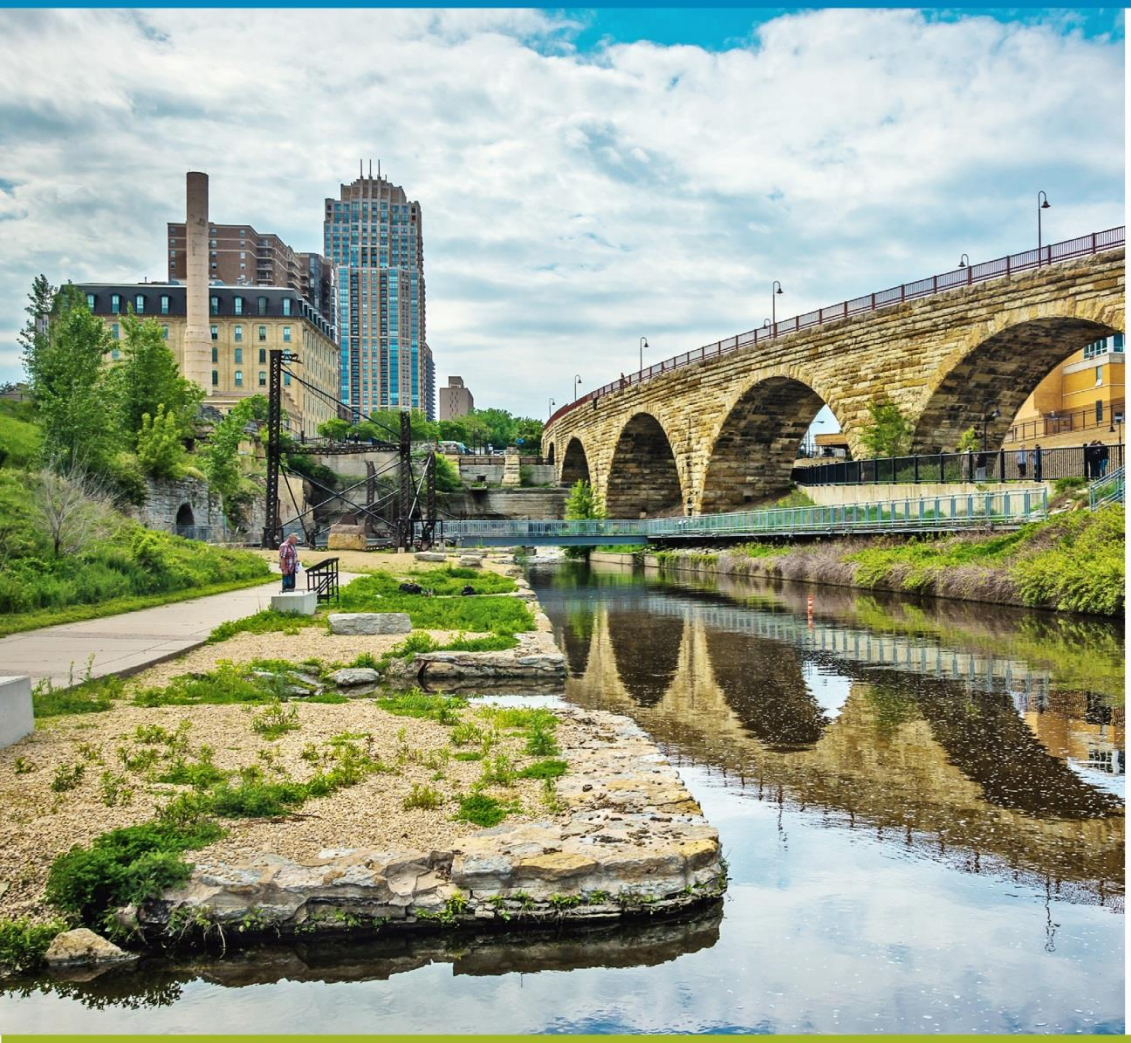
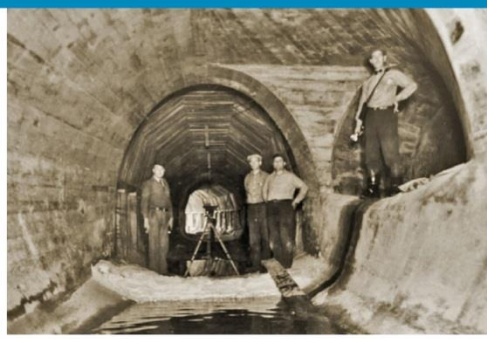
City of Minneapolis
Stormwater and Sanitary Sewer Guide





Guidelines and regulations

Developed by Minneapolis Public Works
Surface Water and Sewers Division

October 2017
Revision February 2025

Minneapolis
City of Lakes

City of Minneapolis
Stormwater and Sanitary Sewer Guide

Guidelines and Regulations

Prepared by
City of Minneapolis

October 2017

Revision #1: October 2021
Revision #2: February 2025

Minneapolis
City of Lakes

Contents

List of Tables

List of Figures

List of Worksheets

List of Appendices

Glossary of Terms

- **Applicant** is the individual or entity proposing a development, project, undertaking or land-disturbing activity, including phased or connected actions.
- **Connected actions** are two or more projects, regardless of ownership, determined by the City engineer to be related in any of the following ways: (1) one project would directly induce the other, (2) one project is a prerequisite for the other, or (3) neither project is justified by itself (Minneapolis City Ordinance [MCO], Chapter 54).
- **Development** is any human-induced change to improved or unimproved real estate (public or private). This includes (but is not limited to) construction, installation, or expansion of a building or other structure; land division; street construction; drilling; and site alteration that involves dredging, grading, excavating, filling, clearing, or paving of parking/storage facilities. Development encompasses both new development and redevelopment.
- **Discharge** means any disposal, injection, dumping, spilling, pumping, emitting, emptying, leaching, leaking, or placing of any material so that it enters or is likely to enter a water body or a public sewer or drainage system.
- **Environmental Site Assessment (ESA), Phase I** is an assessment of sites previously used for industrial and commercial purposes to identify potential contamination (e.g., pollutants, contaminants, petroleum and petroleum products, controlled substances, and constituents). A Phase I ESA involves a review of records, a site inspection, and interviews with owners, occupants, neighbors, and local government officials. Sampling and laboratory analysis may or may not be performed.
- **Environmental Site Assessment, Phase II** involves the use of sampling and laboratory analysis to evaluate an industrial or commercial site identified in a Phase I assessment as potentially contaminated. Depending on study results, the Phase II assessment outlines additional necessary site investigation and potential remedial actions.
- **Groundwater** is water contained below the surface of the earth in the saturated zone, including all waters in confined, unconfined, or perched conditions; in near-surface unconsolidated sediment or regolith; or in rock formations deeper underground.
- **Groundwater discharge** means the discharge of groundwater to a municipal or regional sanitary sewer or storm sewer system. This may include, but is not limited to, discharges of subsurface water from site remediation and investigations, well development, brownfield redevelopment, discharges from footing and foundation drains, and groundwater discharge associated with construction or property management activities.
- **Hydrograph** is a graph showing variation in the rate of flow or discharge with respect to time.
- **Impervious surface** means a surface that impedes the infiltration of rainfall or snowmelt and results in an increased volume of runoff. Examples include rooftops, sidewalks, driveways, parking lots and storage areas, and conventional concrete, asphalt, or gravel.

- **Infiltration** is the percolation of water into the ground. Infiltration is often expressed as a rate (inches per hour) determined through an infiltration test.
- **Land-disturbing activities** are any activities that result in a change or alteration in the existing ground cover (both vegetative and non-vegetative) and/or the existing topography. Land-disturbing activities include (but are not limited to) the following: development, redevelopment, demolition, construction, reconstruction, clearing, grading, filling, stockpiling, excavating, and constructing borrow pits. Routine vegetation management and mill and overlay/resurfacing activities that do not alter the soil material beneath the pavement base are not considered land disturbance. In addition, other maintenance activities such as catch basin and pipe repair/replacement, lighting, and pedestrian ramp improvements will not be considered land disturbance for the purposes of determining permanent stormwater management requirements.
- **Long-term groundwater discharge** is an ongoing or episodic groundwater discharge that does not have a specified completion date. Long-term groundwater discharge includes (but is not limited to) groundwater-remediation systems and development/construction sites after construction is complete.
- **Long-Term Groundwater Discharge Approval** is an approval from the City of Minneapolis which prescribes certain requirements or restrictions for a groundwater discharge to the municipal or regional storm sewer or sanitary sewer system.
- **Minneapolis Code of Ordinances (MCO)** is a compilation of laws adopted by the Minneapolis City Council. It is found at the following website: https://www.municode.com/library/mn/minneapolis/codes/code_of_ordinances
- **MPCA CSW Permit (CSW Permit)** is the MPCA's most current Construction Stormwater General Permit (MNR100001).
- **Municipal sanitary sewer system** refers to sanitary sewer infrastructure that is owned and maintained by the City of Minneapolis.
- **Municipal storm sewer system** refers to storm sewer infrastructure that is owned and maintained by the City of Minneapolis.
- **Non-stormwater discharge** means any discharge that does not originate from rain or snowmelt. This includes (but is not limited to) pumped groundwater, concrete washout, or equipment/vehicle wastewaters.
- **Phased actions** are two or more projects undertaken by the same proposer that the City engineer determines (1) will have environmental effects on the same geographic area and (2) are substantially certain to be undertaken sequentially over a limited period of time (MCO, Chapter 54).
- **Pollutant** is an elemental or physical material that can be mobilized or dissolved by water or air and creates a negative impact to human health and/or the environment. Stormwater pollutants include suspended solids (sediment), heavy metals (e.g., lead, copper, zinc, and cadmium), nutrients (e.g., nitrogen and phosphorus), chlorides, bacteria and viruses, organics (e.g., oil, grease, hydrocarbons, pesticides, and fertilizers), and floatable debris.
- **Private sanitary sewer system** is the private sanitary sewer infrastructure that is owned and maintained by a private landowner or owners and includes the service lateral(s), appurtenances, and connection(s) to the public sanitary sewer system.
- **Private storm sewer system** is the private storm sewer infrastructure that is owned and maintained by a private landowner or owners and includes the lateral(s), appurtenances, and connection(s) to the public storm sewer system.

- **Receiving water** means any lake, river, stream, or wetland that receives stormwater discharges directly from a project by way of a municipal or private storm sewer system.
- **Regional sanitary sewer system** is the sanitary sewer infrastructure that is owned and maintained by Metropolitan Council Environmental Services (MCES).
- **Regional storm sewer system** is the public storm sewer infrastructure that is owned by public entities other than the City of Minneapolis, such as Hennepin County or Minnesota Department of Transportation (Mn/DOT).
- **Sanitary sewer connection** means the connection of the private sanitary sewer system service line or service lateral and all elements of the private sanitary sewer system to the municipal or regional sanitary sewer system.
- **Sanitary sewer service lateral repair** means the repair, reconstruction, or rehabilitation of any portion of a private sanitary sewer system.
- **Sanitary sewer disconnection** means a disconnection or abandonment of the private sanitary sewer system, connection/service, or service lateral that is currently connected to the municipal or regional sanitary sewer system.
- **Sanitary sewer extension** refers to a new flow source or new upstream flow that will discharge into an existing and in-place connection to the municipal or regional sanitary sewer.
- **Sanitary sewer service lateral** is a pipe that carries wastewater from the collection point on a property to the municipal or regional sanitary sewer system. The service lateral is owned and maintained by a private landowner or owners.
- **Sanitary sewer service line**—see sanitary sewer service lateral.
- **Sanitary sewer system** means pipelines, tunnels, manholes, pumping stations, force mains, and all other constructions, devices, and appliances appurtenant thereto, used for conveying sewage or industrial waste or other wastes to a point of ultimate disposal.
- **Sediment** is soil or other particulate matter that can be transported by stormwater.
- **Site** is the land on which the project, including phased or connected actions, is located.
- **Specific-capacity test** is a single-well pumping test in which pumping occurs at a steady rate until the drawdown in the well has effectively stabilized. A well's specific capacity is the ratio of pumping rate to drawdown, which describes the quantity of water a well can produce per unit of drawdown. Specific capacity is commonly expressed in units such as gallons per minute per foot. Data from a specific-capacity test can be used to estimate aquifer hydraulic properties.
- **Storm sewer connection** means the connection of the private storm sewer system, service line, or service lateral and all elements of the private storm sewer system to the municipal or regional storm sewer system.
- **Storm sewer service lateral repair** means the repair, reconstruction, or rehabilitation of any portion of a private storm sewer system.
- **Storm sewer disconnection** means a disconnection or abandonment of the private storm sewer system, connection/service, or service lateral that is currently connected to the municipal or regional storm sewer system.
- **Storm sewer extension** refers to a new flow source or new upstream flow that will discharge into an existing and in-place connection to the municipal or regional storm sewer.

- **Storm sewer service lateral** is a pipe that carries stormwater from a collection point on a property to the municipal or regional storm sewer system. The service lateral is owned and maintained by a private landowner or owners.
- **Storm sewer service line**—see storm sewer service lateral.
- **Storm sewer system** refers to infrastructure including (but not limited to) pumping stations; enclosed storm sewers; outfall sewers; surface drains; street, curb, and alley improvements associated with storm or surface water improvements; natural and created wetlands; channels; ditches; rivers; streams; wet- and dry-bottom basins; pocket ponds; multiple pond systems; settling basins; infiltration trenches or basins; filter systems; bio-retention areas; dry or wet swales; grass channels; rooftop detention; skimming devices; grit chambers; and other flood-control facilities. These systems work to collect, transport, convey, pump, treat, control, store, manage, and dispose of storm or surface water or pollutants originating from or carried by storm or surface water.
- **Stormwater** means water that is generated by rainfall or snowmelt.
- **Stormwater** best management practices (BMPs) refers to practices meant to prevent or reduce the discharge of pollution from the storm sewer system to public waters. They are practices, techniques, or measures that are effective in managing one or more of the following: (1) stormwater runoff rate, (2) stormwater runoff volume, or (3) pollutants and sediment conveyed by stormwater runoff. A partial list of structural BMPs and devices includes pond systems/detention basins, infiltration cells ("rain gardens"), infiltration trenches, filtration systems, vegetated channels, grit chambers, and oil/water separators. BMPs that use the properties of vegetation or soil to remove stormwater pollutants through physical and biological processes are often referred to as "green infrastructure." A partial list of nonstructural BMPs includes organic litter management, street or parking lot sweeping, and construction phasing to minimize the length of time soil areas are exposed. BMPs are further defined in the *Minnesota Stormwater Manual*.
- **Stormwater Pollution Prevention Plan** (SWPPP) is a requirement for NDPES stormwater permits from the Minnesota Pollution Control Agency (MPCA). The SWPPP identifies potential sources of pollution expected to affect the quality of stormwater discharged from the construction site and describes strategies that will be used to reduce those pollutants.
- **Stormwater pre-treatment** (practices such as sediment basins, vegetated filter strips and swales, hydrodynamic separators, etc.) helps stormwater BMPs function properly—often by preventing sediment from overloading the system. Stormwater pre-treatment can also be used to lessen the effects of high or rapid inflow, dissipate energy, and provide additional storage.
- **Stormwater runoff** is water generated by rainfall or snowmelt that does not soak into the ground but flows over surfaces.
- **Temporary groundwater discharge** is a groundwater discharge that has a specified completion date or duration, such as from a construction project.
- **Treatment** is the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in stormwater or wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into the storm sewer or sanitary sewer system.
- **Utility Connection Permit** is issued by the City for private sanitary sewer systems connected to the municipal or regional sanitary sewer systems and for private storm sewer systems connected to the municipal or regional storm sewer system. This permit is required before each instance of work, including connection, disconnection, extension, or repair.

List of Acronyms

BMP	Best Management Practice
ESU	Equivalent Stormwater Unit
MCES	Metropolitan Council Environmental Services
MCO	Minneapolis Code of Ordinances
MDR	Minneapolis Development Review
MNDNR	Minnesota Department of Natural Resources
MPCA	Minnesota Pollution Control Agency
MPRB	Minneapolis Park and Recreation Board
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance Plan
PDR	Preliminary Development Review
PW-SWS	Public Works-Surface Water and Sewers
SWPPP	Stormwater Pollution Prevention Plan
TP	Total Phosphorus
TSS	Total Suspended Solids

1 Introduction

1.1 Need for stormwater and infrastructure management

Surface water resources, parks, and open spaces are distinctive features of the City of Minneapolis and part of its identity. The City takes a proactive approach to managing its water resources and infrastructure, recognizing that the health and vitality of the lakes and urban streams are linked to how property and storm and sanitary sewer systems are managed. The City's water resources approach follows these guiding principles:

- Maintain and enhance infrastructure
- Provide cost-effective services
- Meet or surpass regulatory requirements
- Protect people, property, and the environment
- Educate and engage the public and stakeholders
- Enhance livability and safety

Looking toward the future, the City anticipates an ever-increasing need to balance two important concerns: (1) protecting, maintaining, and/or upgrading aging infrastructure and (2) achieving regulatory mandates to improve water resource quality.

1.2 Regulatory background

The passage of the Federal Clean Water Act in the 1970s mandated the safeguard of public waters through the regulation of pollutant discharge to surface waters including lakes, streams, wetlands, and rivers. In the 1990s, the United States Environmental Protection Agency expanded the requirements of the Clean Water Act to include stormwater runoff. The authority to implement these requirements has been delegated to the Minnesota Pollution Control Agency (MPCA), which has issued the City its National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit.

- https://www2.minneapolismn.gov/media/content-assets/www2-documents/departments/Final-Permit-MN0061018.pdf

The conditions of the NPDES MS4 permit require the City to reduce post-construction pollutant loading from land-disturbing projects. Recognizing the complex nature of stormwater and sanitary design, regulations, and infrastructure management, the City of Minneapolis Public Works-Surface Water and Sewers (PW-SWS) Division has developed this *City of Minneapolis Stormwater and Sanitary Sewer Guide* (the Guide). The purpose of the Guide is to assist applicants and design professionals (such as civil engineers, geotechnical engineers, landscape architects, architects, geologists, and planners) in preparing development plans for properties within the City.

The Guide is a “go-to” document that:

- Summarizes the various storm and sanitary sewer review and approval processes.
- Outlines the submittal requirements and provides guidance for the development of a complete submittal package using checklists, application worksheets, and links to additional information.
- Outlines the standards and requirements that must be met for compliance with the City of Minneapolis Code of Ordinances (MCO) and PW-SWS approval.

The Guide is focused on the reviews and approvals performed by PW-SWS staff only; it does not address the requirements of other City departments or other divisions within Public Works, such as Streets, Sidewalks, Parking, Right-of-Way, Traffic, or Water. Directions to specific design guidance documents, such as the MPCA’s *Minnesota Stormwater Manual*, are provided in the respective sections of the Guide.

