regional Trail Master Plan and shows the general site locations studied in the feasibility analysis.

Figure 1: Site Locations



A summary of preceding contextual studies is provided below:

- 2007: City/SWS staff investigated the potential to disconnect CSO 055, where a storm main is connected to the sanitary sewer at the intersection of Cedar Ave and 48th St. A subsequent investigation was conducted in 2014. Both efforts concluded it was not possible without additional measures to offset the increased flows to the Minnehaha Creek, which would require a larger collaborative effort. These studies were not included in the current feasibility analysis.
- 2012: MCWD contracted with Inter-Fluve to complete a series of geomorphic and biologic assessments within the Minnehaha Creek watershed to evaluate existing stream networks, channel stability, and water quality. A similar assessment was conducted in 2003 and 2004. The 2012 study included ground reconnaissance to evaluate system changes and provide recommendations for potential improvement areas.
- 2013: Regional study to look at volume management opportunities along the parkway. MCWD separately studied opportunities for infiltration-based green infrastructure adjacent to Minnehaha Creek and subsequently received Clean Water Legacy funding for implementation.
- 2014: Minnehaha Creek experienced record flooding throughout the District resulting in road closures, sustained standing water, bank failures, and in-stream erosion issues. As a result, MCWD, in consultation with Wenck Associates, Inc. (Wenck), completed a field assessment where 47 sites along Minnehaha Creek were identified as flood damage locations. Of the 47 sites, 35 were submitted and approved for Federal Emergency Management Agency (FEMA) federal funding



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assistance for stream bank stabilization. FEMA approved funding for 35 sites targeting stream bank stabilization that generally focused on standardized riprap material, channel bank re-sloping, erosion control practices, and, to a lesser extent, integrated design to improve the in-stream condition using bioengineered practices.

- Early August 2017: Inter-Fluve and Wenck staff completed a visual assessment of the 47 sites identified in 2014. This confirmed project site elements still required action and identified other project constraints (e.g. infrastructure, cultural resource issues). Based on this high-level screening and dialogue with MCWD, 16 of the 35 FEMA funded sites and three of the 12 non-FEMA funded sites were recommended for preliminary design in Stage 1.
- 2017: City/SWS contracted HR Green to study alternatives to reduce urban flooding and manage stormwater in the subwatershed to the southwest of Lake Harriet with input by MCWD and MPRB. The final report included a recommendation to add a BMP at the 52nd St outfall to Minnehaha Creek.
- April 2018: HKGI, Wenck, and Inter-Fluve conducted an analysis and issued a report to enable filtering of high impact projects which could align with potential partner capital improvement projects and FEMA repairs to create efficiency in implementation. The report addresses stormwater best management practices (BMPs) that may be constructed independently of or in conjunction with FEMA funded projects. 13 potential BMPs were identified. The objective of this report was to provide stakeholders (i.e. MCWD, the City of Minneapolis, MPRB, etc.) with a list of potential BMP locations, pollutant removal efficiency, and cost of identified BMPs. The information in this report was intended to identify BMPs for independent construction, direct future master planning efforts, and direct the integration of BMP projects as part of related infrastructure improvement projects.
- 2018: As part of its regular asset management program, the City/SWS evaluated the condition of pipes and outfalls to Minnehaha Creek in the years leading up to 2018. The condition and priorities for replacement were shared with the partners as part of the ongoing collaboration in the area. The City/SWS continues to collect missing data as conditions allow.
- 2020: The Minnehaha Parkway Regional Trail Master Plan was completed by MPRB, MCWD, and the City of Minneapolis with the help of consultants including Wenck, Inter-Fluve, and HKGI, and with extensive community engagement. The plan was officially adopted by MPRB in November of 2020. The plan is intended to guide capital improvements over the next 20-30 years for parkland and trails surrounding Minnehaha Creek.

The above information, along with the continued efforts by the project stakeholders, led to the three selected sites discussed in this analysis. This analysis, and the cooperative agreement consisting of the three primary stakeholders (MCWD, MPRB, City/SWS), is part of a long-term partnership between the agencies to focus on improvements related to water quality and stormwater benefits within the City. This feasibility analysis focuses on metrics such as water quality, water quantity, and ecological integrity by investigating stormwater BMPs, re-meandering of the creek, and floodplain restoration. In addition, passive and active recreational amenities, accessibility upgrades, and interpretive elements were considered.

As the MTWP looks to make investments along the creek corridor through Minneapolis, each project has the possibility to include recreational components. Some potential recreational features such as trail realignments around stormwater features or creek re-meanders will be integral to maintaining multi-modal



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connectivity along Minnehaha Parkway; others are unrelated to specific stormwater improvements but may benefit from being planned and constructed alongside these projects to capture some efficiency in cost. These recreational projects are considered “à la carte” and are noted in the body of this report and in the cost estimate (Appendix B) as such. A study on the proposed recreational features was done by HKGI and is summarized in the report. The recreational projects explored in this feasibility study, whether they relate directly to proposed water quality improvements or not, are grounded in the 2020 Minnehaha Parkway Regional Trail Master Plan, and are included here to ensure continuity of planning intent as the agencies look to implement this first phase of creek improvements. MPRB and MCWD should continue to work together to select which of the à la carte recreational projects should be folded into the scope of the selected water quality projects.



2.0 Data Sources

Various sources of data were obtained to evaluate any potential regulatory requirements that would influence alternative designs and to serve as a baseline for concept exploration. Technical constraints were also revisited at each location to help focus alternative development. Technical constraints investigated include infrastructure needs, potential tree conflicts, historic structures, and groundwater influences. An outline of data sources reviewed are listed below.

MCWD provided the following information:

- Existing hydrologic and hydraulic (H/H) and water quality models associated with the 2018 study
- Preliminary concept sketches associated with the 2020 Parkway Master Plan

MPRB provided the following information:

- Historic maps
- Historic photos
- Historic corridor improvement figures
- The Master plan survey
 - LiDAR, tree survey, infrastructure survey
- Site specific concerns including locations of ice dams, flooding, foot traffic, turtle movement, etc.

The City of Minneapolis provided the following information:

- Two City of Minneapolis H/H (XPSWMM) models and a water quality model (P8)
- Prioritized list of outfall repairs
- Markups of GIS figures to show project concerns. Those items include:
 - City utilities
 - Original boundary for CSO 055
 - Metropolitan Council Environmental Services (MCES) utilities
 - Historic information and site specific improvement concerns.

2.1 Discovery/Desktop Data Collection and Review

A desktop review was completed to evaluate regulatory requirements and timelines for the implementation of each site, including but not limited to threatened and endangered species, wetland permitting, and environmental review need.



Threatened and Endangered Species

A threatened and endangered species desktop review was conducted to determine potential impacts to rare species as part of the potential site modifications. If any federal funds are to be used for this project, official United States Fish and Wildlife Service (USFWS) consultation would be required. Coordination with the Minnesota Department of Natural Resources (MDNR) may also be encouraged or required. Rare species that may potentially be impacted as well as potential measures to mitigate impacts are included below:

Rusty-patched bumble bee (RPBB): The RPBB may be present at each site. Nests are typically one to four feet underground in abandoned rodent nests or mammal burrows and occasionally at the soil surface (excludes pavement, wetlands and waterbodies). Overwintering sites are typically in upland forest and woodlands but tall vegetation in uplands can be utilized as well. To avoid adverse effects, ground disturbance in overwintering and nesting habitats should either be less than 0.25 acres or occur outside the overwintering timeframe (October 11 – April 14) or outside the nesting timeframe (April 15 to October 10th). Removal of foraging resources should either be less than 2.0 acres or occur outside the nesting timeframe.

Tri-colored bat (TCB): The TCB may be present at the Nicollet site. Tree clearing and culvert/bridge work would need to be conducted in the winter to avoid impacts to TCB habitat.

Pugnose shiner: The shiner is likely present at all sites. The proposed site modifications at the Cedar and Penn-Newton sites are not anticipated to require substantial mitigative action. Potential re-meandering associated with the Nicollet site may require further assessment and mitigative measures. Mitigation may include appropriate erosion and sediment controls.

Blandings turtle: The turtle may be present at the Cedar and Nicollet sites but is not anticipated to require substantial action. Education protocols such as educating construction workers and inspectors about the turtle and posting flyers with MDNR contacts would be followed. Mitigation may include appropriate erosion and sediment controls.

The lake sturgeon, least darter, and forster's tern may also be present at each site, however the proposed site modifications are not anticipated to require substantial action. Appropriate erosion and sediment controls could be implemented as a mitigative measure. The forster's tern uses marshy edges for nesting and generally occurs in colonies in wetlands less than 50 acres in size. If the forster's tern or an active nest is spotted, it should be reported to the MDNR for next steps.

Wetland Permitting

A desktop review of wetland presence and potential regulated impacts was conducted to determine any required permitting associated with site modifications proposed at each site. Permitting through the United State Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA) and permitting through the MDNR under the Wetland Conservation Act (WCA) will likely be required for the Cedar site and may be required for the Nicollet site. Further evaluation for each site is included in Section 3.0.



Environmental Review Need

A mandatory Environmental Assessment Worksheet (EAW) would be required by Subpart 26 of Statute 4410.4300 for stream re-meandering of over 500 feet in length. An EAW is anticipated to be needed for re-meandering associated with Option 1 at the Nicollet site. Further evaluation of Option 1 and associated site modifications is included in Section 3.0.

Other Anticipated Permits and Coordination

Other permits and agency coordination may be needed for the implementation of each site. Table 1 summarizes all anticipated permits/coordination for each site and its proposed options. See Section 3.0 for further evaluation of each option.

Table 1: Anticipated Permits and Coordination

Site/Option and Agency	Cedar		Nicollet		Penn-Newton	
	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2
FEMA	No rise certificate	No rise certificate	CLOMR/LOMR	CLOMR/LOMR	No rise certificate	No rise certificate
MPCA NPDES	NPDES/SDS Construction Stormwater General Permit					
City of Minneapolis	Coordination with SWS. CH 54 Erosion Control Private Utility connections	Coordination with SWS. CH 54 Erosion Control Private Utility connections	Coordination with SWS. CH 54 Erosion Control Private Utility connections	Coordination with SWS. CH 54 Erosion Control Private Utility connections	Coordination with SWS. CH 54 Erosion Control Private Utility connections	Coordination with SWS. CH 54 Erosion Control Private Utility connections
MCWD	Erosion Control, Floodplain Alteration, Stormwater Management, Wetland Protection and Streambank Stabilization Permits	Erosion Control, Floodplain Alteration, Stormwater Management, Wetland Protection and Streambank Stabilization Permits	Erosion Control, Floodplain Alteration, Stormwater Management, Wetland Protection and Streambank Stabilization Permits	Erosion Control, Floodplain Alteration, Stormwater Management, Wetland Protection and Streambank Stabilization Permits	Erosion Control, Floodplain Alteration, Stormwater Management, Wetland Protection and Streambank Stabilization Permits	Erosion Control, Floodplain Alteration, Stormwater Management, Wetland Protection and Streambank Stabilization Permits
MPRB	Permits for disturbance/work within the parkway					



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Site/Option and Agency	Cedar		Nicollet		Penn-Newton	
	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2
MCES	Sanitary line coordination and/or relocation	Sanitary line coordination and/or relocation	N/A	N/A	Sanitary line coordination and/or relocation	Sanitary line coordination and/or relocation
MDNR and USACE	Coordination and/or permits for work below the Ordinary High-Water Level (OHW)	Coordination and/or permits for work below the Ordinary High-Water Level (OHW)	Coordination and/or permits for work below the Ordinary High-Water Level (OHW)	Coordination and/or permits for work below the Ordinary High-Water Level (OHW)	Coordination and/or permits for work below the Ordinary High-Water Level (OHW)	Coordination and/or permits for work below the Ordinary High-Water Level (OHW)
	Wetland permitting likely	Wetland permitting likely	Potential wetland permitting	Potential wetland permitting	N/A	N/A
Hennepin County	Coordination for impacts to County Roads	Coordination for impacts to County Roads	N/A	N/A	N/A	N/A
Metro Transit	Coordination with impacts to bus routes and stops	Coordination with impacts to bus routes and stops	Coordination with impacts to bus routes and stops	Coordination with impacts to bus routes and stops	Coordination with impacts to bus routes and stops	Coordination with impacts to bus routes and stops



3.0 Feasibility Sites

3.1 Cedar

3.1.1 Overview

The Cedar site consists of large open green space along the north side of the creek between the Bloomington Avenue and Cedar Avenue sections of the creek. There is potential at the site to address stormwater and floodplain issues, create significant ecological lift, and optimize the overall recreational use of the area. The primary objectives for this site included analyzing the potential for a stormwater BMP to reduce localized flooding, incorporating wetland and nature-based solutions, and revising trail and circulation patterns.

Figure 2: Cedar Site – Existing Conditions



3.1.2 Technical Feasibility / Constructability Review (Infrastructure Analysis)

The Cedar site was evaluated for five projects with 2 alternatives (Option 1 and Option 2) for the projects. The five projects include creek re-meander (Project A), riparian habitat restoration (Project B), bank re-naturalization (Project C), multi-basin stormwater wetland (Project D1/D2), and combined sewer (CSO) separation (Project E). The site was also evaluated for two à la carte projects including recreation and circulation improvements (Projects F and G). See Figures 3 and 4 for a quick look and Appendix A for detailed concept drawings of each option and associated projects. The alternatives were reviewed to determine constructability of each option prior to developing feasibility costs. The only difference between the two alternatives is the multi-basin stormwater wetland (Project D1/D2).

Option 1 grades the stormwater wetland to minimize tree impacts. Option 2 includes a larger stormwater wetland that has boardwalks included for the pedestrian walking path through this park. Option 2 also includes circulation adjustments that considered a pedestrian trail under Cedar Avenue. It was determined that including a trail with this project would not be feasible, as its location below the creek elevation would require flood walls and stormwater pumps to keep it dry.

Through feasibility it was determined that the existing stormwater infrastructure would be adjusted to change the routing of the existing storm sewer from the current creek outlet to the newly constructed stormwater wetland. The review determined the elevations would be feasible to complete.

The feasibility of separating the CSO was also evaluated. The CSO area on Cedar Avenue is likely feasible and can be coordinated with other infrastructure improvements. While a moratorium is currently in place due to a recent Hennepin County improvement project, the City has indicated that this is an administrative process and does not prevent work from occurring in the area. The CSO storm sewer in question connects to an MCES sanitary interceptor in the intersection of Cedar Ave and 48th Street and extends north and west through an alley. Achieving gravity drainage will require replacing the existing pipe at a higher elevation. As part of this project, stormwater improvements along the parkway will be designed to support future CSO separation.

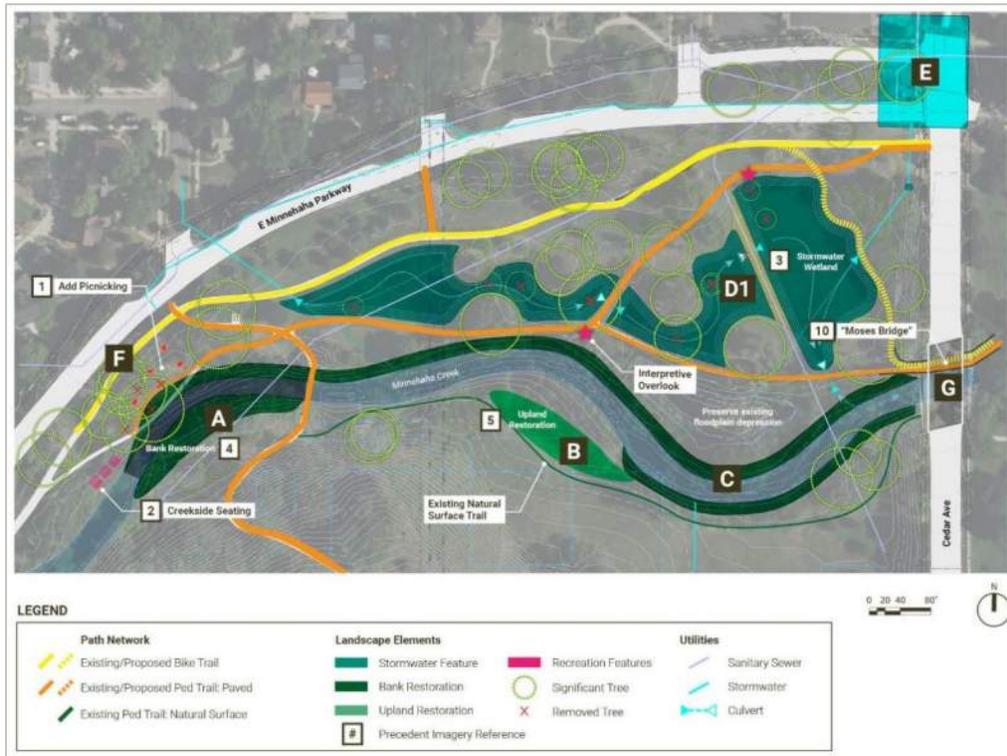
There are two sanitary sewers that are in the site:

- The first sanitary sewer is a 11-foot horseshoe concrete pipe built in 1926. The Metropolitan Council owns this interceptor line. It runs diagonally across the site, crossing Minnehaha Creek near 16th avenue south and crossing Cedar Avenue north of E Minnehaha Parkway. In 2022, MCES inspected the interceptor line and found it to be in good condition. There are no plans to complete any rehabilitation work in the near future, however MCES has expressed interest in additional evaluation of this system when the stormwater wetlands are moved forward in design.
- The second sanitary sewer is a 21-inch clay pipe that was built in 1930 and is owned by the City. It runs diagonally through the site and connects to the MCES pipe in the park south of 48th St. The City/SWS does not want the proposed stormwater wetland above their system due to concerns about accessing it for maintenance and concerns about clear water inflow into the sanitary sewer from the ponded water. During the feasibility report generation, the City/SWS televised the system to assess its condition. The televising showed there currently is significant inflow into it from the groundwater, and lining it is not recommended due to the current level of inflow. The City/SWS has expressed tentative interest in relocating the sanitary sewer farther east if a reasonable alignment can be found that does not compromise the hydraulics of the system. Funding for relocation effort would need to be secured if that is pursued.



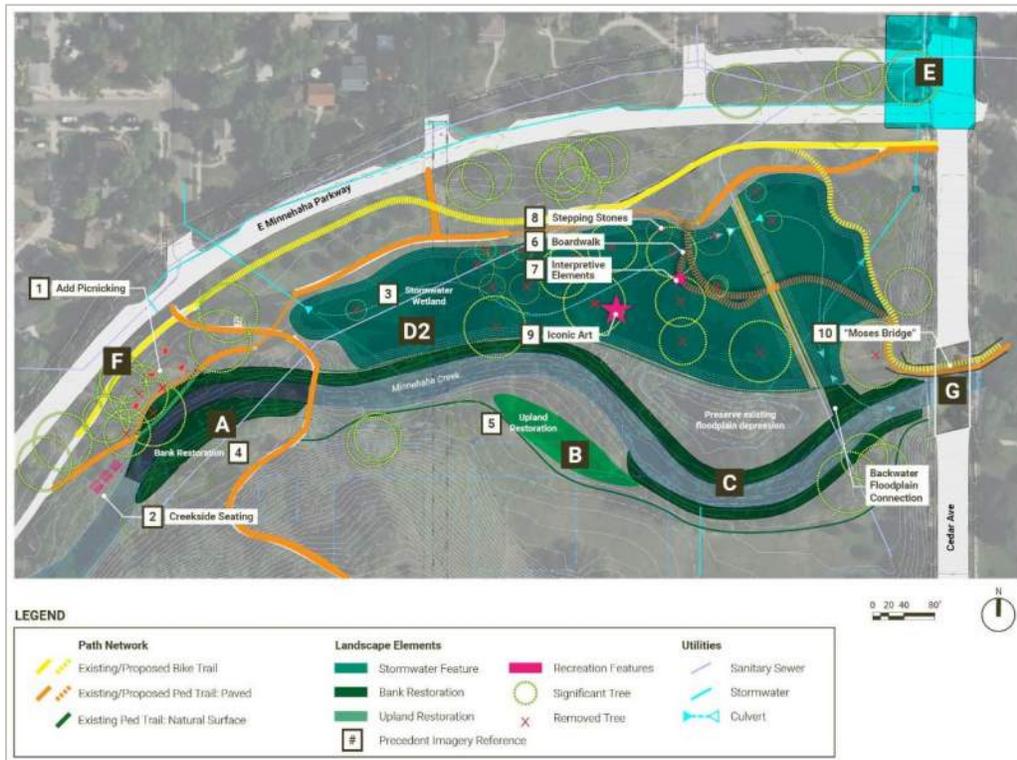
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Figure 3: Cedar Site - Option 1



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Figure 4: Cedar Site - Option 2



3.1.3 Permitting and Wetlands

A list of anticipated permits is included in Section 2.1.

The existing creek and riparian forest wetland areas on the north and south sides of the creek are wetlands according to the National Wetland Inventory (NWI). Specific design considerations for the proposed ponds should be considered in final design to demonstrate compliance with WCA rules. The available information indicates that modification of these existing areas would create excess standing water and/or conversion of the areas to stormwater ponding resulting in certain WCA permitting requirements. Final design should take into consideration the existing wetland type(s) and prioritize minimal excavation to preserve the wetland's natural characteristics. The goal should be to ensure that any modifications support wetland functionality rather than transforming these areas into cattail-dominated stormwater ponds. Maintaining features that resemble natural wetlands will strengthen the case that the proposed changes do not constitute a conversion of wetland to non-wetland under WCA. Additionally, there are existing gas line markers in the vicinity of this site, so further due diligence and coordination with local utility companies shall be expected to determine the exact locations of utilities prior to construction.

The project is in a regulatory floodway and is not anticipated to increase the existing flood elevations within the 100-year floodway. Prior to receiving any permits for site modifications, a no-rise certificate must be obtained through the proper FEMA procedure. The certificate must be supported by technical data and signed by a registered professional engineer. Any local floodplain requirements would also be addressed.

3.1.4 Water Quality

The existing Total Phosphorous (TP) loading for the Cedar tributary area is 63.1 lbs/yr. P8 models were created for both options utilizing data from the Minneapolis water quality model for calibration purposes. See Appendix D for results of the P8 modeling. The watershed areas were split between hydrologic soil groups (HSG) D and A with most of the tributary areas being grassed areas due to the high percentage of residential housing land use. Option 1, with three separate ponds, proposes each pond captures flows from their respective watershed and discharges south to Minnehaha Creek. This option consists of a western pond that captures runoff from a 95-acre watershed, primarily consisting of residential housing, with some park area, and an eastern pond that captures water from a 19-acre watershed that includes a mix of residential areas, parkways, and industrial zones. The west pond has limited removal efficiencies due to the pond footprint size in relation to its contributing drainage area whereas the east pond has higher removal efficiencies for its respective contributing drainage area.

Option 2, with two larger combined ponds, modifies the model by implementing just one device that captures both watersheds. The combined pond is more appropriately sized for the watershed area and thus provides removal efficiency in line with Nationwide Urban Runoff Program (NURP) pond TP removal percentages. The west pond associated with Option 1 has a reduced efficiency because the watershed area (95 acres) in comparison to the pond size is much larger. TP loading was compared to the Minneapolis water quality model; the modeled loads varied by 5%.



Table 2: Cedar - Water Quality Total Phosphorus (TP) Removal Summary

Option	Watershed Inflows (lbs/yr)	Removals (lbs/yr)	% Removal
Option 1			
East Pond (19 acres tributary)	13.4	8.7	65%
West Pond (95 acres tributary)	49.7	17.6	35%
Total	63.1	26.3	42%
Option 2			
Combined Pond/Total	63.1	37	58%

3.1.5 H&H

The City’s XP-SWMM model was used to evaluate the level of risk of exacerbating street flooding by adding ponding features to the green space at the site. See Appendix E for the results of the SWMM modeling. The tributary drainage area for the proposed BMP(s) is approximately 114 acres. The proposed BMP(s) will add storage below the approximate 100-year flood elevation of 821 with proposed storage elevations between elevations 816 to 817. Option 1 provides about 1.25 acre-feet of additional flood storage, and Option 2 provides approximately 2.4 acre-feet of additional flood plain storage.

Due to the existing conditions where many existing pipes and manholes have inverts with reverse slopes or inverts below the creek elevation, there are some potential challenges with demonstrating a decrease in the 100-year flood elevation associated with the pond improvements when utilizing the City’s XP-SWMM model for proposed updates. Even with the addition of extra storage below the 100-year elevation, preliminary updates to the model indicate 0.02 to 0.08 feet of rise in the upstream pipe depending on the option under consideration which could be within the tolerances of the model. It was determined this rise would not increase the risk of off-street flooding. Final design will require further analysis of this topic, taking into consideration potential updates to the city storm sewer infrastructure around this site.

3.1.6 Site Amenities

At the Cedar site, circulation adjustments are integral projects related to the proposed stormwater and creek restoration improvements. Option 1 requires only a small trail realignment to skirt the creek re-meander stabilization at Project A. Option 2 requires more significant trail realignment as part of project D2 but moves these trails out of the floodplain to improve year-round usability. Also included in project D2 is a 12’ wide boardwalk across the new multi-basin stormwater wetland, which would offer a unique recreational experience along Minnehaha Parkway and provide an opportunity for an interpretive overlook related to the restored wetland. À la carte recreation at Cedar includes the addition of picnic tables beneath existing trees near project A. Additionally, a “Moses Bridge” shared use path extension beneath Cedar Avenue was proposed in the master plan in order to reduce at-grade crossings of busy Cedar Avenue and could also be accommodated with either of the proposed stormwater wetland projects. An existing packed earth natural surface trail along the south side of the creek may need to be realigned to skirt the riparian restoration area; this will likely be achieved naturally over time through foot traffic.



The project features associated with the Cedar site provide opportunities to enhance interpretive programming along the regional trail. A study done by 106 Group found that development of the multi-basin stormwater pond and riparian habitat restoration provide the most significant opportunity for incorporating interpretive enhancements. The boardwalk and overlook platforms would provide views to these features and would be an excellent forum for introducing trail users to the topic of “engineered nature”. Other potential opportunities include playful interactive features for young audiences, and guided ranger talks led by MPRB or partner agency staff. See Appendix G for the full interpretive foundations assessment and recommendations.

Figure 5: Cedar - Proposed Site Amenities



3.1.7 Stream Assessment

Significant erosion was observed near the pedestrian path and recently installed amenities near the west end of the project extents. A meander is recommended in this location along with shifting of the trail. Re-meandering (Project A) at this location would add approximately 25 feet of stream length. Bank restoration (Projects A and C) is proposed along a total of 1,810 feet of stream bank, 560 feet associated with Project A and 1,250 feet associated with Project C. Geomorphic reconnaissance efforts and conceptual design development for stream modifications were completed by Inter-Fluve and summarized in a technical memorandum included in Appendix H.



3.1.8 Cost

Stantec produced detailed cost estimates for the site and each option based on work items such as recreational improvements, general construction, engineering, and permitting. The detailed cost estimates also accounted for Inter-Fluve’s Engineer’s Opinion of Probable Construction Costs (EOPCC), which considered work items specific to stream restoration. Appendix B includes the detailed cost estimate for the site and Appendix H includes Inter-Fluve’s EOPCC. Table 3 below summarizes the cost estimate without the à la carte recreation and circulation improvements.

Table 3: Cedar - Cost Summary

Cedar	
Option 1	Option 2
Smaller pond footprint w/o major circulation adjustments	Larger pond footprint w/ major circulation adjustments
\$ 1,020,000	\$ 3,080,000

3.1.9 Operation and Maintenance

An initial understanding of the maintenance required for each option was provided during the project workshops. The level of effort for operation and maintenance (O&M) for Option 1 (smaller pond) is moderate, and the level of O&M effort for Option 2 (larger pond with boardwalk) is considered high due to the boardwalk adding complexity. The City of Minneapolis would be responsible for O&M related to wet ponds (visual inspections and removal of sediment/debris), stormwater wetlands (visual inspection and removal of sediment/debris), and the existing grit chamber (inspections and cleaning). MPRB would be responsible for O&M related to wet ponds (vegetation maintenance), stormwater wetlands (vegetation maintenance), trails and boardwalks (maintenance, plowing, and surface management), streambank restoration and streambank re-meander (vegetation maintenance), and native vegetation (herbicides and prescribed burns, inspection for disease, and mowing invasives). Contractors would be hired to help with O&M of streambank restoration and re-meander (vegetation establishment, maintenance, and inspections). O&M responsibilities outlined above are based on asset ownership and preliminary conversations with the MTWP. See Appendix F for detailed meeting minutes and slide decks from the workshops. Implementation and ownership of O&M will be a continued discussion between the contributing agencies as design and implementation progresses. The final arrangement will need to be finalized through project agreements.

3.1.10 Site Summary

There is significant potential for addressing stormwater and floodplain issues, creating ecological lift, and optimizing recreational use at the Cedar site. The key objectives include integrating stormwater BMPs, wetland and nature-based solutions, and revising the trail and circulation patterns. The benefits of Option 1 include expansion of the ponding area to achieve pollutant removal without requiring boardwalks which is the main cost driver of Option 2. Option 1 is overall the lowest cost option, however it removes only 42% of TP inflows compared to Option 2 which provides 60% removal of inflows. Option 1 would also require less



O&M as it doesn't include the boardwalk which adds complexity to Option 2. Option 2 has the potential to provide a net gain in flood storage volume of approximately 4,000 cubic yards, while Option 1 has the potential to provide 2,000 cubic yards. The bank restoration for both options would provide a significant habitat benefit, though Option 1 would preserve a greater number of trees and Option 2 would provide a larger wetland habitat. The proposed pond design for each option would maintain wetland function, thus there would not be any significant wetland permitting obstacles. The implementation of either option provides the opportunity for CSO separation at Cedar Avenue. The land footprint efficiency is greater for Option 1, as the pond proposed in Option 2 would have a greater land footprint. Overall, both options have a high potential for addressing floodplain issues and uplifting the ecosystem.