1.3 Organization and use

This document is organized into several sections that guide the user through the storm and sanitary sewer review process related to erosion and sediment control, stormwater management, groundwater discharge, and storm and sanitary sewer utility connections associated with development and redevelopment projects. Flow charts outlining the review process and the submittal requirements for the various permits are included (where applicable). The Guide is organized into the following sections:

- Section 1: Introduction
- Section 2: Development Review
- Section 3: Erosion and Sediment Control Ordinance Requirements
- Section 4: Stormwater Management Ordinance Requirements
- Section 5: Groundwater Discharge
- Section 6: Sanitary and Storm Sewer Connections, Disconnections, Repairs, and Extensions
- Section 7: Public Stormwater or Sanitary Sewer Infrastructure Construction/Reconstruction
- Section 8: Stormwater Utility

The Guide also includes sections defining the acronyms used, a glossary of terms, and appendices.

Links to information subject to change are provided within the Guide (e.g., external reference documents, the MCO, standard plates and technical specifications, permit fees). Updates or revisions to the regulations and the Guide may be available. Please check for updates on the City’s website.

2 Development Review

2.1 Introduction

This section of the Guide summarizes the process for Preliminary Development Review (PDR) in the City of Minneapolis.

2.2 Development review process

Minneapolis Development Review (MDR) is a service center administered by Community Planning and Economic Development (CPED). This service center receives development/redevelopment project proposals and carries out the PDR process. Most development/redevelopment project proposals are routed through the PDR process. This process precedes issuance of building and other types of permits. MDR maintains a service area for all types of permit applications and development proposals at:

Public Service Building
Room 220
505 4th Avenue S
Minneapolis, MN 55415

Plans submitted to the permit service area by the applicant are expected to be at the 100% design phase. If you have questions about City requirements, please call 612-673-3000 or 311 prior to submittal. Plans are received by a development coordinator who performs a cursory review to determine whether the plans are more appropriate for the City's regular or modified PDR process. The modified process is designed for proposals that the coordinator deems less complicated and appear to need less interaction among the City staff and the applicant and design professionals. These types of projects may include minor site grading or landscaping that does not affect the public right-of-way, or minor modifications to on-site parking lots or buildings.

After receipt of the project proposals by the development coordinator, the plans will be reviewed by Public Works (PW) and other staff, including Public Works-Surface Water and Sewers (PW-SWS) Division staff. The PW-SWS reviewer assesses and approves projects based on six areas of concern:

1. Erosion and sediment control
2. Stormwater management and drainage
3. Utility connections to the municipal or regional sanitary sewer system or storm sewer system
4. Long-term groundwater discharge
5. Improper discharges/connections to the storm or sanitary sewer systems
6. Impacts to municipal sanitary sewer system or storm sewer system.

The Guide outlines the standards, submittal requirements, and review process for each of the items listed above.

Typically, once routed within PW, the project proposals are reviewed within 1 week.

In addition to the PDR process, project proposals may also need to be reviewed through the CPED zoning and planning processes. These include review of issues related to zoning, land subdivision, overlay districts (including floodplain or shore land), comprehensive planning and heritage preservation. To check zoning requirements and whether zoning approvals are necessary for your project, call (612) 673-3000.

Once projects are approved through the PDR, CPED, and any other relevant processes, detailed building plans are reviewed for issuance of building and other permits needed to carry out construction and obtain a Certificate of Occupancy (if required). If there are proposed changes after PDR approval, or if construction has not started within 18 months of PDR approval, the project plans must be resubmitted. Figure 2-1 shows a schematic of the Minneapolis PDR process.

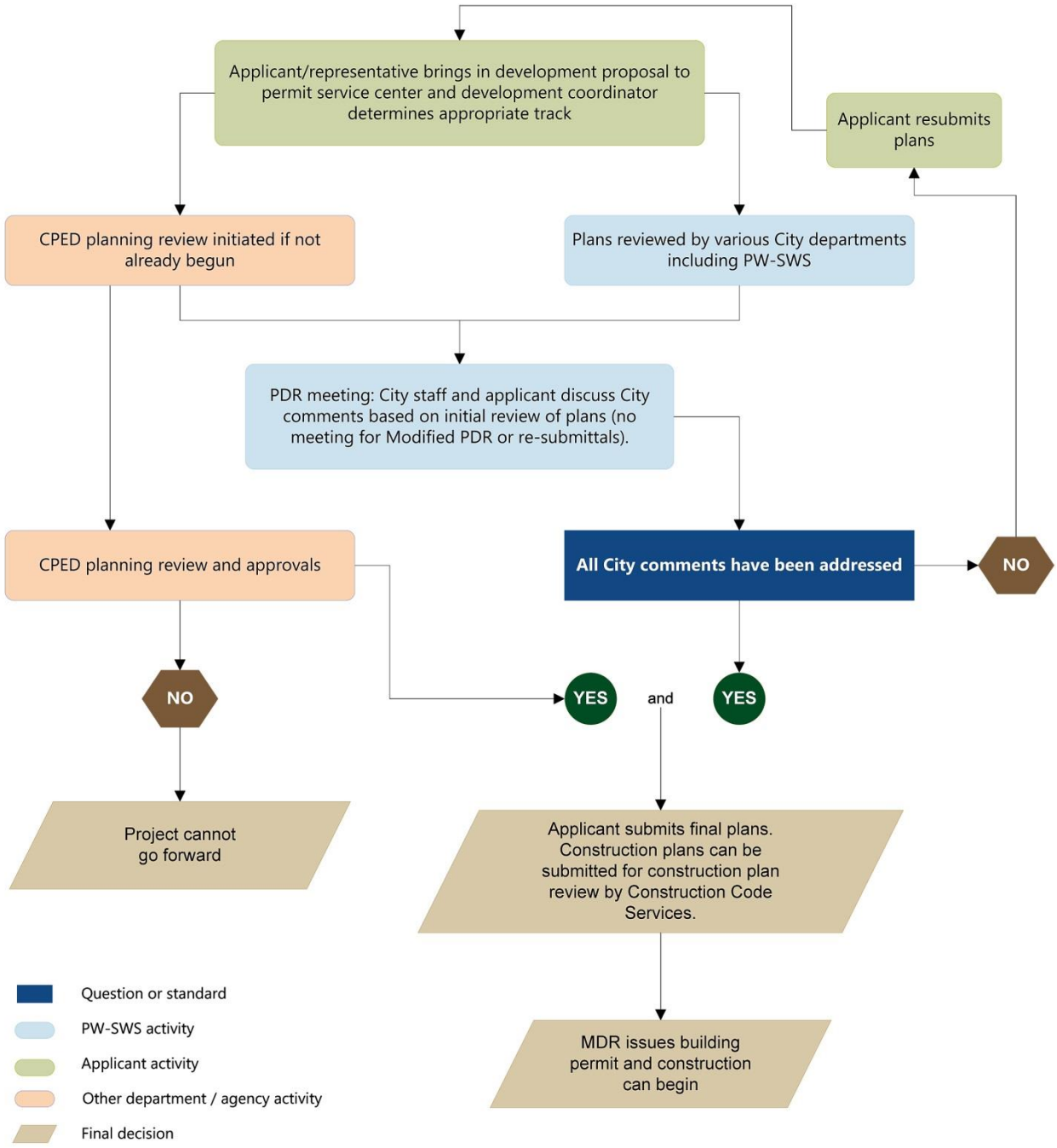


Figure 2-1 Schematic of Minneapolis PDR review process

2.3 Determining applicability

Table 2-1, below, summarizes the various reviews related to storm and sanitary sewer requirements. A summary of the conditions that form the threshold for various requirements and the section of the Guide that will provide additional information are also noted.

Table 2-1 Summary of the PW-SWS reviews, thresholds, and requirements

Topic	Threshold	City Requirements	Guide Section
Erosion and Sediment Control	Total volume of material disturbed, stored, disposed of, or used as fill is < 5 cubic yards, or the disturbed area is < 500 square feet	Erosion, sedimentation, and runoff must be minimized even on small projects, but no permit application or plan must be submitted	Section 3
	Total volume of material disturbed, stored, disposed of, or used as fill is ≥ 5 cubic yards, or the disturbed area is ≥ 500 square feet	Erosion and Sediment Control Permit[1]	Section 3
	Total volume of material disturbed, stored, disposed of, or used as fill is ≥ 500 cubic yards or the disturbed area is ≥ 5,000 square feet	Erosion Control Plan must be approved before an Erosion and Sediment Control Permit will be issued[1]	Section 3
Stormwater Management	All land-disturbing activities on sites in excess of 0.5 acres, including phased and connected actions	Stormwater Management Plan[2]	Section 4
Groundwater Discharge	All development/redevelopment projects where discharge of groundwater from the site is proposed or reasonably anticipated to occur	Follow groundwater discharge process and standards	Section 5
	Proposed long-term groundwater discharge to the municipal or regional sanitary or storm sewer system	Groundwater Discharge Approval; Utility Connection Permit	Section 5
	Temporary groundwater discharge	Temporary Water Discharge Permit	Section 5
Stormwater Utility Connections	Any of the following: • Storm sewer connection • Storm sewer extension • Storm sewer service lateral repair • Storm sewer disconnection	Utility Connection Permit	Section 6
	Work within the right-of-way	Right-of-Way Excavation Permit	Section 6
	Work on a private sewer line inside a building or within 5 feet of a building	Plumbing Permit	Section 6
	Rainleader disconnect	Rainleader Disconnect Permit	Section 6
Sanitary Sewer Connections	Any of the following: • Sanitary sewer connection • Sanitary sewer extension • Sanitary sewer service lateral repair • Sanitary sewer disconnection	Utility Connection Permit	Section 6
	Work within the right-of-way	Right-of-Way Excavation Permit	Section 6
	Work on a private sewer line inside a building or within 10 feet of a building	Plumbing Permit	Section 6

(1) The following activities are exempt from obtaining an Erosion and Sediment Control Permit and providing an Erosion and Sediment Control Plan: (a) cemetery graves, (b) emergencies posing an immediate danger to life or property or substantial flood or fire hazards, (c) any activity by a utility or public entity subject to an alternative regulatory process including (but not limited to) projects by the University of Minnesota on its campus or work within the right-of-way carried out by public or private utilities or road authorities.

(2) The following activities are exempt from the Stormwater Management Plan standards: (a) emergency work to protect life, limb, or property; (b) installation of fence, sign, telephone, electric, or other kinds of posts or poles; (c) sidewalk or underground utility-only projects that restore the ground surface to its pre-project condition; (d) mill and overlay activities; (e) linear projects that involve noncontiguous disturbed areas, such that each noncontiguous disturbed area shall be considered a separate land-disturbance area, regardless of whether the noncontiguous areas are part of the same plan set; (f) construction or reconstruction of a single-family home or duplex; (g) BMPs implemented for reasons other than to comply with the requirements of the Chapter 54 Stormwater Management Ordinance.

2.4 Applicant responsibilities

The project design team may include a variety of team members such as the applicant and several design professionals (civil engineers, geotechnical engineers, landscape architects, architects, geologists, and planners). On teams where there is more than one design professional making stormwater management decisions, the applicant should establish clear roles and responsibilities.

The project design team is responsible for ensuring that the design meets the City of Minneapolis requirements. Although City staff are willing to meet with the developer to discuss City requirements and will review the proposed design to determine if requirements have been met, they are not responsible for the project design.

When a site has unusual or complex circumstances, the project design team is responsible for notifying the appropriate review agencies (local, regional, or state agencies, as well as the City). In these cases, it is recommended that the project design team propose a course of action consistent with good planning, engineering practices, and scientific principles and obtain agreement from PW-SWS and other agencies before continuing with the design.

2.4.1 Watershed Management Organization requirements

There are four watershed management organizations (WMO) within the City of Minneapolis. These are listed below and shown in Figure 2-2. Three of these organizations (noted in bold) have rules and standards that must be followed in addition to City requirements and have a separate review process:

- **Bassett Creek Watershed Management Commission (BCWMC)** — separate review process for adherence to rules and standards
- **Minnehaha Creek Watershed District (MCWD)** — separate review process for adherence to rules and standards
- **Shingle Creek Watershed Management Commission (SCWMC)** — separate review process for adherence to rules and standards
- **Mississippi Watershed Management Organization (MWMO)** — no separate review process

PW-SWS staff will refer applicants to the applicable WMOs for projects in these areas. The WMO will carry out its own review and issue and enforce permits or approvals. This referral is typically made in the reviewer's PDR comments. The MWMO relies on its member cities to carry out review or permitting activities. Consistent with state rules and statutes, watershed organization rules and requirements are addressed in periodic updates to the City's *Local Surface Water Management Plan*, with corresponding updates to City ordinances and other development controls.

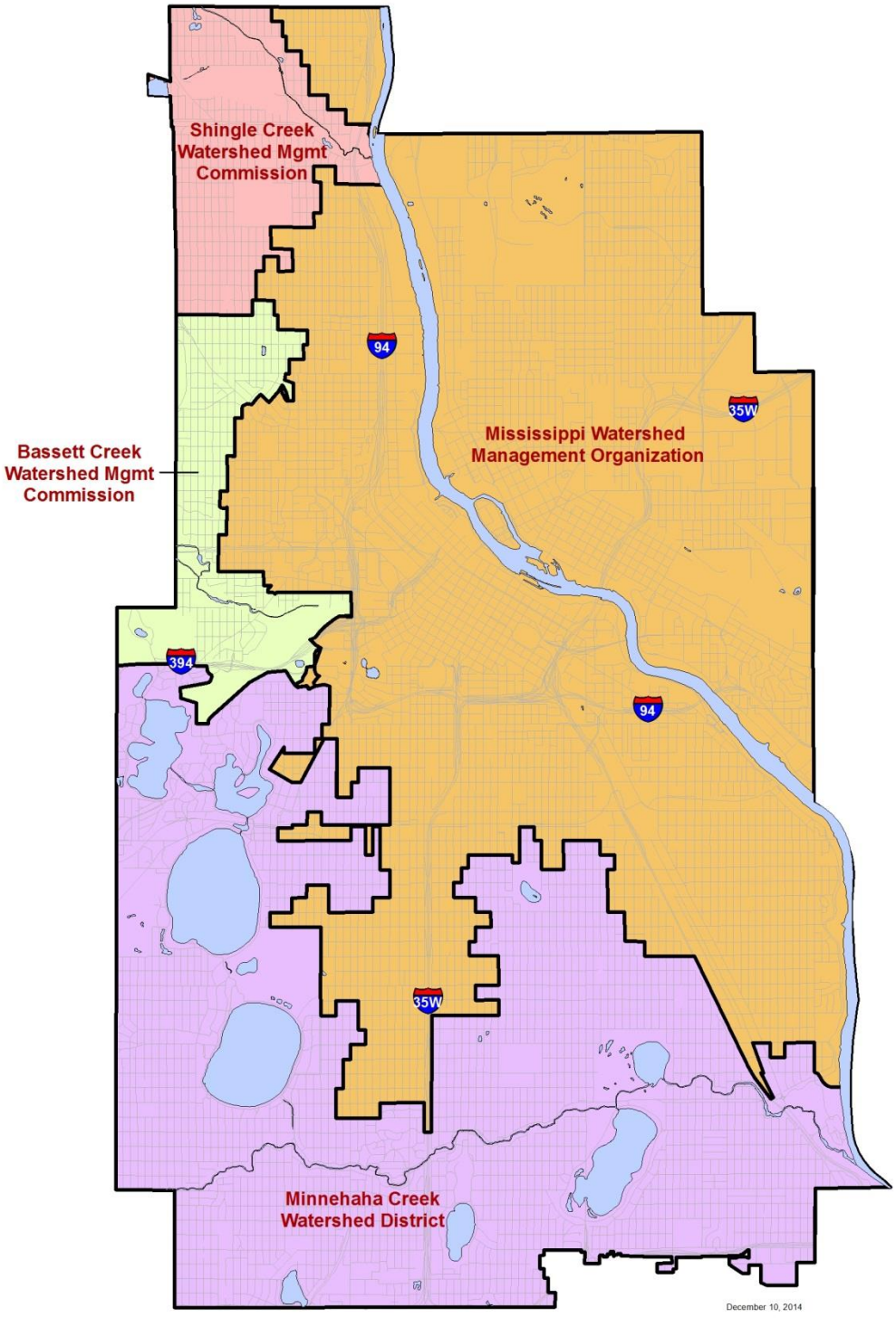


Figure 2-2 Watershed management organizations in Minneapolis

2.4.2 Other agency requirements

There may be projects that require additional permits or approvals beyond those required by the City of Minneapolis and the WMOs. The applicant is responsible for obtaining all required permits and approvals. Examples of the types of agency permits, regulations, and guidelines related to development/ redevelopment projects include (but are not limited to) the following:

Minnesota Department of Natural Resources (MNDNR)

- Water Appropriations Permit
- Public Waters Work Permits

Minnesota Pollution Control Agency (MPCA)

- National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit
- Petroleum and brownfields programs for the cleanup of contaminated sites for redevelopment
- NPDES Industrial Stormwater Permit
- Sanitary Sewer Extension Permit

Metropolitan Council Environmental Services (MCES)

- MCES Direct Connection Permit
- Industrial Waste Discharge Permit
- Encroachment agreements

Minnesota Department of Transportation (Mn/DOT)

- Drainage Permit

United States Army Corps of Engineers (USACE)

- Permits for work in US waters and wetlands

3 Erosion and Sediment Control Ordinance Requirements

3.1 Introduction

This section of the Guide summarizes the erosion and sediment control requirements and performance standards that are required by the Minneapolis Code of Ordinances (MCO).

Chapter 52 of the MCO (Erosion and Sediment Control and Drainage) establishes requirements and controls for land disturbances, soil storage, and erosion and sedimentation. The ordinance can be found at the following web address:

- https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=COOR_TIT3ALPOENPR_CH52ERSECODR

The purpose of this ordinance is to limit soil erosion and prevent sediment from leaving project sites. The ordinance establishes standards and specifications for conservation practices and planning activities which minimize soil erosion at construction sites and prevent sediment from entering storm sewers and being transported to lakes, creeks, and the Mississippi River.

The ordinance does not include prescriptive details regarding sediment and erosion control best management practices (BMPs). Section 3.3 provides general erosion and sediment control guidance.

3.2 Erosion and sediment control requirements

The City requires that all land-disturbing activity shall be completed in a manner to minimize the amount of sediment in stormwater discharges associated with those activities. To ensure compliance with MCO Chapter 52, the City requires qualifying projects to obtain an Erosion and Sediment Control Permit, which may also require an associated Erosion and Sediment Control Plan or Stormwater Pollution Prevention Plan (SWPPP).

3.2.1 Erosion and Sediment Control Permit

Any land disturbing activity where the total volume of material disturbed, stored, disposed of, or used as fill exceeds five (5) cubic yards or the area disturbed exceeds five hundred (500) square feet shall require an Erosion and Sediment Control Permit.

MCO Chapter 52 requires applicants to obtain an Erosion and Sediment Control Permit before commencement of any land-disturbing. Exemptions include the following:

- Cemetery graves
- Emergencies posing an immediate danger to life or property, or substantial flood or fire hazards, provided that erosion control measures, including any necessary remedial action, are implemented as soon as possible

- Any activity by a utility or public entity subject to an approved alternate regulatory process (e.g., National Pollutant Discharge Elimination System [NPDES] General Construction Permit, MS4 Permit) including (but not limited to) projects by the University of Minnesota on its campus or work in the right-of-way carried out by public or private utilities or road authorities
- Activity where the total volume of material disturbed, stored, disposed of, or used as fill is less than 5 cubic yards or the area disturbed is less than 500 square feet, provided the activity does not obstruct a watercourse and is not located in a FEMA floodplain

If the land-disturbing activity threatens or impeded the ability of the city to meet its own permit requirements under the NPDES program, the city may terminate the exemption and require the applicant to obtain an erosion and sediment control permit in full compliance with this code.