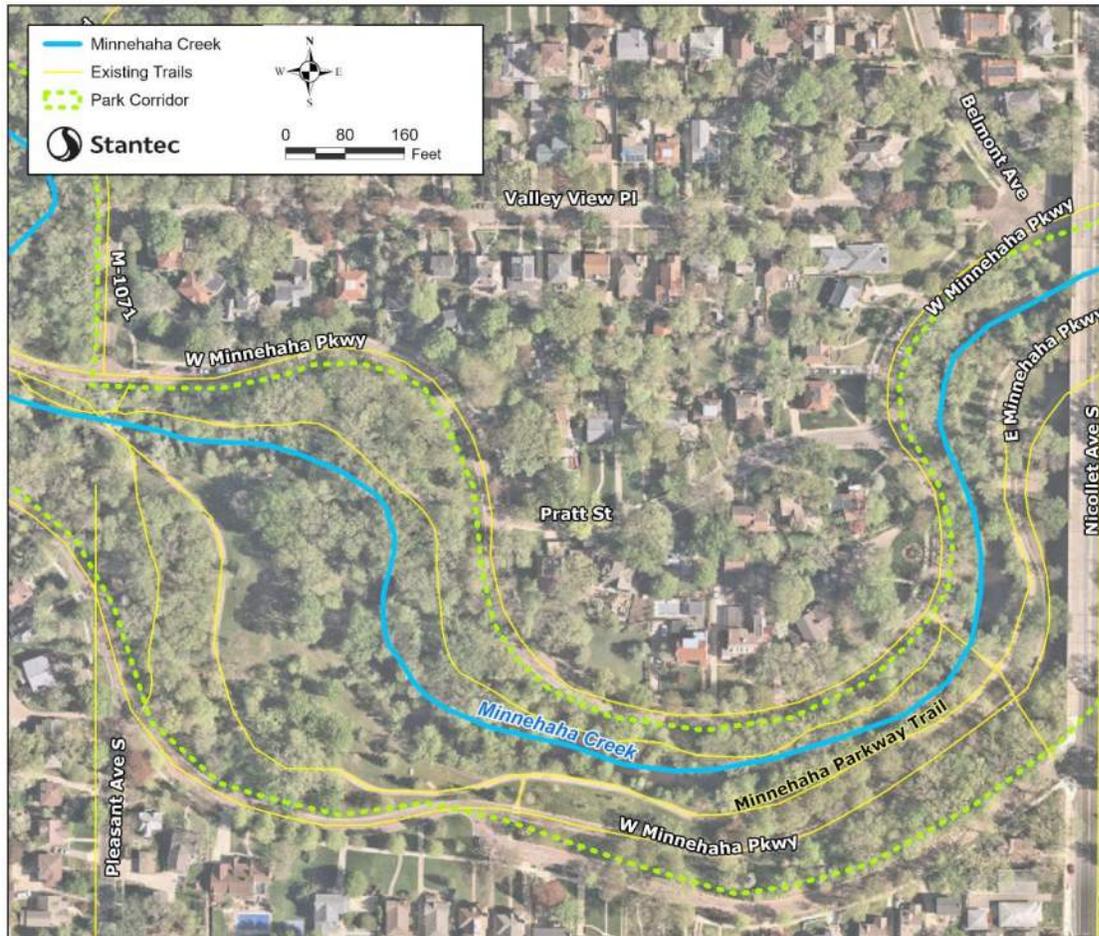
3.2 Nicollet

3.2.1 Overview

The Nicollet site consists of a large green space along the south side of the creek just west of Nicollet Avenue. The primary objectives for this site included the analysis of integrating a stormwater BMP to provide water quality benefits and additional floodplain storage, integrating stream restoration, wildlife restoration and nature-based solutions, and revised trail and circulation patterns. The BMP analysis considered two options that differ in the amount of storage provided in the BMP(s).



Figure 6: Nicollet Site - Existing Conditions



3.2.2 Technical Feasibility / Constructability Review (Infrastructure Analysis)

The Nicollet site was evaluated for six projects with two alternatives (Option 1 and Option 2). The six projects include bank restoration (Project A), circulation adjustments (Project B), stormwater/flood storage wetlands & re-meander (Project C1/C2), in-stream habitat improvements (Project D), additional circulation adjustments (Project E1/E2) and a grit chamber (Project F). The site was also evaluated for à la carte recreation improvements (Project G). See Figures 7 and 8 for a quick look at the concept drawings and see Appendix A for detailed concept drawings of each option and associated projects. The alternatives were reviewed to determine constructability of each option prior to developing feasibility costs. There are a few key differences between the two alternatives. Option 1 includes re-meander of the creek between the wetland and preserved trees, removal of the former roadway embankment to improve floodplain storage and connectivity, an interpretive overlook, and in-stream habitat features to force micro pools and provide complexity. Option 2 includes excavation to create a single wetland basin while preserving the trees in the center, and bank stabilization adjacent to the proposed stormwater outfall. Option 2 would provide greater stormwater and floodplain storage.



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Through feasibility, it was determined that the elevation of the storm sewer on the east side of the site, coming from the parking lot on Minnehaha parkway, is too low for a stormwater pond to have beneficial water quality treatment. A grit chamber was included as an option to provide water quality in this location.

Discrepancies were observed between historic information and the model at the Diamond Lake Road storm sewer and it was unknown whether a weir structure was installed. Minneapolis sent staff out to inspect the storm sewer and found the weir in place. It was determined that the majority of water from the upstream drainage area is flowing north on Pleasant Ave to the Nicollet site. After this was determined, the stormwater pond in Option 2 was upsized to maximize the water quality benefit.

Figure 7: Nicollet Site - Option 1

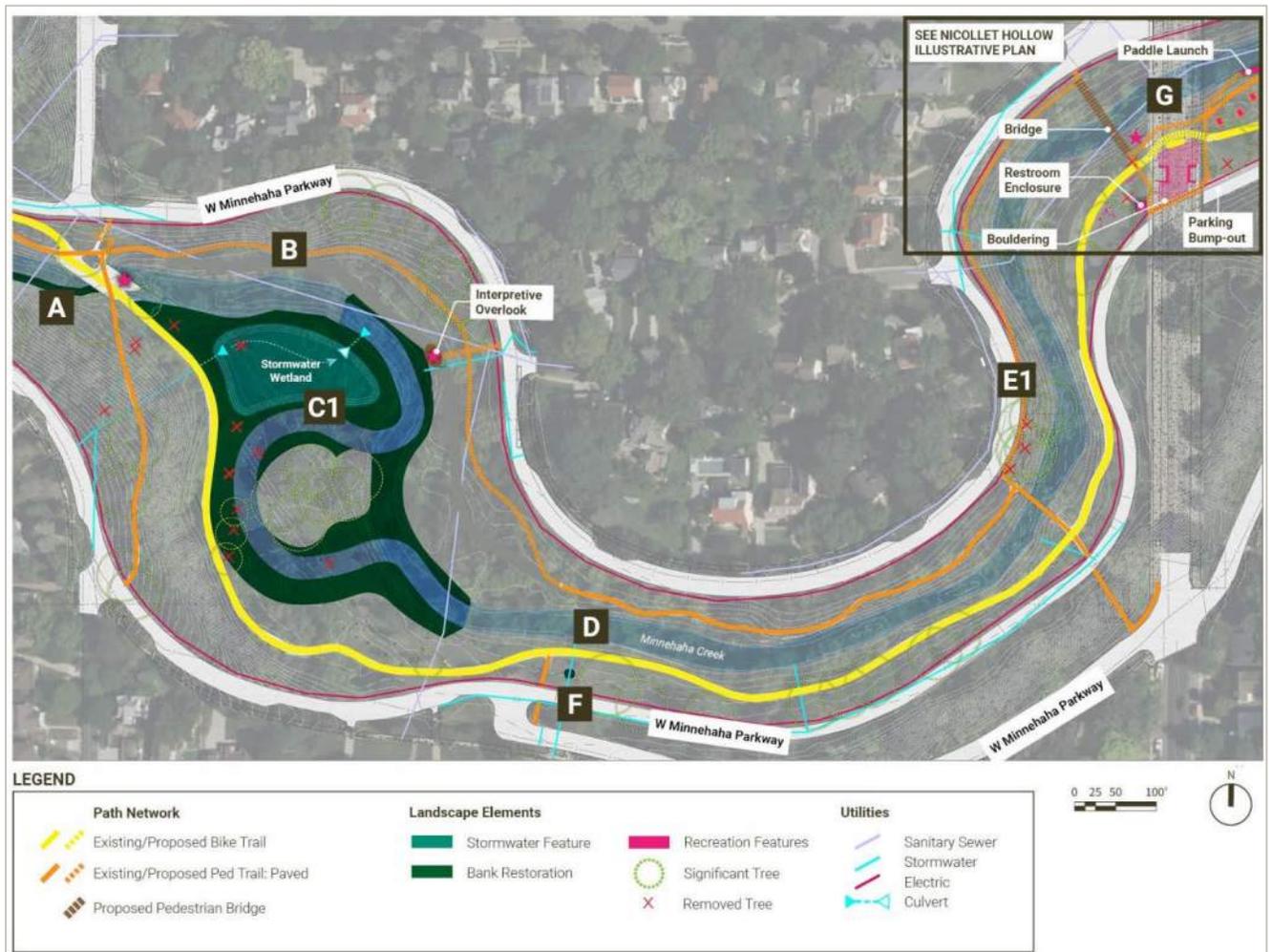
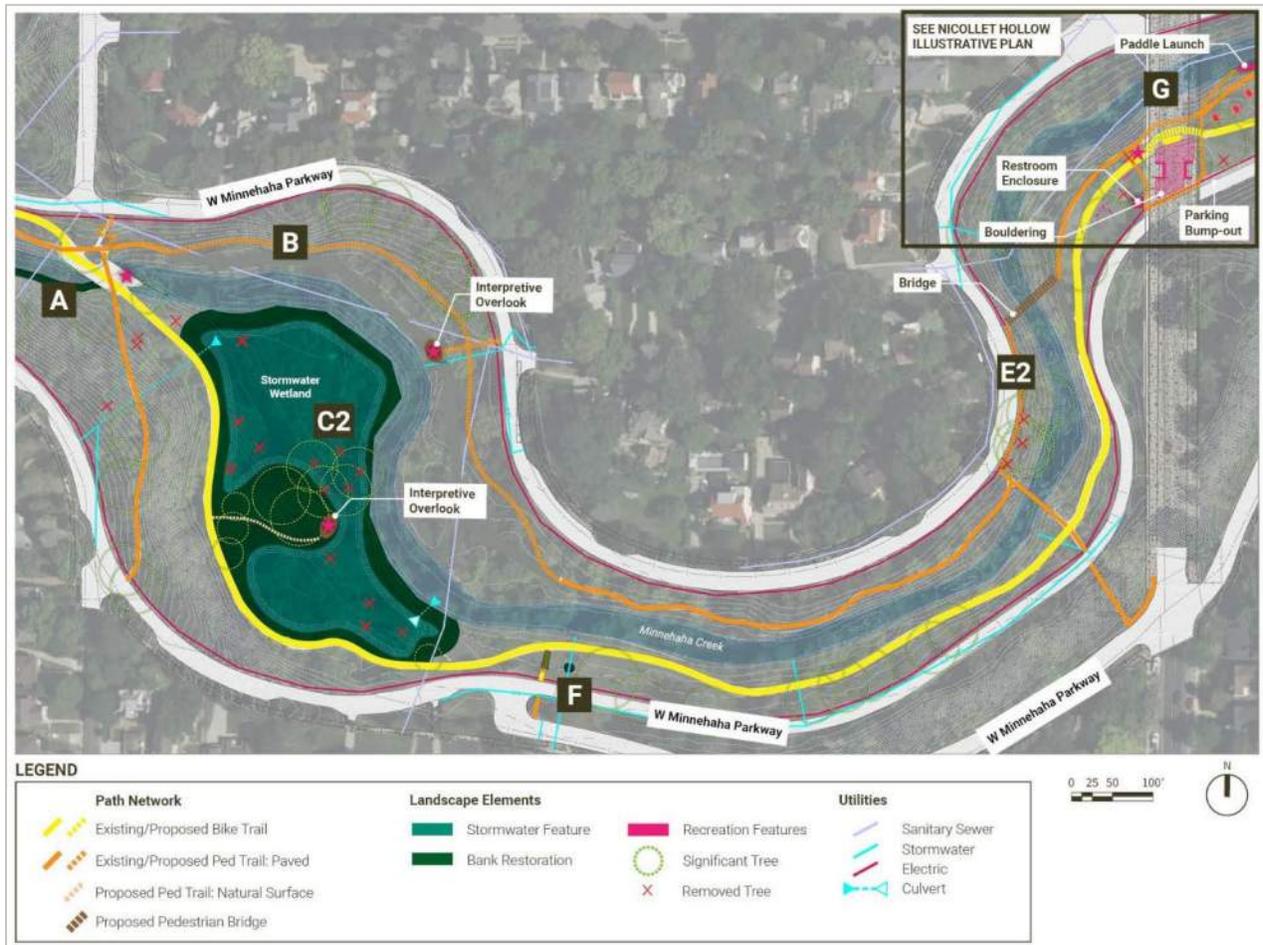


Figure 8: Nicollet Site - Option 2



3.2.3 Permitting and Wetlands

A list of anticipated permits is included in Section 2.1.

Based on available information, there does not appear to be likely wetland impacts resulting from the proposed improvements to the Nicollet site. If wetland impacts are identified as the design progresses, the proper protocol would be followed to demonstrate compliance with WCA rules.

The movement of the channel would likely result in a substantial change to the regulated floodplain, triggering the need to obtain a letter from FEMA officially revising the current National Flood Insurance Program (NFIP) map to show the changes to the floodplain, regulated floodway, or flood elevations.

The re-meandering associated with Option 1 would trigger the need for state environmental review in the form of an EAW.



3.2.4 Water Quality

The current TP loading for the Nicollet tributary area is 71.6 lbs/yr. A P8 water quality model was used to evaluate the removal efficiency of the two Nicollet options. Option 1 features a pond with 0.5 acre-feet of dead pool storage, while Option 2 increases the dead pool storage to 1.7 acre-feet. Both options capture water from an approximate 107-acre watershed. The watershed areas were split between HSG D and A with most of the tributary areas being grassed areas due to the high percentage of residential housing land use. The H&H analysis determined that there is a flow splitter within a manhole structure located near the intersection of Diamond Lake Road and Pleasant Ave that allows for low flows to continue to the north, and for higher flows to split to Pleasant Ave and Diamond Lake Road. The storm sewer system that continues north down Pleasant Ave is part of the watershed that is captured by the BMP analyzed at this location, and the storm sewer downstream of this flow split that runs east down Diamond Lake Road is not able to be captured due to the depth of the pipes by the time the sewer reaches the proximity of this site.

The increased pond size in Option 2 results in higher removal efficiency. The P8 model was used to investigate the balance between dead pool storage and TP removal, aiming to optimize pond size and removal efficiency.

Table 4: Nicollet - Water Quality Total Phosphorus (TP) Removal Summary

Option	Watershed Inflows (lbs/yr)	Removals (lbs/yr)	% Removal
Option 1			
Nicollet Pond / Total	71.6	17.0	24%
Option 2			
Nicollet Pond / Total	71.6	30.3	42%

3.2.5 H&H

The City's XP-SWMM model was used to evaluate whether adding ponding at the site would increase the risk of off-street flooding. The updates to the model demonstrate no increase in high water levels for the upstream manholes/nodes. Additionally, the MCWD XP-SWMM model was reviewed to address concerns that higher peak flows in the creek could reduce the proposed pond's water quality benefits. The tributary drainage area for the proposed ponding is approximately 107 acres. Based on the XP-SWMM model, peak flows occur about six to seven days after the storm event. The City's XP-SWMM model utilizes starting depths in the downstream nodes at elevation 835.8'. This starting elevation from the City model corresponds to an elevation between the 2-year and 5-year event from the MCWD model. Assuming that smaller water quality storm events (less than the 1-year event) are generating most of the pollutants in the first flush type events, it seems feasible that the ponds should still have sufficient time to remove pollutants by treating the water in the first 24 to 48 hours after a first flush event unless there are first flush events that occur during that 6 to 7 day period after a larger storm event.

The proposed BMPs in both options will add storage below the approximate 100-year flood elevation of 836-837'. Option 1 provides about 0.7 acre-feet of additional flood storage, and Option 2 provides approximately 2.4 acre-feet of additional flood plain storage. The tributary drainage area for this pond is



approximately 107 acres, but it should be noted that a significant portion of this area is intercepted by a flow diversion structure such that low flows drain to the ponds, and high flows divert to a storm network that is not captured by the ponds. From a water quality standpoint, it is assumed that the low flows are associated with the water quality events, and from a hydrologic/hydraulics standpoint, higher flows are diverted to bypass the ponds.

3.2.6 Site Amenities

Similar to Cedar, circulation adjustments at the Nicollet site are important recreational investments that address flooding and safety issues along the regional trail. Project B moves an existing trail segment further outside of the floodplain to improve year-round usability. An interpretive overlook is included in this project in order to educate visitors/users about the stormwater wetland improvement project that will be visible across the creek, and a new interpretive panel is included at the existing bridge crossing Minnehaha Creek at the western edge of the project area.

Project alternatives E1 and E2 offer solutions to the dangerous shared use trail around the curve on the southeast side of the creek near Nicollet. Both options move pedestrian circulation to the north/west side of the creek to avoid keeping a combined trail along the tight creek meander and allow conversion of the shared-use trail on the south/east bank to a bicycle-only path. A new pedestrian bridge will be required in order to accomplish this. Option E1 sites the bridge at the narrowest point of the creek for cost efficiency and requires fewer tree removals and less new trail to be installed. Option E2 sites the bridge at the location noted in the master plan, which requires a larger bridge span, longer path extension and more tree removals, but will be more convenient for neighborhood residents arriving from the north along Belmont Avenue. Option E2 will allow recreational investments at Nicollet Hollow to function better as neighborhood park amenities, a need noted throughout engagement for the master plan.

Both proposed stormwater/flood storage options along Minnehaha Creek have the potential to include interpretive overlooks that offer visitors viewing platforms for wildlife watching and insight into the significance of these green infrastructure investments.

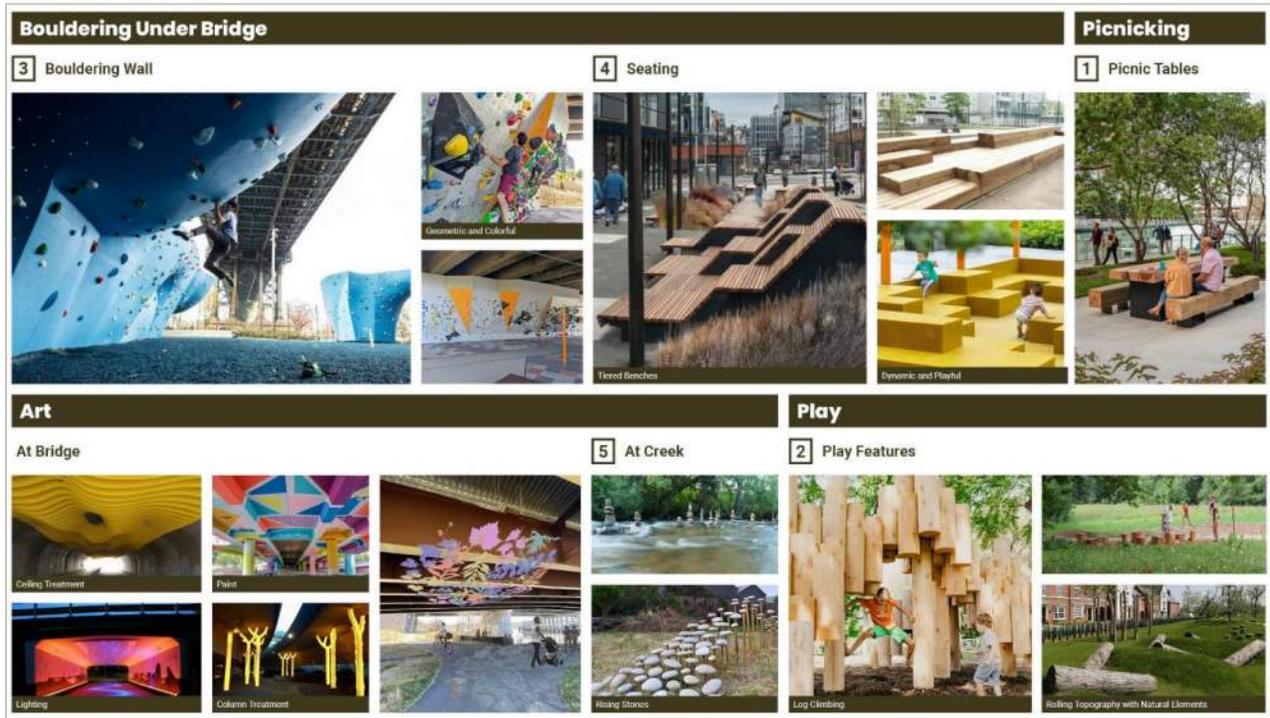
À la carte recreation at Nicollet includes the creation of “Nicollet Hollow,” which should be tied to improvements to the Nicollet Avenue Bridge if possible. The master plan proposed the addition of a bouldering area beneath the bridge, and would involve the installation of climbing holds, safety surfacing, signage, lighting, and a viewing/gathering space for climbers or observers. Other improvements proposed as part of the Nicollet Hollow project include additional picnic tables and seating, a drinking fountain, pollinator lawn seeding, playful public art features, a portable restroom enclosure, circulation additions or realignment as needed, and a new ADA-accessible paddle launch. A small parking bump out of three parallel parking spaces along Minnehaha Parkway on the creek’s south side would facilitate use of this new creek access facility.

The study done by 106 Group found that the creek re-meander and development of the stormwater wetland provide the most significant opportunities for incorporating interpretive enhancements. Interpretive messaging would highlight how Minnehaha Creek once functioned in its natural state and how human interference with the natural system both helped and hindered the creeks’ core functions. Self-guided interpretive media would provide the best medium for relaying this message. Other potential opportunities include recreation and interpretive features under the Nicollet Avenue bridge and highlighting adaptive



recreation opportunities at the proposed ADA accessible launch. See Appendix G for the full interpretive foundations assessment and recommendations.

Figure 9: Nicollet - Proposed Site Amenities



3.2.7 Stream Assessment

Depending on the design concept, the concrete pipes, fallen portions of the parkway bridge wall, and damaged trees are recommended to be removed and replaced. Re-meander of the stream (Project C1) is proposed for Option 1 and would add approximately 375 feet of stream length. The banks are recommended to be stabilized with bioengineering practices and would restore approximately 1,130 feet of stream bank for Option 1, and 740 feet of stream bank for Option 2. Geomorphic reconnaissance efforts and conceptual design development for stream modifications were completed by Inter-Fluve and summarized in a technical memorandum included in Appendix H.

3.2.8 Cost

Stantec produced detailed cost estimates for the site and each option based on work items such as recreational improvements, general construction, engineering, and permitting. The detailed cost estimates also accounted for Inter-Fluve's EOPCC, which considered work items specific to stream restoration.



Appendix B includes a detailed cost estimate for the site and Appendix H includes Inter-Fluve’s EOPCC. Table 5 below summarizes the cost estimate without the à la carte recreation improvements.

Table 5: Nicollet - Cost Summary

Nicollet	
Option 1	Option 2
Creek Re-meander w/ smaller stormwater basin	Larger Stormwater & Flood Storage basins
\$ 2,270,000	\$ 2,370,000

3.2.9 Operation and Maintenance

An initial understanding of the maintenance required for each option was provided during the project workshops. The level of effort for operation and maintenance (O&M) for both Option 1 (creek re-meander and smaller stormwater wetland) and Option 2 (larger stormwater and flood storage wetlands) are considered moderate. The City of Minneapolis would be responsible for O&M related to stormwater wetlands (visual inspections and removal of sediment/debris). MPRB would be responsible for O&M related to stormwater wetlands (vegetation maintenance), trails, bridges, and overlooks (maintenance, plowing, and surface management), and streambank restoration and streambank re-meander (vegetation maintenance). Contractors would be hired to help with O&M of streambank restoration and re-meander (vegetation establishment, maintenance, and inspections). O&M responsibilities outlined above are based on asset ownership and preliminary conversations with partners. See Appendix F for detailed meeting minutes and slide decks from the workshops. Implementation and ownership of O&M will be a continued discussion between the contributing agencies as design and implementation progresses. The final arrangement will need to be finalized through project agreements.

3.2.10 Site Summary

There is potential for addressing stormwater and floodplain issues, stream restoration, and optimizing the recreational use at the Nicollet site. The key objectives include providing water quality benefits and additional floodplain storage, restoring the stream and wildlife habitats, and revising the trail and circulation patterns to improve safety and accessibility. Based on the factors assessed in the feasibility study, Option 1 and 2 are similar in cost-effectiveness, though Option 2 provides a greater percentage removal of TP inflows. Option 1 has the potential to provide a net gain in floodplain storage of 1,000 cubic yards, while Option 2 has the potential to provide 4,000 cubic yards. The O&M for both options is similar and considered moderate in effort and complexity.

Regarding habitat improvement, both options would benefit the ecosystem through creation of stormwater wetlands, though the re-meandering associated with Option 1 would significantly benefit the creek and riparian habitat. There would be some permitting obstacles for both options relating to disturbance to the floodplain. The re-meandering associated with Option 1 would also require environmental review which



requires a significant amount of time. The larger stormwater and flood storage wetlands proposed in Option 2 would have a greater land footprint when compared to Option 1. The recreational amenities proposed for both options would have a large impact as there is currently a major gap in amenities along this portion of the regional trail within the neighborhood park. Overall, implementation of either project option at the Nicollet site would address floodplain issues, improve water quality, and provide a significant recreational benefit to the area.

3.3 Penn - Newton

3.3.1 Overview

The Penn-Newton site consists of two main areas with the first area being just east of Penn Avenue and south of the creek, and the second area located at the southeast corner of the intersection of Newton Avenue and W 52nd Street. The primary objectives for the Penn Avenue area include integrating a stormwater BMP to provide water quality benefits, maintaining existing trees, and creek and floodplain forest restoration. The project at the Newton Avenue area will consist of implementing a series of small stormwater treatment cells/basins that will reduce the flow velocities of drainage from the contributing drainage area. The existing Newton area consists of a concrete flume that daylights to the creek. The intent is to manage that flow through a series of BMPs instead of utilizing the drainage flume, which would be removed. There is also an area north of Morgan Avenue, described in this report as the Penn-Newton North project, where bank restoration is proposed.



Figure 10: Penn-Newton Site - Existing Conditions



3.3.2 Technical Feasibility / Constructability Review (Infrastructure Analysis)

The Penn-Newton site was evaluated for five project options with two alternatives (Option 1 and Option 2). The projects include a stormwater treatment train or check dams (Project A1/A2), bank restoration (Project B), oak savanna restoration (Project C), a water access point (Project D), a stormwater treatment/filtration basin near Penn Avenue (Project E1/E2), and bank restoration within the Penn-Newton North project (Project F). The site was also evaluated for à la carte recreation improvements (Project G). See Figures 11, 12, and 13 for a quick look at the concept drawings and see Appendix A for detailed concept drawings of each option and associated projects. The alternatives were reviewed to determine constructability of each option prior to developing feasibility costs. This review included the analysis of the large drainage area that outlets through a 60" pipe from Morgan Avenue. The pipe was reviewed to determine elevations and pipe routes to capture it in the stormwater basin near Penn Avenue. To route the stormwater to the west would include significant impacts to the landscape including multiple desirable oak trees being removed and significant landscape and trail impacts. These land impacts were discussed during initial workshops and the treatment of this drainage area determined to not be feasible. Infiltration was also considered for the basins. It was determined that high creek water levels and assumed clay soils would not be conducive for infiltration.



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There are a few key differences between the two alternatives. Both alternatives would remove the existing stormwater flume near Newton Avenue, however Option 1 would include three stormwater basins as a replacement and Option 2 would include meandering check dams to reduce flow velocities, reduce erosion risks, and trap sediments. Additionally, Option 1 would include two flat-bottomed turf style stormwater treatment basins in a series near Penn Avenue to maintain playable recreation surface, whereas Option 2 would include a southern turf style stormwater treatment basin and a northern filtration basin with sand filter and drain tile.