Activities exempted from an Erosion and Sediment Control Permit and MCO Chapter 52 compliance must still employ best management practices to minimize erosion, and sedimentation.

For land-disturbing activities that do not require an Erosion and Sediment Control Plan be submitted, the City may grant an Erosion and Sediment Control Permit after the applicant submits a completed permit application. The permit application shall include 24-hour contact information for the site owner and any person(s) responsible for providing and maintaining erosion and sediment control for the site.

3.2.1.1 Erosion and Sediment Control Plan

For land-disturbing activities greater than 5,000 square feet or greater than 500 cubic yards, an Erosion and Sediment Control Plan must be submitted and approved by the Public Works-Surface Water and Sewers (PW-SWS) Division before an Erosion and Sediment Control Permit can be issued.

The Erosion and Sediment Control Plan shall include the following:

- Identification of the limits of disturbance associated with the project
- Plans in sufficient detail demonstrating the existing and proposed grading of the site. This may include, but not be limited to, existing and proposed spot elevations, contours and drainage flow arrows.
- Identification of methods for permanent stabilization of the disturbed area
- Location of existing and proposed private, municipal, and regional storm sewer systems
- Location and type of proposed temporary erosion prevention and sediment control BMPs necessary to minimize discharge of sediments offsite
- Details of permanent stabilization measures
- Additional documentation (if required by the City)

3.2.1.2 Stormwater Pollution Prevention Plan (SWPPP)

For land-disturbing activities greater than 1 acre, or less than 1 acre if that activity is part of a larger common plan of development or sale that covers more than 1 acre, a Stormwater Pollution Prevention Plan (SWPPP) must be submitted and approved by PW-SWS before an Erosion and Sediment Control Permit can be issued. The SWPPP shall include the following:

- Identification of the limits of disturbance associated with the project.

- Plans is sufficient detail demonstrating the existing and proposed grading of the site. This may include, but not be limited to, existing and proposed spot elevations, contours, and drainage flow arrows.
- Identification of methods for permanent stabilization of the disturbed area.
- Location of existing and proposed private, municipal, and regional storm sewer systems.
- A narrative describing the timing of installation of all erosion prevention and sediment control BMPs.
- Location and type of proposed, municipal, and regional storm sewer systems
- A narrative describing the timing of installation of all erosion prevention and sediment control BMPs.
- Location and type of proposed temporary erosion prevention and sediment control BMPs necessary to minimize discharge of sediment offsite.
- Details for proposed temporary erosion prevention and sediment control BMPs.
- Estimated quantities for the life of the project for all temporary erosion prevention and sediment control BMPs (e.g. linear feet of silt fence or square feet of erosion control blanket).
- The Stormwater Management Plan, described in 4.3.1, is considered to part of the SWPPP
- Document (consistent with the CSW Permit 21.1 to 21.3) all trained individuals whose job duties and responsibilities for the project include:
    - Preparing the SWPPP
    - Overseeing implementation of, revising, and/or amending the SWPPP
    - Performing erosion and sediment control inspections
    - Performing or supervising the installation, maintenance and repair of BMPs
- Describe methods to minimize soil compaction and preserve topsoil
- Identify the owner of the property where the land disturbing activity is occurring and the contractor responsible for the work.

3.2.1.3 Additional documentation

In some instances, the City may require additional information, as seen fit during review.

3.2.2 Permit Review and Issuance Process

Figure 3-1 outlines the process for Erosion and Sediment Control Permit applications. The process includes two thresholds: (1) the necessity for an Erosion and Sediment Control Permit and (2) the necessity for an approved Erosion and Sediment Control Plan before the permit will be issued. The Minneapolis Development Review (MDR) Office reviews Erosion and Sediment Control Permit applications and issues the permit. The Erosion and Sediment Control Plans and SWPPP are reviewed and approved by PW-SWS.

If a project is subject to the Preliminary Development Review (PDR) process, the Erosion and Sediment Control Plan and SWPPP (if applicable) is reviewed by PW-SWS along with the rest of the plan set and comments are provided to the development coordinator as illustrated in Figure 3-1.

If demolition activities are anticipated before building permits are issued, a demolition Erosion and Sediment Control Plan can be submitted for review as part of the PDR process. In the event the proposed construction activities are delayed or do not receive permits, then methods and timing for permanent stabilization of disturbed areas must be addressed in the demolition Erosion and Sediment Control Plan.

If a project is not subject to the PDR process, the PW-SWS reviewer provides comments directly to the applicant.

Once issued, an Erosion and Sediment Control Permit shall remain valid for the period during which the land-disturbing activity takes place, but not longer than 1 year (unless the applicant receives an extension from the City).

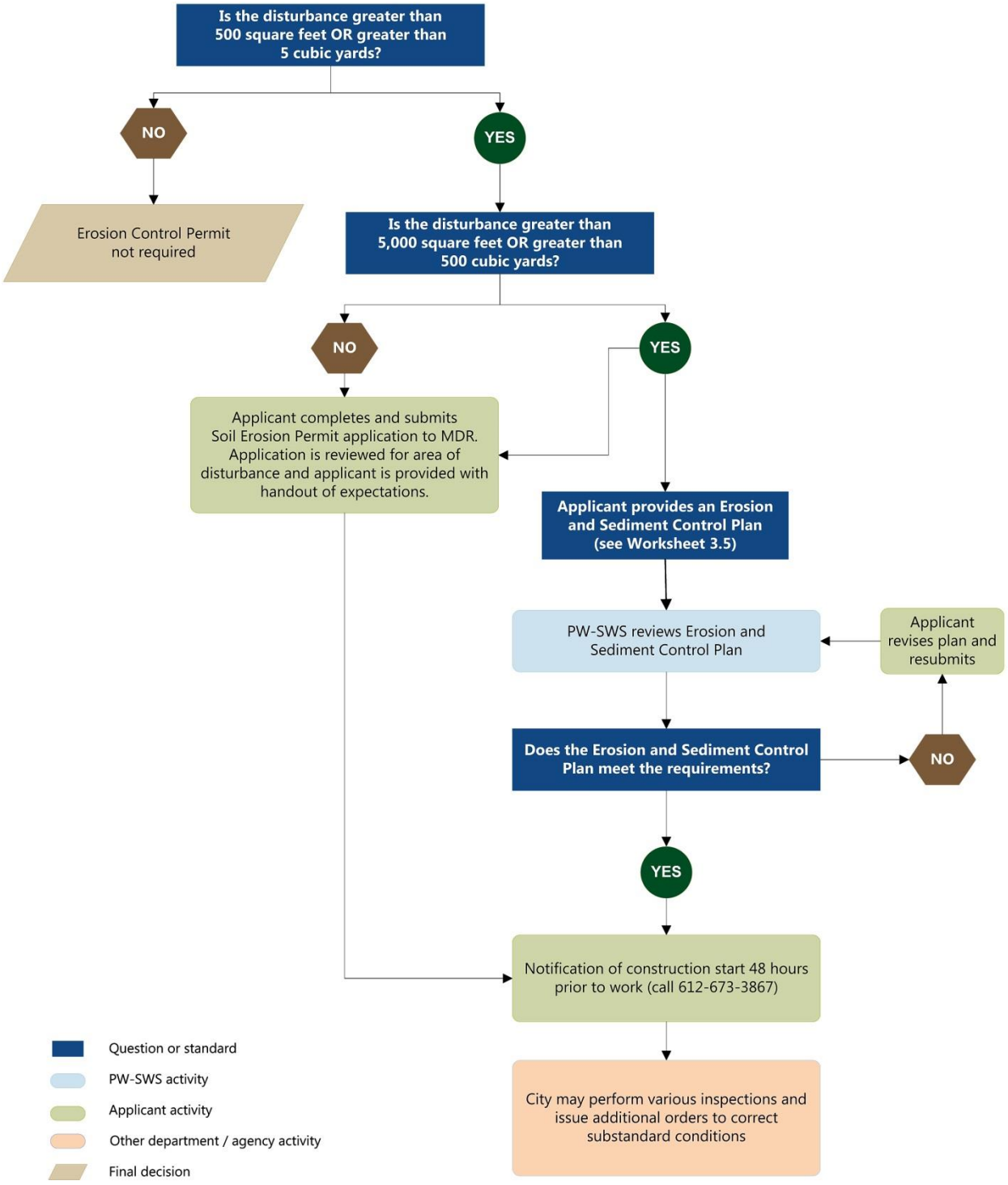


Figure 3-1 Erosion and Sediment Control Permit process

3.2.3 Inspection, Maintenance, and Supervision

Land-disturbing activity requiring an Erosion and Sediment Control Permit, approval of an Erosion and Sediment Control Plan, and/or approval of a Stormwater Pollution Prevention Plan must not commence until the applicable permit has been issued, and/or the ESC plan or SWPPP has been approved.

The permittee must inspect and maintain all erosion and sediment control BMPs to ensure integrity and effectiveness. The permittee must repair, replace, or supplement all nonfunctional BMPs with functional BMPs by the end of the next business day after discovery. Permittees may request additional time if field conditions prevent access to the area.

Permittees must comply with all inspection, maintenance and record keeping procedures identified in the MPCA CSW Permit if a SWPPP is required.

City staff perform inspections of sites to verify compliance while they are under construction. Should it be found that the control methods are ineffective or not being maintained properly, the City may take enforcement actions as described within MCO 52. This includes but is not limited to (1) requiring remedial action within a specified time period, (2) issuing a stop-work order, (3) issuing a citation and fine, or (4) revoking the permit.

3.2.3.1 Initial Inspection

The permittee shall email the City (environmentalinspections@minneapolismn.gov) when initial erosion and sediment control measures are installed. No land disturbance activities shall begin prior to approval from the issuing authority that all pre-construction erosion and sediment control measures are correctly installed. Sites with an ESC Plan or SWPPP shall demonstrate that pre-construction erosion and sediment control measures are in line with their approved plans.

3.2.3.2 Routine Inspection

The permittee shall ensure the entire construction site is inspected on a regular schedule and that BMPs on the site are maintained and functioning. The permittee shall inspect the construction site at least once every seven (7) days during active construction and within twenty-four (24) hours after a rainfall event greater than one-half (1/2) inch in twenty-four (24) hours. A written record must be kept of each inspection. The inspection frequency may be reduced to once per month on areas of the site with permanent cover. Inspections may cease during frozen conditions when construction has stopped but must resume within twenty-four (24) hours of runoff or if construction begins again. Any deficiencies shall be noted in a report and signed by the person performing the inspection.

3.2.3.3 Final Inspection

The permittee shall email the City (environmentalinspections@minneapolismn.gov) and request a final inspection when the land disturbing operations are complete and the site is stabilized. The site shall be considered stabilized when all the following conditions are met:

- All soil disturbing activities have been completed.
- All drainage facilities and their protective devices have been installed.
- Perennial vegetation or permanent cover covers all areas that have been disturbed. Perennial vegetation shall be considered established and completed for stabilization when it has

established a healthy and growing stand with a uniform cover of at least seventy percent (70%) of the expected final vegetative growth density.

- The permanent storm water management system has been constructed and is operational.
- Sediment has been removed from basins, ditches, and other conveyance systems.
- Temporary BMPs have been removed.
- Any impacts to adjacent properties or other areas disturbed or impacted as a result are corrected.
- All site noncompliance issues have been resolved.

3.2.4 Amendments to Erosion and Sediment Control Plans and SWPPPs

Permittees must amend approved SWPPPs within 7 days to include additional or modified BMPs whenever the following occur:

- There is a change in design, construction, operation, maintenance, weather or seasonal conditions having a significant effect on the discharge of pollutants to surface waters or groundwater.
- Inspections or investigations by the site owner or operator, USEPA, MPCA officials or City indicate the SWPPP is not effective in eliminating or significantly minimizing the discharge of pollutants to surface waters or groundwater or the discharges are causing water quality standard exceedances or the SWPPP is not consistent with the objectives of a USEPA approved TMDL.
- If the owner or operator identified in the SWPPP changes prior to completion of the work and close-out of the permit, the permittee shall notify the City of the change no later than 30 days after the change occurs. The current owner or operator must provide a SWPPP to the new owner or operator.

3.2.5 ESC Permit Closure

Work will be considered complete, and the permit shall be eligible for closure when all of the following occur:

- All exposed soil areas have undergone final stabilization and have permanent cover.
- The site is constructed to finished grade.
- The site is in conformance with all approved permit conditions to the satisfaction of the City and has passed a final inspection.

3.2.6 Additional regulations

Projects may also need permits from the following:

- Minnesota Pollution Control Agency (MPCA) NPDES Construction Stormwater Permit: This permit is required for all projects disturbing greater than 1 acre. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be provided and kept on the project site.
- Watershed organizations: If the project is within the jurisdiction of one of the following watershed organizations (see Figure 2-2) additional guidance and/or regulatory controls may be applicable.
    - Bassett Creek Watershed Management Commission

- Minnehaha Creek Watershed District
- Shingle Creek Watershed Management Commission

Specific guidance is available from the websites of the agencies listed above.

The City may require additional items to ensure land-disturbing activities

3.3 Erosion and sediment control guidance

MCO Chapter 52 establishes standards and specifications for conservation practices and planning activities but does not include prescriptive details regarding sediment and erosion control BMPs. The applicant for an Erosion and Sediment Control Permit may propose the use of any effective erosion and sediment control technique. Techniques are subject to City approval.

Recommended guidance documents for the design of erosion and sediment control BMPs include the following:

- City of Minneapolis Erosion and Sediment Control Notes—General performance standards and guidance for projects that require an Erosion and Sediment Control Permit but not an Erosion and Sediment Control Plan
  - https://www2.minneapolismn.gov/media/content-assets/www2-documents/departments/pw-plates/wcmsp-210394.pdf
- Standard Plates developed by the City of Minneapolis
  - https://www2.minneapolismn.gov/business-services/doing-business-with-the-city/construction-infrastructure/sewr-standard-plates/
- Minnesota Department of Transportation (Mn/DOT) Erosion Control and Stormwater Management Guidance
  - http://www.dot.state.mn.us/environment/erosion

3.4 Erosion and Sediment Control Permit application

The Erosion and Sediment Control Permit application can be found at:

- https://www2.minneapolismn.gov/business-services/licenses-permits-inspections/construction-permits/permits-overview/permit-types/soil-erosion-permits/soil-erosion/

4 Stormwater Management Ordinance Requirements

4.1 Introduction

Under the federal Clean Water Act, development and redevelopment projects must reduce post-construction pollutant loading from project areas. Through watershed management and compliance with stormwater mandates from federal, state, and local regulatory agencies, the City of Minneapolis is required to manage storm drainage and surface water systems to improve and protect water resource quality. The primary method to control stormwater discharges from development and redevelopment properties is through the incorporation of stormwater best management practices (BMPs) and better site design.

The City of Minneapolis has broad general powers to enact legislation for the health and welfare of the community. The City Charter and Minneapolis Code of Ordinances (MCO) include provisions that protect the water resources of the City. The primary ordinances governing stormwater management can be found in MCO Title 3, Chapter 54 (Air Pollution and Environmental Protection). The ordinance establishes requirements for projects with land-disturbing activities. It can be found at:

- https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=COOR_TIT3AIPOENPR_CH54STMA

The purpose of the ordinance is to minimize the negative impacts of stormwater runoff rates, volumes, and pollutants on receiving waters—lakes, creeks, wetlands, and the Mississippi River—by guiding future development and redevelopment activity and assuring long-term effectiveness of existing and future stormwater management facilities. Chapter 54 establishes standards, specifications, and planning activities to achieve this purpose.

Impervious areas such as paved streets, parking lots, and rooftops prevent rain and snowmelt from soaking into the ground (called infiltration) and/or being used or released to the air by plants (called interception and evapotranspiration). As runoff flows across surfaces, pollutants such as metals, animal waste, chemicals applied to yards and roads, soil particles, and excess nutrients in leaves and grass clippings are picked up and usually washed through inlets into storm drains and conveyed to nearby waterways. In addition to the increased pollutant loads generated by the stormwater runoff, impervious areas typically generate higher peak discharges and runoff volumes compared to similar areas that are pervious, such as landscaped or natural areas. The high flows and high pollutant loads degrade our lakes, rivers, creeks, and wetlands and harm aquatic life. They can also negatively impact existing City infrastructure.

4.2 Applicability of the Stormwater Management Ordinance

4.2.1 Projects subject to the Stormwater Management Ordinance

If the answer to any of the following questions is yes, the land-disturbing project must be served by stormwater facilities designed to meet the City's Chapter 54 stormwater management requirements.

A. Will the land disturbance be in excess of 0.5 acres (21,780 square feet)? Land-disturbing activities include (but are not limited to) development, redevelopment, demolition, construction, reconstruction, clearing, grading, filling, stockpiling, excavating, and constructing borrow pits.	YES	NO
B. Will the land disturbance be in excess of 0.5 acres for projects that are part of phased actions, meaning two or more projects together that (1) disturb greater than 0.5acres, (2) are undertaken by the same proposer, (3) will have environmental effects on the same geographic area, and (4) are substantially certain to be undertaken sequentially over a limited period of time?	YES	NO
C. Will the land disturbance be in excess of 0.5 acres for projects that are part of connected actions, meaning that two or more projects, regardless of ownership, are related in any of the following ways: (1) one project directly necessitates the other, (2) one project is a prerequisite for the other, or (3) neither project is justified by itself.	YES	NO
D. Will an application be made for a Stormwater Utility Credit?	YES	NO

Notes:

- Projects in Categories A, B, or C, above, are eligible to apply for a Stormwater Utility Credit after all Stormwater Management Ordinance requirements have been met and a letter of compliance has been issued (see Section 4.3.3.2).
- Projects not in Categories A, B, or C, above, must meet Stormwater Management Ordinance requirements to be eligible to apply for a Stormwater Utility Credit. The application cannot be made until all requirements have been met.
- See Section 8 for more information about the Stormwater Utility Credit program.

4.2.2 Projects exempt from the Stormwater Management Ordinance

The following activities are exempt from requirements of the Stormwater Management Ordinance:

1. Emergency work to protect life, limb, or property
2. Installation of fence, sign, telephone, electric or other kinds of posts or poles
3. Sidewalk or underground utility-only projects that restore the ground to its pre-project condition
4. Mill and overlay activities
    a. Projects that do not disturb the underlying soil below the base material are considered a mill and overlay. An overlay of an existing impervious surface that includes raising the grade of the impervious surface more than six (6) inches is not considered a mill an overlay.

5. Linear projects that involve noncontiguous disturbed areas, such that each noncontiguous disturbed area shall be considered a separate land-disturbance area, regardless of whether the noncontiguous areas are part of the same plan set.
6. Construction or reconstruction of a single-family home or duplex.
7. BMPs implemented for reasons other than to comply with the requirements of the Chapter 54 Stormwater Management Ordinance, if the disturbed area associated with construction of the BMP is less than 0.5 acres.