Figure 11: Penn-Newton Site - Option 1

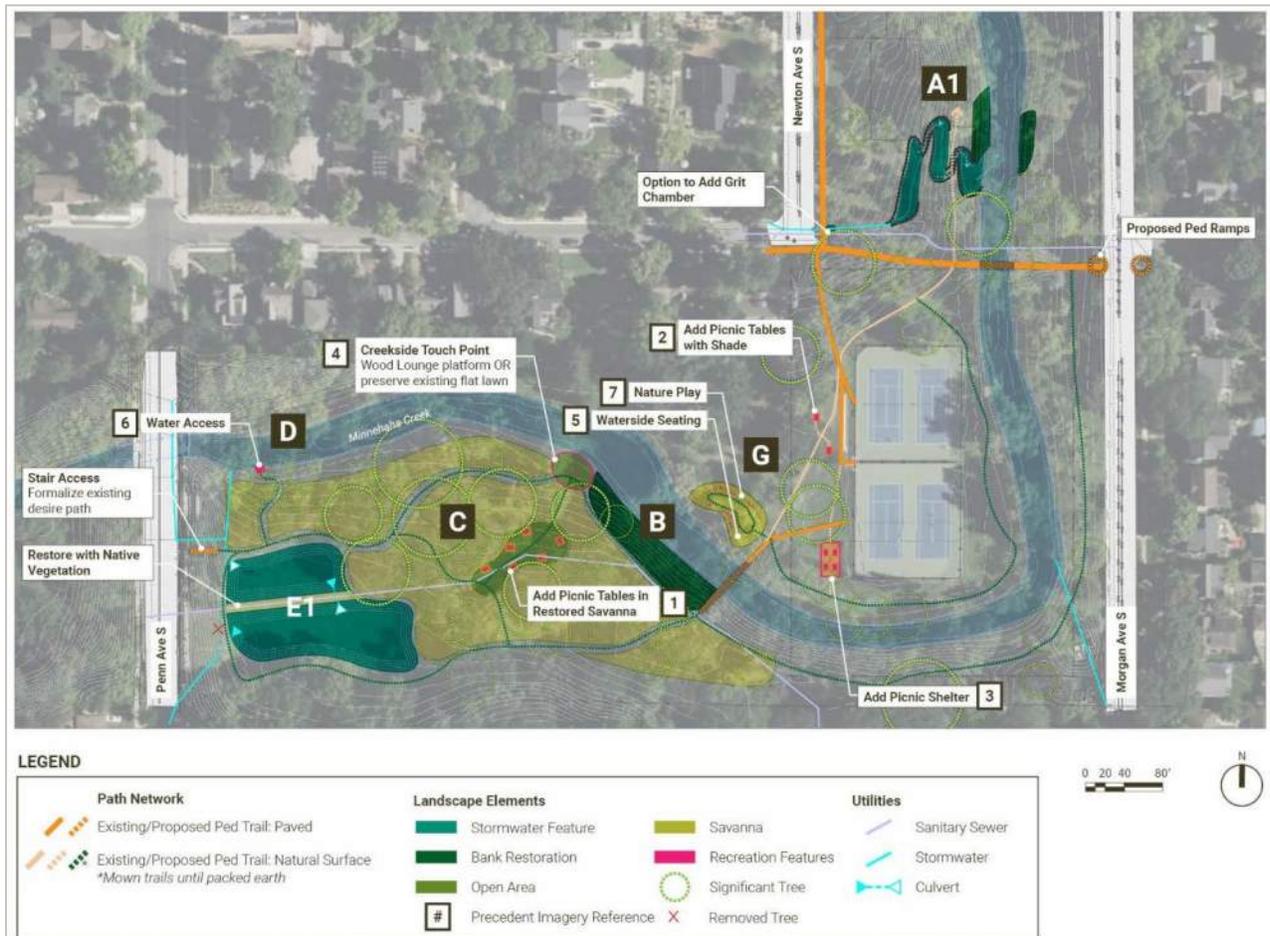


Figure 12: Penn-Newton Site - Option 2

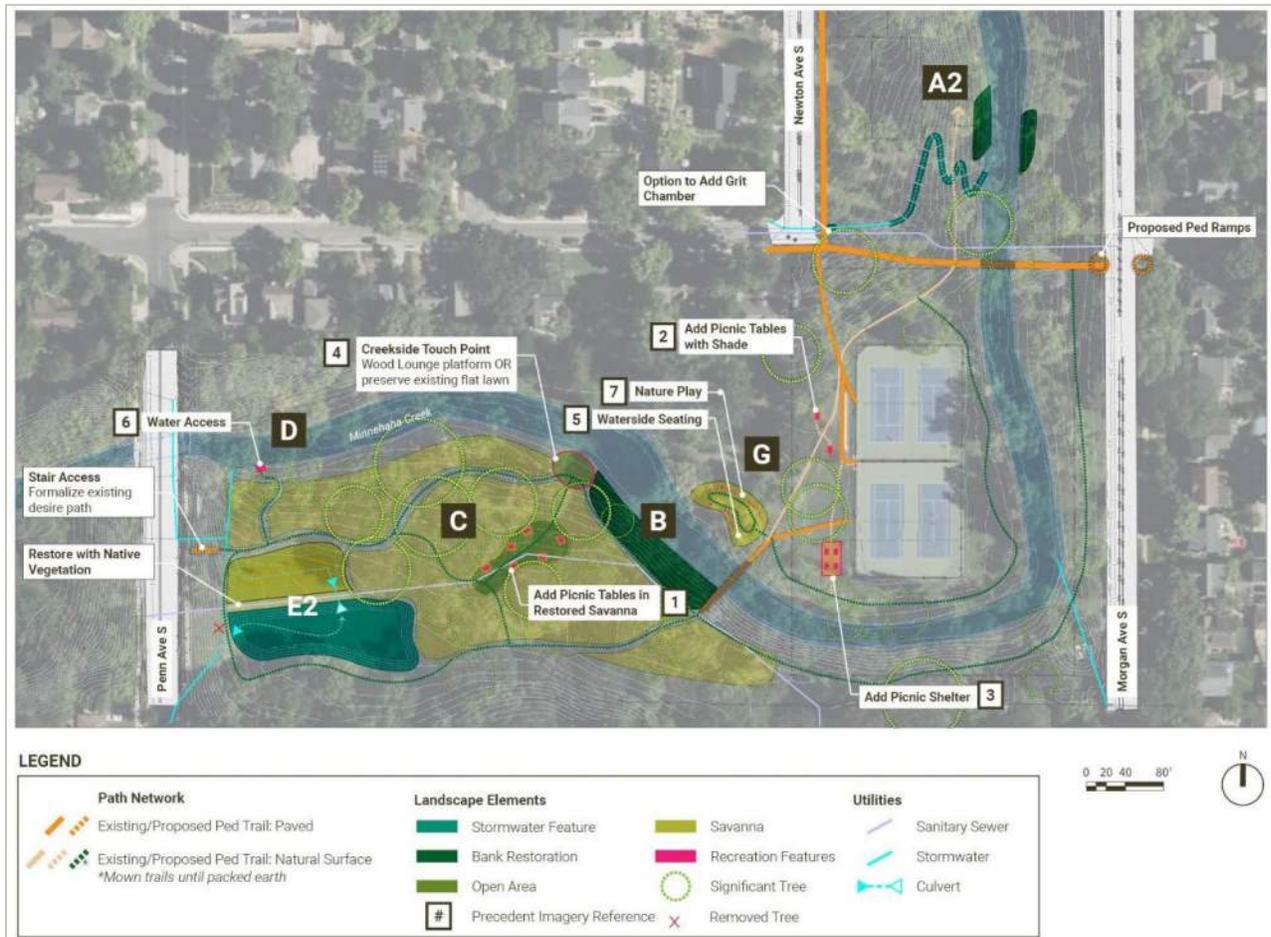


Figure 13: Penn-Newton North



3.3.3 Permitting and Wetlands

A list of anticipated permits is included in Section 2.1.

Based on available information, there do not appear to be any likely wetland impacts resulting from the proposed improvements to the Penn-Newton site.

The project is in a regulatory floodway and is not anticipated to increase the existing flood elevations within the 100-year floodway. Prior to receiving any permits for site modifications, a no-rise certificate must be obtained through the proper FEMA procedure. The certificate must be supported by technical data and signed by a registered professional engineer. Any local floodplain requirements would also be addressed and adhered to.



3.3.4 Water Quality

The TP loading for the Penn tributary area is 5.7 lbs/yr, and TP loading for the Newton tributary area is 8.2 lbs/yr. A P8 water quality model was used to model the removal efficiency for two BMP site locations, the Newton step pool ponds and the Penn BMPs. The Newton step pools receive water from a 14.5-acre watershed west of the pool locations and north of Minnehaha Creek comprised of residential housing. The check dams in Option 2 are considered as an option to decrease flow rates and have negligible TP removal.

The Penn site consists of two BMP options receiving stormwater from 8.6 acres of residential housing collected by the Penn Avenue pipeshed area. The two options utilize a treatment train, one with two ponds in series and another with a pond and sand filter. The treatment trains utilize a southern pond with 0.2 acres of dead pool storage. In Option 1 the southern pond discharges north to a small pond with 0.05 acres of dead storage. In Option 2 the pond discharges to a sand filter. The sand filter basin was assumed to have a filtration rate of one inch/hour.

Table 6: Penn - Water Quality Total Phosphorus (TP) Removal Summary

Option	Watershed Inflows (lbs/yr)	Removals (lbs/yr)	% Removal
Option 1			
Penn Wet Pond	5.7	3.3	58%
Option 2			
Penn Sand Filter	5.7	3.6	63%

Table 7: Newton - Water Quality Total Phosphorus (TP) Removal Summary

Option	Watershed Inflows (lbs/yr)	Removals (lbs/yr)	% Removal
Option 1			
Newton Series of Ponds	8.2	3.2	38%

3.3.5 H&H

The tributary drainage area for the Penn pond is approximately 8 to 9 acres, and the tributary drainage area for the Newton tiered pond is approximately 14 to 15 acres.

The City's XP-SWMM model was used to evaluate the level of risk of exacerbating street flooding by adding ponding to the green space at the Penn site. The updates to the model demonstrate no increase in high water levels for the upstream manholes/nodes, but the improvements will likely require upsizing a portion of the existing storm sewer east of the street right-of-way. This existing storm sewer would be rerouted from the existing manhole just east of the Penn Avenue extents to the new pond which requires a revised pipe orientation and outlet elevation. Due to the proposed pond elevation, the resulting proposed pipe slope is flatter than existing which would require upsizing the pipe from 18" to 24" to maintain pipe capacity and maintain high water levels and flow rates to the creek. The proposed BMPs will not add storage below the



approximate 100-year flood elevation of 846. The tributary drainage area for the pond is approximately 8 to 9 acres, and the tributary drainage area for the Newton tiered pond is approximately 14 to 15 acres.

For the Newton site, HydroCAD models were created to determine potential benefits for the tiered pond system. Based on existing conditions, approximately 1.4 acres drain to the creek via overland flow within the Newton Avenue curb infrastructure that drains to an existing concrete flume, and approximately 13.1 acres drain to an existing 18" storm sewer pipe via a series of existing storm inlets. The confluence of the concrete flume and outlet of the storm sewer pipe occurs about midway between the road and the creek on the hill sloping from the road down to the creek. In the existing conditions, velocities at that point are around 7-10 feet per second. Introducing three small ponds/depressions, with weir overflows acting as flow spreaders to each subsequent pond that ultimately drain to the existing creek, results in flow velocities around 1.5 - 3 feet per second. This demonstrates potential for the ponds to provide some scour reduction benefits on the steep slope. The proposed BMPs will not add storage below the approximate 100-year flood elevation of 845.

3.3.6 Site Amenities

Recreational projects proposed as part of the Penn-Newton site are the same regardless of which stormwater or creek restoration projects are selected. The primary feedback heard through the master plan's engagement process was to maintain the grove of oaks just east of Penn Avenue and to preserve the existing sledding hill at the corner of Newton Avenue and 51st Street. The creek is eroding the outer bend of its shoreline at the base of the sledding hill. In order to prevent failure of this bank, the project proposes bank restoration and stabilization. The existing natural surface trail along the creek here is packed earth and may need to be realigned to skirt the restored slope. This will likely be achieved naturally over time through foot traffic. There is no consistent paved section of Minnehaha Parkway Regional Trail through this area, and MPRB's maintenance staff have expressed that they are unable to take on further trail maintenance at this time; therefore, packed earth natural surface trails are the preference here. Where trails traverse native vegetation rather than turf, they are intended to be mown until compacted enough to remain packed earth trails.

From a recreational standpoint, only project D, the proposed limestone water access along Minnehaha Creek, is an integral project to any of the stormwater and creek restoration work. Conducting this project concurrently with the bank restoration in projects A, B, and F will offer cost savings in equipment mobilization. The remainder of the recreational projects at Penn-Newton are considered à la carte and can be completed at any time. An existing "desire path" down the embankment from Penn Avenue could be converted to a stairway for improved access to this portion of the Creek. Installation of steps would help to prevent erosion of this steep slope. Note that once Penn Avenue requires reconstruction, a set of creek overlooks will be proposed per the master plan to offer an experience of Minnehaha Creek for visitors with mobility impairments where access down to its banks is not easily achieved. An ADA-accessible trail down this slope from Penn to the water access point was explored as part of this study, but it was decided that since few ADA-accessible trails are available along the Creek in this segment, this option should not be pursued at this time. ADA-accessible water accesses are proposed at other areas of the creek where bituminous trails are readily available. Where there is a section of paved path at 52nd Street between Newton and Morgan, curb ramps are proposed east of the existing bridge to facilitate access where there are curbs blocking access.



Picnicking was desired as part of the master plan and is shown here in a central clearing within the oaks south of the creek, ideally to be installed once the surrounding savanna seeding is complete. Additional picnicking is proposed on the north side of the creek near the tennis courts (two tables with umbrellas, and four tables beneath a small shelter). Finally, a small nature play area was suggested in the master plan and is shown here along with Adirondack chair seating on the north side of the creek near the tennis courts.

The study done by 106 Group found that restoration of the oak savanna habitat and the creekside bank restoration provide opportunities for incorporating interpretive enhancements. Interpretation addressing the oak savanna restoration could serve multiple subthemes and topics such as natural resources, cultural resources, and species recreation by installing wayside exhibits or having guided ranger talks. The creekside viewsheds provide great opportunities for wayside exhibits highlighting the partners' effort to reduce shoreline erosion and improve downstream water quality. Another potential opportunity is to include an interpretive element at the public water access since trail users are likely to pause here. See Appendix G for the full interpretive foundations assessment and recommendations.

Figure 14: Penn-Newton - Proposed Site Amenities



3.3.7 Stream Assessment

For the Newton site, the existing stormwater discharge location is recommended to be maintained for the new stormwater outfall, and it is recommended that the banks on both sides of the creek be stabilized adjacent to the new outfall location. Stabilization at the Newton site (Project A) would restore approximately 160 feet of stream bank. For the Penn site, there is bank erosion located upstream of the pedestrian bridge which is downstream of Penn Avenue. It is recommended to rebuild approximately 175 lineal feet of bank with stone toe and engineered soil lifts (Project B). Bank stabilization is also proposed within the Penn-Newton North project (Project F) and would restore approximately 450 feet of stream bank. Geomorphic



reconnaissance efforts and conceptual design development for stream modifications were completed by Inter-Fluve and summarized in a technical memorandum included in Appendix H.

3.3.8 Cost

Stantec produced detailed cost estimates for the site and each option based on work items such as recreational improvements, general construction, engineering, and permitting. The detailed cost estimates also accounted for Inter-Fluve's EOPCC, which considered work items specific to stream restoration. Appendix B includes a detailed cost estimate for the site and Appendix H includes Inter-Fluve's EOPCC. Table 8 below summarizes the cost estimate without the à la carte recreation improvements.

Table 8: Penn-Newton - Cost Summary

Penn-Newton	
Option 1	Option 2
Stormwater treatment basin and tiered pools	Stormwater filtration basin and check dams
\$ 1,440,000	\$ 1,410,000

3.3.9 Operation and Maintenance

An initial understanding of the maintenance required for each option was provided during the project workshops. The level of effort for operation and maintenance (O&M) for both Option 1 (surface pond and treatment trains) and Option 2 (underground filtration and treatment trains) is moderate. The City of Minneapolis would be responsible for O&M related to wet ponds (visual inspections and removal of sediment/debris), underground filtration (visual inspections, removal of sediment/debris, drawdown maintenance and filter replacement), tiered ponds (visual inspection and removal of sediment/debris), and the grit chamber (inspections and cleaning). MPRB would be responsible for O&M related to wet ponds (vegetation maintenance), tiered ponds (vegetation maintenance), trails (maintenance, plowing, and surface management), recreation features including water access points and picnic areas (maintenance and surface management), streambank restoration (vegetation maintenance), and oak savanna (herbicides and prescribed burns, inspection for disease, and mowing invasives). Contractors would be hired to help with O&M of streambank restoration and check dams (vegetation establishment, maintenance, and inspections). O&M responsibilities outlined above are based on asset ownership and preliminary conversations with partners. See Appendix F for detailed meeting minutes and slide decks from the workshops. Implementation and ownership of O&M will be a continued discussion between the contributing agencies as design and implementation progresses. The final arrangement will need to be finalized through project agreements.



3.3.10 Site Summary

The key objectives of the Penn-Newton site include integrating stormwater BMPs to improve water quality and restoring the creek and floodplain forest while maintaining the existing trees. There are also significant opportunities to incorporate recreational amenities and realign existing trails. Based on the factors assessed in the feasibility study, Option 2 is the most cost-effective option while providing a similar percentage removal of TP inflows when compared to Option 1. Overall, the water quality benefit and addition of flood storage capacity would be quite minimal for both options at the Penn-Newton site. The greatest benefits of implementing the projects at the site would be a clear permitting pathway with very few obstacles and addressing adjacent projects/infrastructure such as the deteriorating concrete flume near Newton Avenue and bank stabilization upstream of the pedestrian bridge, adjacent to the proposed stormwater outfall and at Penn-Newton North, to decrease erosion. The proposed savanna restoration and stormwater basins associated with both projects would provide habitat improvements. O&M of stormwater basins for both options would be moderate, and the land footprint efficiency would be similar. Overall, the implementation of either option at the Penn-Newton site would improve water quality and the floodplain forest habitat while also creating significant recreational improvements.



4.0 Decision/Prioritization Matrix

The Prioritization Matrix was completed to determine the feasibility of the alternatives proposed at each site and to assess the recommended phasing of each site. The primary factors considered include capital cost, water quality benefit, operation and maintenance (O&M) and flood resiliency. The secondary factors considered include ecosystem lift, pathway to permitting, adjacent infrastructure and projects, efficiency of the land footprint, and community amenities. Each alternative option was assigned a score for each of the factors considered. Scoring ranges from 1 to 3, where 1 indicates lower feasibility or benefit, and 3 indicates higher feasibility or benefit. Scores are then added up to reach a total score. The higher the total score, the more feasible the alternative is. The full prioritization matrix is included in Appendix C. A summary of the prioritization matrix results for the primary factors and the total scores is included in Table 9 below.

Table 9: Prioritization Summary

Site Name	Alternative Concept	Capital Cost	Water Quality Benefit (lb TP/yr)	Potential Gain in Floodplain Storage (CY)	O&M Level of Effort	Total Score
Cedar	Option 1	\$1,020,000	26	2,000	Moderate	21
	Option 2	\$3,080,000	37	4,000	High	21
Nicollet	Option 1	\$2,270,000	17	1,000	Moderate	17
	Option 2	\$2,370,000	30	4,000	Moderate	18
Penn-Newton	Option 1	\$1,440,000	7	n/a	Moderate	18
	Option 2	\$1,410,000	4	n/a	Moderate	18

Based on the results of the prioritization matrix, the Cedar site has the greatest opportunity for maximization of project benefits and feasibility of project implementation. Option 1, the alternative with the smaller stormwater pond footprint, is the lower cost of the two options, while still providing a significant water quality benefit. The level of effort for O&M is a bit higher for Option 2 compared to Option 1. The flood storage capacity would be significantly increased in both options. See Appendix C for details on the secondary factors considered. Secondary factors such as the pathway to permitting and addressing adjacent infrastructure increase the feasibility of the Cedar site.

The Penn-Newton site has the next best opportunity for maximization of project benefits and feasibility of implementation. Options 1 and 2 have similar benefits and feasibility. Option 1, stormwater treatment basin and tiered pools, is the most cost efficient and provides a similar water quality benefit as Option 2, stormwater filtration basin and check dams. Option 2 has slightly lower water quality benefits as the check dams do not provide any measurable TP removal. The level of effort for O&M is moderate for both options. The addition of flood storage for both options would be minimal, however bank and slope stabilization would help with flood resiliency. Secondary factors such as the pathway to permitting and addressing adjacent infrastructure increase the feasibility of the Penn-Newton site.



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The Nicollet site has the lowest opportunity for maximization of project benefits and feasibility of implementation. Options 1 and 2 have similar benefits and feasibility. Option 1, creek re-meander and smaller flood storage wetland, is slightly lower cost than Option 2, larger stormwater and flood storage wetland. Option 2, however, provides a significantly greater water quality benefit compared to Option 1. The level of effort for O&M for both options is moderate, and the flood storage capacity would be significantly increased for both options. Secondary factors such as the pathway to permitting provide lower benefits for the Nicollet site, decreasing its feasibility when compared to the other two sites.



5.0 Recommendations

The feasibility analysis considered each project option to identify project benefits such as improvements to water quality, ecological lift, and user experience. Ease of implementation was also highly considered for each of the project options. The feasibility analysis has resulted in the following recommended Phase I Project Sequence:

1. Cedar (design anticipated 2025-2026)
2. Penn-Newton (the project would be split into sub elements):
 - a. Spillway repair and creek stabilization (design anticipated 2025-2026)
 - c. 53rd Street and Penn stormwater (lowest priority. To be evaluated against other projects)
3. Nicollet (concept planning and community engagement anticipated 2026-2027 given the project complexities)

This approach is designed to maximize the benefits of water quality improvements, ecological enhancements, and user experience while ensuring ease of implementation and cost efficiency. The next step towards implementation is to move these recommendations to the detailed design phase with the goals of creating a long-term implementation process for improving the parkway.



Appendix A

HKGI Concept Drawings

PROJECTS

A) CREEK REMEANDER

- Realign creek to add meander bend along its current trajectory
- Stabilize banks and restore floodplain bench
- Relocate path and bench away from top of slope

B) RIPARIAN HABITAT RESTORATION

- Convert mowed lawn to native tallgrass prairie, oak savanna, and/or riparian forest

C) BANK RENATURALIZATION

- Remove plastic mesh, remove/reset existing boulders, and reconstruct top of bank with bioengineering treatments

D1) MULTI-BASIN STORMWATER WETLAND

- Preserve some trees in this area vs. option D2. Incorporates native and wetland vegetation

E) CSO SEPARATION

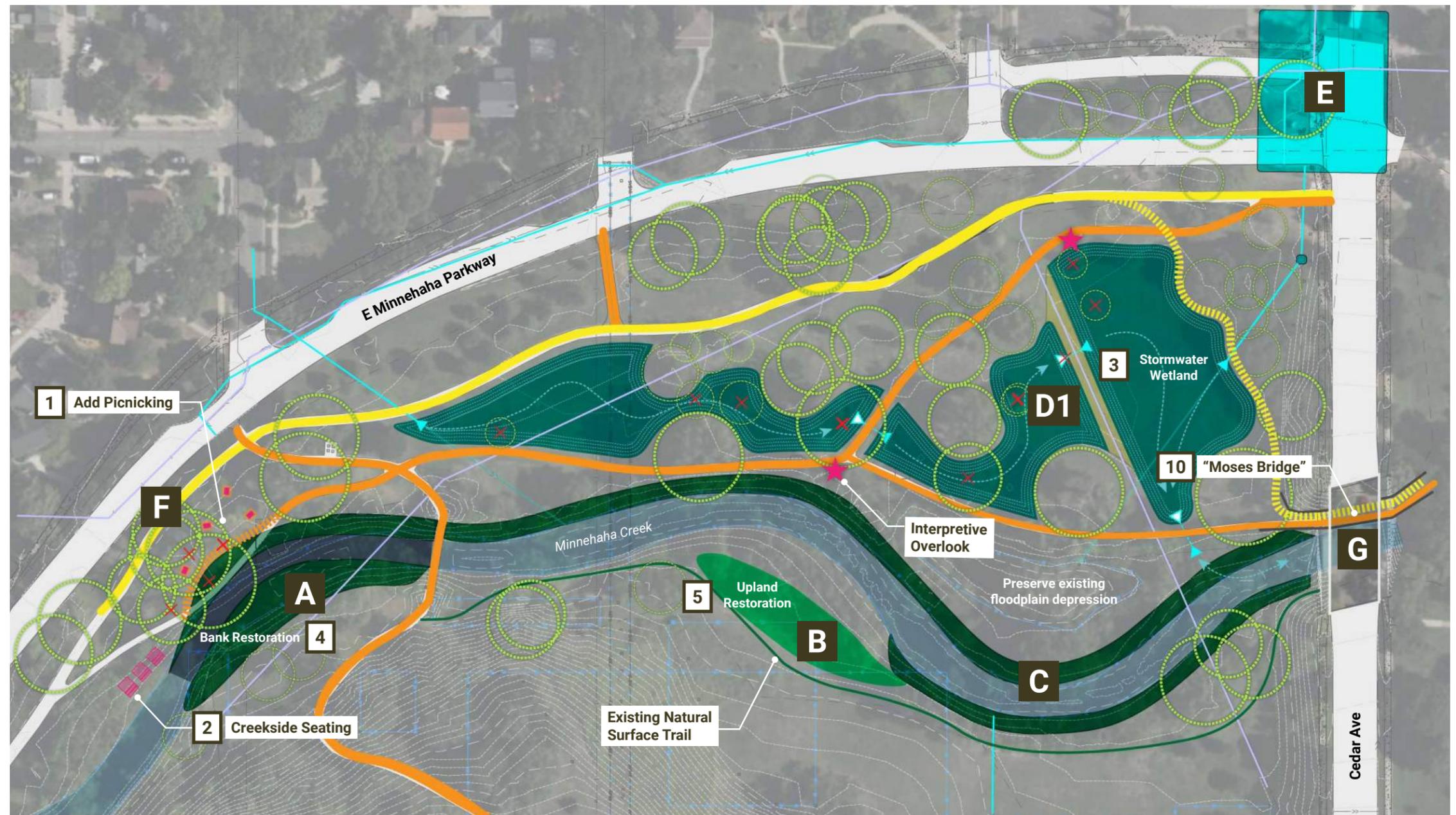
- Separate sanitary and storm sewer systems

F) À LA CARTE RECREATION IMPROVEMENTS

- Add picnicking
- Add creekside seating

G) À LA CARTE CIRCULATION IMPROVEMENTS

- "Moses Bridge" beneath Cedar Ave with associated bike trail connection



LEGEND

Path Network	Landscape Elements	Utilities
Existing/Proposed Bike Trail	Stormwater Feature	Sanitary Sewer
Existing/Proposed Ped Trail: Paved	Bank Restoration	Stormwater
Existing Ped Trail: Natural Surface	Upland Restoration	Culvert
	Recreation Features	
	Significant Tree	
	Removed Tree	
	Precedent Imagery Reference	



CEDAR AVENUE: OPTION 1 CONCEPT DIAGRAM

PROJECTS

A) CREEK REMEANDER

- Realign creek to add meander bend along its current trajectory
- Stabilize banks and restore floodplain bench
- Relocate path and bench away from top of slope

B) RIPARIAN HABITAT RESTORATION

- Convert mowed lawn to native tallgrass prairie, oak savanna, and/or riparian forest

C) BANK RENATURALIZATION

- Remove plastic mesh, remove/reset existing boulders, and reconstruct top of bank with bioengineering treatments

D1) MULTI-BASIN STORMWATER WETLAND

- Preserve some trees in this area vs. option D2. Incorporates native and wetland vegetation

E) CSO SEPARATION

- Separate sanitary and storm sewer systems

F) À LA CARTE RECREATION IMPROVEMENTS

- Add picnicking
- Add creekside seating

G) À LA CARTE CIRCULATION IMPROVEMENTS

- "Moses Bridge" beneath Cedar Ave with associated bike trail connection

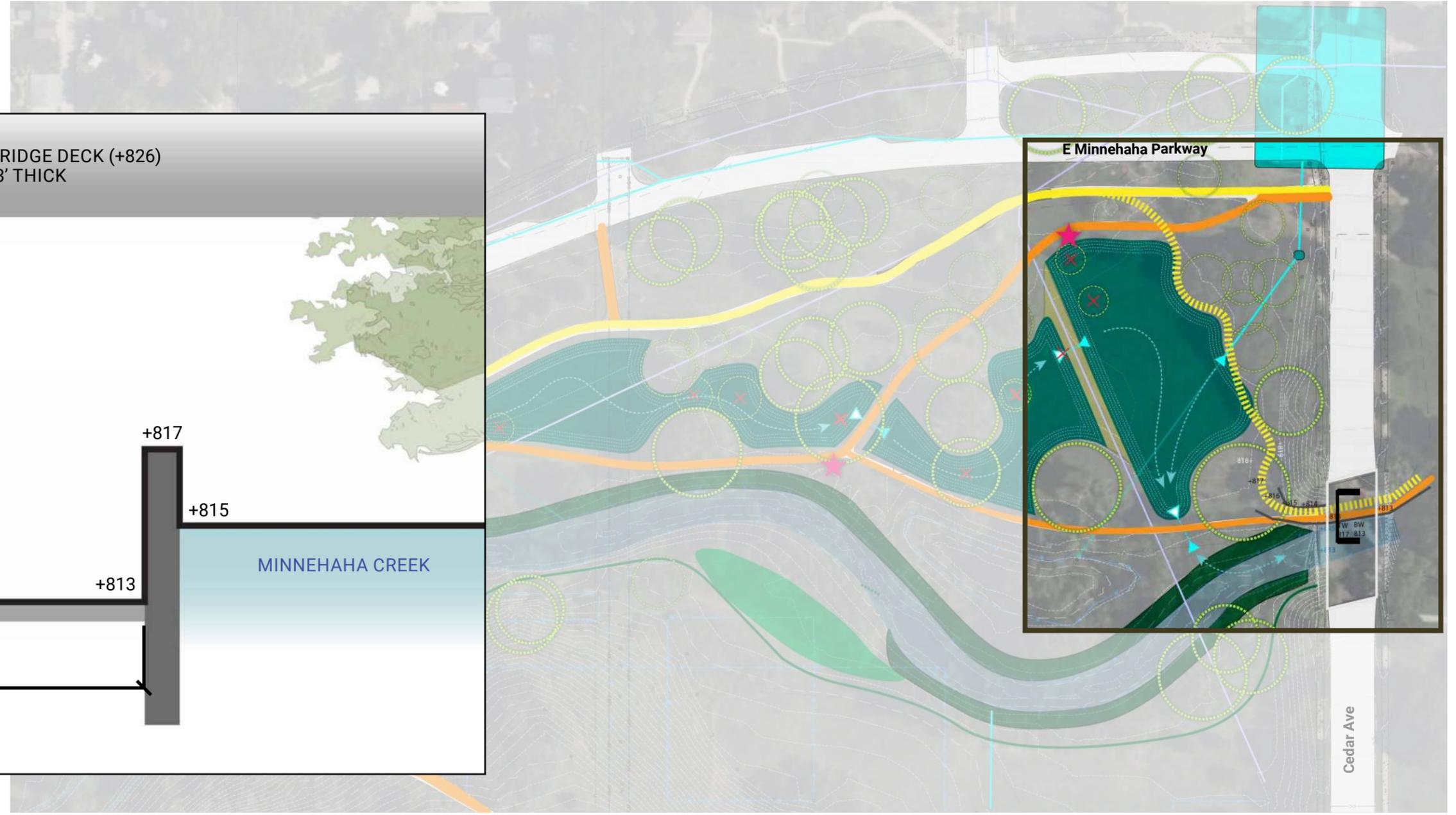
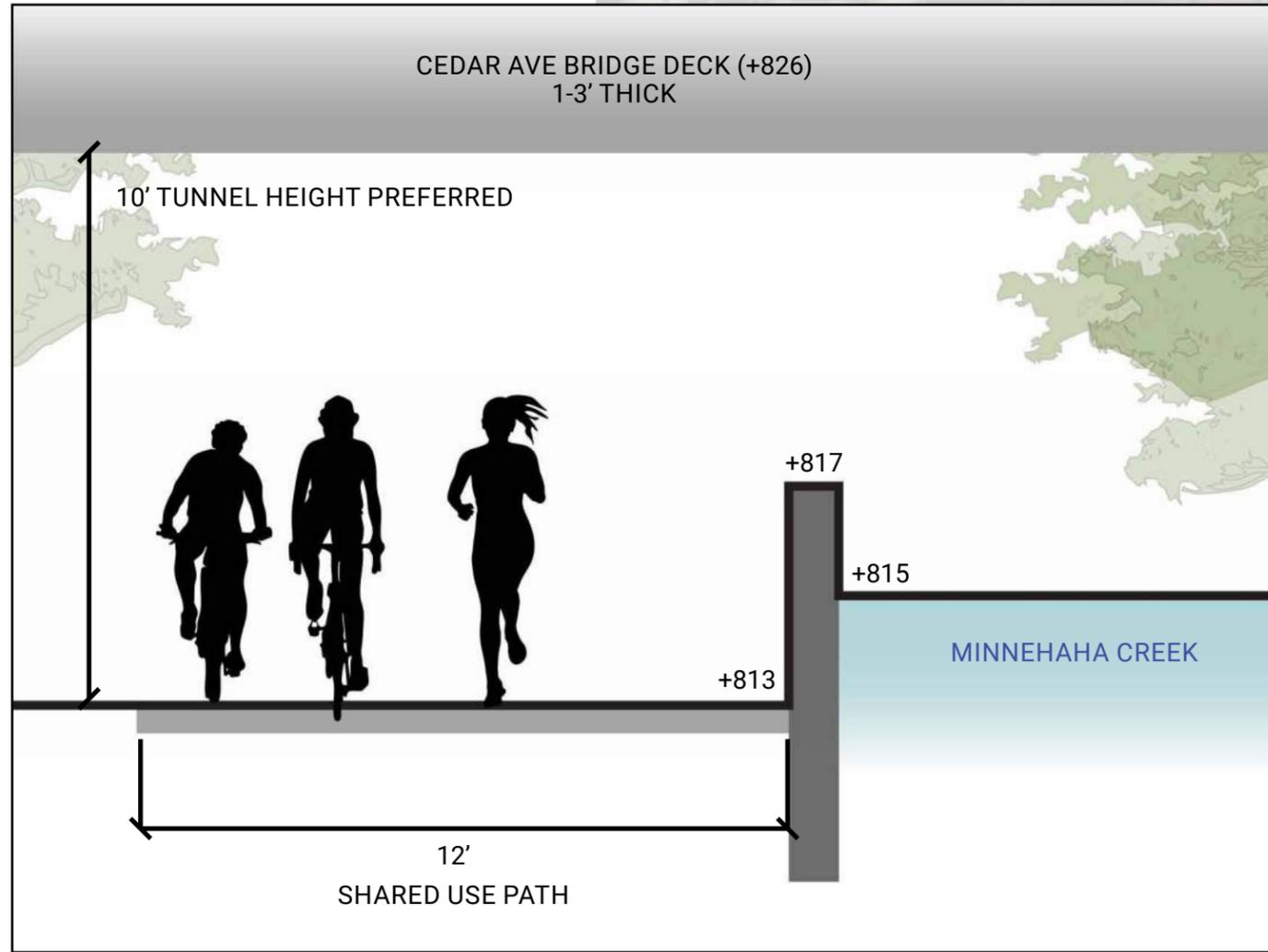