4.3 Stormwater management requirements

4.3.1 Stormwater Management Plan

A Stormwater Management Plan shall be submitted to the City for all projects subject to the Stormwater Management Ordinance (see Section 4.2). Sections 4.3.1.1 through 4.3.1.3 outline the specific requirements and performance standards for stormwater management. It is highly recommended that the applicant discuss proposed projects with Minneapolis Public Works-Surface Water and Sewers (PW-SWS) staff early in the planning and site design process to determine the applicability of these stormwater management requirements.

The Stormwater Management Plan should provide all the information necessary for City staff to review the proposed project's compliance with the stormwater management requirements and identify the owner's ongoing Operation and Maintenance Plan. After the Stormwater Management Plan has been approved and the project has been completed, the City will conduct an inspection to certify that stormwater facilities comply with the approved Stormwater Management Plan. Once certified, the facilities will be registered by the City and subject to periodic City inspection. In addition, the owner will be responsible for regular inspection and maintenance to ensure the facilities continue to function as approved and in accordance with the Operation and Maintenance Plan.

The Stormwater Management Plan includes all drawings, calculations, and other documents comprising the stormwater-related design and specifications for the proposed project. This includes (but is not limited to) drainage systems, structures, concepts, techniques, and management/maintenance systems required by the ordinance and this Guide.

4.3.1.1 Rate control

All projects subject to the Stormwater Management Ordinance shall comply with the following rate control standards

- **Rate control:** No increase in the peak discharge over existing conditions for the 2-year, 10-year, and 100-year 24-hour storm event.

The storm distribution for the above-identified storm events shall be the NRCS MN MSE 3.

4.3.1.2 Water quality standards by receiving water body

All projects subject to the Stormwater Management Ordinance shall comply with the following water quality standards organized by receiving water body. Pollutant removal (water quality) requirements are based on the specific receiving water body. If you are unsure which water body receives runoff from a specific project, please see Figure 4-1 and Figure 4-2 or contact Jeremy Strehlo, PW-SWS, jeremy.strehlo@minneapolismn.gov.

- **Water quality:** Seventy percent (70%) removal of total suspended solids (TSS) from a 1.25-inch storm event. Sites discharging to a lake, pond, or wetland listed in Table 4-1 must ALSO reduce total phosphorus (TP) load as specified in the table. See Figure 4-1 and Figure 4-2 for locations.

4.3.1.3 Volume control

All projects subject to the Stormwater Management Ordinance shall comply with the following volume control standards.

A. New development, redevelopment, and nonlinear projects

- Capture and retain 1.1 inches of runoff from the new and fully reconstructed impervious surfaces within the disturbed area for sites without restrictions (see 4.3.1.3 C)

B. Linear projects

- Capture and retain larger of 0.55 inches of runoff from the new and fully reconstructed impervious surfaces; or 1.1 inches of runoff from the net increase in impervious surfaces within the disturbed area for sites without restrictions (see 4.3.1.3 C)

C. Restrictions

Stormwater infiltration practices shall be restricted or prohibited in the following areas:

- That receive discharges from vehicle fueling and maintenance.
- That receive stormwater runoff from entities regulated under NPDES for industrial stormwater: automobile salvage yards; scrap recycling and waste recycling facilities; hazardous waste treatment, storage, or disposal facilities; or air transportation facilities that conduct deicing activities.
- Where high levels of contaminants in soil or groundwater may be mobilized by the infiltrating stormwater. To make this determination, the owners and/or operators of construction activity must complete the MPCA's site screening assessment checklist or conduct their own assessment. The assessment must be retained with the site plans.
  - MPCA Screening Assessment Checklist: https://stormwater.pca.state.mn.us/index.php/Screening_assessment_for_contamination_at_potential_stormwater_infiltration_sites
- Where soil infiltration rates are more than 8.3 inches per hour unless soils are amended to slow the infiltration rate below 8.3 inches per hour.
  - If geotechnical borings are used to estimate design infiltration rates, infiltration tests will be required where the soils within 5' below the bottom of the infiltration BMP are identified in the following unified soil classifications: GW, GP, GM, and SW.
- Of predominately Hydrologic Soil Group D (clay) soils.
  - This includes soils within 5' of the bottom of the infiltration BMP.
- Within 1,000 feet upgradient or 100 feet downgradient of active karst features.
- Outside of an Emergency Response Area (ERA) within a Drinking Water Supply Management Area (DWSMA) classified as high or very high vulnerability as defined by the Minnesota Department of Health (MDH), unless the project proposer performs a higher level of engineering analysis sufficient to provide a functioning treatment system and to prevent adverse impacts to groundwater.
- In an ERA within a DWSMA classified as high or very high vulnerability as defined by the MDH.

- In an ERA within a DWSMA classified as moderate vulnerability as defined by the MDH unless the project proposer performs a higher level of engineering analysis sufficient to provide a functioning treatment system and to prevent the adverse impacts to groundwater.
- With less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock.
- 10’ or less from property lines or subsurface portions of buildings unless the project proposer performs a higher level of engineering analysis sufficient to provide a functioning treatment system and to prevent adverse impacts to adjacent properties or structures.
    - This is a minimum distance. The project proposer shall sufficiently evaluate and avoid potential impacts to adjacent properties and buildings.

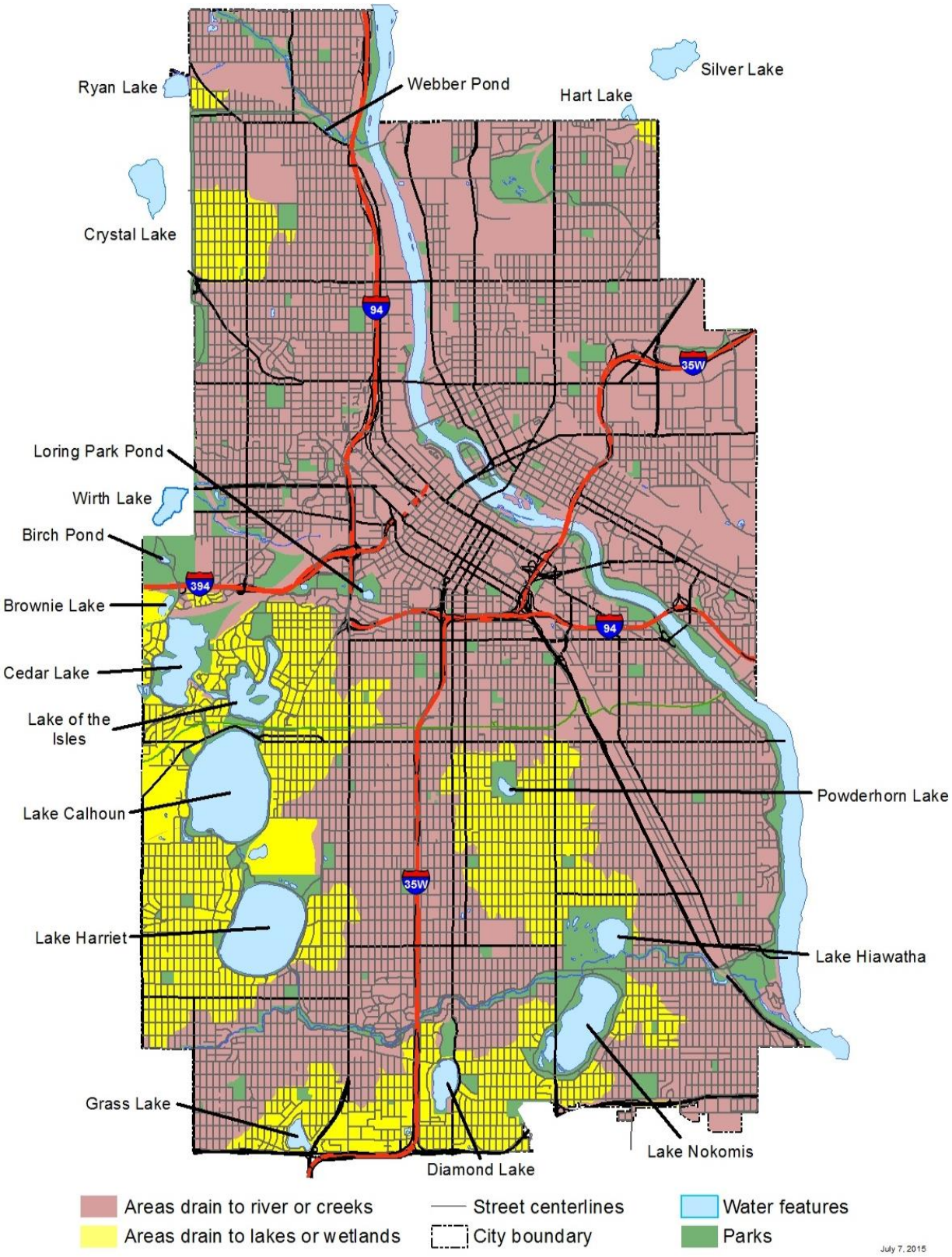


Figure 4-1 Areas draining to rivers, creeks, lakes, and wetlands

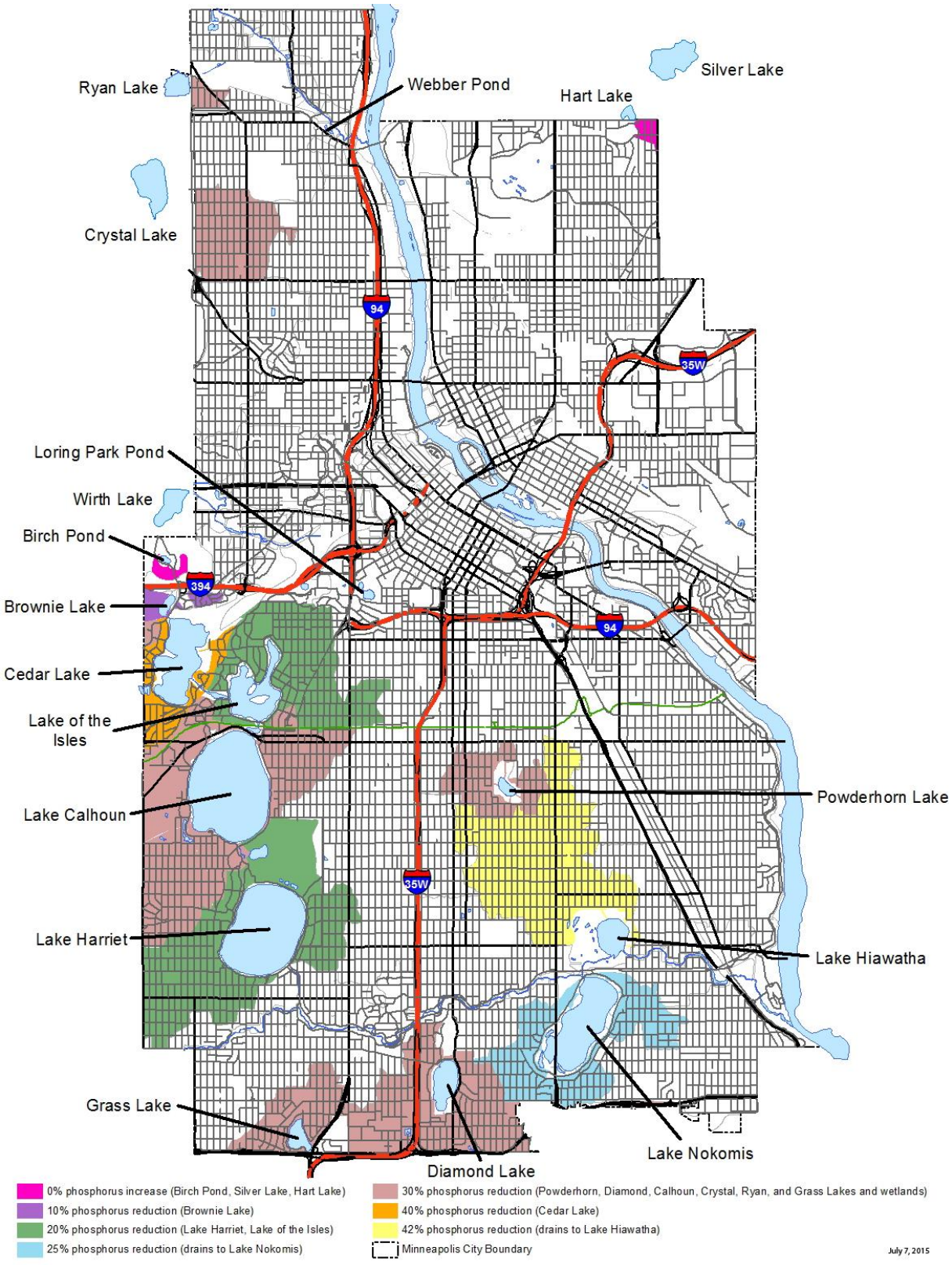


Figure 4-2 Phosphorus load reductions for lakes and wetlands

Table 4-1 Phosphorus load reduction goals for discharges to Minneapolis water bodies

Water Body	Stormwater Discharge Goal[1]
Brownie Lake	10% phosphorous load reduction
Cedar Lake	40% phosphorous load reduction
Lake of the Isles	20% phosphorous load reduction
Lake Calhoun	30% phosphorous load reduction
Lake Harriet	20% phosphorous load reduction
Powderhorn Lake	30% phosphorous load reduction
Lake Hiawatha	42% phosphorous load reduction
Lake Nokomis	25% phosphorous load reduction
Loring Park Pond	0% phosphorous load increase
Webber Pond	0% phosphorous load increase
Wirth Lake	30% phosphorous load reduction
Spring Lake	30% phosphorous load reduction
Crystal Lake	30% phosphorous load reduction
Diamond Lake	30% phosphorous load reduction
Grass Lake	30% phosphorous load reduction
Birch Pond	0% phosphorous load increase
Ryan Lake	30% phosphorous load reduction
Other wetlands	30% phosphorous load reduction

[1] Source: City Council Resolution 2000R-042

4.3.1.4 Additional Site Specific Requirements

The City may impose such conditions and requirements as deemed necessary to prevent degradation of the performance of the City's storm sewer system or creation of a nuisance or unreasonable hazard to persons or to a public or private property. This may include (but is not limited to) lowering peak discharge rates for specified rain events, limiting peak discharge to pre-settlement conditions, volume reduction, and additional TSS and TP removal standards.

4.3.1.5 Additional regulations

Projects may also need permits from the following:

- **Minnesota Pollution Control Agency (MPCA)—**A National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit includes requirements for permanent stormwater control for all projects disturbing greater than 1 acre. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be provided to PW-SWS and kept on the project site.
- **Watershed Organizations—**If the project is within the jurisdiction of one of the following watershed organizations (see Figure 2-2 for map) additional guidance and/or regulatory controls may be applicable.
    - Bassett Creek Watershed Management Commission
    - Minnehaha Creek Watershed District

- Shingle Creek Watershed Management Commission

4.3.1.6 Stormwater modeling requirements

Chapter 54 of the MCO requires that (1) all land-disturbing projects on sites in excess of 0.5 acre shall be served by stormwater facilities designed to meet City stormwater goals and (2) no person shall disturb land in excess of 0.5 acres until a Stormwater Management Plan has been approved by the City.

To demonstrate that the proposed stormwater management features will achieve the stormwater management requirements, the applicant will need to evaluate the existing and proposed stormwater system using hydrologic/hydraulic models, water quality models and volume reduction calculations.

The following section offers general guidance for stormwater modeling as required by the City of Minneapolis.

Preferred models and modeling approaches

Hydrologic and hydraulic modeling

Hydrologic and hydraulic models are used to estimate the watershed runoff hydrographs for the existing and proposed conditions on a site and to evaluate the performance of a given BMP on peak discharges. These models use design-storm rainfall and site surface characteristics to generate the runoff response from the contributing areas. Additionally, these models evaluate the hydraulics of the stormwater management system based on information related to the conveyance and storage system.

The hydrologic and hydraulic models accepted by the City of Minneapolis include:

- HydroCAD
- XP-SWMM

These models contain several methodologies to compute runoff from precipitation. The methods preferred by the City include:

- NRCS/SCS curve number runoff methodology
- XP-SWMM runoff methodology

Other models and methodologies may be used, as approved by the City of Minneapolis. General guidance related to the design storm event and model input parameters are included later in this section.

Water quality modeling

Water quality models are used to estimate watershed pollutant loading and to evaluate the pollutant removal efficiency of a proposed BMP or series of BMPs. These models typically use rainfall records and site surface, pollutant, and particle characteristics to generate the runoff and pollutant loads from the areas tributary to BMPs. The models are used to estimate the pollutant-removal efficiencies of BMPs.

The water quality models accepted by the City of Minneapolis include:

- P8 (version 2.4 or newer)
- WinSLAMM (version 9.4.0 or newer)

Other models may be used, as approved by the City of Minneapolis. General guidance related to the continuous rainfall files and model input parameters are provided later in this section.

In addition to the water quality models noted, there are several other tools available to help evaluate the impact of various BMPs on pollutant removal and water quality improvements. These tools include:

- **SHSAM (sizing hydrodynamic separators and manholes)—**A computer program for predicting the amount of suspended sediments removed from stormwater runoff by various proprietary hydrodynamic separators or standard sumps (sometimes known as "grit chambers") over a given period of time. This program is available at: https://shsam.barr.com/.
- **Minimal Impact Design Standards (MIDS) calculator—**A user-friendly spreadsheet "calculator" or tracking system developed by the MPCA; the calculator provides the annual volume, TP, dissolved phosphorus, and TSS removed annually by a variety of BMPs. Depending on the complexity of the project the City may consider the MIDS calculator to be an acceptable tool. This program is available at: http://stormwater.pca.state.mn.us/index.php/MIDS_calculator

Volume control calculations

Volume control calculations are used to estimate the volume of stormwater runoff retained on a site. These calculations use the proposed new and fully reconstructed impervious areas, the appropriate runoff multiplier (1.1" and/or 0.55"), and the retention volume being provided by the stormwater management BMPs.

The required volume control amount shall be determined by multiplying the proposed new and fully reconstructed impervious surface area within the disturbed area by the applicable retention multiplier of 1.1" or 0.55".

The volume control amount being provided by BMPs shall be modeled. Volume retention models accepted by the City of Minneapolis include:

- HydroCAD
- XP-SWMM

These models contain several methodologies to compute runoff from precipitation. The methods preferred by the City include:

- NRCS/SCS curve number runoff methodology
- XP-SWMM runoff methodology

Other models and methodologies may be used, as approved by the City of Minneapolis. General guidance related to the design storm event and model input parameters are included later in this section.

The draw down time for the required volume control amount shall be 48-hours or less.

Stormwater modeling submittal items

In addition to all other submittal requirements, the applicant is responsible for providing the various modeling inputs and result files for review by PW-SWS staff. The exact format for the modeling documentation will vary depending on the specific models being used; however, the submitted modeling documentation shall include the following:

- A completed Stormwater Management Plan Summary Table (Section 4.4)
- Hydrologic and hydraulic model inputs and results (for existing and proposed conditions) including:
    - Supporting computations prepared for the data input file
    - Model input and output reports
    - Schematic (node) diagrams (showing all routing in the model)
    - Inflow-outflow hydrographs for each storage node for each design storm (presented graphically)
    - Geotechnical investigation and infiltration testing reports
- Water quality model inputs and results including:
    - Supporting computations prepared for the data input file
    - Model input and output reports
    - Summary of routing in the model
- Volume control calculations and model inputs and results including:
    - Supporting computations prepared for determining the required volume control amount
    - Model inputs and output reports
    - Schematic (node) diagrams (showing all routing in the model)
    - Inflow-outflow hydrographs for each storage node for the 2-year design storm (presented graphically)
    - If the volume control requirement is not able to be achieved on the project, a narrative describing the constraints must be provided for review, including any supporting documentation, and justification for why the constraints can't be avoided.

For sites that have a history of soil or groundwater contamination, supporting documentation must be provided demonstrating the appropriateness of infiltration of stormwater on the site. This would include, but not be limited to, the following:

- MPCA Contamination Screening Checklist for Stormwater Infiltration
- Phase 1 or Phase 2 Environmental Site Assessment
- Response Action Plan
- Closure letters from the MPCA

Project closeout

Upon completion of construction there is a defined project closeout process (see Section 4.3.3) that includes on-site stormwater management. In addition to the other requirements, the City requires that the applicant re-evaluate the stormwater management system based on the record drawings. The hydrologic, hydraulic, water quality, and volume control models developed for the proposed conditions shall be updated to reflect the record drawings.

The applicant shall submit the following items as part of the project closeout submittal package:

- Completed Stormwater Management Plan Summary Table including the as-built conditions (Section 4.4)
- Hydrologic and hydraulic model inputs and results (for as-built conditions)
  - Supporting computations prepared for the data input file
  - Model input and output reports
  - Schematic (node) diagrams (showing all routings in the model)
  - Inflow-outflow hydrographs for each design storm, presented graphically
- Water quality model inputs and results (for as-built conditions)
  - Supporting computations prepared for the data input file
  - Model input and output reports
  - Summary of routing in the model
- Volume control calculations and model inputs and results (for as-built conditions):
  - Supporting computations prepared for determining the required volume control amount
  - Model inputs and output reports
  - Schematic (node) diagrams (showing all routing in the model)
  - Inflow-outflow hydrographs for each storage node for the 2-year design storm (presented graphically)
  - If the volume control requirement is not able to be achieved or not fully achieved on the project, a narrative describing the constraints must be provided for review, including any supporting documentation, and justification for why the constraints can't be avoided

Stormwater modeling parameter guidance

Tables 4-2 through 4-8 summarize the recommended model input files and acceptable values for the various model parameters. The applicant will need City approval to deviate from recommended model parameter values. For model parameters not specified below, best professional judgment should be used.

Table 4-2 Parameter guidance

Precipitation	
HydroCAD and XP-SWMM	
Design storm events for HydroCAD and XPSWMM	See Table 4-3: City of Minneapolis design storm events—rainfall frequency depth [24-hour storm event]
P8 precipitation and temperature files	MPLS-125.pcp[1] and MSP4908.tmp[1] Model run period: 4/30/1969–5/6/1969 Model keep dates: 4/30/1969–5/6/1969 Passes through storm file: 10 times
WinSLAMM rain file	MPLS-125.RAN[1] Model run period: 4/30/1969–5/1/1969
SHSAM	

SHSAM precipitation file SHSAM temperature file	GoldenValleyMN StPaulMN-1991–2007.txt
Watershed and Runoff Characteristics	
NRCS/SCS Curve Number Runoff Methodology (HydroCAD, XP-SWMM, and P8)	
Curve numbers	See Table 4-4: Curve number for selected land covers
Initial abstraction (XP-SWMM)	Use default value of 0.2
Unit hydrograph shape factor (XP-SWMM)	Use default value of 484
Impervious runoff coefficient (P8)	Use 1.0
Impervious depression storage (P8)	Use 0.02 inches
Runoff Coefficient Methodology (WinSLAMM)	
Runoff coefficient file	great lakes.rsv
XP-SWMM Runoff Methodology Using Green-Ampt Infiltration (XP-SWMM)	
Green-Ampt infiltration parameters	See Table 4-5: Green-Ampt infiltration parameters
Pervious/Impervious depression storage	See Table 4-6: Depression storage for selected land covers
Watershed roughness	See Table 4-7: Watershed roughness coefficients (Manning's n) for sheet flow
Best Management Practice (BMP)/Conveyance Parameters	
Design infiltration rates	See Table 4-8: Design infiltration rates
Pollutant Loading Parameters	
P8	
Scale factor for particle loads	1
Street sweeping	All impervious surfaces modeled as Not Swept
Particle file	NURP50
SHSAM	
Particle size distribution file	NURP-PSD.txt
WinSLAMM	
WinSLAMM pollutant files (particulate solids concentration file, pollutant probability distribution file, particle size parameter file)	WinSLAMM V.10 • great lakes.pscx • great lakes.ppdx • great lakes.cpz WinSLAMM V.9.4 • great lakes.pscx • great lakes.ppdx • great lakes.cpz
WinSLAMM	
Particle-size distribution	NURP-PSD.txt

1. Contact Jeremy Strehlo to obtain necessary precipitation and/or temperature files: Jeremy.Strehlo@minneapolismn.gov

Table 4-3 City of Minneapolis design storm events—rainfall frequency depth

Return Period	Depth[1, 2, 3]
2 years	2.8 inches
10 years	4.2 inches
100 years	7.5 inches

1. Source: NOAA Atlas 14, Volume 8, Version 2, Midwestern States
2. For use with HydroCAD and XP-SWMM models
3. Standards for using synthetic hydrographs for design purposes (2-, 10-, and 100-year storm events), using the NRCS MN MSE3 distribution

Table 4-4 Curve numbers for selected land covers

Land Cover[1, 2, 3]	Hydrologic Condition	Curve Numbers for Hydrologic Soil Groups			
		A	B	C	D
Presettlement[4]					
Meadows and prairies, no grazing	Good	30	58	71	78
Developed					
Impervious surfaces[5]	NA	98	98	98	98
Turfgrass, cover < 50%	Poor	68	79	86	89
Turfgrass, cover 50 to 75%	Fair	49	69	79	84
Turfgrass, cover > 75%	Good	39	61	74	80
Meadows and prairies, no grazing	Good	30	58	71	78

1. Source: TR-55 (United States Department of Agriculture, Soil Conservation Service. 1986. *Urban Hydrology for Small Watersheds*. Technical Release No. 55. Second Edition. Washington, DC.).
2. For use with HydroCAD, XP-SWMM, and P8 models (SCS methodology).
3. These curve numbers supplied by TR-55 are for antecedent runoff condition II (ARC II).
4. The curve numbers listed for pre-settlement are considered appropriate for native soil and vegetation conditions.
5. Impervious surfaces are defined in glossary of terms.

Table 4-5 Green-Ampt infiltration parameters—saturated hydraulic conductivity, average capillary suction, and initial moisture deficit values[1]

USDA Soil Texture Class	Average Capillary Suction[2] (in)	Saturated Hydraulic Conductivity[3] (Ks) (in/hr)	Range Saturated Hydraulic Conductivity[4] (Ks) (in/hr)	Initial Moisture Deficit for Soil (vol. of air/vol. of voids, expressed as a fraction)[2] Moist Soil Climates (Eastern US)
Sand	1.95	5.30	3.6–10.3	0.35
Fine sand	– –	4.80	4.2–8.7	– –
Loamy sand	2.41	2.60	1.4–5.6	0.31
Loamy fine sand	– –	2.30	1.4–4.8	– –
Sandy loam	4.33	0.90	0.4–2.7	0.25
Fine sandy loam	– –	0.50	0.2–1.1	– –
Loam	3.50	0.20	0.11–0.8	0.19
Silt loam	6.57	0.30	0.14–0.9	0.17
Sandy clay loam	8.60	0.14	0.04–0.6	0.14
Clay loam	8.22	0.05	0.01–0.28	0.15
Silty clay loam	10.75	0.17	0.09–0.5	0.11
Sandy clay	9.41	0.04	0.01–0.12	0.09
Silty clay	11.50	0.06	0.02–0.28	0.09
Clay	12.45	0.07	0.03–0.27	0.08

1. For use with XP-SWMM model (XP-SWMM runoff methodology).

2. a. These values are provisional and are offered as reasonable parameter estimates for SWMM applications where more detailed soils information is not available. There is significant variance in these values; laboratory and field testing, sensitivity analysis, and calibration may be employed to improve these estimates.

   b. Typically, use USDA SCS (now NRCS) Soil Survey to determine soil texture. In these surveys, saturated hydraulic conductivity is reported as permeability. Use the saturated hydraulic conductivity values reported in the soil survey for permeability rather than the saturated hydraulic conductivity values listed in the table above. In the absence of a soil survey or more reliable information, the values listed above may be used.

   c. Synthesized from: Maidment, D.R., ed. 1993. *Handbook of Hydrology*. 5.1–5.39. New York: McGraw-Hill.

3. Geometric mean value from Ks Database (Rawls et al. 1998).

4. Twenty-five and 75 percentile values from Ks database (Rawls et al. 1998).

Table 4-6 Depression storage for selected land covers

Land Covers[1]	Depression Storage	Source
Impervious, 1% slope, flat roofs, parking lots, roads	0.0625–0.125 inches	Tholin and Kiefer 1960
Impervious, 2.5% slope, and sloped roofs	0.05 inches	Viessman 1996
Turfgrass	0.25 inches	Tholin and Kiefer 1960
Open fields	0.402 inches[2]	Urban Drainage and Flood Control District 2008
Wooded areas	0.402 inches[2]	Urban Drainage and Flood Control District 2008

1. For use with XP-SWMM model (XP-SWMM runoff methodology).
2. These values include interception losses by vegetation.

Table 4-7 Watershed roughness coefficients (Manning's n) for sheet flow

Surface Description		n[1,2]
Smooth surfaces	Concrete, asphalt, gravel, bare soil	0.011
Grass	Short grass prairie	0.15
	Dense grasses[3]	0.24
	Bermuda grass	0.41
Woods[4]	Light underbrush	0.4
	Dense underbrush	0.8

1. For use with XP-SWMM model (XP-SWMM runoff methodology).
2. The Manning's n values are a composite of information compiled by Engman (1986).
3. Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
4. When selecting Manning's n, consider cover to a height of about 0.1 foot, the only part of the plant cover that will obstruct sheet flow.

Table 4-8 Design infiltration rates

Hydrologic Soil Group	Design Infiltration Rate (in/hr)[1]	Soil Textures	Corresponding Unified Soil Classification
A	Site specific infiltration tests will be required to determine design infiltration rates	Gravel Sandy gravel Silty gravels	GW—Well-graded gravels, sandy gravels
			GP—Gap-graded or uniform gravels, sandy gravels
			GM—Silty gravels, silty sandy gravels
			SW—Well-graded gravelly sands
	0.8	Sand Loamy sand Sandy loam	SP—Gap-graded or uniform sands, gravelly sands
B	0.45		SM—Silty sands, silty gravelly sands
	0.3	Loam Silt loam	MH— Micaceous silts, diatomaceous silts, volcanic ash
C	0.2	Sandy clay loam	ML— Silts, very fine sands, silty or clayey fine sands
D	0.06	Clay loam Silty clay loam Sandy clay Silty clay Clay	GC—Clayey gravels, clayey sandy gravels
			SC—Clayey sands, clayey gravelly sands
			CL—Low plasticity clays, sandy or silty clays
			OL—Organic silts and clays of low plasticity
			CH—Highly plastic clays and sandy clays
			OH—Organic silts and clays of high plasticity

1. Source: *Minnesota Stormwater Manual*, MPCA. Check for updates to this manual; the most recent infiltration rate information should be used if different from Table 4-8.

4.3.1.7 Required components of the Stormwater Management Plan

See the application worksheets in Section 4.4 for a comprehensive list of the required components of the Stormwater Management Plan (pre-construction).

4.3.1.8 Design manual and general stormwater management guidance

The City of Minneapolis considers the *Minnesota Stormwater Manual*, prepared by the MPCA, to be the City's approved design manual. It can be found at the following website:

- http://stormwater.pca.state.mn.us/index.php/Main_Page

To encourage development and redevelopment consistent with the City's mission of enhancing the physical quality of the community, the City has established goals/guidelines for site drainage:

- Maximize the use of infiltration where conditions are suitable.
- Maintain the natural contours and vegetation of the land whenever possible.
- Minimize fill and the use of retaining walls.
- Minimize runoff by reducing impervious cover.
- Maintain general drainage patterns—mitigating adverse impacts to adjacent properties (e.g., erosion, sedimentation, flooding), rights-of-way, storm sewer systems, and public waters.
- Manage snow so that it is not deposited by plowing, stockpiling, or other artificial means that create significant concentrations of surface water that could cause damage to or unreasonable environmental, health, or safety conditions on adjacent properties.
- Incorporate stormwater pre-treatment measures to prevent clogging of stormwater BMPs related to infiltration and filtration. Design stormwater pre-treatment to remove settleable solids, floating materials, grease, and oils to the maximum extent practical. Examples include (but are not limited to) vegetated filter strips or swales, hydrodynamic separators, and small sedimentation basins.

4.3.1.9 Operations and Maintenance Plan (O&M Plan)

The Stormwater Management Plan shall include an Operations & Maintenance (O&M) Plan for the BMPs installed on the property. The O&M Plan shall be site and BMP specific and will, at a minimum include the following:

- Site map clearly detailing:
    - Location of each BMP
    - Area for inspection (clean outs, inlets, outlets, sumps, etc.)
    - Contributing areas
    - Emergency overflows (if applicable)
- Inspection forms for each BMP detailing the following:
    - Inspection activity (what to look for)
    - Regimen for cleaning (how often)
    - Observations (What did I find)
    - Maintenance actions (What should I do and when)
    - Maintenance completed (What did I do)
- Detail/cross-section of each BMP
- Snow removal or storage plan. It is recommended BMPs not be used for snow storage.

Sample self-inspection forms and a template are in Appendices A–C. The forms are samples of active inspection forms. The template shall be customized, by the applicant, to be site and BMP specific.

4.3.1.10 Preconstruction stormwater management review process

The process and decision tree for reviewing Stormwater Management Plans is outlined in Figure 4-3.

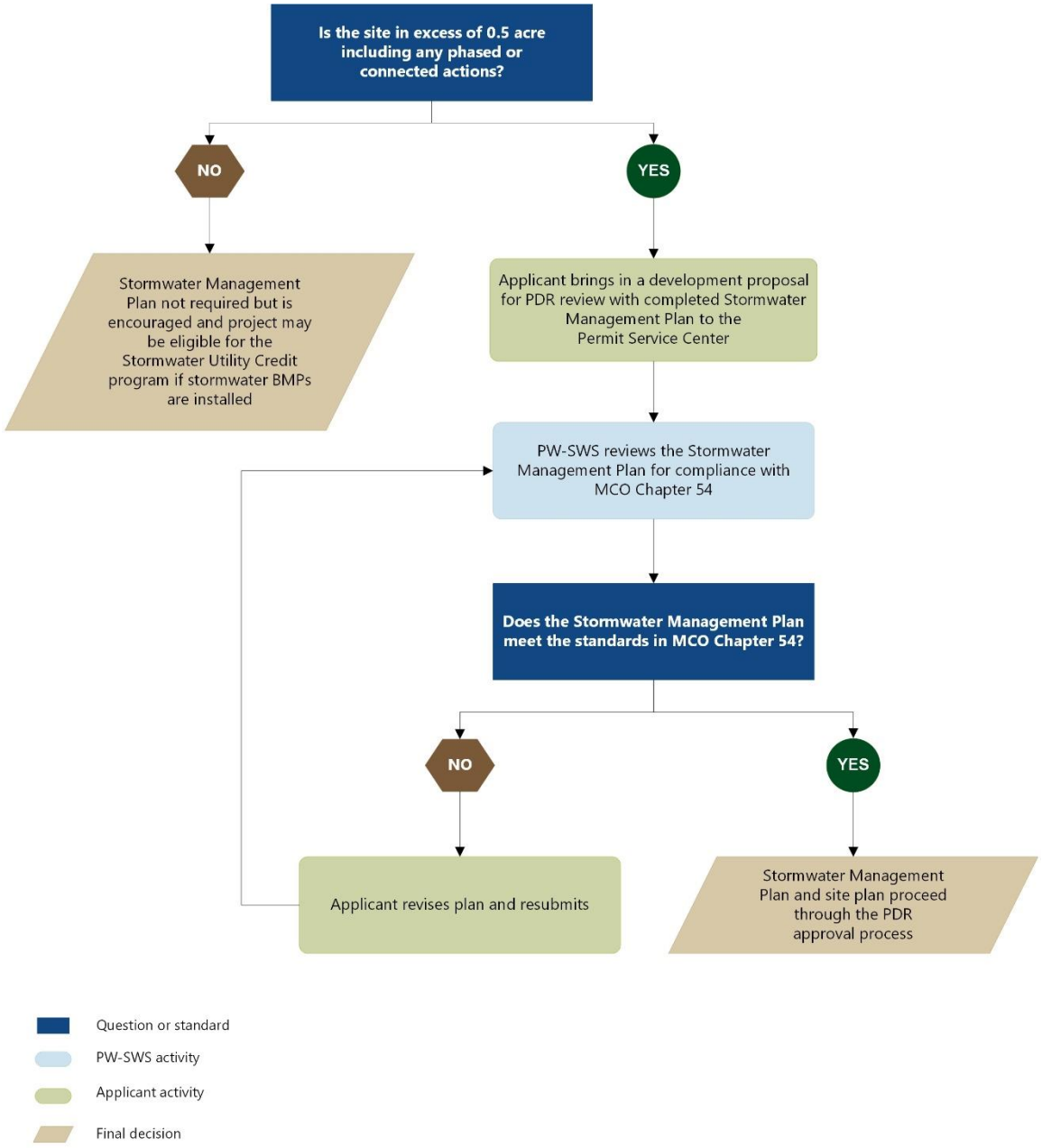


Figure 4-3 Stormwater management plan process

Figure 4-3 Stormwater Management Plan approval process

4.3.2 Responsibility during construction

An approved Stormwater Management Plan must be carried out within 1 year. An extension, not to exceed 1 year, may be requested. Any modifications to an approved Stormwater Management Plan must be submitted to PW-SWS for review and approval.

4.3.3 Responsibility following construction/project completion

4.3.3.1 Project closeout requirements

As part of the project closeout process, the property owner or their representative shall provide a final (post-construction) Stormwater Management Report, including record drawings and updated stormwater modeling, as a means of verifying that the approved stormwater management design has been met.

The final Stormwater Management Report shall include (but not be limited to) the following items:

- Copies of completed construction site erosion control inspections covering all on-site BMPs
- Record drawings reflecting the as-built conditions
- Updated summary of the stormwater hydrologic and water quality modeling results reflecting the as-built conditions shown in the record drawings (see Section 4.3.1.6)
- An updated and complete O&M Plan for all BMPs (including initial inspection records) using the customized self-inspection report submitted as part of the approved Stormwater Management Plan (see examples in Appendices A–C)
- A signed statement by a professional engineer registered in the state of Minnesota verifying that the as-constructed state of the project meets the requirements of the ordinance and functions within the parameters of the approved design

See the application worksheets in Section 4.4 for a comprehensive list of the required components of the final Stormwater Management Report (post-construction).