LEGEND

Path Network		Stormwater Wetland		Other Features	
	Existing/Proposed Bike Trail		Emergent		Sanitary Sewer
	Existing/Proposed Ped Trail: Paved		Transitional		Stormwater
	Existing Ped Trail: Natural Surface		Wetland		Culvert
	Precedent Imagery Reference		Restoration		



CEDAR AVENUE: OPTION 1 ILLUSTRATIVE PLAN



LEGEND

Path Network	Landscape Elements	Utilities
Existing/Proposed Bike Trail	Stormwater Feature	Sanitary Sewer
Existing/Proposed Ped Trail: Paved	Bank Restoration	Stormwater
Existing Ped Trail: Natural Surface	Upland Restoration	Culvert
	Recreation Features	
	Significant Tree	
	Removed Tree	
	Precedent Imagery Reference	



**CEDAR AVENUE: OPTION 1
"MOSES BRIDGE" STUDY**

PROJECTS

A) CREEK REMEANDER

- Realign creek to add meander bend along its current trajectory
- Stabilize banks and restore floodplain bench
- Relocate path and bench away from top of slope

B) RIPARIAN HABITAT RESTORATION

- Convert mowed lawn to native tallgrass prairie, oak savanna, and/or riparian forest

C) BANK RENATURALIZATION

- Remove plastic mesh, remove/reset existing boulders, and reconstruct top of bank with bioengineering treatments

D2) MULTI-BASIN STORMWATER WETLAND

- Maximize flood storage. More tree removals than in option D1. Incorporate native and wetland vegetation
- Make circulation adjustments: move bike path north and allow pedestrian path to utilize existing bike path for a stretch to move trails out of the floodplain
- Add a boardwalk with overlook and interpretive elements across the stormwater wetland to connect to grade-separated access beneath Cedar

E) CSO SEPARATION

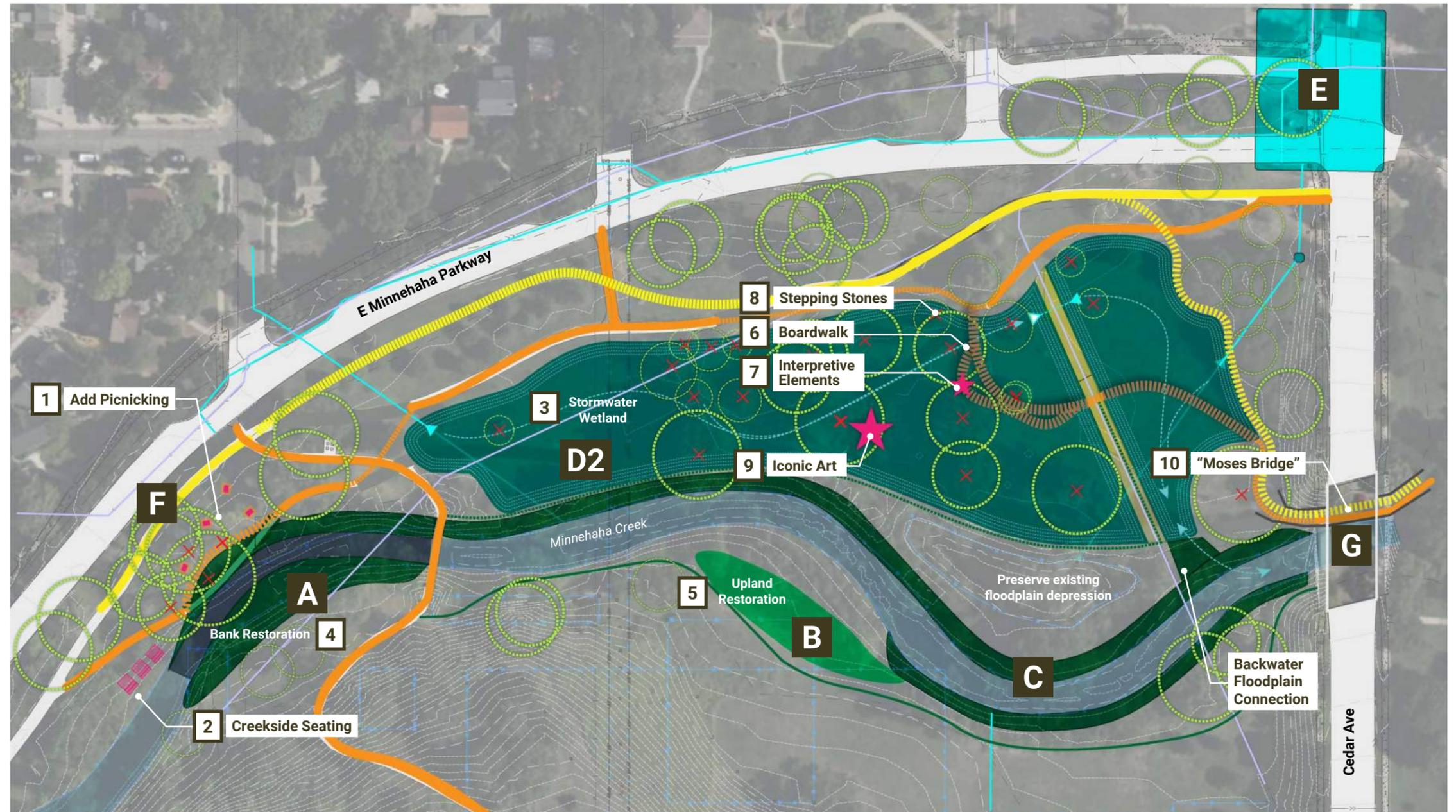
- Separate sanitary and storm sewer systems

F) À LA CARTE RECREATION IMPROVEMENTS

- Add picnicking
- Add creekside seating

G) À LA CARTE CIRCULATION IMPROVEMENTS

- "Moses Bridge" beneath Cedar Ave



LEGEND

Path Network	Landscape Elements	Utilities
Existing/Proposed Bike Trail	Stormwater Feature	Sanitary Sewer
Existing/Proposed Ped Trail: Paved	Bank Restoration	Stormwater
Existing Ped Trail: Natural Surface	Upland Restoration	Culvert
	Recreation Features	
	Significant Tree	
	Removed Tree	
	Precedent Imagery Reference	

CEDAR AVENUE: OPTION 2 CONCEPT DIAGRAM

PROJECTS

A) CREEK REMEANDER

- Realign creek to add meander bend along its current trajectory
- Stabilize banks and restore floodplain bench
- Relocate path and bench away from top of slope

B) RIPARIAN HABITAT RESTORATION

- Convert mowed lawn to native tallgrass prairie, oak savanna, and/or riparian forest

C) BANK RENATURALIZATION

- Remove plastic mesh, remove/reset existing boulders, and reconstruct top of bank with bioengineering treatments

D2) MULTI-BASIN STORMWATER WETLAND

- Maximize flood storage. More tree removals than in option D1. Incorporate native and wetland vegetation
- Make circulation adjustments: move bike path north and allow pedestrian path to utilize existing bike path for a stretch to move trails out of the floodplain
- Add a boardwalk with overlook and interpretive elements across the stormwater wetland to connect to grade-separated access beneath Cedar

E) CSO SEPARATION

- Separate sanitary and storm sewer systems

F) À LA CARTE RECREATION IMPROVEMENTS

- Add picnicking
- Add creekside seating

G) À LA CARTE CIRCULATION IMPROVEMENTS

- "Moses Bridge" beneath Cedar Ave

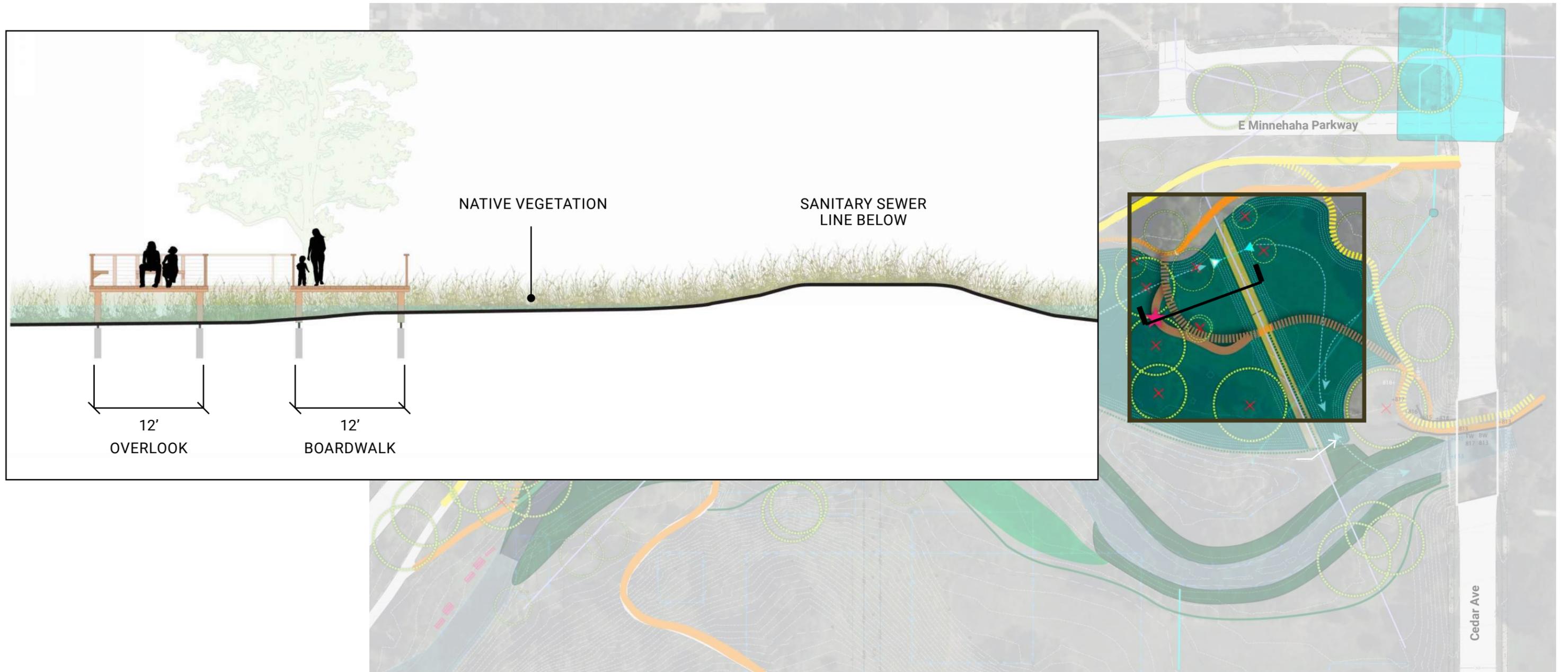


LEGEND

Path Network		Stormwater Wetland	
	Existing/Proposed Bike Trail		Emergent
	Existing/Proposed Ped Trail: Paved		Transitional
	Proposed Ped Trail: Boardwalk		Wetland
	Existing/Proposed Ped Trail: Natural Surface		Restoration
	Precedent Imagery Reference		Sanitary Sewer
			Stormwater Culvert



CEDAR AVENUE: OPTION 2 ILLUSTRATIVE PLAN

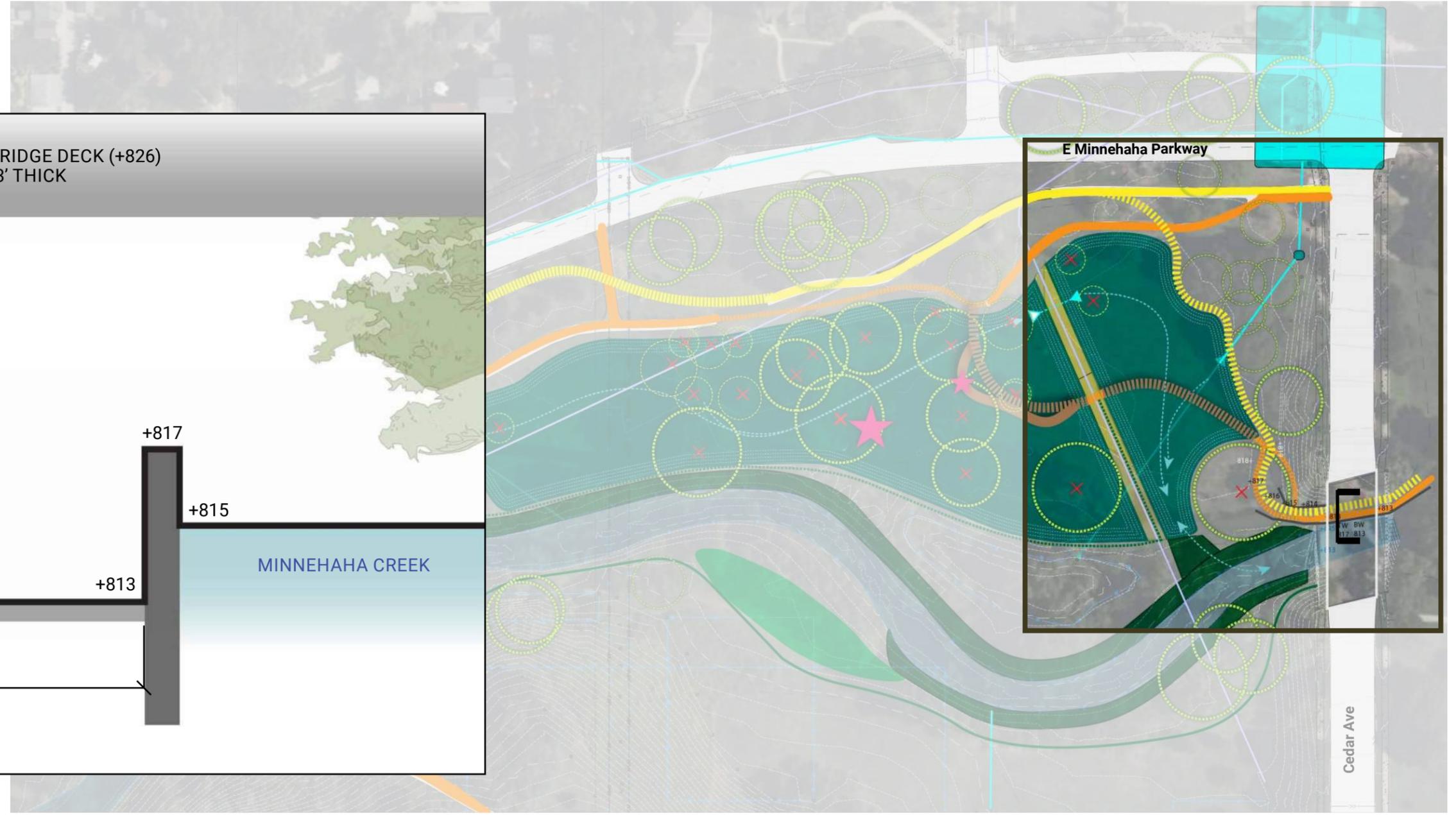
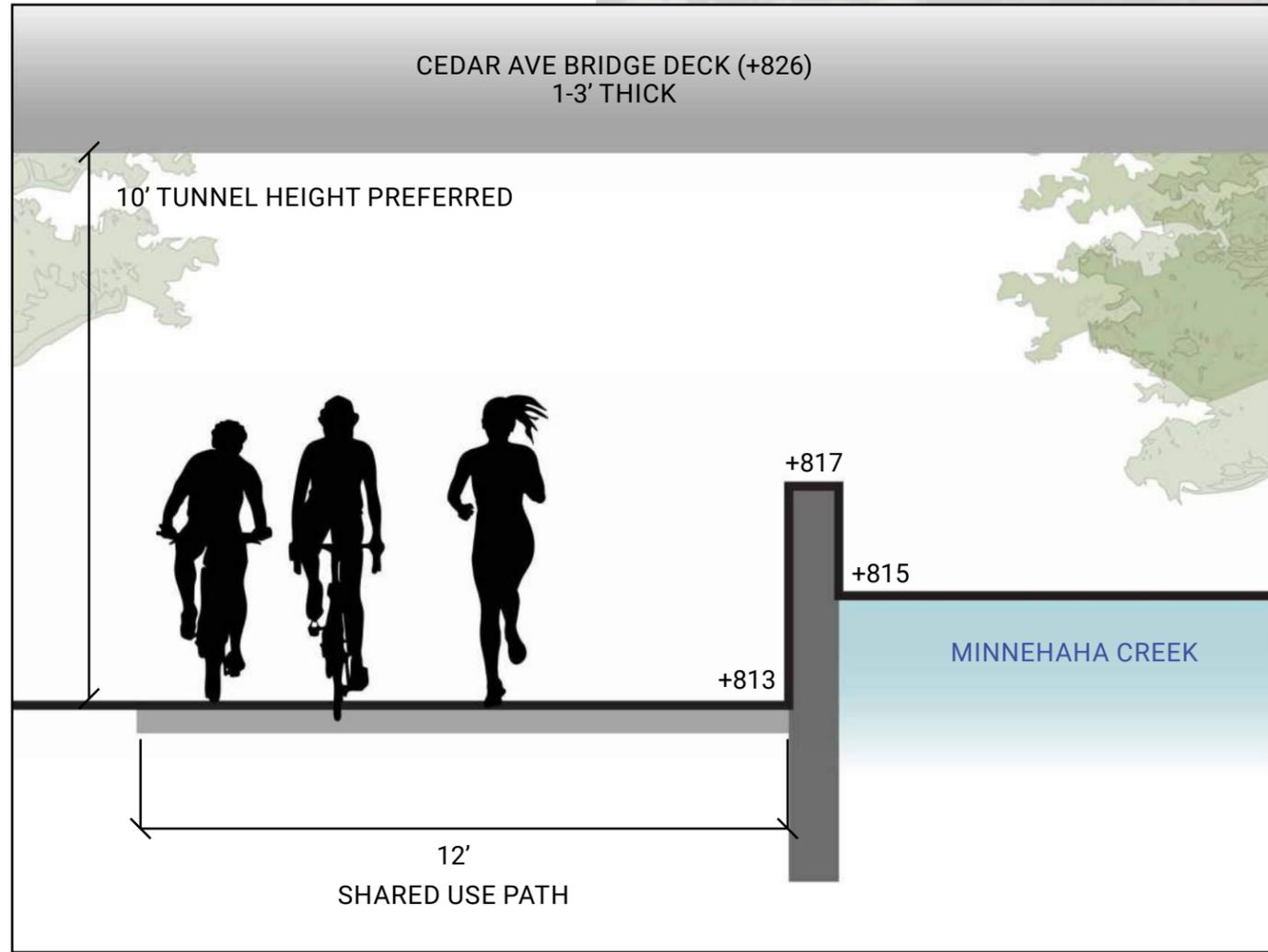


LEGEND

Path Network	Landscape Elements	Utilities
Existing/Proposed Bike Trail	Stormwater Feature	Sanitary Sewer
Existing/Proposed Ped Trail: Paved	Bank Restoration	Stormwater
Existing Ped Trail: Natural Surface	Upland Restoration	Culvert
	Recreation Features	
	Significant Tree	
	Removed Tree	



**CEDAR AVENUE: OPTION 2
BOARDWALK STUDY**



LEGEND

Path Network	Landscape Elements	Utilities
Existing/Proposed Bike Trail	Stormwater Feature	Sanitary Sewer
Existing/Proposed Ped Trail: Paved	Bank Restoration	Stormwater
Existing Ped Trail: Natural Surface	Upland Restoration	Culvert
	Recreation Features	
	Significant Tree	
	Removed Tree	



**CEDAR AVENUE: OPTION 2
"MOSES BRIDGE" STUDY**

Picnicking and Seating

1 Picnic tables



2 Creekside Seating



Stormwater Wetland

3 Stormwater Wetland



4 Bank Restoration



5 Upland Restoration



Shared-use Path Tunnel

10 "Moses Bridge"



6 Boardwalk



7 Interpretive Elements



8 Stepping Stones



9 Iconic Art



PROJECTS

A) BANK RESTORATION

- Remove concrete pipes from bank and stabilize bank with bioengineering

B) CIRCULATION ADJUSTMENTS

- Improve ADA-accessibility of pedestrian access from north. Move pedestrian trails out of the floodplain where possible. Add interpretive overlook across the creek from new stormwater wetland

C1) STORMWATER / FLOOD STORAGE WETLAND & REMEANDER

- Remove former roadway embankment to improve floodplain storage and connectivity
- Remeander creek between wetlands and preserved trees
- Add interpretive overlook

D) IN-STREAM HABITAT IMPROVEMENTS

- Add in-stream habitat features to force micro pools and provide complexity

E1) CIRCULATION ADJUSTMENTS

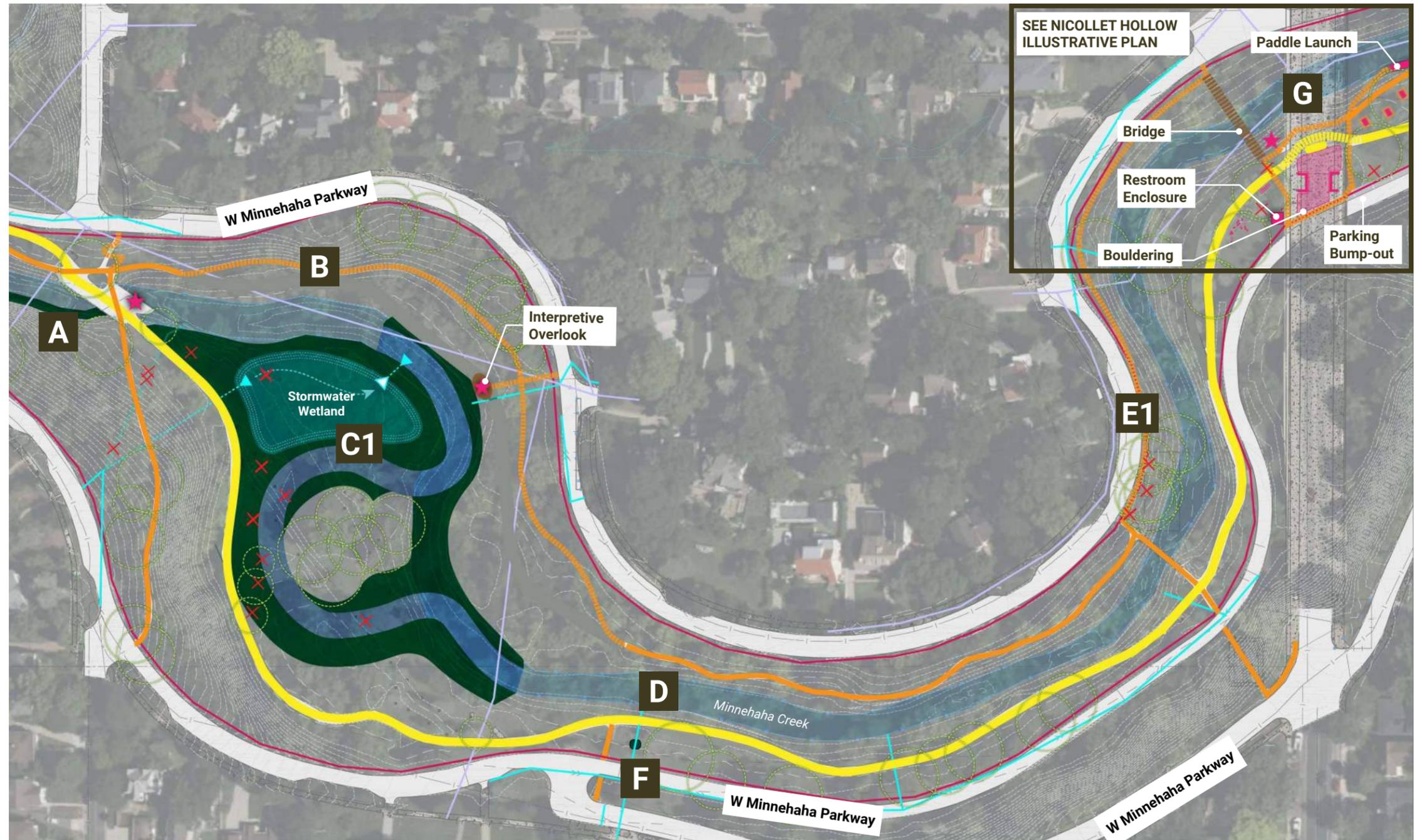
- Extend pedestrian path on north side of the creek to separate modes currently in conflict along the curve. Requires new pedestrian bridge

F) GRIT CHAMBER

- Construct grit chamber in line with existing storm infrastructure

G) À LA CARTE RECREATION IMPROVEMENTS

- Add improvements at Nicollet Hollow:
 - Bouldering with resilient surfacing and viewing/gathering space
 - Bike parking
 - Restroom enclosure
 - ADA-accessible paddle launch with parallel parking bump-out
 - Picnicking
 - Artful play elements
 - Public art



LEGEND

Path Network	Landscape Elements	Recreation Features	Utilities
Existing/Proposed Bike Trail	Stormwater Feature	Recreation Features	Sanitary Sewer
Existing/Proposed Ped Trail: Paved	Bank Restoration	Significant Tree	Stormwater
Proposed Pedestrian Bridge	Removed Tree	Culvert	Electric



NICOLLET: OPTION 1 CONCEPT DIAGRAM

PROJECTS

A) BANK RESTORATION

- Remove concrete pipes from bank and stabilize bank with bioengineering

B) CIRCULATION ADJUSTMENTS

- Improve ADA-accessibility of pedestrian access from north. Move pedestrian trails out of the floodplain where possible. Add interpretive overlook across the creek from new stormwater wetland

C2) STORMWATER & FLOOD STORAGE WETLANDS

- Excavate and create a single wetland basin, preserving large cottonwoods in center
- Bank stabilization adjacent to proposed stormwater outfall

E2) CIRCULATION ADJUSTMENTS

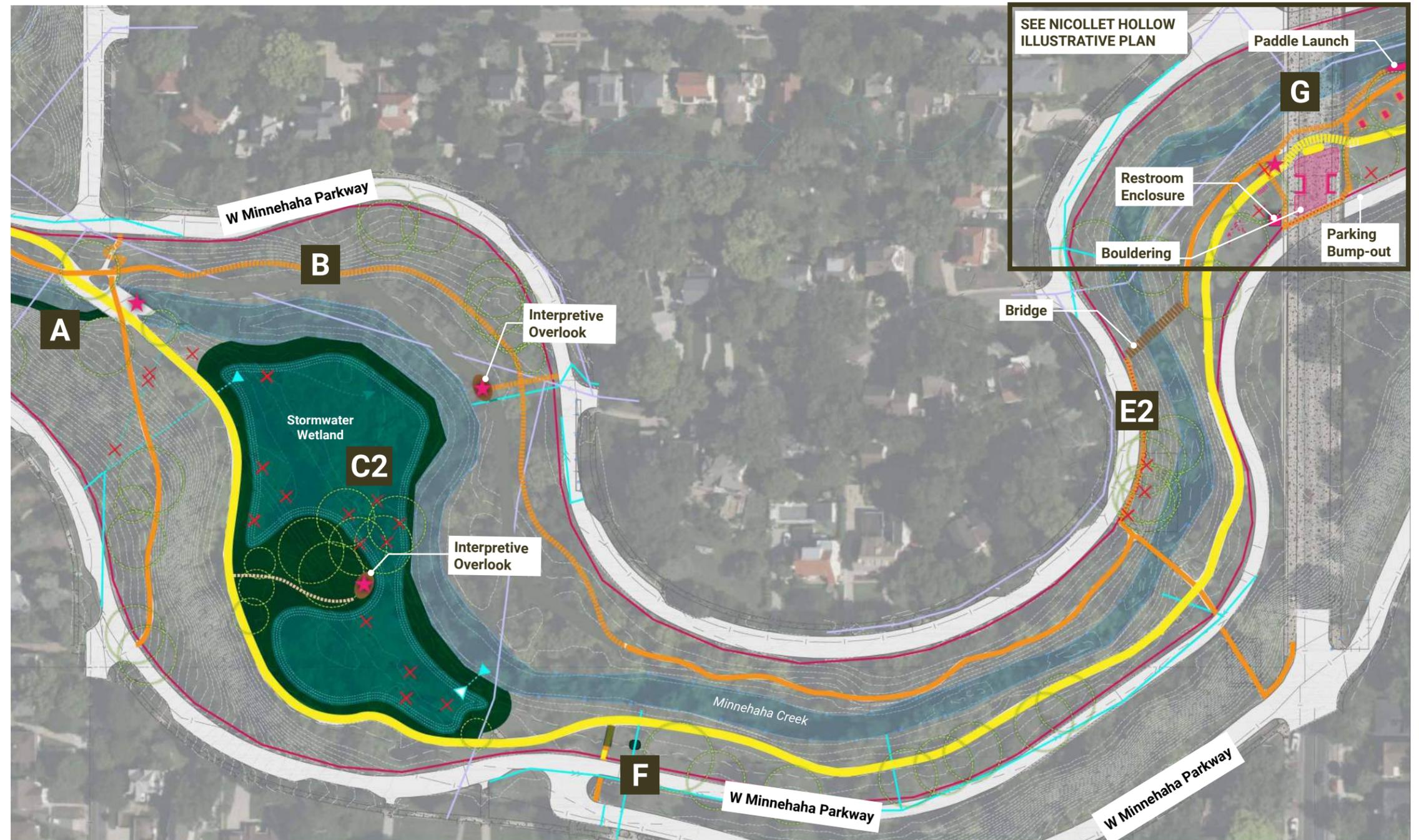
- Extend pedestrian path on north side of the creek to separate modes currently in conflict along the curve. Requires new pedestrian bridge