The final report may be submitted to PW-SWS electronically. It must be completed within 90 days of the project's Certificate of Occupancy. If the project does not require a Certificate of Occupancy, the final report must be submitted within 90 days of substantial completion.

4.3.3.2 Compliance status

After all the required information has been submitted, City inspectors will conduct a site inspection and create a Stormwater Management Inspection Report. A copy of this report, detailing the compliance status, will be provided to the property owner within 30 days of the inspection.

All site areas used for the purpose of treatment or rate control of stormwater runoff shall be preserved and maintained for that use, including areas required for maintenance and inspection.

4.3.3.3 Stormwater Utility Credit

Following completion of the project, submission of information required in MCO Chapter 54, and City notification of compliance under MCO Chapter 54, the property owner or their designee has the opportunity to apply for a Stormwater Utility Credit. This credit program provides opportunities for property owners to reduce their monthly stormwater utility bills by installing BMPs that provide water quality improvement or management, including stormwater facilities that are required under MCO Chapter 54. For properties with facilities required under MCO Chapter 54, compliance with the ordinance (including completion of the project closeout requirements [Section 4.3.3.1 and Section 4.4]) is a prerequisite for submitting an application for a Stormwater Utility Credit. It is not, however, a guarantee of meeting the requirements for receiving a credit. For more information on the City of Minneapolis Stormwater Utility Credit Program, see Section 8.

4.3.3.4 Routine inspection and maintenance of stormwater facilities

The property owner is required to perform routine maintenance of stormwater management facilities in accordance with the approved O&M Plan. All facilities shall be inspected by the owner or responsible party annually, or as specified in the O&M Plan. They must be maintained in proper condition for sustained use, consistent with the performance standards for which they were originally designed. If failing, the property owner must repair the facilities to ensure they function properly.

Sample self-inspection forms and a template are in Appendices A–C. The forms are samples of active inspection forms. The template shall be customized, by the applicant, to be site and BMP specific.

4.3.3.5 Annual registration and inspection

BMPs are subject to annual inspection by City staff. If the devices are not functioning satisfactorily, the City may issue a notice of noncompliance and the procedures described in MCO Section 54.130 shall be followed.

Property owners in control of a BMP installed under the Stormwater Management Ordinance shall register the site annually by remitting an annual registration fee at a rate established through the City's annual budgeting process.

Submission and payment of the fee confirm that the site's stormwater management devices have been inspected, maintained, and are functioning satisfactorily. The annual fee is due on January 31 of each year.

Completed self-inspection reports shall be returned to:

Minneapolis Public Works–Surface Water and Sewers Division
Attention: Stormwater Management Compliance 250 4th Street S, Room 300
Minneapolis, MN 55415-1373

Or by email to: stormwater@minneapolismn.gov

4.4 Stormwater Management Plan Worksheets

The following are the application worksheets for use in developing the Stormwater Management Plan. There are two versions of the worksheets. The first version (pre-construction) is meant to assist in developing a plan. It does not need to be submitted—except the Stormwater Management Plan Summary Tables and Stormwater Management Plan Engineer's Certification. These may be included in any Stormwater Management Report.

The second version of the worksheets (post-construction) should be submitted with the complete Stormwater Management Plan and the final Stormwater Management Report required as part of the project closeout process.

4.4.1 Stormwater Management Plan Worksheets (pre-construction, optional)

GENERAL PROJECT INFORMATION

Project name:

_____

Site address:

_____

See Figure 4-1 to identify receiving waterbody; if unsure contact Jeremy Strehlo as shown below.

All proposers of land-disturbing activities in excess of 0.5 acre, including phased or connected actions, are required to submit a Stormwater Management Plan as part of the project site plan.

For questions, or to schedule a pre-submission meeting, contact Minneapolis Public Works-Surface Water and Sewers:

Jeremy Strehlo
jeremy.strehlo@minneapolismn.gov
(612) 673-3973

This checklist is provided for applicant use and does not need to be submitted as part of a Stormwater Management Plan (unless otherwise indicated).

STORMWATER MANAGEMENT PLAN SUBMITTAL REQUIREMENTS

Have you considered the following as part of the development of the Stormwater Management Plan?

Is your project located in an area with known flooding problems? If you are unsure, please follow-up with Public Works-Surface Water and Sewers (PW-SWS) staff. If yes, has the site been designed to reduce potential flood impacts as much as possible?	YES	NO
Does your project convey runoff (either surface or piped) to/from adjacent properties? If yes, has the site been designed so adjacent properties will not be negatively impacted?	YES	NO
Are there existing or proposed drainage easements on your project site? If yes, has the site been designed with consideration of those easements?	YES	NO
Have you collected soil borings from the project site? (If yes, please include the geotechnical report with the Stormwater Management Plan submittal.)	YES	NO
What is the estimated groundwater elevation on your site? _____ feet What is the lowest floor or excavation elevation on your site? _____ feet		
Will your project require long-term groundwater discharge? (If yes, see Section 5 and complete Section 5.8, Long-Term Groundwater Discharge Approval Worksheet.)	YES	NO
Has a Phase I Environmental Site Assessment (ESA) or Phase II ESA Response Action Plan been developed for this project site? (If yes, please include the appropriate report with the Stormwater Management Plan submittal.)	YES	NO

Is soil or groundwater contamination likely to be an issue on this site? If yes, have BMPs and groundwater management been appropriately designed for the site?	YES	NO

Stormwater Management Plan (pre-construction) components

Project narrative—Have you included narrative text summarizing the project and the proposed Stormwater Management Plan?	YES	NO
Engineer's Certification of the Stormwater Management Plan—Has the Engineer's Certification of the Stormwater Management Plan been signed by a professional engineer?	YES	NO
Maps of existing and proposed drainage areas—Have you included maps of the existing and proposed conditions of the project site? These should include the following information: • Existing and proposed watersheds and subwatersheds, including offsite areas draining to the project site • Limits of land disturbance • Soil boring locations (if available), soil types, and hydrologic soil groups • Land-use and land-cover types (including delineation and labeling of impervious areas) • Location of existing and proposed private, municipal, and regional stormwater systems • Existing and proposed contours and/or spot elevations in sufficient detail to depict the existing and proposed drainage patterns of the site.	YES	NO
Summary table of existing and proposed total project site area and impervious and pervious areas—Have you provided the Stormwater Summary Table summarizing: • Existing and proposed total site area, disturbed area, and impervious, pervious, and treated impervious area? • Existing and proposed peak flow? • Existing and proposed runoff volume? • Existing and proposed water quality summary?	YES	NO
Final design drawings—Have you provided final design drawings of the proposed project and stormwater management system with sufficient clarity? These should include (at a minimum) the following items: • Plan view of existing site conditions including property lines; existing contours; existing private, municipal, and regional storm and sanitary sewers on the site and within 25 feet of the property boundary; existing BMPs on the site (if applicable); and other utility locations • Plan view of the proposed site plan including property lines; proposed contours; existing private, municipal, and regional storm and sanitary sewers on the site and within 25 feet of the property boundary; proposed storm sewers; private connections; BMP locations (including stormwater pre-treatment measures); and proposed snow storage area (or snow removal plan) • Detailed plans, cross sections, and profiles for each BMP showing critical design features, side slopes, structures (including inlets and outlets [control structures]), and emergency spillways/overflows; soil profiles and elevations (including the seasonal water table); elevations of the normal water level (permanent pool);	YES	NO

water quality volume and maximum design elevations; and manufacturer's specifications for proprietary devices
• Location and dimensions of existing and proposed drainage easements; include the following notes on the project plans:
  ○ The contractor, property owner, or responsible party shall contact Minneapolis Surface Water and Sewers 48 hours prior to any excavation or construction related to or in the location of the proposed Stormwater Management BMPs (contact Paul Chellsen, 612-673-2406, or paul.chellsen@minneapolismn.gov).
  ○ Within 90 days of the project's receipt of a Certificate of Occupancy (or substantial completion if a Certificate of Occupancy is not required) the property owner, or responsible party shall provide a final Stormwater Management Report to the Department of Public Works-Surface Water and Sewers Division, including record drawings. This report will serve as a means of verification that the intent of the approved stormwater management design has been met. This final report shall substantiate that all aspects of the original design have been adequately provided for by the construction of the project.		

Modeling results summary and supporting documentation (See Section 4.3.1.6 for additional information regarding the stormwater modeling requirements.) • Have you provided documentation of all hydrologic, water quality, and volume control model inputs and results to aid in model review? • Have you summarized the results of the hydrologic, water quality, and volume control modeling including the existing and proposed site discharges at each discharge location? • Have you provided analysis of the suitability of utilizing infiltration BMPs or other volume retention BMPs on the site, including geotechnical investigations and infiltration test reports? • Have you provided justification for not meeting or only partially meeting the required volume control requirement?	YES	NO
Construction notes—Have you included construction notes? These should explain the following: • Procedures to be followed to properly implement the plan • Planting and landscaping specifications • Preservation measures for existing vegetation • Timing and sequencing of construction • Temporary measures needed to protect stormwater pre-treatment areas and BMPs during construction	YES	NO
Inspection plan during construction—Have you included a detailed construction inspection plan? This should identify the following: • The critical elements in the plan that need to be surveyed or inspected by a representative of the project engineer • The responsible party for maintenance and inspection • The timing and notification requirements involved	YES	NO
Operation and Maintenance (O&M) Plan—Have you included an O&M Plan?	YES	NO

• The O&M Plan shall be site and BMP specific and will, at a minimum including the following
• Site map clearly detailing:
  ○ Location of each BMP
  ○ Area for inspection (clean outs, inlets, outlets, sumps, etc.)
  ○ Contributing areas
  ○ Emergency overflows (if applicable)
• Inspection forms for each BMP detailing the following (see examples in Appendices A-C):
  ○ Inspection activity (what to look for)
  ○ Regimen for cleaning (how often)
  ○ Observations (What did I find)
  ○ Maintenance actions (What should I do and when)
  ○ Maintenance completed (What did I do)
• Detail/cross-section of each BMP
• Snow removal or storage plan
• Site specific chloride reductions management plan or addendum		

STORMWATER MANAGEMENT PLAN SUMMARY TABLE (optional submittal with Stormwater Management Plan)

A completed sample form is shown below. A blank form can be obtained from Jeremy Strehlo, jeremy.strehlo@minneapolismn.gov.

SITE PLAN NO. _____ (filled in by City staff)

STORMWATER MANAGEMENT PLAN SUMMARY TABLE

Instructions:

1) When submitting plans for review, submit this Summary Table with Existing and Proposed columns filled and all relevant calculations, modeling and information for project review. Include details about all sub-basins and BMPs in the Stormwater Management Report.
2) After construction, submit this Summary Table with As-Built columns filled in and all relevant calculations, modeling and information based on the project record drawings. Include details about all sub-basins and BMPs in the Final Stormwater Management Report.

Project Name: SAMPLE PROPOSED SUMMARY	Hydrologic Soil Group (HSG) Used – A, B, C, or D: B
Project Address: 1234 1st Ave N	Description of Soil: FILL, SAND WITH GRAVEL, SOME ORGANIC AT DEEP LEVELS
Receiving Waterbody: MISSISSIPPI RIVER	
Parcel(s) Total Area: 2.34 acres	

BMPs (check all that apply): ☐ Surface Infiltration ☑ Subsurface Infiltration ☐ Surface Filtration ☐ Subsurface Filtration ☐ Detention Pond ☐ Subsurface Detention ☐ Permeable/Pervious Pavement ☐ Green Roof ☐ Proprietary Device ☐ Other (identify):

	EXISTING	PROPOSED	AS-BUILT
1. IMPERVIOUS AREA SUMMARY	(Acres)	(Acres)	(Acres)
DISTURBED SITE AREA ONLY	(This section must be filled in for all projects.)		
Disturbed Area Impervious	1.44	1.30	
Disturbed Area Pervious	0.00	0.14	
Total Disturbed Area	1.44	1.44	
Impervious Area Draining to a BMP	0.00	1.05	
INCLUDES RUN-ON FROM OFF-SITE	(This section must be filled in if off-site stormwater runs onto the site; if none, write "none".)		
Impervious	1.64	1.45	
Pervious	0.00	0.19	
Total Disturbed and Run-On Area	1.64	1.64	
Impervious Area Draining to a BMP	0.00	1.18	
2. RATE CONTROL PEAK FLOW SUMMARY *	(Cubic Ft./Second)	(Cubic Ft./Second)	(Cubic Ft./Second)
DISTURBED SITE AREA AND RUN-ON	(This section must be filled in for all projects.)		
2.8 in. event (2-year)	5.19	1.51	
4.2 in. event (10-year)	7.95	6.85	
7.5 in. event (100-year)	11.49	10.89	
3. RUNOFF VOLUME SUMMARY *	Acre-Feet	Acre-Feet	Acre-Feet
DISTURBED SITE AREA AND RUN-ON	(This section must be filled in for all projects.)		
2.8 in. event (2-year)	0.32	0.28	
4.2 in. event (10-year)	0.51	0.46	
7.5 in. event (100-year)	0.74	0.69	
4. WATER QUALITY SUMMARY			
DISTURBED SITE AREA ONLY	(All projects must calculate TSS removal efficiency. Only projects discharging to a lake, pond or wetland must also calculate for TP.)		
TSS SUMMARY	% Removal	% Removal	% Removal
Total Suspended Solids (TSS) for 1.25", 24-hr event	0	71	
TP SUMMARY	% Reduction	% Reduction	% Reduction
Total Phosphorus (TP) for 1.25", 24-hr event	0	42	

* Use NOAA Atlas 14 events

STORMWATER MANAGEMENT PLAN ENGINEER'S CERTIFICATION

I hereby certify to the best of my knowledge, information, and belief that this Stormwater Management Plan complies with the rules, regulations, and standards as outlined under Chapter 54, Stormwater Management, Title 3 of the Minneapolis Code of Ordinances. Specifically, the stormwater management facilities detailed in the referenced plan have been designed to meet the minimum requirements for (check box for all that apply):

- ☐ **Water quality:** Seventy (70) percent removal of total suspended solids (TSS) from a 1.25-inch storm event AND for a site that discharges to a lake, pond, or wetland; total phosphorus (TP) pollutant load reduction is as specified City Council Resolution 2000R-042.
- ☐ **Rate control:** No increase in the peak discharge over existing conditions for the 2-year, 10-year, and 100-year 24-hour storm event, using the NRCS MN MSE3 distribution.
- ☐ **Volume control:** Capture and retain on-site 1.1 inches or runoff from the new and fully reconstructed impervious surfaces within the disturbed area, for new development, redevelopment, and nonlinear projects on sites without restrictions.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the state of Minnesota.

Signature _____ Date _____

Print name _____ MN registration number _____

4.4.2 Final Stormwater Management Report Worksheets (post-construction, required)

GENERAL PROJECT INFORMATION

Project name: _____

Site address: _____

FINAL STORMWATER MANAGEMENT REPORT SUBMITTAL REQUIREMENTS

Final Stormwater Management Report must be submitted within 90 days of project completion

Record drawing(s)—Have you included record drawings utilizing the original approved plans? These should detail the following: • The actual elevations shown alongside proposed elevations, with the proposed elevations crossed out (notation must be legible for comparison) • Elevations referenced to the same benchmark datum as the original design plans (noted as such) • The stormwater management device(s) installed (pond, rain garden, etc.) • Any plan changes, noted, with the record drawing reflecting the actual construction • Plan views showing the as-constructed location of all BMPs and associated stormwater infrastructure • Cross sections and profiles of each BMP showing all design features, soil profiles, elevations, and seasonal water table • Normal water level, high water level, and overflow routes for all basins, ponds, or channels • Drawings signed by a licensed engineer, architect, or land surveyor, certifying the submittal is a record drawing of the as-constructed site conditions	YES	NO
Additional submittal items—Have you included the following additional information? • Map showing as-built impervious surfaces (e.g., building and permanent structure locations, parking areas, sidewalks) with an updated Stormwater Management Plan Summary Table summarizing the delineated property area, pervious and impervious areas, and impervious areas draining to BMPs (see example table in Section 4.4.1). • Location of any drainage easements—easements must be recorded to preserve major stormwater flow paths, specify maintenance responsibilities, restrict buildings/structures, and prevent any grading, filling, or other activities that obstruct flows. • Manufacturer's details and specifications for all installed proprietary stormwater devices.	YES	NO

Updated stormwater modeling • Have you included the updated stormwater hydrologic and water quality modeling reflecting as-built conditions? • Have you provided documentation of all hydrologic and water quality model inputs and results (as outlined in Section 4.3.1.6) to aid in model review? • Have you summarized the results of the hydrologic and water quality modeling on the updated Stormwater Management Plan Summary Table (Section 4.4.1)?	YES	NO
Final Operations and Maintenance (O&M) Plan—Have you included an updated and complete O&M Plan for all BMPs (including initial inspection records) using the customized self-inspection report that was submitted as part of the approved Stormwater Management Plan?	YES	NO

FINAL STORMWATER MANAGEMENT SUMMARY TABLE (required submittal with final Stormwater Management Report)

A completed sample form is shown below. A blank form can be obtained from Jeremy Strehlo, jeremy.strehlo@minneapolismn.gov.

SITE PLAN NO. _____ (filled in by City staff)

STORMWATER MANAGEMENT PLAN SUMMARY TABLE

Instructions:

1) When submitting plans for review, submit this Summary Table with Existing and Proposed columns filled and all relevant calculations, modeling and information for project review. Include details about all sub-basins and BMPs in the Stormwater Management Report.
2) After construction, submit this Summary Table with As-Built columns filled in and all relevant calculations, modeling and information based on the project record drawings. Include details about all sub-basins and BMPs in the Final Stormwater Management Report.