F) GRIT CHAMBER

- Construct grit chamber in line with existing storm infrastructure

G) À LA CARTE RECREATION IMPROVEMENTS

- Add interpretive overlook at stormwater wetland
- Add improvements at Nicollet Hollow:
 - Bouldering with resilient surfacing and viewing/gathering space
 - Bike parking
 - Restroom enclosure
 - ADA-accessible paddle launch with parallel parking bump-out
 - Picnicking
 - Artful play elements
 - Public art

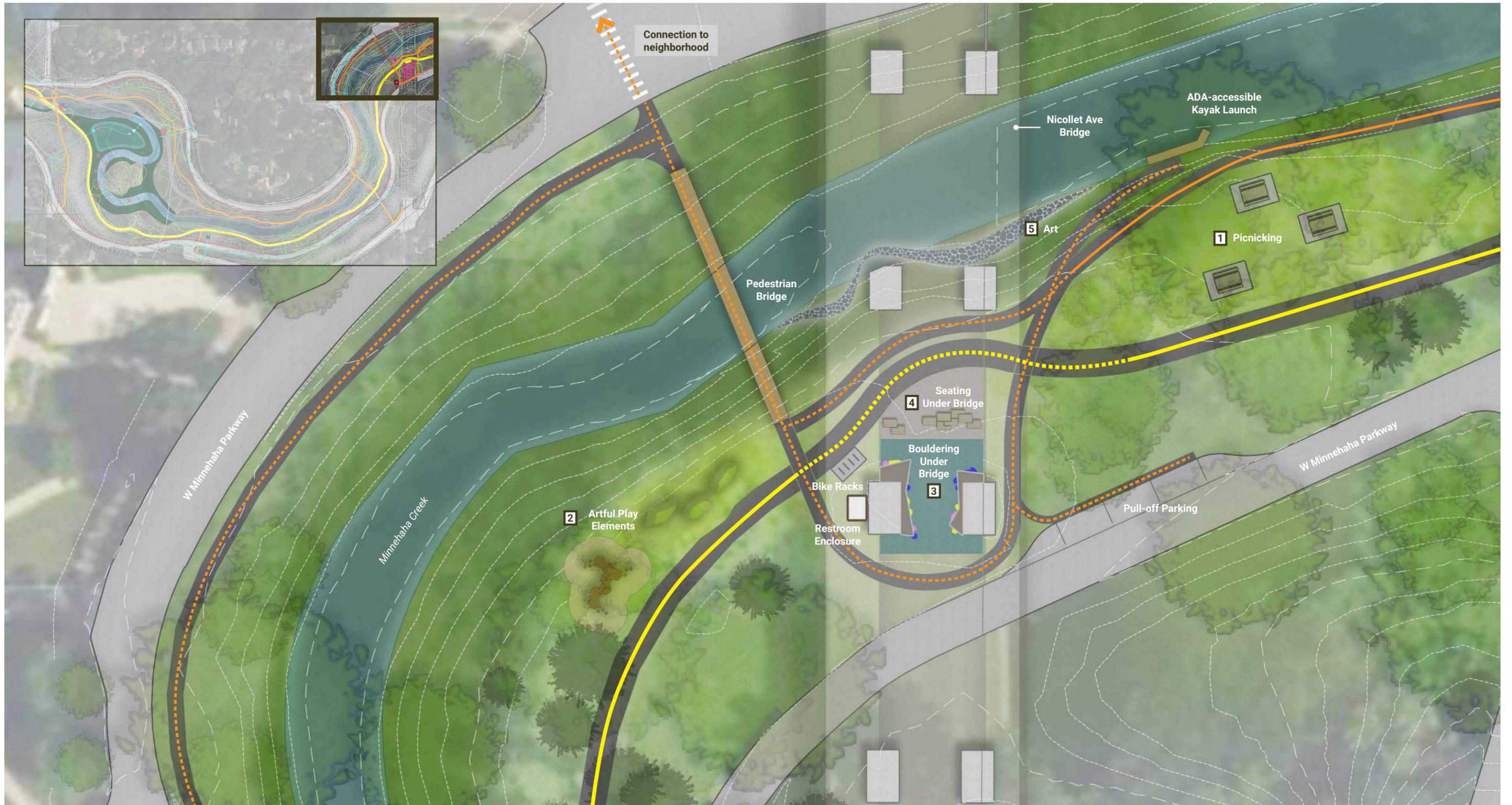


LEGEND

Path Network	Landscape Elements	Recreation Features	Utilities
Existing/Proposed Bike Trail	Stormwater Feature	Recreation Features	Sanitary Sewer
Existing/Proposed Ped Trail: Paved	Bank Restoration	Significant Tree	Stormwater
Proposed Ped Trail: Natural Surface		Removed Tree	Electric
Proposed Pedestrian Bridge			Culvert



NICOLLET: OPTION 2 CONCEPT DIAGRAM



NICOLLET BRIDGE: ILLUSTRATIVE PLAN

LEGEND

Path Network		#	Reference to Precedent Imagery
	Existing/Proposed Bike Trail		
	Existing/Proposed Ped Trail: Paved		
	Proposed Ped Trail: Bridge		



Bouldering Under Bridge **Picnicking**

3 Bouldering Wall



Geometric and Colorful

4 Seating



Tiered Benches



Dynamic and Playful

1 Picnic Tables



Art **Play**

At Bridge



Ceiling Treatment



Paint



Lighting



Column Treatment

5 At Creek



Rising Stones



2 Play Features



Log Climbing



Rolling Topography with Natural Elements

**NICOLLET:
PRECEDENT IMAGERY**

PROJECTS

A1) STORMWATER TREATMENT TRAIN

- Remove flume, add catch basin and new curb at road to capture stormwater from road
- Add grit chamber
- Add three basins to replace the open stormwater flume
- Add natural surface path to traverse the basins (option for small bridge or path)
- Stabilize bank adjacent to proposed stormwater outfall

B) BANK RESTORATION

- Stabilize and revegetate slope, relocate natural surface trail away from top of slope

C) OAK SAVANNA RESTORATION

- Add native interseeding beneath oaks with natural surface path maintained through the grove

D) WATER ACCESS POINT

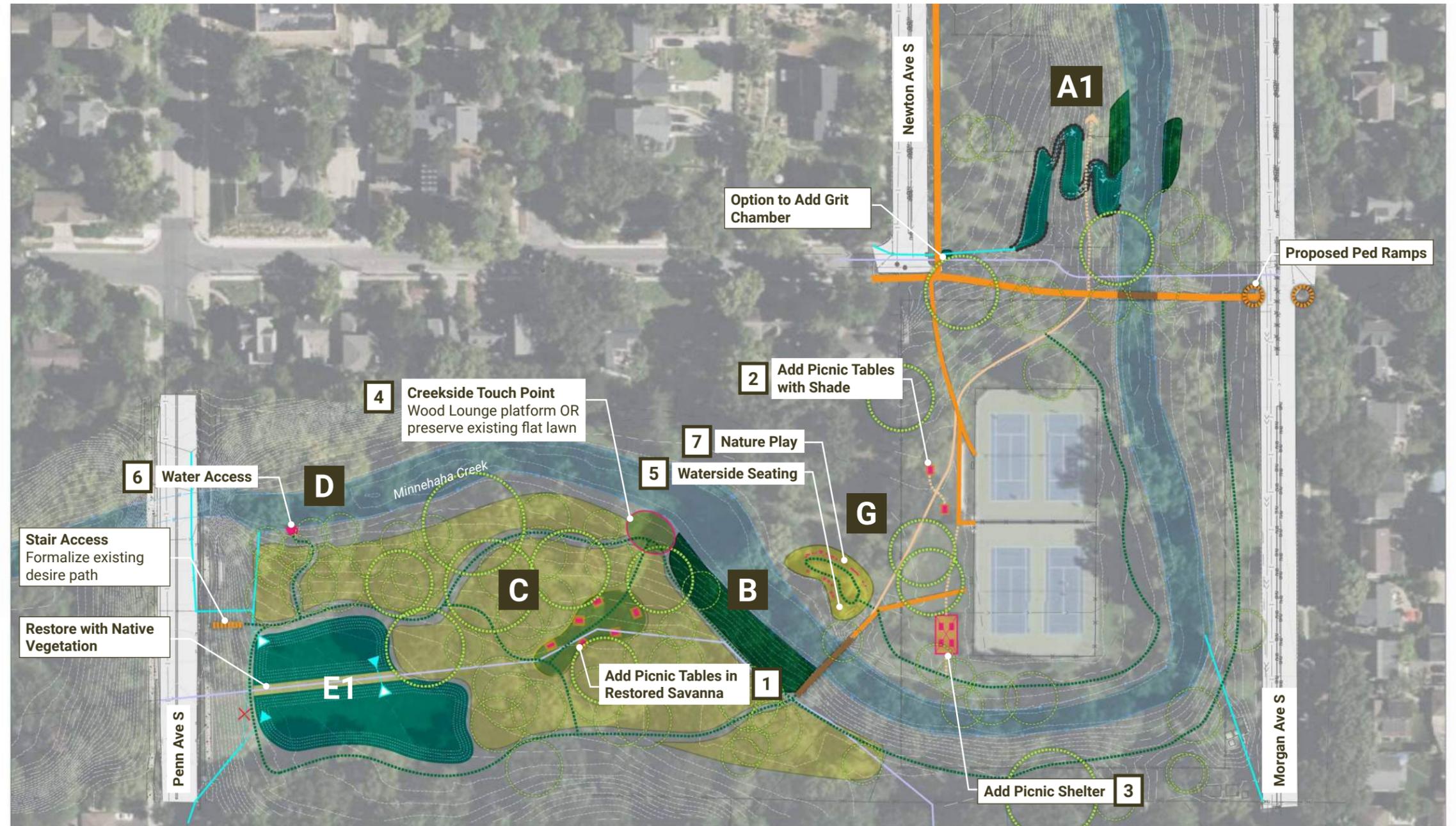
- Install stepped limestone water access point near Penn

E1) PENN AVENUE STORMWATER TREATMENT BASIN

- Add flat-bottomed turf basins to maintain playable recreation surface

G) À LA CARTE RECREATION IMPROVEMENTS

- Add picnicking: tables within restored savanna; picnic tables with umbrellas and picnic shelter near tennis
- Add nature play features and waterside seating along Minnehaha Creek
- Add wood lounge platform at creekside touch point
- Add stair access



LEGEND

Path Network	Landscape Elements	Utilities
Existing/Proposed Ped Trail: Paved	Stormwater Feature	Sanitary Sewer
Existing/Proposed Ped Trail: Natural Surface <i>*Mown trails until packed earth</i>	Bank Restoration	Stormwater
	Open Area	Culvert
	Savanna	
	Recreation Features	
	Significant Tree	
	Precedent Imagery Reference	Removed Tree



PENN-NEWTON: OPTION 1 CONCEPT DIAGRAM

PROJECTS

A2) CHECK DAMS

- Remove flume, add catch basin and new curb at road to capture stormwater from road
- Add grit chamber
- Add meandering check dams to reduce flow velocities, reduce erosion risks, and trap sediment (replace the open stormwater flume)
- Add natural surface path to traverse check dams (option for small bridge or path as part of the dam)
- Stabilize bank adjacent to proposed stormwater outfall

B) BANK RESTORATION

- Stabilize and revegetate slope, relocate natural surface trail away from top of slope

C) OAK SAVANNA RESTORATION

- Add native interseeding beneath oaks with natural surface path maintained through the grove

D) WATER ACCESS POINT

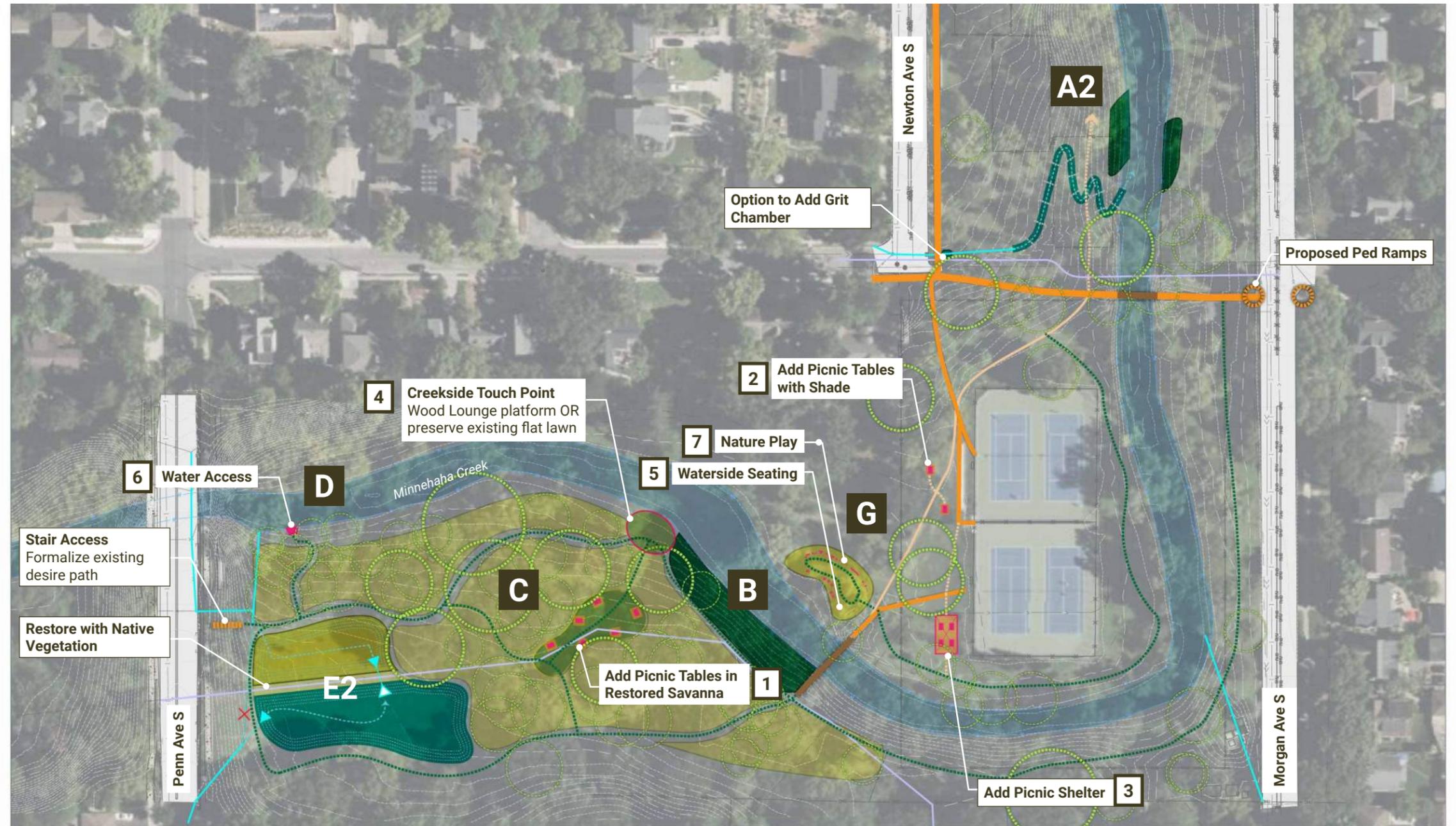
- Install stepped limestone water access point near Penn

E2) PENN AVENUE STORMWATER FILTRATION BASIN

- Construct northern basin with sand filter and draitile. Southern basin would be a treatment basin as in option E1

G) À LA CARTE RECREATION IMPROVEMENTS

- Add picnicking: tables within restored savanna; picnic tables with umbrellas and picnic shelter near tennis
- Add nature play features and Adirondack chairs along Minnehaha Creek
- Add wood lounge platform at creekside touch point
- Add stair access



LEGEND

Path Network	Landscape Elements	Utilities
Existing/Proposed Ped Trail: Paved	Stormwater Feature	Sanitary Sewer
Existing/Proposed Ped Trail: Natural Surface <i>*Mown trails until packed earth</i>	Bank Restoration	Stormwater
	Open Area	Culvert
	Savanna	
	Recreation Features	
	Significant Tree	
	Removed Tree	
	Precedent Imagery Reference	



PENN-NEWTON: OPTION 2 CONCEPT DIAGRAM

PROJECTS

F) BANK RESTORATION

- Stabilize bank and reset existing boulder armor
- Relocate natural surface trail away from top of slope



LEGEND

Path Network	Landscape Elements	Utilities
Existing/Proposed Ped Trail: Paved	Stormwater Feature	Sanitary Sewer
Existing/Proposed Ped Trail: Natural Surface <i>*Mown trails until packed earth</i>	Bank Restoration	Stormwater
	Significant Tree	Culvert



PENN-NEWTON: NORTH CONCEPT DIAGRAM

Picnicking

1 Picnic tables in restored savanna



2 Picnic tables with shade



Small structure



Umbrella



Shade sail

3 Picnic shelter



Pitched roof



Flat roof

Waterside

4 Creekside Touch Point



"Plein air platform"

5 Waterside Seating



Fixed, heavy duty



Movable chairs

6 Water Access



Nature Play

7 Nature Play



Appendix B

Cost Estimate

Cost Summary

Location/Alternate	Project	Capital Costs	Capital Cost for Full Alternative	
Penn Newton Option 1	Project A1	Stormwater treatment train	\$ 610,000	\$ 1,440,000
	Project B	Bank Restoration	\$ 160,000	
	Project C	Oak Savanna Restoration	\$ 20,000	
	Project D	Water Access point	\$ 60,000	
	Project E1	Stormwater Treatment Basin	\$ 260,000	
	Project F	Bank Restoration	\$ 330,000	
	Project G	A La Carte Recreation Projects	(1)	
Penn Newton Option 2	Project A2	Check Dams	\$ 500,000	\$ 1,410,000
	Project B	Bank Restoration	See Option 1	
	Project C	Oak Savanna Restoration	See Option 1	
	Project D	Water Access point	See Option 1	
	Project E2	Filtration Basin	\$ 340,000	
	Project F	Bank Restoration	See Option 1	
	Project G	A La Carte Recreation Projects	(1)	
Cedar Avenue Option 1	Project A	Creek remeander	\$ 350,000	\$ 1,020,000
	Project B	Riparian Habitat Restoration	\$ 20,000	
	Project C	Bank Renaturalization	\$ 160,000	
	Project D1	Multi-basin stormwater wetland	\$ 490,000	
	Project E	CSO Separation	(2)	
	Project F/G	A La Carte Recreation and Circulation Projects	(1)	
Cedar Avenue Option 2	Project A	Bank Restoration and shaping	\$ 300,000	\$ 3,080,000
	Project B	Riparian Habitat Restoration	See Option 1	
	Project C	Bank Renaturalization	See Option 1	
	Project D2	Multi-basin stormwater wetland (3)	\$ 2,600,000	
	Project E	CSO Separation	(2)	
	Project F/G	A La Carte Recreation and Circulation Projects	(1)	
Nicollet Option 1	Project A	Bank Restoration	\$ 120,000	\$ 2,290,000
	Project B	Circulation Adjustments	\$ 260,000	
	Project C1	Stormwater wetlands & remeander	\$ 1,050,000	
	Project D	In-Stream Habitat Improvements	\$ 40,000	
	Project E1	Circulation Adjustments	\$ 660,000	
	Project F	Grit Chamber	\$ 160,000	
	Project G	A La Carte Recreation Projects	(1)	
Nicollet Option 2	Project A	Bank Restoration	See Option 1	\$ 2,370,000
	Project B	Circulation Adjustments	See Option 1	
	Project C2	Stormwater & flood storage wetlands	\$ 770,000	
	Project E2	Circulation adjustments	\$ 1,060,000	
	Project F	Grit Chamber	See Option 1	
	Project G	A La Carte Recreation Projects	(1)	

- (1) A La Carte costs are included in the detail budget tables
(2) CSO separation costs have too many unknowns for costs to be included at this time
(3) Price includes \$800,000 in boardwalk improvements

Cost Estimates for Cedar

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Option 1 - Creek Remeander (Project A)					
1	Mobilization/Demobilization	LS	1	\$ 19,000.00	\$ 19,000.00
2	Traffic Control	LS	1	\$ 6,000.00	\$ 6,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 14,000.00	\$ 14,000.00
4	Site Access	LS	1	\$ 5,000.00	\$ 5,000.00
5	New 8' Bituminous Trail	LF	140	\$ 115.00	\$ 16,100.00
6	Remove Bituminous Trail	SY	780	\$ 10.00	\$ 7,800.00
7	Control of Water	LS	1	\$35,000	\$ 35,000.00
8	Earthwork	CY	610	\$18	\$ 10,980.00
9	FES Lifts	FACE-F	840	\$50	\$ 42,000.00
10	Topsoil	CY	70	\$30	\$ 2,100.00
11	Stone Toe	CY	80	\$140	\$ 11,200.00
12	Riffle Stone	CY	30	\$140	\$ 4,200.00
13	Surface Fabric	SY	1,500	\$18	\$ 27,000.00
14	Seeding	AC	0.4	\$12,000	\$ 4,800.00
SUBTOTAL					\$ 205,180.00
[30%] CONTINGENCY					\$ 61,554.00
TOTAL CONSTRUCTION COST					\$ 266,734.00
30% LEGAL, ENGINEERING, ADMIN, FINANCE					\$ 80,020.20
TOTAL PROJECT COSTS					\$ 346,754.20

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Option 2 - Bank Restoration and Shaping (Project A)					
1	Mobilization/Demobilization	LS	1	\$ 16,000.00	\$ 16,000.00
2	Traffic Control	LS	1	\$ 5,000.00	\$ 5,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 12,000.00	\$ 12,000.00
4	Site Access	LS	1	\$ 5,000.00	\$ 5,000.00
5	Control of Water	LS	1	\$35,000	\$ 35,000.00
6	Earthwork	CY	610	\$18	\$ 10,980.00
7	FES Lifts	FACE-F	840	\$50	\$ 42,000.00
8	Topsoil	CY	70	\$30	\$ 2,100.00
9	Stone Toe	CY	80	\$140	\$ 11,200.00
10	Riffle Stone	CY	30	\$140	\$ 4,200.00
11	Surface Fabric	SY	1,500	\$18	\$ 27,000.00
12	Seeding	AC	0.4	\$12,000	\$ 4,800.00
SUBTOTAL					\$ 175,280.00
[30%] CONTINGENCY					\$ 52,584.00
TOTAL CONSTRUCTION COST					\$ 227,864.00
30% LEGAL, ENGINEERING, ADMIN, FINANCE					\$ 68,359.20
TOTAL PROJECT COSTS					\$ 296,223.20

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Riparian Habitat Restoration (Project B)					
1	Mobilization/Demobilization	LS	1	\$ 2,000.00	\$ 2,000.00
2	Traffic Control	LS	1	\$ 1,000.00	\$ 1,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 1,000.00	\$ 1,000.00
4	Site Access	LS	1	\$ 1,000.00	\$ 1,000.00
5	Revegetation	AC	0.5	\$ 17,000.00	\$ 8,500.00
SUBTOTAL					\$ 13,500.00
[30%] CONTINGENCY					\$ 4,050.00
TOTAL CONSTRUCTION COST					\$ 17,550.00
30% LEGAL, ENGINEERING, ADMIN, FINANCE					\$ 5,265.00
TOTAL PROJECT COSTS					\$ 22,815.00

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Bank Renaturalization (Project C)					
1	Mobilization/Demobilization	LS	1	\$ 9,000.00	\$ 9,000.00
2	Traffic Control	LS	1	\$ 3,000.00	\$ 3,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 7,000.00	\$ 7,000.00
4	Site Access	LS	1	\$ 3,000.00	\$ 3,000.00
5	Remove Plastic Mesh and Reset Boulders	DAYS	3	\$3,000	\$ 9,000.00
6	FES Lifts	FACE-F	1,250	\$50	\$ 62,500.00
7	Backfill	CY	50	\$18	\$ 900.00
8	Topsoil	CY	50	\$30	\$ 1,500.00
9	Seeding	AC	0.2	\$5,000	\$ 1,000.00
SUBTOTAL					\$ 96,900.00
[30%] CONTINGENCY					\$ 29,070.00
TOTAL CONSTRUCTION COST					\$ 125,970.00
30% LEGAL, ENGINEERING, ADMIN, FINANCE					\$ 37,791.00
TOTAL PROJECT COSTS					\$ 163,761.00

Cost Estimates for Cedar

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Option 1 - Multi-Basin Stormwater Wetland - Smaller Footprint (Project D1)					
1	Mobilization/Demobilization	LS	1	\$ 27,000.00	\$ 27,000.00
2	Traffic Control	LS	1	\$ 13,000.00	\$ 13,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 19,000.00	\$ 19,000.00
4	Site Access	LS	1	\$ 7,000.00	\$ 7,000.00
5	Tree Clearing	EA	7	\$ 750.00	\$ 5,250.00
6	Common Excavation Export EV	CY	6120	\$ 25.00	\$ 153,000.00
7	Remove Existing RCP	LIN FT	355	\$ 20.00	\$ 7,100.00
8	Remove Existing Storm Structure	EA	1	\$ 2,500.00	\$ 2,500.00
9	Pretreatment	EA	1	\$ 15,000.00	\$ 15,000.00
10	Install New RCP	LIN FT	120	\$ 100.00	\$ 12,000.00
11	Storm Structures	LS	1	\$ 15,000.00	\$ 15,000.00
12	Revegetation and Restoration	AC	1.4	\$ 10,000.00	\$ 14,000.00
	SUBTOTAL				\$ 289,850.00
	[30%] CONTINGENCY				\$ 86,955.00
	TOTAL CONSTRUCTION COST				\$ 376,805.00
	30% LEGAL, ENGINEERING, ADMIN, FINANCE				\$ 113,041.50
	TOTAL PROJECT COSTS				\$ 489,846.50

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Option 2 - Multi-Basin Stormwater Wetland - Larger Footprint (Project D2)					
1	Mobilization/Demobilization	LS	1	\$ 46,000.00	\$ 46,000.00
2	Traffic Control	LS	1	\$ 22,000.00	\$ 22,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 33,000.00	\$ 33,000.00
4	Site Access	LS	1	\$ 12,000.00	\$ 12,000.00
5	Tree Clearing	EA	25	\$ 750.00	\$ 18,750.00
6	Common Excavation Export EV	CY	12010	\$ 25.00	\$ 300,250.00
7	Remove Existing RCP	LIN FT	355	\$ 20.00	\$ 7,100.00
8	Remove Existing Storm Structure	EA	1	\$ 2,500.00	\$ 2,500.00
9	Pretreatment	EA	1	\$ 15,000.00	\$ 15,000.00
10	Install New RCP	LIN FT	60	\$ 100.00	\$ 6,000.00
11	Storm Structures	LS	1	\$ 15,000.00	\$ 15,000.00
12	Revegetation and Restoration	AC	2.5	\$ 10,000.00	\$ 25,000.00
13	Overlook	EA	1	\$ 80,000.00	\$ 80,000.00
14	Interpretive Sign	EA	1	\$ 8,000.00	\$ 8,000.00
15	12' Timber Boardwalk with railings (vehicle-rated)	LF	530	\$ 1,500.00	\$ 795,000.00
16	New 8' Bituminous Trail	LF	1112	\$ 115.00	\$ 127,880.00
17	Remove Bituminous Trail	SY	2660	\$ 10.00	\$ 26,600.00
	SUBTOTAL				\$ 1,540,080.00
	[30%] CONTINGENCY				\$ 462,024.00
	TOTAL CONSTRUCTION COST				\$ 2,002,104.00
	30% LEGAL, ENGINEERING, ADMIN, FINANCE				\$ 600,631.20
	TOTAL PROJECT COSTS				\$ 2,602,735.20

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
CSO Separation (Project E)					
	SUBTOTAL				\$ -
	[30%] CONTINGENCY				\$ -
	TOTAL CONSTRUCTION COST				\$ -
	30% LEGAL, ENGINEERING, ADMIN, FINANCE				\$ -
	TOTAL PROJECT COSTS				\$ -

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
A La Carte Recreation Improvements - Picnicking (Project F)					
<i>Cost for a la carte recreation projects are based on the master plan's implementation chapter and adjusted 5% per year for inflation to</i>					
1	Mobilization/Demobilization	LS	1	\$ 29,000.00	\$ 29,000.00
2	Traffic Control	LS	1	\$ 9,000.00	\$ 9,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 21,000.00	\$ 21,000.00
4	Site Access	LS	1	\$ 20,000.00	\$ 20,000.00
5	Picnic Tables and Concrete Pads at 16th Ave	EA	6	\$ 9,800.00	\$ 58,800.00
6	Interpretive Overlooks	EA	2	\$ 80,000.00	\$ 160,000.00
7	Creekside Seating	SF	250	\$ 80.00	\$ 20,000.00
	SUBTOTAL				\$ 317,800.00
	[30%] CONTINGENCY				\$ 95,340.00
	TOTAL CONSTRUCTION COST				\$ 413,140.00
	30% LEGAL, ENGINEERING, ADMIN, FINANCE				\$ 123,942.00
	TOTAL PROJECT COSTS				\$ 537,082.00

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
A La Carte Circulation Improvements - "Moses Bridge" (Project G)					
1	Mobilization/Demobilization	LS	1	\$ 227,000.00	\$ 227,000.00
2	Traffic Control	LS	1	\$ 66,000.00	\$ 66,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 163,000.00	\$ 163,000.00
4	Site Access	LS	1	\$ 60,000.00	\$ 60,000.00
5	Tunnel at Cedar Ave	LS	1	\$ 1,914,500.00	\$ 1,914,500.00
6	Bike Path Connection to Tunnel	LF	505	\$ 115.00	\$ 58,075.00
	SUBTOTAL				\$ 2,488,575.00
	[30%] CONTINGENCY				\$ 746,572.50
	TOTAL CONSTRUCTION COST				\$ 3,235,147.50
	30% LEGAL, ENGINEERING, ADMIN, FINANCE				\$ 970,544.25
	TOTAL PROJECT COSTS				\$ 4,205,691.75

Cost Estimates for Nicollet

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Bank Restoration (Project A)					
1	Mobilization/Demobilization	LS	1	\$ 7,000.00	\$ 7,000.00
2	Traffic Control	LS	1	\$ 2,000.00	\$ 2,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 5,000.00	\$ 5,000.00
4	Site Access	LS	1	\$ 2,000.00	\$ 2,000.00
5	Control of Water	LS	1	\$20,000	\$ 20,000.00
6	Remove Concrete Culvert Bank Stabilization	LS	1	\$2,000	\$ 2,000.00
7	Address WPA Wall	LS	1	\$10,000	\$ 10,000.00
8	FES Lifts	FACE-FT	300	\$50	\$ 15,000.00
9	Backfill	CY	50	\$18	\$ 900.00
10	Stone Toe	CY	30	\$140	\$ 4,200.00
11	Bank Revegetation	AC	0.1	\$12,000	\$ 1,200.00
	SUBTOTAL				\$ 69,300.00
	[30%] CONTINGENCY				\$ 20,790.00
	TOTAL CONSTRUCTION COST				\$ 90,090.00
	30% LEGAL, ENGINEERING, ADMIN, FINANCE				\$ 27,027.00
	TOTAL PROJECT COSTS				\$ 117,117.00

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Circulation Adjustments (Project B)					
1	Mobilization/Demobilization	LS	1	\$ 14,000.00	\$ 14,000.00
2	Traffic Control	LS	1	\$ 4,000.00	\$ 4,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 10,000.00	\$ 10,000.00
4	Site Access	LS	1	\$ 4,000.00	\$ 4,000.00
5	New 8' Bituminous Trail	LF	870	\$ 115.00	\$ 100,050.00
6	Remove Bituminous Trail	SY	700	\$ 10.00	\$ 7,000.00
7	Seating	EA	2	\$ 6,000.00	\$ 12,000.00
	SUBTOTAL				\$ 151,050.00
	[30%] CONTINGENCY				\$ 45,315.00
	TOTAL CONSTRUCTION COST				\$ 196,365.00
	30% LEGAL, ENGINEERING, ADMIN, FINANCE				\$ 58,909.50
	TOTAL PROJECT COSTS				\$ 255,274.50

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Option 1 - Stormwater/Flood Storage Wetland and Remeander (Project C1)					
1	Mobilization/Demobilization	LS	1	\$ 56,000.00	\$ 56,000.00
2	Traffic Control	LS	1	\$ 17,000.00	\$ 17,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 40,000.00	\$ 40,000.00
4	Site Access	LS	1	\$ 15,000.00	\$ 15,000.00
5	Tree Clearing	EA	10	\$ 750.00	\$ 7,500.00
6	Common Excavation Export EV	CY	1250	\$ 25.00	\$ 31,250.00
7	Remove Existing RCP	LIN FT	185	\$ 20.00	\$ 3,700.00
8	Remove Existing Storm Structure	EA	3	\$ 2,500.00	\$ 7,500.00
9	Pretreatment	EA	1	\$ 15,000.00	\$ 15,000.00
10	Install New RCP	LIN FT	195	\$ 100.00	\$ 19,500.00
11	Storm Structures	LS	1	\$ 20,000.00	\$ 20,000.00
12	Control of Water	LS	1	\$75,000	\$ 75,000.00
13	Earthwork	CY	1,000	\$18	\$ 18,000.00
14	Offsite Disposal	CY	800	\$20	\$ 16,000.00
15	FES Lifts	FACE-FT	1,960	\$50	\$ 98,000.00
16	Salvaged Topsoil	CY	140	\$17	\$ 2,380.00
17	Backfill	CY	140	\$18	\$ 2,520.00
18	Stone Toe	CY	170	\$140	\$ 23,800.00
19	Riffle Stone	CY	120	\$140	\$ 16,800.00
20	Habitat Boulders	EACH	8	\$300	\$ 2,400.00
21	Surface Fabric	SY	5900	\$18	\$ 106,200.00
22	Bank Revegetation	AC	1.4	\$12,000	\$ 16,800.00
23	Revegetation and Restoration	AC	1	\$ 10,000.00	\$ 10,000.00
	SUBTOTAL				\$ 620,350.00
	[30%] CONTINGENCY				\$ 186,105.00
	TOTAL CONSTRUCTION COST				\$ 806,455.00
	30% LEGAL, ENGINEERING, ADMIN, FINANCE				\$ 241,936.50
	TOTAL PROJECT COSTS				\$ 1,048,391.50

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Option 2 - Stormwater and Flood Storage Wetlands (Project C2)					
1	Mobilization/Demobilization	LS	1	\$ 42,000.00	\$ 42,000.00
2	Traffic Control	LS	1	\$ 13,000.00	\$ 13,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 30,000.00	\$ 30,000.00
4	Site Access	LS	1	\$ 11,000.00	\$ 11,000.00
5	Tree Clearing	EA	11	\$ 750.00	\$ 8,250.00
6	Common Excavation Export EV	CY	5920	\$ 25.00	\$ 148,000.00
7	Remove Existing RCP	LIN FT	185	\$ 20.00	\$ 3,700.00
8	Remove Existing Storm Structure	EA	3	\$ 2,500.00	\$ 7,500.00
9	Pretreatment	EA	1	\$ 15,000.00	\$ 15,000.00
10	Install New RCP	LIN FT	195	\$ 100.00	\$ 19,500.00
11	Storm Structures	LS	1	\$ 20,000.00	\$ 20,000.00
12	Control of Water	LS	1	\$30,000	\$ 30,000.00
13	FES Lifts	FACE-FT	1,180	\$50	\$ 59,000.00
14	Backfill	CY	170	\$18	\$ 3,060.00
15	Stone Toe	CY	100	\$140	\$ 14,000.00
16	Surface Fabric	SY	460	\$18	\$ 8,280.00
17	Bank Revegetation	AC	0.3	\$12,000	\$ 3,600.00
18	Revegetation and Restoration	AC	2	\$ 10,000.00	\$ 20,000.00
	SUBTOTAL				\$ 455,890.00
	[30%] CONTINGENCY				\$ 136,767.00
	TOTAL CONSTRUCTION COST				\$ 592,657.00
	30% LEGAL, ENGINEERING, ADMIN, FINANCE				\$ 177,797.10
	TOTAL PROJECT COSTS				\$ 770,454.10

Cost Estimates for Nicollet

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Option 1 - Instream Habitat Improvements (Project D)					
1	Mobilization/Demobilization	LS	1	\$ 1,000.00	\$ 1,000.00
2	Traffic Control	LS	1	\$ 1,000.00	\$ 1,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 1,000.00	\$ 1,000.00
4	Site Access	LS	1	\$ 1,000.00	\$ 1,000.00
5	Habitat Boulders	EACH	12	\$300	\$ 3,600.00
6	Large Wood	EACH	8	\$1,500	\$ 12,000.00
7	Riffle Stone	CY	30	\$140	\$ 4,200.00
				SUBTOTAL	\$ 23,800.00
				[30%] CONTINGENCY	\$ 7,140.00
				TOTAL CONSTRUCTION COST	\$ 30,940.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 9,282.00
				TOTAL PROJECT COSTS	\$ 40,222.00

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Option 1 - Circulation Adjustments - Extension of Path and New Bridge (Project E1)					
1	Mobilization/Demobilization	LS	1	\$ 36,000.00	\$ 36,000.00
2	Traffic Control	LS	1	\$ 11,000.00	\$ 11,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 26,000.00	\$ 26,000.00
4	Site Access	LS	1	\$ 10,000.00	\$ 10,000.00
5	New 8' Bituminous Trail	LF	190	\$ 115.00	\$ 21,850.00
6	Tree Clearing	EA	3	\$ 750.00	\$ 2,250.00
7	Remove Bituminous Trail	SY	950	\$ 10.00	\$ 9,500.00
8	New Pedestrian Bridge	EA	1	\$ 275,000.00	\$ 275,000.00
				SUBTOTAL	\$ 391,600.00
				[30%] CONTINGENCY	\$ 117,480.00
				TOTAL CONSTRUCTION COST	\$ 509,080.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 152,724.00
				TOTAL PROJECT COSTS	\$ 661,804.00

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Grit Chamber (Project F)					
1	Mobilization/Demobilization	LS	1	\$ 9,000.00	\$ 9,000.00
2	Traffic Control	LS	1	\$ 3,000.00	\$ 3,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 7,000.00	\$ 7,000.00
4	Site Access	LS	1	\$ 3,000.00	\$ 3,000.00
5	Grit Chamber	LS	1	\$ 75,000.00	\$ 75,000.00
				SUBTOTAL	\$ 97,000.00
				[30%] CONTINGENCY	\$ 29,100.00
				TOTAL CONSTRUCTION COST	\$ 126,100.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 37,830.00
				TOTAL PROJECT COSTS	\$ 163,930.00

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Option 1 - A La Cart Recreation Improvements - Bridge and Interpretive Overlook (Project G)					
<i>Cost for a la carte recreation projects are based on the master plan's implementation chapter and adjusted 5% per year for inflation to 2025 dollars:</i>					
1	Mobilization/Demobilization	LS	1	\$ 141,000.00	\$ 141,000.00
2	Traffic Control	LS	1	\$ 43,000.00	\$ 43,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 113,000.00	\$ 113,000.00
4	Site Access	LS	1	\$ 43,000.00	\$ 43,000.00
5	Picnic Area at Lower Parkway Road (includes picnic tables, drinking fountain, pollinator lawn, and playful public art features)	LS	1	\$ 250,000.00	\$ 250,000.00
6	Activity Area (includes ADA-accessible creek access, restroom enclosure, bouldering wall, natural-themed play features, public art, and associated trail connections under Nicollet Ave Bridge)	LS	1	\$ 1,000,000.00	\$ 1,000,000.00
7	Interpretive Overlooks	EA	2	\$ 80,000.00	\$ 160,000.00
				SUBTOTAL	\$ 1,750,000.00
				[30%] CONTINGENCY	\$ 525,000.00
				TOTAL CONSTRUCTION COST	\$ 2,275,000.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 682,500.00
				TOTAL PROJECT COSTS	\$ 2,957,500.00

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Option 2 - Circulation Adjustments - Extension of Path and New Bridge (Project E2)					
1	Mobilization/Demobilization	LS	1	\$ 57,000.00	\$ 57,000.00
2	Traffic Control	LS	1	\$ 17,000.00	\$ 17,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 41,000.00	\$ 41,000.00
4	Site Access	LS	1	\$ 15,000.00	\$ 15,000.00
5	New 8' Bituminous Trail	LF	550	\$ 115.00	\$ 63,250.00
6	Tree Clearing	EA	3	\$ 750.00	\$ 2,250.00
7	Remove Bituminous Trail	SY	2900	\$ 10.00	\$ 29,000.00
8	New Pedestrian Bridge	EA	1	\$ 400,000.00	\$ 400,000.00
				SUBTOTAL	\$ 624,500.00
				[30%] CONTINGENCY	\$ 187,350.00
				TOTAL CONSTRUCTION COST	\$ 811,850.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 243,555.00
				TOTAL PROJECT COSTS	\$ 1,055,405.00

NO.	ITEM DESCRIPTION	UNIT	QUANTIT	UNIT PRICE	TOTAL PRICE
Option 2 - A La Cart Recreation Improvements - Bridge and Interpretive Overlooks (Project G)					
<i>Cost for a la carte recreation projects are based on the master plan's implementation chapter and adjusted 5% per year for inflation to 2025 dollars:</i>					
1	Mobilization/Demobilization	LS	1	\$ 143,000.00	\$ 143,000.00
2	Traffic Control	LS	1	\$ 43,000.00	\$ 43,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 107,000.00	\$ 107,000.00
4	Site Access	LS	1	\$ 43,000.00	\$ 43,000.00
5	Picnic Area at Lower Parkway Road (includes picnic tables, drinking fountain, pollinator lawn, and playful public art features)	LS	1	\$ 250,000.00	\$ 250,000.00
6	Activity Area (includes ADA-accessible creek access, restroom enclosure, bouldering wall, natural-themed play features, public art, and associated trail connections under Nicollet Ave Bridge)	LS	1	\$ 1,000,000.00	\$ 1,000,000.00
7	Interpretive Overlook	EA	1	\$ 80,000.00	\$ 80,000.00
8	Interpretive Overlook at Stormwater Wetland	EA	1	\$ 100,000.00	\$ 100,000.00
				SUBTOTAL	\$ 1,766,000.00
				[30%] CONTINGENCY	\$ 529,800.00
				TOTAL CONSTRUCTION COST	\$ 2,295,800.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 688,740.00
				TOTAL PROJECT COSTS	\$ 2,984,540.00

Cost Estimates for Penn-Newton

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Option 1 - Remove riprap, construct tiered ponds (Project A1)					
1	Mobilization/Demobilization	LS	1	\$ 33,000.00	\$ 33,000.00
2	Traffic Control	LS	1	\$ 16,000.00	\$ 16,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 23,000.00	\$ 23,000.00
4	Site Access	LS	1	\$ 9,000.00	\$ 9,000.00
5	Tree Clearing	EA	5	\$ 750.00	\$ 3,750.00
6	Remove Existing Concrete Spillway	SY	900	\$ 30.00	\$ 27,000.00
7	Remove and Replace Pavement	SY	40	\$ 150.00	\$ 6,000.00
8	Concrete Curb	LIN FT	15	\$ 50.00	\$ 750.00
9	Install New RCP	LIN FT	100	\$ 100.00	\$ 10,000.00
10	Storm Structures	LS	1	\$ 15,000.00	\$ 15,000.00
11	Grit Chamber	LS	1	\$ 75,000.00	\$ 75,000.00
12	Install Geotextile Fabric	SY	160	\$ 7.00	\$ 1,120.00
13	Install Class III Riprap	TON	170	\$ 120.00	\$ 20,400.00
14	Common Excavation Export EV	CY	330	\$ 25.00	\$ 8,250.00
15	Retaining Walls	LF	190	\$ 210.00	\$ 39,900.00
16	Install Plants	LS	1	\$ 15,000.00	\$ 15,000.00
17	Revegetation and Restoration	AC	0.25	\$ 10,000.00	\$ 2,500.00
18	Control of Water	LS	1	\$ 25,000.00	\$ 25,000.00
19	Bank Tree Clearing	LS	1	\$ 5,000.00	\$ 5,000.00
20	FES Lifts	FACE-FT	320	\$ 50	\$ 16,000.00
21	Backfill	CY	30	\$ 18	\$ 540.00
22	Topsoil	CY	30	\$ 30	\$ 900.00
23	Stone Toe	CY	30	\$ 140	\$ 4,200.00
24	Bank Revegetation	AC	0.1	\$ 12,000	\$ 1,200.00
				SUBTOTAL	\$ 358,510.00
				[30%] CONTINGENCY	\$ 107,553.00
				TOTAL CONSTRUCTION COST	\$ 466,063.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 139,818.90
				TOTAL PROJECT COSTS	\$ 605,881.90

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Option 2 - Remove riprap, construct check dams (Project A2)					
1	Mobilization/Demobilization	LS	1	\$ 27,000.00	\$ 27,000.00
2	Traffic Control	LS	1	\$ 13,000.00	\$ 13,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 19,000.00	\$ 19,000.00
4	Site Access	LS	1	\$ 7,000.00	\$ 7,000.00
5	Tree Clearing	EA	5	\$ 750.00	\$ 3,750.00
6	Remove Existing Concrete Spillway	SY	900	\$ 30.00	\$ 27,000.00
7	Remove and Replace Pavement	SY	40	\$ 150.00	\$ 6,000.00
8	Concrete Curb	LIN FT	15	\$ 50.00	\$ 750.00
9	Install New RCP	LIN FT	100	\$ 100.00	\$ 10,000.00
10	Storm Structures	LS	1	\$ 15,000.00	\$ 15,000.00
11	Grit Chamber	LS	1	\$ 75,000.00	\$ 75,000.00
12	Install Geotextile Fabric	SY	50	\$ 7.00	\$ 350.00
13	Install Class III Riprap	TON	140	\$ 120.00	\$ 16,800.00
14	Common Excavation Export EV	CY	210	\$ 25.00	\$ 5,250.00
15	Retaining Walls	LF	0	\$ 210.00	\$ -
16	Install Plants	LS	1	\$ 15,000.00	\$ 15,000.00
17	Revegetation and Restoration	AC	0.25	\$ 10,000.00	\$ 2,500.00
18	Control of Water	LS	1	\$ 25,000.00	\$ 25,000.00
19	Bank Tree Clearing	LS	1	\$ 5,000.00	\$ 5,000.00
20	FES Lifts	FACE-FT	320	\$ 50	\$ 16,000.00
21	Backfill	CY	30	\$ 18	\$ 540.00
22	Topsoil	CY	30	\$ 30	\$ 900.00
23	Stone Toe	CY	30	\$ 140	\$ 4,200.00
24	Bank Revegetation	AC	0.1	\$ 12,000	\$ 1,200.00
				SUBTOTAL	\$ 296,240.00
				[30%] CONTINGENCY	\$ 88,872.00
				TOTAL CONSTRUCTION COST	\$ 385,112.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 115,533.60
				TOTAL PROJECT COSTS	\$ 500,645.60

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Bank Restoration (Project B)					
1	Mobilization/Demobilization	LS	1	\$ 9,000.00	\$ 9,000.00
2	Traffic Control	LS	1	\$ 5,000.00	\$ 5,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 7,000.00	\$ 7,000.00
4	Site Access	LS	1	\$ 3,000.00	\$ 3,000.00
5	Control of Water	LS	1	\$ 25,000.00	\$ 25,000.00
6	Bank Tree Clearing	LS	1	\$ 5,000.00	\$ 5,000.00
7	FES Lifts	FACE-FT	700	\$ 50	\$ 35,000.00
8	Backfill	CY	50	\$ 18	\$ 900.00
9	Topsoil	CY	50	\$ 30	\$ 1,500.00
10	Stone Toe	CY	30	\$ 140	\$ 4,200.00
11	Bank Revegetation	AC	0.1	\$ 12,000	\$ 1,200.00
				SUBTOTAL	\$ 96,800.00
				[30%] CONTINGENCY	\$ 29,040.00
				TOTAL CONSTRUCTION COST	\$ 125,840.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 37,752.00
				TOTAL PROJECT COSTS	\$ 163,592.00

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Oak Savanna Restoration (Project C)					
1	Mobilization/Demobilization	LS	1	\$ 2,000.00	\$ 2,000.00
2	Traffic Control	LS	1	\$ 1,000.00	\$ 1,000.00
3	Oak Savanna Restoration	AC	1.4	\$ 6,500.00	\$ 9,100.00
				SUBTOTAL	\$ 12,100.00
				[30%] CONTINGENCY	\$ 3,630.00
				TOTAL CONSTRUCTION COST	\$ 15,730.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 4,719.00
				TOTAL PROJECT COSTS	\$ 20,449.00

Cost Estimates for Penn-Newton

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Water Access Point (Project D)					
1	Mobilization/Demobilization	LS	1	\$ 4,000.00	\$ 4,000.00
2	Traffic Control	LS	1	\$ 2,000.00	\$ 2,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 3,000.00	\$ 3,000.00
4	Site Access	LS	1	\$ 1,000.00	\$ 1,000.00
5	Limestone Water Access	LS	1	\$ 25,000.00	\$ 25,000.00
6	Revegetation and Restoration	LS	1	\$ 1,500.00	\$ 1,500.00
				SUBTOTAL	\$ 36,500.00
				[30%] CONTINGENCY	\$ 10,950.00
				TOTAL CONSTRUCTION COST	\$ 47,450.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 14,235.00
				TOTAL PROJECT COSTS	\$ 61,685.00

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Option 1 - Stormwater Treatment Basin (Project E1)					
1	Mobilization/Demobilization	LS	1	\$ 14,000.00	\$ 14,000.00
2	Traffic Control	LS	1	\$ 7,000.00	\$ 7,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 10,000.00	\$ 10,000.00
4	Site Access	LS	1	\$ 4,000.00	\$ 4,000.00
5	Common Excavation Export EV	CY	2120	\$ 30.00	\$ 63,600.00
6	Remove Existing RCP	LIN FT	125	\$ 20.00	\$ 2,500.00
7	Pretreatment	EA	1	\$ 15,000.00	\$ 15,000.00
8	Install New RCP	LIN FT	100	\$ 100.00	\$ 10,000.00
9	Storm Structures	LS	1	\$ 15,000.00	\$ 15,000.00
10	Revegetation and Restoration	AC	1	\$ 10,000.00	\$ 10,000.00
				SUBTOTAL	\$ 151,100.00
				[30%] CONTINGENCY	\$ 45,330.00
				TOTAL CONSTRUCTION COST	\$ 196,430.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 58,929.00
				TOTAL PROJECT COSTS	\$ 255,359.00

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Option 2 - Stormwater Filtration Basin (Project E2)					
1	Mobilization/Demobilization	LS	1	\$ 19,000.00	\$ 19,000.00
2	Traffic Control	LS	1	\$ 6,000.00	\$ 6,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 13,000.00	\$ 13,000.00
4	Site Access	LS	1	\$ 5,000.00	\$ 5,000.00
5	Common Excavation Export EV	CY	2120	\$ 25.00	\$ 53,000.00
6	Remove Existing RCP	LIN FT	125	\$ 20.00	\$ 2,500.00
7	Pretreatment	EA	1	\$ 15,000.00	\$ 15,000.00
8	Install New RCP	LIN FT	100	\$ 150.00	\$ 15,000.00
9	Storm Structures	LS	1	\$ 15,000.00	\$ 15,000.00
10	Filtration Basin	SF	3275	\$ 12.00	\$ 39,300.00
11	4" PVC Drintile	Lin FT	250	\$ 30.00	\$ 7,500.00
12	Revegetation and Restoration	AC	1	\$ 10,000.00	\$ 10,000.00
				SUBTOTAL	\$ 200,300.00
				[30%] CONTINGENCY	\$ 60,090.00
				TOTAL CONSTRUCTION COST	\$ 260,390.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 78,117.00
				TOTAL PROJECT COSTS	\$ 338,507.00

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
Bank Restoration (Project F)					
1	Mobilization/Demobilization	LS	1	\$ 18,000.00	\$ 18,000.00
2	Traffic Control	LS	1	\$ 9,000.00	\$ 9,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 13,000.00	\$ 13,000.00
4	Site Access	LS	1	\$ 5,000.00	\$ 5,000.00
5	Control of Water	LS	1	\$ 35,000.00	\$ 35,000.00
6	Bank Tree Clearing	LS	1	\$10,000	\$ 10,000.00
7	Removal of Existing Riprap	LS	1	\$2,000	\$ 2,000.00
8	FES Lifts	FACE-FT	1800	\$50	\$ 90,000.00
9	Backfill	CY	120	\$18	\$ 2,160.00
10	Topsoil	CY	120	\$30	\$ 3,600.00
11	Stone Toe	CY	40	\$140	\$ 5,600.00
12	Bank Revegetation	AC	0.2	\$12,000	\$ 2,400.00
				SUBTOTAL	\$ 195,760.00
				[30%] CONTINGENCY	\$ 58,728.00
				TOTAL CONSTRUCTION COST	\$ 254,488.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 76,346.40
				TOTAL PROJECT COSTS	\$ 330,834.40

Cost Estimates for Penn-Newton

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
A La Carte Recreation Improvements - Picnicking, Nature Play, etc. (Project G)					
<i>Cost for a la carte recreation projects are based on the master plan's implementation chapter and adjusted 5% per year for inflation to 2025 dollars:</i>					
1	Mobilization/Demobilization	LS	1	\$ 170,000.00	\$ 170,000.00
2	Traffic Control	LS	1	\$ 81,000.00	\$ 81,000.00
3	Dewatering & Erosion/Sediment Control	LS	1	\$ 120,000.00	\$ 120,000.00
4	Site Access	LS	1	\$ 44,000.00	\$ 44,000.00
5	Picnic Tables with Concrete Pads at Oak Savanna Restoration	EA	6	\$ 9,800.00	\$ 58,800.00
6	Picnic Tables with Concrete Pads and Shade at Tennis Courts	EA	2	\$ 20,000.00	\$ 40,000.00
7	Picnic Shelter at Tennis Court	LS	1	\$200,000	\$ 200,000.00
8	Natural Surface Path to Picnicking at Tennis Courts	LF	100	\$9	\$ 900.00
9	Nature-based Play Area	LS	1	\$1,021,000	\$ 1,021,000.00
10	Waterside Seating Area	EA	1	\$78,500	\$ 78,500.00
11	Stair Access	SF	54	\$250	\$ 13,500.00
12	Wood Platform at Creek Access	LS	500	\$80	\$ 40,000.00
				SUBTOTAL	\$ 1,867,700.00
				[30%] CONTINGENCY	\$ 560,310.00
				TOTAL CONSTRUCTION COST	\$ 2,428,010.00
				30% LEGAL, ENGINEERING, ADMIN, FINANCE	\$ 728,403.00
				TOTAL PROJECT COSTS	\$ 3,156,413.00

Appendix C

Prioritization Matrix

Prioritization Matrix

Site	Concept Name	Primary Drivers									Secondary Drivers										TOTAL
		Capital Cost	Cost Score	Water Quality Benefit (lb TP/yr)	Water Quality Score	O&M Notes	O&M Effort Score	Potential Net Gain In Floodplain Storage Volume (CY)	Flood Resiliency Notes	Flood Resiliency Score	Ecosystem / Habitat Services Lift Notes	Ecosystem / Habitat Services Lift Score	Permitting Notes	Pathway to Permitting Score	Infrastructure and Adjacent Project Considerations and Notes	Adjacent Projects Score	Land Footprint Notes	Land Footprint Efficiency Score	Community Amenities Lift Notes	Community Amenities Lift Score	
<i>Cedar</i>	Option 1 - Smaller Stormwater Pond Footprint	\$ 1,020,000	3	26	2	Stormwater Pond maintenance	2	2,000	Flood Storage capacity could be increased within the footprint of the proposed stormwater pond (both for overland flow and backwater from the creek)	2	Riparian habitat would benefit from bank renaturalization, maintaining existing "oxbow" floodplain, and added floodplain forest area. Conversion of turf grass to wetland habitat provides net added habitat services. More large trees are preserved under this alternative than Option 2. Backwater connection from proposed stormwater pond to Creek could provide spawning habitat for fishes and expanded habitat availability for many species.	2	Wetland may exist on east portion of proposed ponding area. The wetland function would be maintained via pond design.	3	CSO Separation. Creek remeander and bank stabilization will relocate and protect trail and bench that are currently in the path of eroding bank.	3	Smaller stormwater footprint	2	Reduced size of basin means more recreation space, however poor drainage and seasonal inundation currently affect the use of this area for recreation. Minor circulation adjustments at creek remeander would protect path from continued erosion threat. No adjustments would mean continued flooding. Addition of picnicking can occur at any time. Interpretive features should be added with stormwater improvements.	2	21
<i>Cedar</i>	Option 2 - Larger Stormwater Pond Footprint with Major Circulation Adjustments	\$ 3,080,000	1	37	3	Stormwater Pond maintenance; Boardwalk adds some complexity	1	4,000	Flood Storage capacity could be increased within the footprint of the proposed stormwater pond (both for overland flow and backwater from the creek)	3	Riparian habitat would benefit from bank renaturalization, maintaining existing "oxbow" floodplain, and added floodplain forest area. Conversion of turf grass to wetland habitat provides net added habitat services. Less large trees are preserved under this alternative than Option 1. Backwater connection from proposed stormwater pond to Creek could provide spawning habitat for fishes and expanded habitat availability for many species.	2	Wetland may exist on east portion of proposed ponding area. The wetland function would be maintained via pond design.	3	CSO Separation. Creek remeander and bank stabilization will relocate and protect trail and bench that are currently in the path of eroding bank.	3	Larger stormwater footprint, but addition of boardwalk	2	Larger pond results in least recreation space, however addition of boardwalk and wetland habitat provides a new recreation amenity not found nearby. Circulation adjustments would move the trail out of the floodplain resulting in more reliable use. Circulation adjustments and interpretive elements must occur with stormwater improvements. Picnicking can be added at any time.	3	21
<i>Penn-Newton</i>	Option 1 - Stormwater Treatment Basin (Penn) and Tiered Pools (Newton)	\$ 1,440,000	2	7	1	Stormwater Pond Maintenance	2	-	Minimal change/impact	1	Conversion of turf grass to wetland habitat provides added habitat services for aquatic and riparian species, but may modify habitat for pollinators and is disconnected from riparian area. Proposed savanna restoration is a habitat improvement.	2	No hurdles with Threatened & Endangered species, wetlands, or water levels.	3	Addresses deteriorating concrete flume (Newton). Bank stabilization upstream of pedestrian bridge arrests erosion and re-routes existing natural surface walking trail (Penn).	3	-	2	Loss of usable open space for flexible recreation (Penn). Option to add stairway between Penn Ave and the proposed water access, along with picnicking. Also option to add a pedestrian path between 52nd and 53rd. Recreational elements can be phased with stormwater improvements or happen separately.	2	18
<i>Penn-Newton</i>	Option 2 - Stormwater Filtration Basin (Penn) and Check Dams (Newton)	\$ 1,410,000	2	4	1	Stormwater Pond Maintenance	2	-	Minimal change/impact	1	Conversion of turf grass to wetland habitat provides added habitat services for aquatic and riparian species, but may modify habitat for pollinators and is disconnected from riparian area. Proposed savanna restoration is a habitat improvement.	2	No hurdles with Threatened & Endangered species, wetlands, or water levels.	3	Addresses deteriorating concrete flume (Newton). Bank stabilization upstream of pedestrian bridge arrests erosion and re-routes existing natural surface walking trail (Penn).	3	-	2	Recreational amenities have a large impact as they address a major gap in amenities along the regional trail and neighborhood park. Circulation will be improved by the trail adjustments and should occur simultaneously with the proposed stormwater improvements. Trails would be moved out of the floodplain where able. Recreational amenities could happen separately but should occur simultaneously with the bridge work. Interpretive elements should happen simultaneously with stormwater improvements.	2	18
<i>Nicollet</i>	Option 1 - Creek Remeander with Smaller Stormwater / Flood Storage Wetlands	\$ 2,270,000	1	17	2	Stormwater Wetland Maintenance, ADA dock, restroom	2	1,000	Floodplain reconnection and floodplain storage added by removing former roadway prism	2	Requires removal of several mature trees but creek remeander and added stream length would provide in-stream habitat and riparian benefits. Floodplain reconnection adds to riparian habitat area and value.	3	Would likely require a CLOMR/LOMR (~\$70k and 12+ months). EAW needed for Remeander. May require accommodations for pugnose shiner.	1	-	1	Smaller stormwater wetland footprint	2	Recreational amenities have a large impact as they address a major gap in amenities along the regional trail and neighborhood park. Circulation will be improved by the trail adjustments and should occur simultaneously with the proposed stormwater improvements. Trails would be moved out of the floodplain where able. Recreational amenities could happen separately but should occur simultaneously with the bridge work. Interpretive elements should happen simultaneously with stormwater improvements.	3	17
<i>Nicollet</i>	Option 2 - Larger Stormwater and Flood Storage Wetlands	\$ 2,370,000	1	30	3	Stormwater Wetland Maintenance, ADA dock, restroom	2	4,000	Floodplain reconnection and floodplain storage added by removing former roadway prism	3	Floodplain reconnection adds to riparian habitat area and value.	2	Would likely require a CLOMR/LOMR (~\$70k and 12+ months).	2	-	1	Larger stormwater wetland footprint	1	Recreational amenities have a large impact as they address a major gap in amenities along the regional trail and neighborhood park. Circulation will be improved by the trail adjustments and should occur simultaneously with the proposed stormwater improvements. Trails would be moved out of the floodplain where able. Recreational amenities could happen separately but should occur simultaneously with the bridge work. Interpretive elements should happen simultaneously with stormwater improvements.	3	18