Project Name: SAMPLE FINAL SUMMARY	Hydrologic Soil Group (HSG) Used – A, B, C, or D: B
Project Address: 1234 1st Ave N	Description of Soil: FILL, SAND WITH GRAVEL, SOME ORGANIC AT DEEP LEVELS
Receiving Waterbody: MISSISSIPPI RIVER	
Parcel(s) Total Area: 2.34 acres	

BMPs (check all that apply): ☐ Surface Infiltration ☑ Subsurface Infiltration ☐ Surface Filtration ☐ Subsurface Filtration ☐ Detention Pond ☐ Subsurface Detention ☐ Permeable/Pervious Pavement ☐ Green Roof ☐ Proprietary Device ☐ Other (identify):

	EXISTING	PROPOSED	AS-BUILT
1. IMPERVIOUS AREA SUMMARY	(Acres)	(Acres)	(Acres)
DISTURBED SITE AREA ONLY	(This section must be filled in for all projects.)		
Disturbed Area Impervious	1.44	1.30	1.28
Disturbed Area Pervious	0.00	0.14	0.16
Total Disturbed Area	1.44	1.44	1.44
Impervious Area Draining to a BMP	0.00	1.05	1.05
INCLUDES RUN-ON FROM OFF-SITE	(This section must be filled in if off-site stormwater runs onto the site; if none, write "none".)		
Impervious	1.64	1.45	1.43
Pervious	0.00	0.19	0.19
Total Disturbed and Run-On Area	1.64	1.64	1.62
Impervious Area Draining to a BMP	0.00	1.18	1.17
2. RATE CONTROL PEAK FLOW SUMMARY *	(Cubic Ft./Second)	(Cubic Ft./Second)	(Cubic Ft./Second)
DISTURBED SITE AREA AND RUN-ON	(This section must be filled in for all projects.)		
2.8 in. event (2-year)	5.19	1.51	1.50
4.2 in. event (10-year)	7.95	6.85	6.81
7.5 in. event (100-year)	11.49	10.89	10.73
3. RUNOFF VOLUME SUMMARY *	Acre-Feet	Acre-Feet	Acre-Feet
DISTURBED SITE AREA AND RUN-ON	(This section must be filled in for all projects.)		
2.8 in. event (2-year)	0.32	0.28	0.27
4.2 in. event (10-year)	0.51	0.46	0.45
7.5 in. event (100-year)	0.74	0.69	0.67
4. WATER QUALITY SUMMARY			
DISTURBED SITE AREA ONLY	(All projects must calculate TSS removal efficiency. Only projects discharging to a lake, pond or wetland must also calculate for TP.)		
TSS SUMMARY	% Removal	% Removal	% Removal
Total Suspended Solids (TSS) for 1.25", 24-hr event	0	71	73
TP SUMMARY	% Reduction	% Reduction	% Reduction
Total Phosphorus (TP) for 1.25", 24-hr event	0	42	44

* Use NOAA Atlas 14 events

FINAL STORMWATER MANAGEMENT REPORT ENGINEER'S CERTIFICATION

(Required submittal with final Stormwater Management Report)

I have attached: (Check boxes that apply)

- ☐ Record drawing(s)—see requirement list on the final Stormwater Management Report Worksheets (Section 4.4)
- ☐ Updated stormwater hydrologic, water quality modeling and volume control to reflect as-built conditions as outlined in Section 4.3.1.6, including the final Stormwater Management Plan Summary Table
- ☐ Final Operations and Maintenance Plan for the property
- ☐ Completed initial inspection records

_____

_____

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the state of Minnesota.

Signature _____ Date_____

Print name _____ MN registration number _____

5 Groundwater Discharge

5.1 Introduction

The City of Minneapolis receives requests from applicants, such as developers and property owners, to discharge groundwater pumped for drainage or other purposes to the municipal or regional storm sewer or sanitary sewer systems. The intent of this section is to provide:

1. A consistent and clear framework—identifying the criteria for groundwater discharge.
2. An outline of City reviews necessary for applicants seeking approvals for groundwater discharge.

The standards identified in this section are intended to protect infrastructure and water resources, ensure the functionality and safety of the storm sewer and sanitary sewer systems, and insure public health and safety.

5.1.1 Requirement for City of Minneapolis approval

No person shall allow or cause to allow groundwater discharges into the municipal or regional storm sewer or sanitary sewer systems without first receiving an approval from the City of Minneapolis. Approvals related to groundwater discharge are considered revocable and may be withdrawn by the City at any time.

Subsurface drain tile located above the groundwater elevation and without evidence of groundwater flow within the tile may be connected to the municipal or regional storm sewer system if connected to a private storm sewer system and upon receipt of a Utility Connection Permit (Section 6). Subsurface drain tile meeting these conditions is not subject to the requirements and processes of this section.

5.1.2 Other permits

Along with approval from the City of Minneapolis, other approvals and/or permits may be required before groundwater can be pumped or discharged. The applicant is responsible for determining which approvals or permits are required. Agencies that may require related reviews or permits include (but are not limited to) the following:

1. The Minnesota Department of Natural Resources (MNDNR): Water Appropriation Permit
2. Minnesota Pollution Control Agency (MPCA): Permit to discharge to surface water
3. Metropolitan Council Environmental Services (MCES): Permit to connect to the sanitary sewer system (Discharge to the sanitary sewer may be necessary if the groundwater is determined to be contaminated.)
4. Minneapolis Park and Recreation Board (MPRB): Permit to place signage on park property or lakes and creeks.

5.2 Groundwater discharge review process

The applicant is responsible for investigating and evaluating the site conditions to identify any potential groundwater discharges that may be necessary both during and after construction.

If groundwater discharges are anticipated or occur during construction, or are proposed as a one-time occurrence (temporary discharges), the applicant must apply for a Minneapolis Temporary Water Discharge Permit and provide all related information and supporting documentation described in this section. Figure 5-1 provides a flowchart of the Minneapolis Temporary Water Discharge Permit application review process.

If groundwater discharge is not anticipated after construction, the applicant must state on the proposed plans that long-term groundwater discharges are not proposed. The City reserves the right to require additional groundwater analysis if long-term groundwater discharges are reasonably anticipated or soil borings provided by the applicant do not reasonably indicate the anticipated high groundwater elevations on the site.

If groundwater discharges are anticipated or occur after construction (long-term discharges) the applicant must apply for a Minneapolis Long-Term Groundwater Discharge Approval and provide all related information and supporting documentation described in this section. The Long-Term Groundwater Discharge Approval application shall include a Groundwater Discharge Plan and completed Long-Term Groundwater Discharge Approval Worksheet (Section 5.8) signed by an engineer or geologist licensed in the state of Minnesota. Figure 5-2 provides a flowchart of the Minneapolis Long-Term Groundwater Discharge Approval application review process.

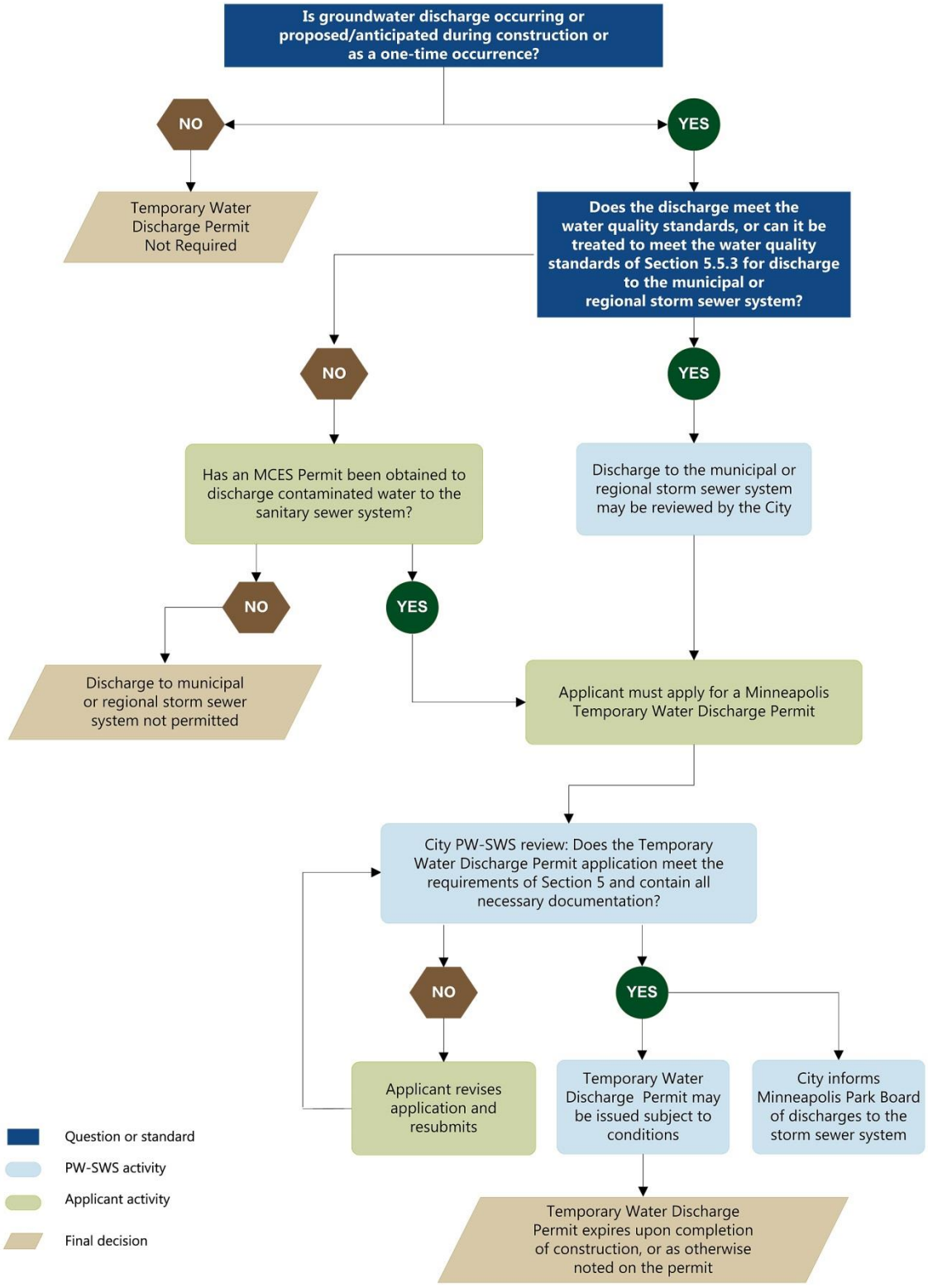


Figure 5-1 Minneapolis Temporary Water Discharge Permit application review process

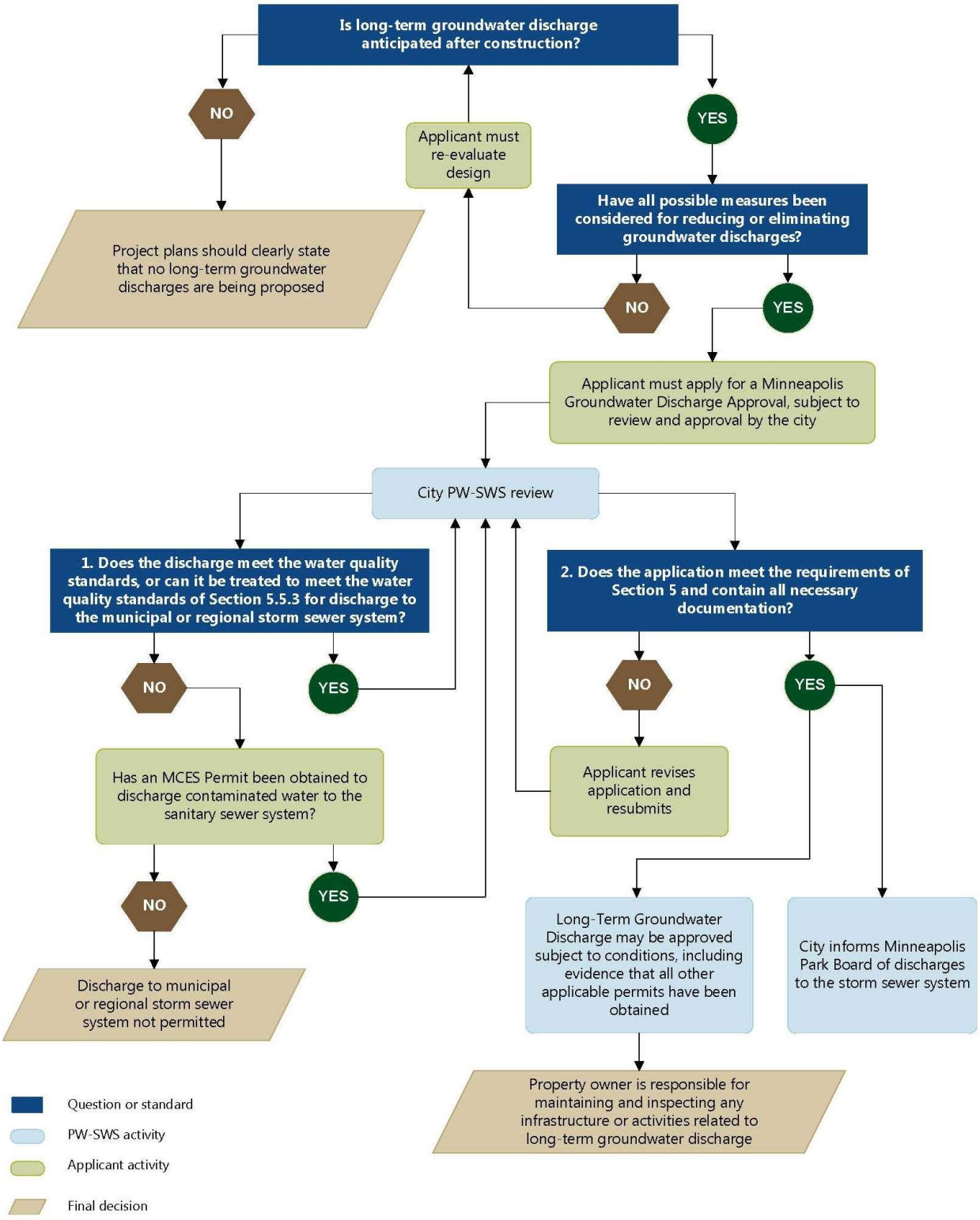


Figure 5-2 Minneapolis Long-Term Groundwater Discharge Approval application review process

5.3 Groundwater discharge rate and quality analysis

5.3.1 Determining groundwater discharge rate and volume

It is the applicant's responsibility to determine the maximum and average discharge rates and volume for any proposed groundwater discharges. Groundwater discharges to the municipal or regional storm sewer or sanitary sewer systems will be limited to those as identified by the applicant and approved by the City through the approval review processes. The discharge rate and volume should be based on the anticipated high groundwater elevation and pump characteristics at the site at the time discharges are proposed.

The applicant must evaluate site conditions and select appropriate methods to quantify the groundwater discharge rates and volumes. Testing should be performed at or reasonably near the highest measured or anticipated groundwater elevation. If appropriate, a specific-capacity test (also referred to as a drawdown test) may be performed. A specific-capacity test involves pumping water from a well or standpipe until drawdown has stabilized. The applicant may use data from the test to estimate the hydraulic properties of the subsurface material. This estimate can then be used to calculate the temporary or long-term groundwater discharge rates as described below.

The applicant may employ alternate hydraulic testing methods for sites where subsurface conditions preclude specific-capacity testing, subject to approval by the City. Hydraulic property estimates from grain-size analyses may be provided to supplement (but not replace) estimates from hydraulic testing results. The applicant should ensure that hydraulic property values are representative of the aquifer in which dewatering will occur and are not significantly affected by factors such as well loss and underdevelopment.

The applicant must estimate the maximum discharge rate for the groundwater discharge system during the time discharges are proposed and under conditions where the groundwater is at its reasonable high elevation—including seasonal and long-term fluctuations. If sufficient supporting documentation is not available to determine the high groundwater elevation, the maximum discharge rate should be calculated for a groundwater elevation 6 feet higher than measured during the specific-capacity test or alternative hydraulic testing method. Using a groundwater elevation 6 feet higher than measured during the test provides a degree of conservatism in the resulting discharge estimate to account for possible errors in water-level measurements, hydraulic property estimates, seasonal and annual water-level fluctuations, and unexpected geological conditions. This is not to be viewed as a substitute for due diligence on the part of the applicant to evaluate and design groundwater discharge systems that safeguard planned infrastructure.

The schematic provided in Figure 5-3 shows an example of a hypothetical site where the groundwater elevation observed during testing is 4 feet below the lowest floor. Applying the 6-foot-elevation shift described above, the groundwater discharge estimate considers conditions where the highest groundwater elevation is 2 feet above the lowest floor.

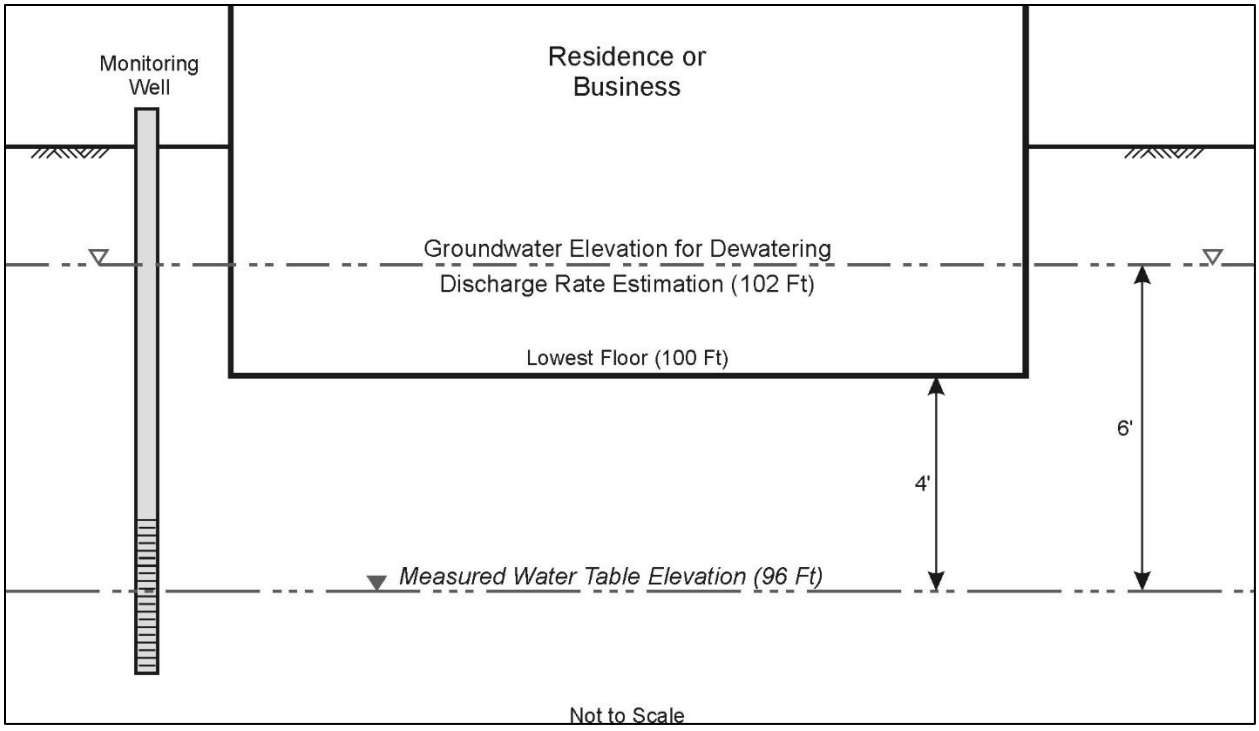


Figure 5-3 Example scenario: discharge-rate estimation

An engineer or geologist licensed in Minnesota and experienced in groundwater hydraulics is required to design and supervise the testing and calculate groundwater discharge rates and volumes from estimated hydraulic property values.

The applicant may also use the temporary or permanent monitoring well where the hydraulic testing is performed to obtain groundwater samples for the analyses discussed below.