Appendix D

Water Quality P8 Modeling

Water Quality (P8) Modeling

Variable	Overall	Cedar E	Cedar W	Cedar Combined	Newton Cell 1	Newton Cell 2	Newton Cell 3	Penn UG Filter	Penn Pond - South	Penn Pond - North	Penn Pond - South Opt 2	Penn North Sand Filter Opt2	Nicollet North Option 1 - Small Pond	Nicollet North Option 2 - Large Pond
P10%	7823.5	682.3	922.2	2770.3	73	49.6	44.6	162.3	187.9	44.1	187.9	66.1	757.3	1873.4
P30%	10937.8	757.2	1510.2	3261.7	144	76.6	57.5	349.3	248.6	43.4	248.6	94.8	1435.2	2687.1
P50%	13582.3	797.1	2136.3	3568.7	245.8	89.9	50.8	351.4	297.9	34	297.9	52.6	2250.8	3300.5
P80%	34205	1676.5	5826.6	7782.1	843.3	104.2	28.1	707.6	694	15.1	694	16.1	7439.6	6898.3
TSS (lbs./yr.)	66548.6	3913	10395.2	17382.8	1306.1	320.3	181	1570.6	1428.5	136.7	1428.5	229.5	11883	14759.4
TP (lbs./yr.)	108.5	8.6	17.6	37	1.8	0.8	0.6	3.3	2.8	0.5	2.8	0.8	17.1	30.3
TKN (lbs./yr.)	485.2	33.5	68.5	144	6.9	3.2	2.3	12.9	11	1.8	11	3.2	66.7	117.9
CU (lbs./yr.)	22.6	1.3	3.5	5.9	0.4	0.1	0.1	0.5	0.5	0	0.5	0.1	4	5
PB (lbs./yr.)	12	0.7	1.9	3.1	0.2	0.1	0	0.3	0.3	0	0.3	0	2.1	2.7
ZN (lbs./yr.)	51.7	3.6	7.3	15.4	0.7	0.3	0.2	1.4	1.2	0.2	1.2	0.3	7.1	12.6
HC (lbs./yr.)	1497.3	88	233.9	391.1	29.4	7.2	4.1	35.3	32.1	3.1	32.1	5.2	267.4	332.1



MINNEAPOLIS THRIVING WATERS PARTNERSHIP
LONG-RANGE PLANNING FRAMEWORK



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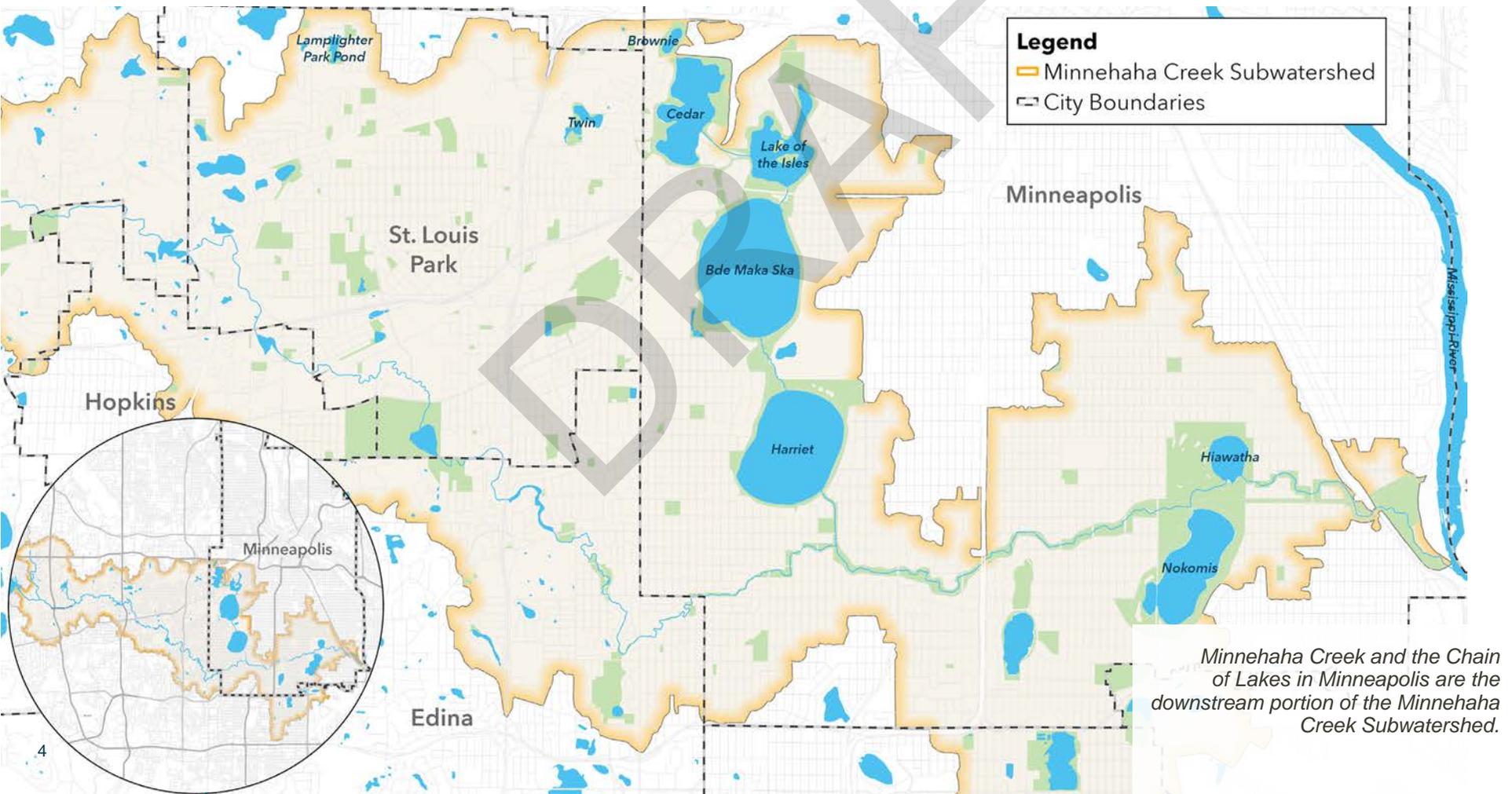
INTRODUCTION



PURPOSE

The Minneapolis Thriving Waters Partnership (Partnership) is a collaborative effort between the City of Minneapolis (City), Minneapolis Park and Recreation Board (MPRB), and Minnehaha Creek Watershed District (MCWD) to improve water quality, mitigate flooding, and enhance natural resources around Minnehaha Creek and the Minneapolis Chain of Lakes.

Recognizing that each organization holds a unique mission, responsibility, and set of tools to implement water and natural resource improvements, the Partnership provides a coordinated framework for aligning efforts where goals, geography, and opportunities overlap. Through a 2024 Cooperative Agreement (Agreement), the partners have committed to integrated land and water resource planning in the City of Minneapolis to improve the city's natural and built environments within the Minnehaha Creek Subwatershed.



The Partnership is supported by an established governance structure—including a Technical Team, Coordinating Team, and Policy Steering Committee—to ensure coordination across policy, planning, and implementation levels. This structure is intended to provide role clarity, support shared decision-making, and maintain continuity as priorities, funding opportunities, and implementation conditions evolve.

The Agreement also established initial project priorities within the Minnehaha Parkway Corridor and prescribed a framework for long-range capital project planning to identify, evaluate, and align future Partnership investment opportunities.

To organize and advance shared priorities, the Partnership utilizes a management unit approach to long-range planning. This approach splits the large and complex Minnehaha Creek Subwatershed into smaller units based on receiving waterbodies. Working at the management unit scale enables a targeted and strategic response to water resource challenges in Minneapolis, by providing a common framework to integrate science, align capital planning, and coordinate investment across agencies.



Management Unit Plans serve as Partnership Investment Plans for each receiving waterbody. These plans document water resource conditions, identify key issues and contributing drivers, and outline a set of prioritized implementation strategies and projects.

Management Unit Plans are intended to inform and support each partner's respective capital improvement plans, budgets, grant applications, and policy decisions, to maintain coordinated action and shared investment over time.

PARTNERSHIP BACKGROUND

1990s

In 1990, the cities of Minneapolis and St. Louis Park, MPRB, MCWD, Hennepin County, and the Minnesota Pollution Control Agency (MPCA) formed the Minneapolis Chain of Lakes Clean Water Partnership (CWP) in response to water quality issues in the Minneapolis Chain of Lakes.

Elevated phosphorus and sediment loads drove algal blooms and impaired recreational use. To address these issues and meaningfully improve one of the city's most significant natural resources, the CWP developed long-term water resource management strategies to reduce pollution from excess nutrients in the Chain of Lakes.



(above) Remarks during Clean Water Partnership groundbreaking in the 1990s. (left) Residents of the Kenwood Neighborhood supporting the CWP efforts to improve Cedar Lake. (below) CWP partners at the groundbreaking of the first CWP project in the 1990s.



Between 1994 and 1997, the partners implemented a coordinated suite of projects totaling approximately \$12.4 million, including regional stormwater ponds and wetlands, internal sediment treatments (Alum), grit chambers, shoreline restorations, and an extensive public education campaign to address nutrient pollution.



Bde Maka Ska Stormwater Pond



Cedar Meadows Stormwater Pond and Wetland System



Public Education Sign

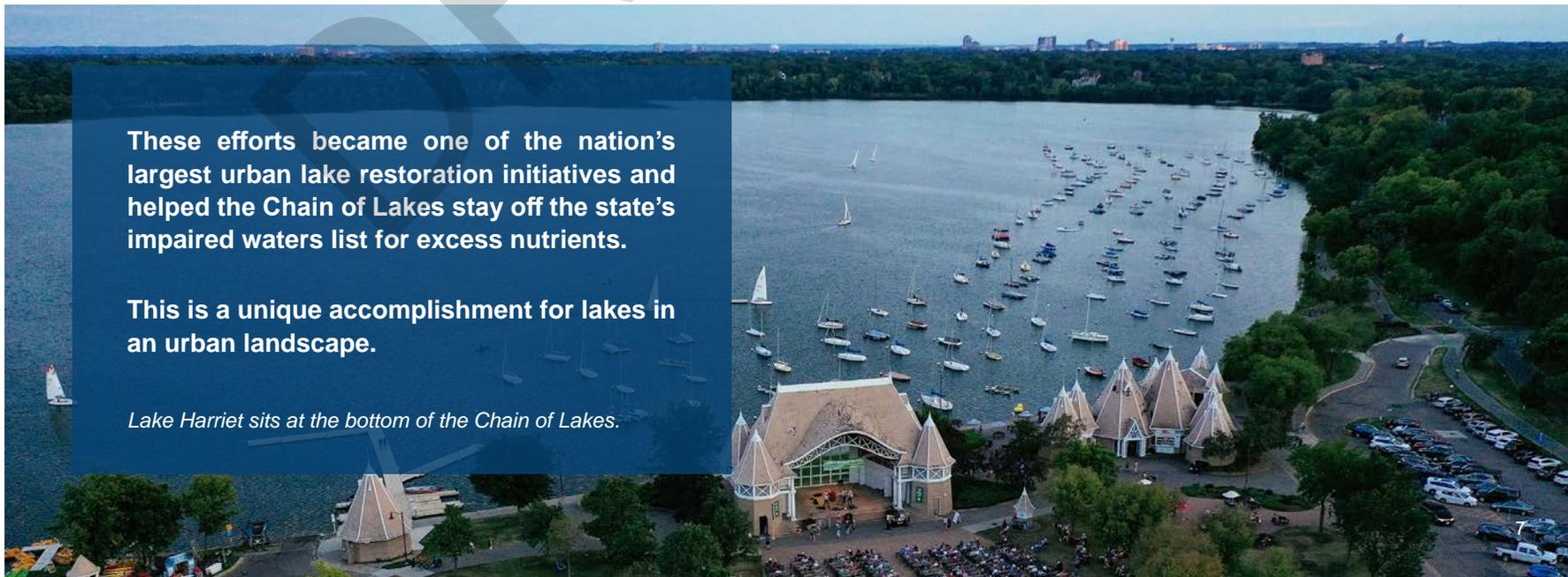
Collectively, these investments reduced phosphorus loading to the Chain of Lakes by approximately 600 pounds per year, resulting in measurable, lasting water quality improvements in some of the state's most visited lakes.

\$12.4 MILLION PUBLIC INVESTMENT
600 LBS NUTRIENT REMOVAL

These efforts became one of the nation's largest urban lake restoration initiatives and helped the Chain of Lakes stay off the state's impaired waters list for excess nutrients.

This is a unique accomplishment for lakes in an urban landscape.

Lake Harriet sits at the bottom of the Chain of Lakes.



2010s

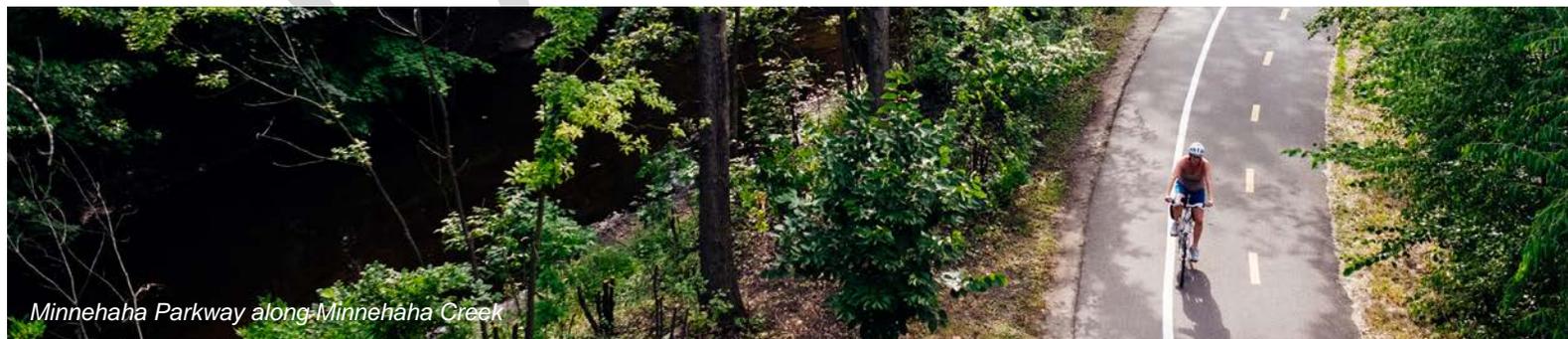
Years later, local flooding and drainage issues caused by the wettest seven years on record (2013-2019) in the Twin Cities, prompted the CWP partners to re-engage and investigate contemporary water concerns in Minneapolis. Property owners southwest of Lake Nokomis had reported wet basements, wet backyards, sinkholes, and impacts to private sewer laterals.

A multi-agency team was assembled to understand the contributing factors and identify mitigation measures for the community, which culminated in the Lake Nokomis Groundwater and Surface Water Evaluation White Paper, published in 2022.¹



Collaboration between the City, MPRB, and MCWD was further strengthened through the adoption of a Memorandum of Understanding (MOU) in 2017, to guide shared efforts to repair flood damage along Minnehaha Creek and outline collaborative investment strategies to improve the natural and built environments within the Minnehaha Creek Subwatershed.

This commitment led to joint planning efforts during the development of the MPRB's Minnehaha Parkway Regional Trail Long-Range Vision Plan, which was approved in 2020 to guide capital improvements in the regional trail area over the next 20-30 years.²



1. City of Minneapolis, et al. *Lake Nokomis Area Groundwater and Surface Water Evaluation*, City of Minneapolis, 2022.

2. Minneapolis Park and Recreation Board (MPRB). *Minnehaha Parkway Regional Trail Plan*, MPRB, 2020. Note, the Plan's original name was the Minnehaha Parkway Regional Trail Master Plan. Since publication, MPRB has implemented a policy to eliminate the term "master" when referring to planning processes, due to its connection with the history of masters and slavery in the United States.



2024

With the previous MOU set to expire in 2023, the parties convened a Water Summit in May 2022 to discuss the future of water planning in Minneapolis. At this meeting, leaders from the City, MPRB, and MCWD expressed support for building a formal and lasting partnership that would align planning and project investments in water quality and flood mitigation.

Following the Summit, staff and policymakers from each agency drafted the 2024 Cooperative Agreement to guide a new era of partnership focused on coordinated, systems-based planning and project implementation.³

Through the adoption of the Agreement, the Minneapolis Thriving Waters Partnership was established.



Since then, a Policy Steering Committee was instituted to provide leadership and direction, and staff initiated and completed feasibility work for three Phase I projects along the Minnehaha Creek corridor to support future project design and implementation, ultimately to improve downstream impaired Lake Hiawatha.

In parallel, the Partnership has continued to build its mid- and long-range planning framework by initiating development of Management Unit Plans.

Policymakers and partner staff at the July 2025 Policy Steering Committee meeting.

MANAGEMENT UNIT APPROACH

The Management Unit (MU) approach is a planning framework that divides a watershed into smaller geographies based on shared physical, ecological, and urban characteristics and receiving waterbodies.

By working at a finer scale, the MU approach supports integrated land and water resource planning, allowing partners to better understand local conditions and how development, infrastructure, and natural systems interact. Each management unit is characterized by three components: issues, drivers, and strategies.

The MU approach is grounded in watershed science and regulatory frameworks that emphasize load-based outcomes.

In the Minnehaha Creek Subwatershed, phosphorus is the primary limiting nutrient driving eutrophication and harmful algal blooms, and water quality goals are often expressed through Total Maximum Daily Loads (TMDLs) or other load reduction targets.

By organizing planning around receiving waterbodies and their contributing drainage areas, management units provide a practical way to understand where pollutant loads originate, evaluate how existing and proposed projects affect those loads, and prioritize investments that will achieve meaningful and measurable reductions over time.

By clearly defining issues, drivers, and strategies within this scientific and regulatory context, **the MU approach allows partners to align capital planning and coordinate investment, enabling targeted and strategic implementation of projects to improve water quality and reduce flooding.**

ISSUES

Observed resource problems such as flooding, impaired water quality, or infrastructure constraints

DRIVERS

Root causes of water quantity or quality issues, such as increased impervious surface, aging infrastructure, or altered hydrology

STRATEGIES & OPPORTUNITIES

Potential solutions to address the identified issues and drivers, such as regional stormwater treatment or internal load management



CEDAR LAKE MANAGEMENT UNIT



Subsequent to the Minnehaha Creek corridor within Minneapolis, the Cedar Lake Management Unit is the Partnership's next priority for detailed planning and implementation, due to its location and unique water quality challenges.

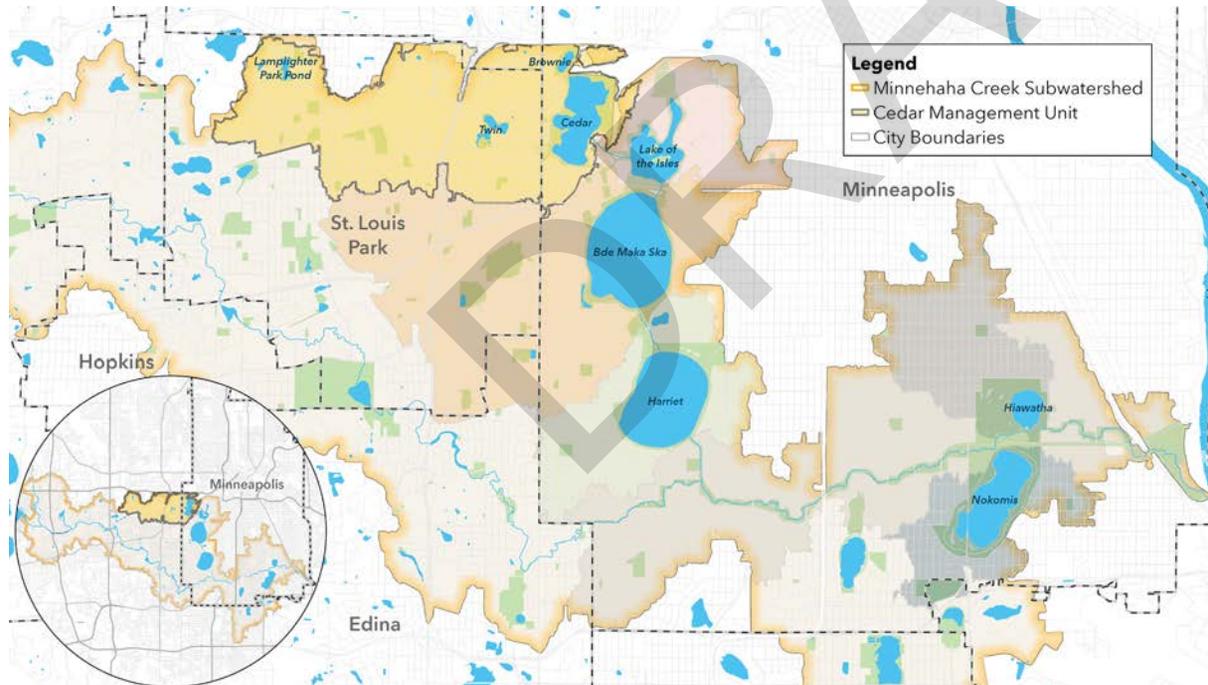


Cedar Lake is positioned at the headwaters of this urban watershed, and despite consistently meeting state water quality standards, has experienced recurring harmful algal blooms, which impact public health and impede recreation at its three swimming beaches.

MPRB has studied these algal blooms and subsequently prioritized water quality improvements for Cedar Lake, adopting a Long-Range Vision Plan in 2023 for Cedar Lake and Lake of the Isles (Cedar-Isles Plan) to inform projects on the surrounding parkland.^{4, 5}

THIS CEDAR LAKE MANAGEMENT UNIT PLAN:

- 1 Quantifies the water resource issues associated with Cedar Lake
- 2 Describes the driving factors of issues in the Lake's drainage area
- 3 Outlines a portfolio of restoration strategies to improve water quality
- 4 Specifies implementation priorities to guide Partnership investment



CEDAR MU AT-A-GLANCE

2,691
ACRES

3
WATERBODIES

96%
DEVELOPED

4. Barr Engineering Co. *Cyanobacteria Mitigation Feasibility Study*, MPRB, 2022.

5. Minneapolis Park and Recreation Board (MPRB). *Cedar Lake and Lake of the Isles Plan*, MPRB, 2023.

HYDROLOGY

Covering 2,691 acres within the northern drainage area of the Minnehaha Creek Subwatershed, the Cedar Lake MU generally drains from east to west and includes portions of Golden Valley, St. Louis Park, and Minneapolis, with approximately 79% of its area located outside of the Minneapolis city boundary.

The MU contains three main waterbodies, Twin Lakes, Brownie Lake, and Cedar Lake; a large unnamed wetland; two stormwater ponds known as Lamplighter and Twin Lakes Park Pond; and one pond-wetland complex called Cedar Meadows.

Water is pumped out of Lamplighter Pond into St. Louis Park storm sewer, ultimately draining into a 72-acre wetland complex in the middle of the Subwatershed before entering Twin Lakes Park Pond and Twin Lakes. Twin Lakes discharges east by gravity via altered stream channels and underground pipes into Cedar Lake, with low flows being diverted into Cedar Meadows for treatment. Brownie Lake flows into Cedar Lake via a human-made channel.

Water from Cedar Lake subsequently flows into Lake of the Isles, continuing downstream through the remaining Chain of Lakes before ultimately reaching Minnehaha Creek.



TWIN LAKES

Twin Lakes is a 13-acre shallow, open water wetland consisting of two basins in St. Louis Park. It receives runoff from a 1,715-acre drainage area that includes Lamplighter Pond and Twin Lakes Park Pond. Its drainage area is fully developed with a high percentage of impervious cover, driven by typical urban and suburban land uses.

Twin Lakes wetland has been listed as impaired for excess nutrients by the State of Minnesota since 2006.



BROWNIE LAKE

Brownie Lake is a 10-acre basin in Minneapolis and is most upstream lake in the Chain of Lakes. It is located within a small, 369-acre urban drainage area that contains the highly developed space around Park Place Boulevard, including the West End shopping center.

Brownie Lake was previously listed as impaired for nutrients but was delisted in 2010 after the construction of a stormwater treatment project at West End significantly decreased watershed nutrient loading. However, it remains impaired for excess chloride, a common pollutant in urban environments associated with road salt use.

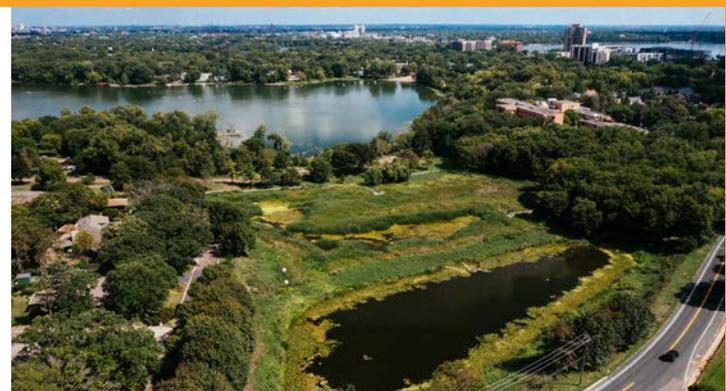
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CEDAR LAKE

Cedar Lake is a 164-acre lake in Minneapolis that receives water from Brownie Lake and Twin Lakes. Cedar Lake's 283-acre direct drainage area consists of mostly single-family homes. Cedar Meadows, a wet detention pond and wetland system, treats water from Twin Lakes before it enters Cedar Lake.

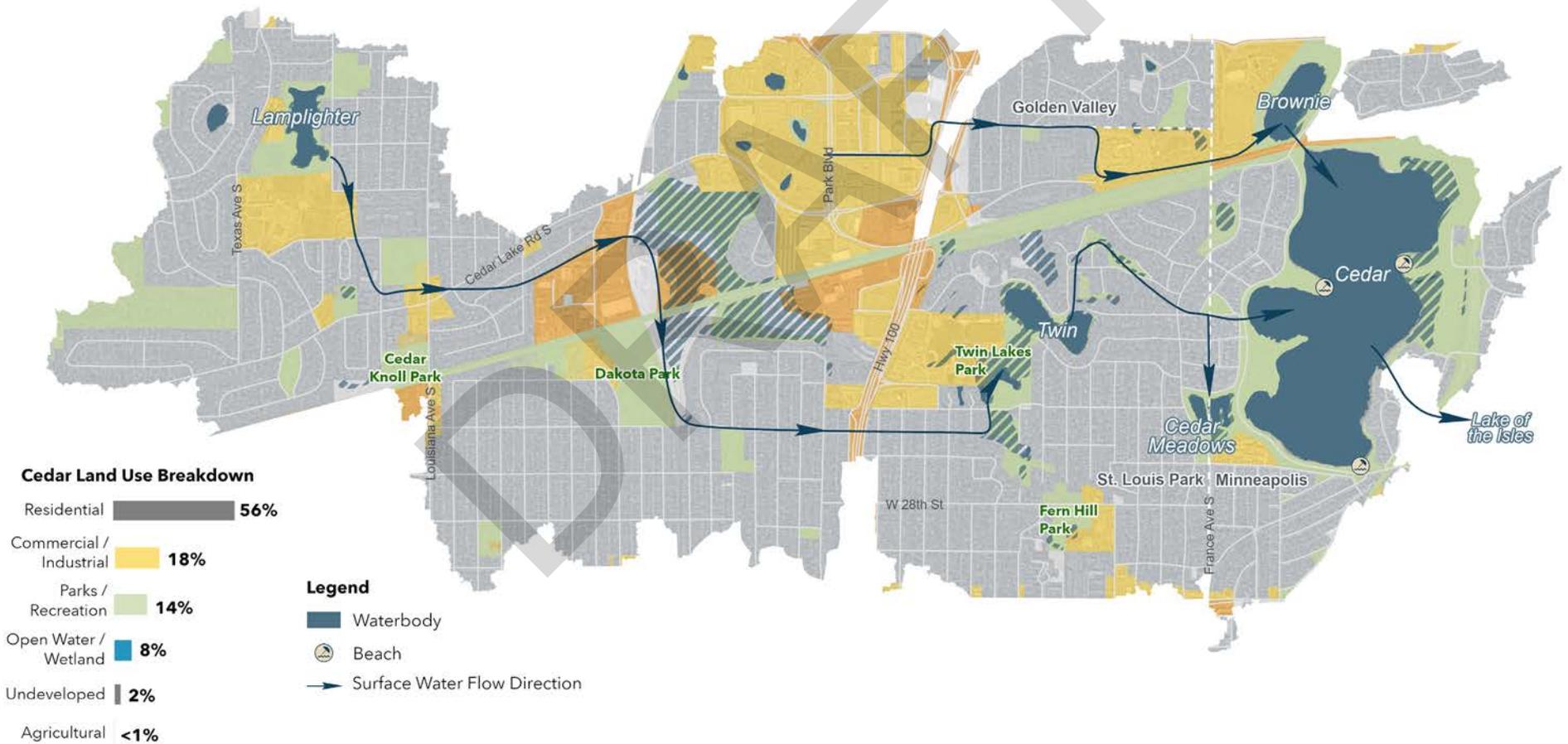
While the Lake is not impaired for excess nutrients, it has been impaired for aquatic consumption since 1998, due to mercury in fish tissue.



LAND USE

The Cedar Lake MU's land use consists of primarily residential, commercial/industrial, and greenspaces classified as parks or recreational. The MU contains a series of community recreation amenities, such as:

- Cedar Lake Regional Trail
- Parks including Twin Lakes Park, Cedar Knoll, and Fern Hill Park
- Three public beaches on Cedar Lake



PAST CEDAR LAKE MANAGEMENT UNIT INVESTMENTS

LAMPLIGHTER POND (2004)

A 5.9-acre expansion and installation of supplemental lift station increased storage capacity and provided increased flood relief

Dredging in 2024 removed 5,530 cubic yards of sediment, increasing stormwater storage capacity and improving water quality

WEST END (2010)

Redevelopment effort that incorporated subsurface infrastructure to reduce annual phosphorus by 47 lbs and runoff volume by 63 acre-feet, delisting Brownie Lake

TWIN LAKES DREDGING (1996)

Dredging removed 81,700 cubic yards of accumulated sediment to increase nutrient residence time and improve function

NORTHSIDE PARK (2024)

Secured \$500k from Lifetime Fitness to install a storm filter system resulting in 7.2 lbs of annual phosphorus reduction

TWIN LAKES PARK POND (1996)

Construction of 4.2-acre basin treats stormwater runoff before entering Twin Lakes

Dredging in 2026 removed approximately 3,870 cubic yards of accumulated sediment resulting in increased stormwater storage capacity and improved water quality

CEDAR MEADOWS POND (1996)

Construction of 11.6-acre wet detention basin/wetland system that treats 90% of stormwater runoff entering Cedar Lake

ALUM TREATMENT (1997)

Alum application within Cedar Lake reduced phosphorus concentrations by 50%



ISSUES

EXCESS NUTRIENTS

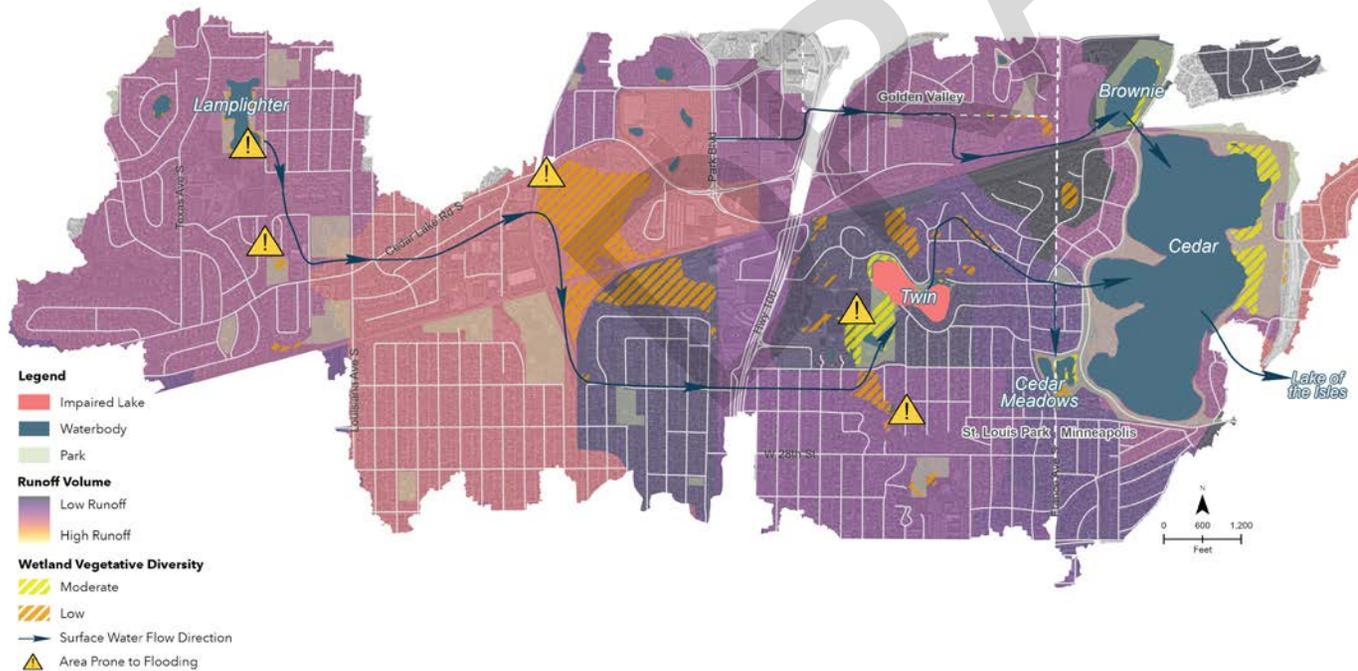
Twin Lakes has been listed as impaired for excess nutrients by the State of Minnesota since 2006, consistently measuring above the state standard for total phosphorus concentrations for wetlands (0.6 mg/L). These high phosphorus concentrations drive algal blooms, poor water clarity, and diminished aquatic vegetation growth.

While Cedar Lake is not impaired for excess nutrients, recent monitoring observations indicate sediment-level phosphorus concentrations are trending upward. Since 2017, the frequency and intensity of algal blooms, including blue-green (cyanobacteria) algal blooms, appears to have increased in Cedar Lake, with blooms occurring earlier in the growing season.⁶ Cyanobacterial blooms observed in Cedar Lake in 2020 and 2021 led MPRB to post warnings of unsafe water quality, impacting recreation and prompting concerns from residents.

DEGRADED WETLANDS

The majority of the MU's wetlands have low or moderate vegetative diversity, based on MCWD's functional assessment of wetlands, and they may be contributing sources of phosphorus into the watershed, due to historic impacts.

Twin Lakes and Cedar Lake are managed for non-native aquatic vegetation species, including Eurasian milfoil, reed canary, and giant reed.



LOCALIZED FLOODING

The historic filling of the region's wetlands has exacerbated the impacts of climatic changes in precipitation patterns on public lands, infrastructure, natural systems, and communities.

Known flood-prone areas in the Cedar Lake MU include Lamplighter Pond, Twin Lakes, Peace Presbyterian Church gardens, 2710 Monterey Avenue, and Northeast Boneyard Ditch.

DRIVERS

A nutrient budget and model assessment completed in Summer 2024 estimated stormwater runoff delivers approximately 764 pounds of phosphorus to Cedar Lake annually, while internal mobilization of nutrients (i.e. internal loading) in the Lake is estimated to contribute another 697 pounds of phosphorus annually. Together, these sources indicate approximately half of the Lake's phosphorus load comes from watershed sources, such as altered upstream waterbodies and stormwater runoff, and half from internal recycling of sediments.⁷

ALTERED WATERBODIES

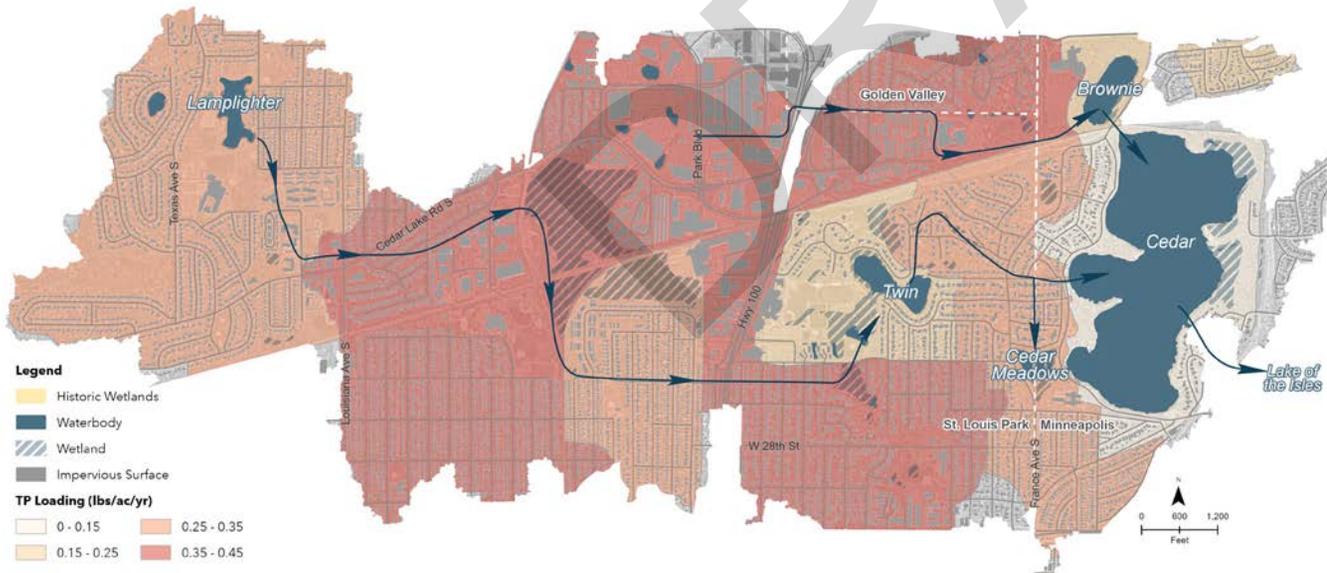
Urbanization throughout the Subwatershed has disrupted and altered the natural hydrology of most of the wetlands within the Cedar Lake MU. When wetlands are ditched and drained to facilitate watershed drainage and land use change, they often convert from a sink for nutrients to sources, as wetland soils break down and polluted stormwater moves through the system.

These processes within altered wetlands can release stored nutrients, causing nutrient impairments in downstream surface waters.

STORMWATER RUNOFF

Elevated phosphorus concentrations and runoff volumes in the Cedar Lake MU are caused by its high amount of impervious land use.

Increased volume and rate of stormwater runoff carries pollutants that degrade water quality in downstream lakes, streams, and wetlands.



INTERNAL LOADING

Internal phosphorus loading in Cedar Lake is driven by historic watershed nutrient loads that cycle through the lake system.

Internal loading can lead to summer algal blooms, poor water clarity, and in severe cases, summer fish kills and harmful algal blooms.

PROPOSED STRATEGIES AND PROJECT OPPORTUNITIES

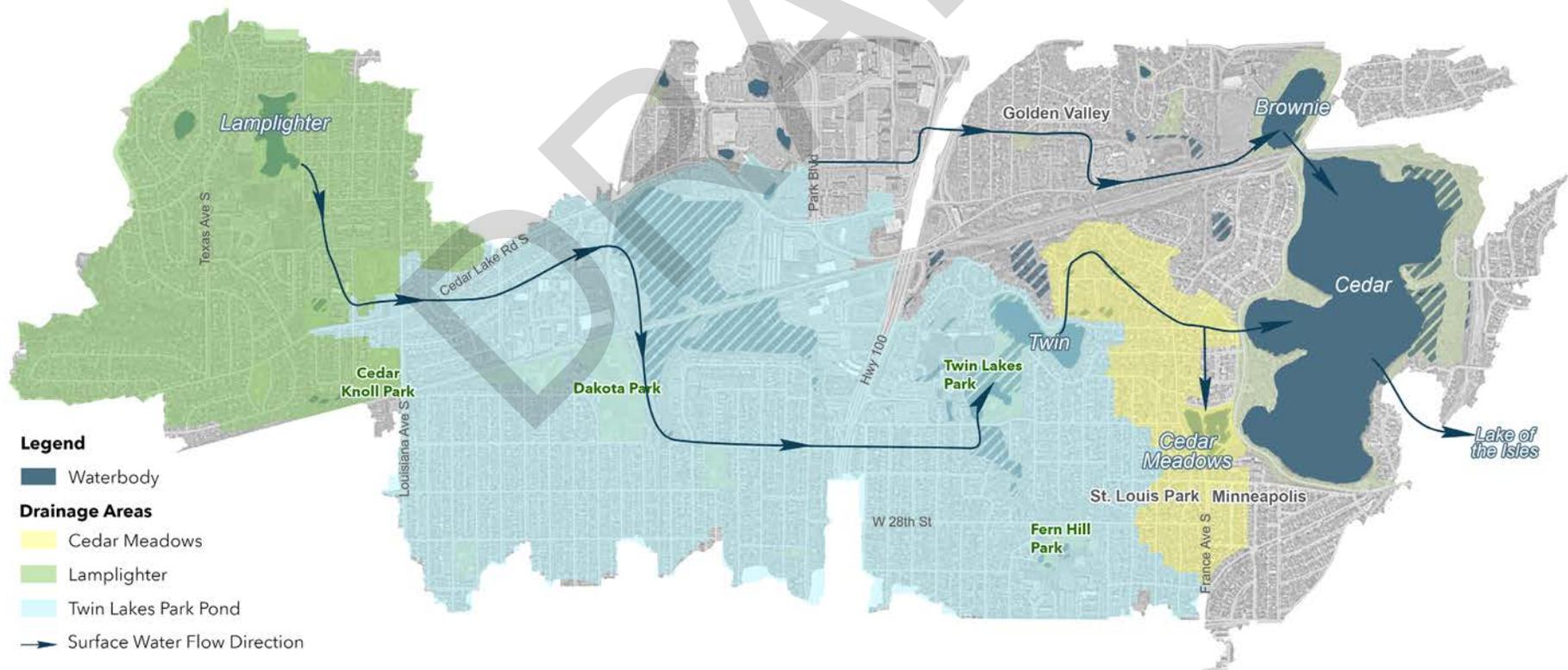
Three strategies have been identified to improve water quality in Cedar Lake, thereby reducing the frequency of harmful algal blooms:

- Optimize Existing Regional Treatment
- Implement Upstream Stormwater Projects
- Address Cedar Lake Internal Load

These strategies are focused on projects and approaches that will make significant, measurable impact toward addressing the issues identified in the Cedar Lake MU.

OPTIMIZE EXISTING REGIONAL TREATMENT

Several publicly-owned regional stormwater management systems exist across this management unit, serving to collect and treat large areas of urban runoff. Collectively, Lamplighter Pond, Twin Lakes Park Pond, and Cedar Meadows treat the majority of watershed runoff entering Cedar Lake, making their effectiveness critical to any long-term water quality strategy.



Due to limited available land for new regional stormwater treatment facilities, improving the performance of existing facilities is likely the most effective strategy to decrease external phosphorus loading to Cedar Lake. While these systems already play a central role in capturing runoff and pollutants, they could be monitored to measure performance, and then retrofitted to improve their treatment effectiveness. Targeted monitoring, maintenance, and retrofit projects can extend the life of these critical assets, improve water quality outcomes, and ensure the effectiveness of future in-lake management strategies.⁸

LAMPLIGHTER POND

Lamplighter Pond treats stormwater runoff from 520 acres in St. Louis Park before it is diverted into Twin Lakes Park Pond. In 2024, the City of St. Louis Park dredged Lamplighter Pond to remove accumulated sediment from stormwater runoff and restore its treatment capacity.

Continued coordination with St. Louis Park and targeted monitoring will help identify opportunities to further enhance pollutant removal over time, ensuring the pond continues to function effectively and contribute to broader watershed load reduction goals.

TWIN LAKES PARK POND

More than 60% of the Cedar Lake drainage area passes through Twin Lakes Park Pond, making it and Twin Lakes key components of a comprehensive restoration strategy to reduce downstream phosphorus loading.

Twin Lakes Park Pond was dredged in early 2026 to maintain its treatment capacity and protect prior water quality investments. Following dredging, effectiveness monitoring led by St. Louis Park will be used to evaluate system performance and identify whether targeted improvements, retrofits, or reinvestments are warranted.

CEDAR MEADOWS

The Cedar Meadows stormwater facility is a reinvestment priority because it receives approximately 90% of the total watershed load to Cedar Lake and represents one of the most effective opportunities to reduce external phosphorus loading.⁹

Performance monitoring indicates that targeted reinvestment of the nearly 30-year-old facility could significantly improve its ability to capture and retain pollutants before they reach the Lake. Improvements to diversion infrastructure, internal hydraulics, and elevation control within the system could enhance retention of both particulate and dissolved phosphorus, measurably improving overall performance and reducing nutrient loading to Cedar Lake.

Cedar Meadows receives 90% of the watershed load to Cedar Lake, and targeted reinvestment could significantly improve its effectiveness.

MPRB's 2023 Cedar-Isles Plan allocates \$3.7 million to a potential retrofit of the Cedar Meadows facility and envisions a revitalization of surrounding trails, boardwalks, vegetation, and site aesthetics. These public realm enhancements could align with the Partnership's ecological goals, offering the opportunity to create a highly visible, multi-benefit project.

8. Minnesota Pollution Control Agency (MPCA). *Minnesota State and Regional Government Review of Internal Phosphorus Load Control*, MPCA, 2020.

9. Minnehaha Creek Watershed District (MCWD). *Cedar Meadows Monitoring Plan*, MCWD, 2024.

IMPLEMENT UPSTREAM STORMWATER PROJECTS

Reducing external phosphorus loading to Cedar Lake will require sustained investment in upstream watershed projects that manage stormwater runoff before it reaches the Lake.

Because stormwater treatment requires physical space for storage, infiltration, or filtration, land availability is a defining constraint in the Cedar Lake Management Unit. Approximately 80% of land in the management unit is privately-owned, and more than half of that private land is residential.

Opportunities for large, stand-alone treatment projects on public land are therefore limited, making redevelopment and public

infrastructure investments the most effective pathways for achieving meaningful watershed load reductions.

As private sites redevelop or public infrastructure is reconstructed, stormwater regulations establish baseline treatment expectations. Through coordinated planning and investment, the Partnership can leverage these opportunities to achieve outcomes that exceed minimum requirements, delivering greater water quality benefits while supporting broader community goals.

MCWD's Land and Water Partnership program provides a key mechanism for working with cities and private developers to align public investment, regulatory authority, and project design to maximize natural resource benefits.



REDEVELOPMENT ZONES

Redevelopment of large or highly impervious sites presents some of the most impactful opportunities for watershed-scale load reduction. While regulatory requirements apply as sites redevelop, achieving regional stormwater benefits through redevelopment often requires additional public investment, early coordination, and negotiation with private developers to integrate larger or shared treatment systems.

For example, redevelopment is underway for a 12-acre block in St. Louis Park's West End, where an underground infiltration basin could treat up to 100 acres. If implemented, this system

could reduce phosphorus loading to Brownie Lake by an estimated 30–70 pounds annually.

Underground infiltration at West End could treat up to 100 acres of stormwater.

Realizing this regional benefit depends on coordinated public-sector participation to support design, funding, and long-term operation beyond regulatory requirements. Construction could begin as early as Summer 2026.

PUBLIC INFRASTRUCTURE

Public infrastructure projects provide opportunities to improve stormwater management by integrating water quality treatment into planned capital investments such as road reconstruction, utility upgrades, outfall improvements, and park and streetscape projects.

Because these projects occur on publicly controlled land, they offer reliable pathways for implementing stormwater improvements and incorporating green infrastructure and landscape-based treatment features where space allows.

Both Minneapolis and St. Louis Park have committed to incorporating stormwater best management practices into public works projects, and the City of Minneapolis has adopted policies to exceed minimum stormwater requirements during road reconstruction where feasible. While there are no road rehabilitation projects currently programmed within the Cedar Lake MU in either city's 10-

year CIP, future investments will continue to be evaluated for integrated water improvement opportunities.

Public infrastructure investments may include traditional gray infrastructure, such as storm sewer and outfall improvements, as well as landscape-based solutions like raingardens, infiltration areas, and enhanced greenspace within the public right-of-way or park settings.

For example, raingarden installations identified in MPRB's Cedar-Isles Master Plan may be advanced in coordination with nearby infrastructure projects or redevelopment.

Similarly, St. Louis Park is advancing an end-of-pipe project to replace the Twin Lakes outlet control structure to improve the downstream storm sewer and restore the channel that runs through the Forest Lake neighborhood, with construction anticipated in Spring 2026.

ADDRESS CEDAR LAKE INTERNAL LOAD

INTERNAL SEDIMENT PHOSPHORUS CONTROL

The estimated internal phosphorus load in Cedar Lake represents approximately 50% of the total phosphorus budget.¹⁰

Given this, an internal sediment phosphorus control treatment, coupled with continued watershed phosphorus reduction strategies, can be an effective way to meaningfully reduce phosphorus load in Cedar Lake, as well as improve recreational and aesthetic value.

Cedar Lake's internal phosphorus load represents about half of its total phosphorus budget, so in-lake treatment should be coupled with watershed load reduction strategies.

Due to public health concerns, MPRB has studied harmful algal blooms in Cedar Lake and identified alum dosing as a key strategy for addressing internal sediment phosphorus and reducing algal blooms.

Alum dosing binds phosphorus in lake sediments and the water column, preventing it from being released back into the lake where it can fuel algal growth. By targeting phosphorus that has accumulated over decades, alum treatment can provide a relatively rapid improvement in water clarity and reduce the frequency and severity of algal blooms. External funding, such as Clean Water Grant Funds, could support an alum treatment.

Addressing upstream loads prior to, or in concert with, internal load management is critical, as alum treatment alone is unlikely to deliver lasting benefits if watershed phosphorus inputs remain high.

BIOLOGICAL DRIVERS

While common carp are present in Twin Lakes and Cedar Lake, carp do not appear to be driving water quality issues in Cedar Lake. The seasonal presence of algal blooms in the summer suggests water quality issues are primarily driven by watershed loading and internal nutrient cycling.^{11, 12}

Accordingly, carp management should not be prioritized as a near-term strategy.

10. Stantec. *Brownie Lake – Cedar Lake Management Unit Data and Model Assessment*, MCWD, 2024.

11. Barr Engineering Co. *Cyanobacteria Mitigation Feasibility Study*, MPRB, 2022.

12. Walsh, Jake, et al. *Minnesota Carp Management Effectiveness Assessment*, Minnesota Aquatic Invasive Species Research Center, 2025.

IMPLEMENTATION PLAN SUMMARY

The purpose of this Management Unit assessment is to provide a subwatershed understanding of the issues and drivers throughout the system and to identify the most cost-effective portfolio of projects. The implementation strategies have been categorized into the following efforts:

- **Optimize existing regional treatment**
- **Implement upstream stormwater projects**
- **Address Cedar Lake internal load**

Opportunities for upstream watershed projects are limited, so the partners must maximize existing infrastructure, while working to proactively identify new opportunities that may arise from

capital improvement plans and private redevelopment. Early coordination with Minneapolis Community Planning and Economic Development (CPED) and St. Louis Park Planning will facilitate identification of project opportunities.

Outreach and engagement with private landowners may also reveal smaller-scale projects, such as local stormwater management, that align with watershed management goals.

Together with internal load management, this mix of public investment, maintenance of existing facilities, integrated stormwater management, and small-scale landscape opportunities will support long-term reductions to Cedar Lake's nutrient load.

Project Type 	Lead Partner(s)	Timing	Estimated Cost	Funding Source(s)	Load Reduction (lbs/year)
Optimize Existing Regional Treatment					
Cedar Meadows Retrofit	MCWD	Target 2027/ Short-term	\$3.7M	Clean Water Fund, local partners	TBD
Twin Lakes Pond Dredging	MCWD	Complete	\$254,000	MCWD	TBD
Lamplighter Pond Retrofit	City of St. Louis Park	Mid-term	Confirm with SLP	St. Louis Park	TBD
Implement Upstream Stormwater Projects					
Redevelopment opportunities, public infrastructure investment, and community landscape opportunities	Cities of Minneapolis and St. Louis Park	Ongoing/ Opportunistic	Project Specific	Clean Water Fund, agency dollars	TBD
Address Cedar Lake Internal Load					
Internal Sediment Phosphorus Control	MPRB	Target 2027/ Short-term	\$533,130	Clean Water Fund, agency dollars, partner match	TBD

ROLES

Project implementation in the Cedar Lake MU will be driven by the Minneapolis Thriving Waters Partnership, which includes the City of Minneapolis, MPRB, and MCWD. Since much of the Cedar Lake MU is located in St. Louis Park, the City of St. Louis Park will also be a key partner for planning and project implementation.

Though work will be advanced in partnership, each organization has a unique role to play, as characterized below. Specific roles for the design, construction, maintenance, and funding of each project will be determined on a case-by-case basis and memorialized through cooperative agreements.

FUNDING

Funding for watershed-based projects will rely on a combination of state grant funds and internal agency sources, including capital improvement funds from the City of Minneapolis, the City of St. Louis Park, MPRB, and MCWD.

While each agency will advance its own projects through local investments and redevelopment-driven opportunities, joint investment and supplemental grant funding may be pursued to strengthen or accelerate implementation. For instance, state-based project funding, stormwater utility funds, and parkland dedication dollars have been identified by the partners as funding opportunities to pursue.

Agency	Roles and Responsibilities
Cities of Minneapolis & St. Louis Park	<p>As the regulated parties with assigned load reductions through the state TMDL framework, cities have the primary responsibility to implement projects and best practices on the landscape.</p> <p>Minneapolis and St. Louis Park can advance stormwater management projects within the right-of-way, conduct land use scans and track redevelopment opportunity zones, coordinate with CPED/St. Louis Park Planning to integrate stormwater treatment into redevelopment beyond regulated requirements, and participate in project funding and partnership strategy.</p>
Minneapolis Park & Recreation Board	<p>MPRB can use its 2023 Cedar-Isles Plan as a guide to prioritize and fund projects within the Cedar Lake MU. MPRB can lead project design, bidding, and implementation of in-lake treatment and projects on parkland, including securing internal approvals, ensuring inclusion of projects in its CIP, and identifying appropriate and comprehensive funding sources.</p>
Minnehaha Creek Watershed District	<p>MCWD can provide technical and financial support to cities for implementation of projects in the MU through its Land and Water Partnership program. Project opportunities will be integrated into MCWD's Watershed Management Plan and Capital Improvement Plan (CIP) to assist in funding and to support external funding opportunities and requirements.</p>

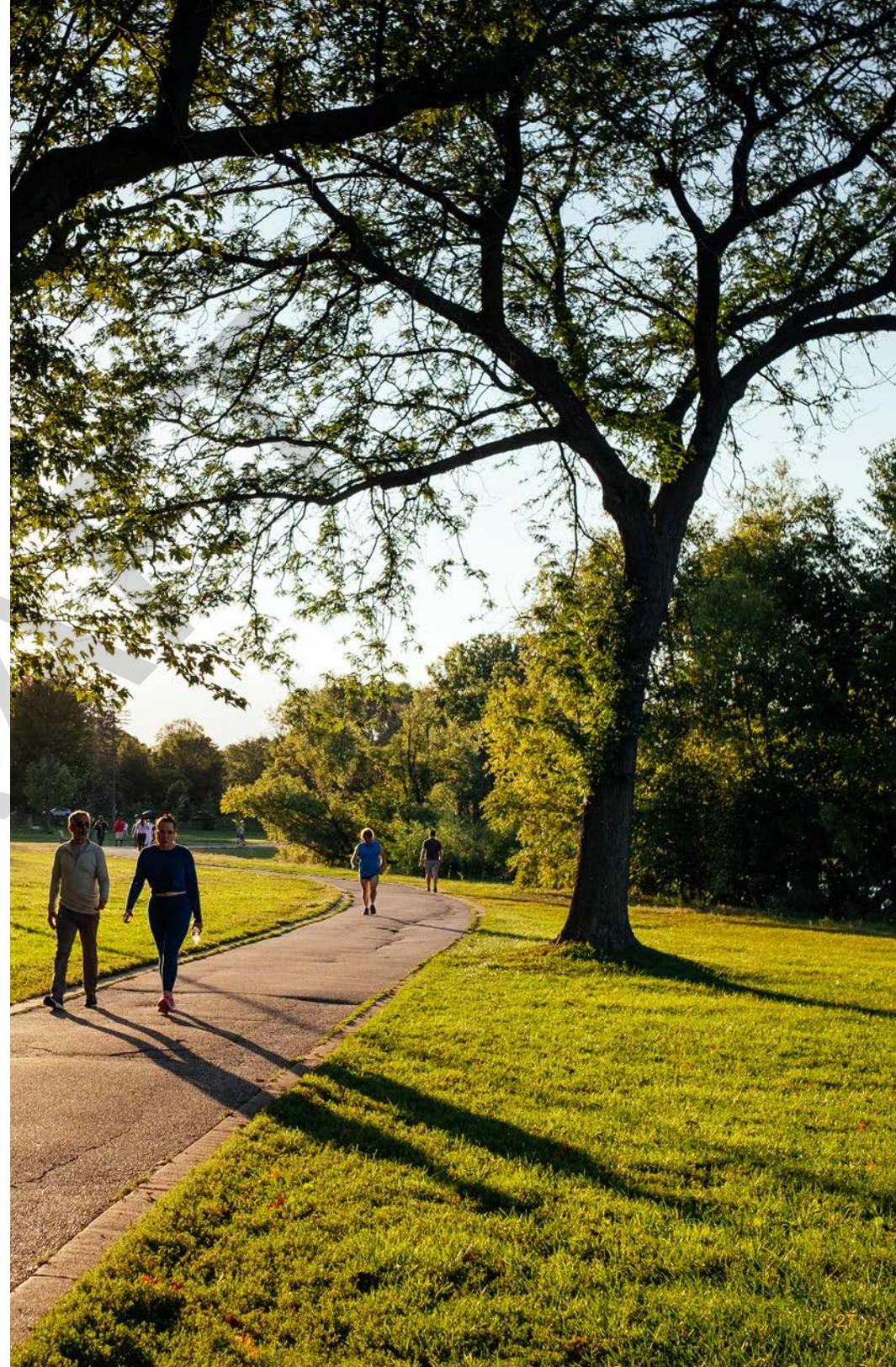
ONGOING PARTNERSHIP COORDINATION

This Plan reflects a phased but flexible approach. Some projects will advance when redevelopment or funding creates opportunity, while others will be timed to maximize eligibility for competitive grant funding. Regular coordination among partners will ensure that priorities remain aligned and projects are advanced strategically to achieve long-term improvements to Cedar Lake.

The Partnership's annual Steering Committee meetings, which convene policymakers and staff, will serve as key checkpoints to drive project opportunities forward, secure alignment on funding strategies, and ensure leadership remains up-to-date.

In addition to Steering Committee meetings, partners will continue to coordinate at the staff and technical levels throughout the year to advance project planning, prepare grant applications, and track implementation milestones. Sharing data, updating project timelines, and coordinating outreach to board managers, council members, and commissioners will help maintain momentum and transparency.

The City of St. Louis Park and the partners will continue to engage at a community development and water resources level. Annual meetings among MPRB and the cities of Minneapolis and St. Louis Park should be established to ensure coordination on mutually beneficial infrastructure, such as Twin Lake and Cedar Meadows. A Coordination Plan between MCWD and St. Louis Park commits staff to coordinating on any planned development and municipal capital investments within the Cedar Lake MU and to identify opportunities to meet these goals.





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Minnehaha Creek Watershed District (MCWD). *Cedar Meadows Monitoring Plan*, MCWD, 2024.

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