5.3.2 Water quality assessment

An assessment of the potential for pollution at the development site and within the potential capture area of dewatering wells must accompany Long-Term Groundwater Discharge Approval and/or Temporary Water Discharge Permit applications. Any of the following may be used as a basis for assessing the potential for pollutants:

1. A Phase II Environmental Site Assessment
2. Other specific site assessment documents that include comprehensive soil or groundwater testing results
3. Direct sampling and testing of groundwater to be discharged

If a Phase II Environmental Site Assessment has been done, the assessment report must be included with the Long-Term Groundwater Discharge Approval and/or Temporary Water Discharge Permit application. The assessment will be used to determine if there is a risk of polluted groundwater at the site and if the dewatering pumps or drain tile are likely to capture polluted groundwater.

In the absence of a Phase II Environmental Site Assessment or other specific site assessment documents that include comprehensive soil or groundwater testing results, the groundwater must be sampled and tested for pollution. The applicant shall ensure that a laboratory certified by the Minnesota Department of Health conducts analyses required by this section of the Guide. Analysis for pH does not need to be completed by a certified laboratory but shall comply with the manufacturer's specifications for equipment calibration and use. Two samples shall be collected at each sampling location and analyzed for each parameter specified in Section 5.5.3.

5.4 Temporary groundwater discharges

Discharge of groundwater that occurs as a one-time event, with a specified completion date or duration (such as from a construction project), is considered temporary. Discharge to the municipal or regional storm sewer or sanitary sewer systems may not occur in these cases until the applicant has applied for and the City has reviewed, approved, and issued a Temporary Water Discharge Permit.

5.4.1 Temporary Water Discharge Permit

The Minneapolis Code of Ordinances (MCO), Chapter 50, requires applicants to obtain a Temporary Water Discharge Permit prior to discharging water to the municipal or regional storm sewer or sanitary sewer systems. Additional Temporary Water Discharge Permit information and applications can be found on the City's webpage.

- https://www.minneapolismn.gov/business-services/licenses-permits-inspections/environmental/temporary-water-discharge/

Temporary Water Discharge Permit applications must include the following items:

- Letter of transmittal describing the site activities and the need for discharge
- Site plan—including the site address, adjacent public roadways, and proposed discharge locations
- Location and details of groundwater discharge treatment system, if applicable
- Proposed groundwater discharge location
- Discharge cessations details such as gate valve location(s) and diversion system
- Water quality sampling location(s)
- Operations and maintenance plans, if required
- Fees as identified on the permit application

5.4.2 Discharges to sanitary sewer

Groundwater discharges to the municipal or regional sanitary sewer system may require a permit from MCES. Temporary Water Discharge Permit applications must include copies of MCES Permit applications and sample analysis. The approved MCES Permit must also be submitted to the City upon issuance.

Fees to treat discharges to the municipal or regional sanitary sewer system may also be imposed. The City may withhold a permit until the applicant has arranged for discharge metering and payment. The City contact for coordinating sewer treatment rates can be found on the Temporary Water Discharge Permit application.

5.4.3 Discharges to the storm sewer

Discharges to the municipal or regional storm sewer system may require a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Permit from the MPCA. If a project does have an NPDES Permit, a copy of the permit and sample analysis must be included with the Temporary Water Discharge Permit application. If an MPCA Permit is not required, the applicant must provide verifying documentation and identify the MPCA point of contact. Sample analysis may still be required for submittal with the Temporary Water Discharge Permit application.

5.4.4 Wet-weather discharges

Discharges must be ceased during wet-weather flows and may not recommence until 4 hours after the wet-weather event. In cases of hardship, discharges may be continued with special City approval. Discharge must be conducted in a manner that does not contribute to local flooding or sewer overflow problems and must not create any other negative impacts.

5.4.5 Additional requirements

At the discontinuance of the discharge, all necessary repairs and corrective work to the municipal or regional storm sewer or sanitary sewer systems must be completed by the applicant to the satisfaction of the City.

5.4.6 Other restrictions

The City may require additional information or data and/or impose conditions deemed necessary to ensure the preservation of public and/or environmental health and safety.

These additional reviews or conditions may include (but not be limited to) the following:

- Discharge volumes
- Discharge rates (peak, average, etc.)
- Water quality
- Impacts on maintenance of the municipal and/or regional sewer systems
- Impacts to the receiving water bodies, including ice safety

5.5 Long-term groundwater discharges

A long-term groundwater discharge is an ongoing or episodic groundwater discharge that does not have a specified completion date, including (but not limited to) groundwater-remediation systems and groundwater discharge from development/construction sites after construction is complete. Discharge of groundwater for an unspecified duration is considered long-term even if the discharges are intermittent. In these cases, discharge to the municipal or regional storm sewer or sanitary sewer systems may not occur until the applicant has applied for and the City has reviewed, approved, and issued a Long-Term Groundwater Discharge Approval. Approval applications may be denied at the City's discretion.

Long-term discharge of groundwater to the municipal or regional storm sewer or sanitary sewer systems must meet the applicable requirements of this section. Applicants seeking long-term discharge of groundwater must complete the worksheet in Section 5.8 and include a Groundwater Discharge Plan.

Long-term groundwater discharge to the municipal or regional storm sewer system must meet all applicable surface water discharge standards including rate, quality, and volume requirements per MCO Chapter 54 and the *City of Minneapolis Stormwater and Sanitary Sewer Guide.*

5.5.1 Reduction of discharge rate and volume

All long-term groundwater discharges must be reduced in rate and volume to the maximum extent feasible prior to discharge. Measures considered should include (but are not limited to):

1. Reduction in infiltration to the building. Under the Minnesota Building Code, below-grade foundation walls are required to be waterproof and a foundation drain (typically a drain-tile system) is required on the outside of the footing. Final grade must be set at or below the upper terminus of the waterproofing material and provide adequate separation to the structure. All walls are required to be made water-resistant and weatherproof through a palette of specific water-management products. The applicant should consider measures beyond building code requirements to reduce water seepage through foundation and basement walls. Measures to reduce groundwater infiltration into the foundation drain should also be considered.
2. Design of the building for effective use within groundwater presence (the existence of shallow groundwater) should be considered.
3. Discharge of groundwater onsite to the greatest extent possible. Infiltration, reuse, or other measures should be considered. Any groundwater discharged on site must be managed to prevent any negative impacts to adjacent properties or right-of-way.

Measures considered and implemented for a site must be documented in the Long-Term Groundwater Discharge Approval Application, Worksheet C. Discussion of the reasons for rejection of measures must be included.

5.5.2 Discharge rate standards

Long-term discharge of groundwater must be reduced to the maximum extent possible prior to discharge, as described above.

For discharges to the municipal or regional storm sewer system the proposed maximum groundwater discharge rate, plus the predicted surface water peak runoff rate shall meet the City's surface water rate-control requirements. The typical Minneapolis surface water runoff-rate standard calls for no increase over existing (pre-development) conditions for the 2-year, 10-year, and 100-year storm event, using the NRSC MN MSE3 distributions. The estimated maximum rate from all groundwater discharges must be added to the post-development runoff rate for comparison with the standard. If the proposed groundwater discharge is being directed to an on-site stormwater best management practice (BMP), the stormwater modeling shall include the proposed groundwater discharge. The post-development runoff rate plus the estimated maximum discharge rate from all groundwater discharges must not exceed the standard. Additional rate and volume control may be required based on knowledge of the receiving pipe or system capacity, localized flooding issues, and/or restrictions related to the receiving water body.

For discharges to the municipal or regional sanitary sewer system, rate control may be required based on knowledge of the receiving pipe or system capacity.

5.5.3 Water quality standards

If groundwater exceeds the thresholds for the water quality parameters summarized in Table 5-1, or if the presence of pollution or potential capture of offsite pollution exists, discharge to the municipal or regional storm sewer system will not be permitted. In these cases, other treatment or discharge to the sanitary sewer system may be considered.

Table 5-1 Parameters for analyses of groundwater from site samples

Water Quality Parameters[1]
Chloride (total)
Copper
Lead
Zinc, total (as Zn)
Nitrite+Nitrite, total (as N)
Phosphorus, total (TP)
Phosphorus, total dissolved
Phosphorus, ortho
Total suspended solids (TSS)
Volatile suspended solids (VSS)
Solids, inorganic suspended by difference (TSS-VSS=ISS)
Sulfate
E. coli
Arsenic
Polycyclic aromatic hydrocarbons (PAHs)
Iron, total (as Fe)
Diesel range organics
Volatile organic compounds (VOCs)

1. See Minnesota Rule 7050 for chronic and acute standards

5.5.4 Utility connections

All sewer utility connections for long-term groundwater discharge shall be gravity connections. Groundwater discharges that rely on pumps shall discharge to a private gravity system within the property boundaries.

5.5.5 Cessation of discharge for downstream maintenance or other activity

The City may require that a long-term groundwater discharge be temporarily blocked, stored, diverted, or otherwise removed from the municipal or regional storm sewer or sanitary sewer system for maintenance, repair, replacement, inspection, or other activity. The site discharge system shall include a mechanism for meeting this requirement as part of its design and construction. Upon direction by the City, the property owner will be responsible for developing and implementing a plan for temporarily discontinuing discharge of groundwater to the municipal or regional storm sewer or sanitary sewer system.

5.5.6 Flow meters and utility charges

As a condition of approval, the City may require metering of any long-term discharges and may impose utility charges. If a meter is required, its design must be approved by the City. All costs associated with installation, testing, and maintenance of the meter shall be the responsibility of the property owner.

Any utility charges imposed by the City may be based on the metered flows or estimated using pump characteristics at the City's discretion.

5.5.7 Operations and Maintenance Plan (O&M Plan)

The applicant shall provide an O&M Plan as part of the Long-Term Groundwater Discharge Approval application. The O&M Plan shall define the maintenance regimen including inspection activities and frequency, type and interval of maintenance, and the party responsible for maintenance of all infrastructure and procedures related to the long-term discharge. The O&M plan shall also address inspection and monitoring of ice conditions at the receiving waterbody and include details associated with ice safety during winter months.

5.5.8 Recording of conditions

Recording a declaration or "Notice of Conditions" with the site property deed at Hennepin County is required for any Long-Term Groundwater Discharge Approval. A copy of the recorded Notice of Conditions document(s) including the record number(s) must be submitted to the City before a Long-Term Groundwater Discharge Approval can be issued. The Notice of Conditions must include all information relevant to any long-term discharges. This includes (but is not limited to) the following:

- Approved discharge volumes
- Approved discharge rates
- Details of required measures to reduce discharge rates or volumes
- O & M Plan
- Plan for cessation of discharge
- Testing and reporting requirements
- Metering requirements or conditions
- Identification of inspection rights for the City

At minimum, the following information is required for recording deed restrictions and conditions:

- Correspondence which indicates whether the property is Abstract or Torrens

- Date
- Signature
- Complete and correct legal description
- Exhibits—verify that all exhibits are attached and labeled
- "Drafted by" statement that includes both the name and address of the document drafter
- Acknowledgments—including date, legible notary seal, notary signature, and commission expiration date
    - Individual acknowledgements require names and marital status of signers (single or husband and wife).
    - A corporate acknowledgement requires business name, name of signer, and signer's corporate title.

More information regarding Hennepin County document recording can be found at:

- http://www.hennepin.us/residents/property/real-estate-recording-information

5.5.9 Responsibility following construction/completion

The conditions of any approved Long-Term Groundwater Discharge Approval shall remain in effect unless cancellation is approved by the City. It is the property owner's responsibility to ensure groundwater discharges are in conformance with all conditions of the approval.

The property owner is required to perform routine maintenance of infrastructure related to long-term groundwater discharges in accordance with the approved O&M Plan. All infrastructure shall be inspected by the owner or responsible party annually (or as specified in the O&M Plan) and maintained in proper condition for sustained use, consistent with the designed performance standards. If failing, the property owner must repair or replace the infrastructure to ensure proper function.

All infrastructure related to long-term groundwater discharge is subject to annual inspection by City staff. If the infrastructure is not functioning satisfactorily, the City may issue a notice of noncompliance and corrective action must be taken by the property owner.

5.5.10 City inspection

The City may establish inspection programs (separate from the regular stormwater inspection program) to evaluate and enforce compliance with these requirements including (but not limited to) the following:

- Routine inspections
- Random inspections
- Inspections based on complaints or other notice of possible violations
- Public safety
- Inspection of drainage basins or areas identified as having higher-than-typical sources of sediment, other pollutants, or dry-weather flows
- Inspections of businesses or industries associated with higher-than-usual discharges of pollutants

- Inspections related to the City's Municipal Separate Storm Sewer System (MS4) Phase I Stormwater Permit

Inspections may include (but are not limited to) the following:

- Reviewing maintenance and repair records
- Sampling discharges, surface water, groundwater, and material/water in drainage-control facilities
- Evaluating the condition of drainage-control facilities and other BMPs
- Determining discharge rates and/or volumes

5.5.11 Entry for inspection and abatement purposes

When any new discharge system is installed on private property and when any new connection is made between private property and the municipal or regional storm sewer or sanitary sewer system, the property owner shall grant the City:

- The right to enter the property at reasonable times and in a reasonable manner based on an established inspection program.
- The right to enter the property when the City has a reasonable basis to believe that a violation of this standard is occurring or has occurred.
- The right to enter the property, when necessary, for abatement of a public nuisance or correction of nonconformance.

5.5.12 Other restrictions

The City may require additional information or data deemed appropriate and/or may impose such conditions as may be deemed necessary to ensure the preservation of public and/or environmental health and safety.

These additional reviews or conditions may include (but are not limited to) the following:

- Discharge volumes
- Discharge rates (peak, average, etc.)
- Impacts on maintenance of the municipal and/or regional sewer systems
- Downstream water quality and temperature impacts
- Changes in water levels (both increases and decreases) of nearby surface water bodies
- Diversion and possible capture of groundwater pollution
- Soil vapor impacts from groundwater pollution diversion
- Geotechnical impacts, such as loss of soil strength and/or volume upon drying
- Erosion and sedimentation issues

To avoid delays, submittal of the Long-Term Groundwater Discharge Approval application and plan should occur as early in the process as possible.

5.6 Contacts

For assistance with the City of Minneapolis process and requirements please contact:

Jeremy Strehlo
Jeremy.Strehlo@minneapolismn.gov
City of Minneapolis Public Works-Surface Water and Sewers
(612) 673-3973

5.7 Long-Term Groundwater Discharge Approval applications

The general requirements, process, and required analyses for a Long-Term Groundwater Discharge Approval application are outlined in Sections 5.1–5.5. Performing a Phase II Environmental Site Assessment or obtaining the results of water analyses (if needed) is recommended prior to submitting building permit applications and will help meet the project's timeline goals.

Estimated average annual and maximum discharge rates and volumes must be submitted with the Long-Term Groundwater Discharge Approval application. Additional sheets may be attached, as needed, to complete the information required.

5.7.1 Application submittals

A Long-Term Groundwater Discharge Approval Worksheet (Section 5.8) must be completely filled out, signed, and submitted with the appropriate accompanying plan sets.

Groundwater Discharge Plan: If a Groundwater Discharge Plan is necessary (based on the criteria outlined in Section 5 of this Guide), the plan must accompany the submittal package and include the following:

- Property lines and footprints of structures
- North arrow and scale
- Surface drainage, including topography and drainage directions
- All measurement(s) of the groundwater table elevation(s) obtained on the property with date(s) and method of measurement
- Location and results of site groundwater hydraulic testing (specific-capacity test or other)
- Estimated average annual and maximum groundwater discharge flow rates and volumes
- Location and details of dewatering measures and equipment
- Location and details of groundwater discharge treatment system, if applicable
- Proposed groundwater discharge location
- Discharge cessation details such as gate valve location(s) and diversion system (Section 5.5.5)
- Location and specifications of the flow meter, if required
- Water quality sampling location(s)
- Utility locations, both private and public; existing and proposed storm and sanitary systems
- O&M Plan, if required

- Flow reduction measures considered and incorporated, including discussion of reasons for rejected measures
- Copies of permits required and issued from other agencies (Section 5.1.2)

5.7.2 Analytical data

The Phase II Environmental Site Assessment or other specific site-assessment documents that include comprehensive soil or groundwater testing results, if available, should be submitted with the Long-Term Groundwater Discharge Approval Worksheet. If not available, analytical data is required for groundwater samples from the site. Analytical data must be accompanied by analytical method-detection limits and corresponding chain-of-custody forms and laboratory reports.

5.7.3 Compliance with laws

All property owners and other persons involved in the development of real property shall be responsible for compliance with any and all laws, rules, or government regulations pertaining to groundwater diversions or discharge. This policy shall not be interpreted so as to supersede any conflicting laws, rules, or government regulations which may be amended from time to time.

5.8 Long-Term Groundwater Discharge Approval Worksheet (required*)

*This worksheet must be submitted if long-term discharges are proposed

Site and contact information

Property site address: _____

Name of property owner: _____

Name of responsible party: _____ Job Title_____

Responsible party phone: _____ Email _____

Responsible party mailing address: _____

City/State/Zip: _____

Discharge information

1. **Will there be temporary groundwater discharges, such as during construction?** (If yes, applicant must apply for a Temporary Water Discharge Permit.)	Yes	No
2. **Is long-term discharge of groundwater after construction proposed?** (If yes, applicant must apply for a Long-Term Groundwater Discharge Approval and submit this worksheet.)	Yes	No

Groundwater Discharge Statement (only if you answered "No" to question 2 above)

By signing this form, I acknowledge I am the responsible party for the above. By answering "No" to Question 2 above, I certify that there will be no channelized or pumped groundwater entering a municipal or regional storm or sanitary sewer system, or impacting adjacent properties or right-of-way on a long-term basis as a result of project activities. If discharge of groundwater is found and the discharge has not been authorized, I am aware that penalties can be assessed. If site conditions change and a discharge is needed, I will contact the City by calling (612) 673-3973 to obtain authorization to discharge.

Signature: _____

Printed name: _____ Date signed: _____

If site conditions and discharge changes, you must contact Minneapolis Public Works-Surface Water and Sewers Division: Jeremy Strehlo, (612) 673-3973, jeremy.strehlo@minneapolismn.gov.

Description of discharge (if applicable, attach analytical data report): _____
_____
_____

Phase II Environmental Assessment attached?* Yes No
Groundwater sampling results attached? Yes No

*Although Phase I and Phase II Environmental Assessments are not required, if performed the information collected must be submitted with the Long-Term Groundwater Discharge Approval application.

Proposed maximum discharge rate: _____ (gpm)

Proposed average annual discharge rate: _____ (gpm)

Proposed annual discharge volume: _____ (gallons)

Discharge volumes and rates are based on an estimated groundwater elevation of: _____ ft
_____datum

Measures implemented to reduce discharge: _____
_____
_____

Measures rejected for reducing discharge: _____
_____
_____

Flow cessation method (Section 5.5.5): _____
_____
_____

Other permits issued and attached: _____
_____

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer or professional geologist under the laws of the state of Minnesota.

Signature _____Date _____

Print name _____ MN registration number _____

City staff use only

Permit or authorization number: _____
Approved by: _____ Date: _____

6 Sanitary and Storm Sewer Connections, Disconnections, Repairs, and Extensions

6.1 Introduction

The intent of this section is to provide guidance for obtaining approvals for connections, disconnections, repairs, and extensions to private, municipal, or regional sanitary and storm sewer systems and to outline how a Utility Connection Permit is obtained. Figure 6-1shows typical private sanitary and storm sewer service connections.

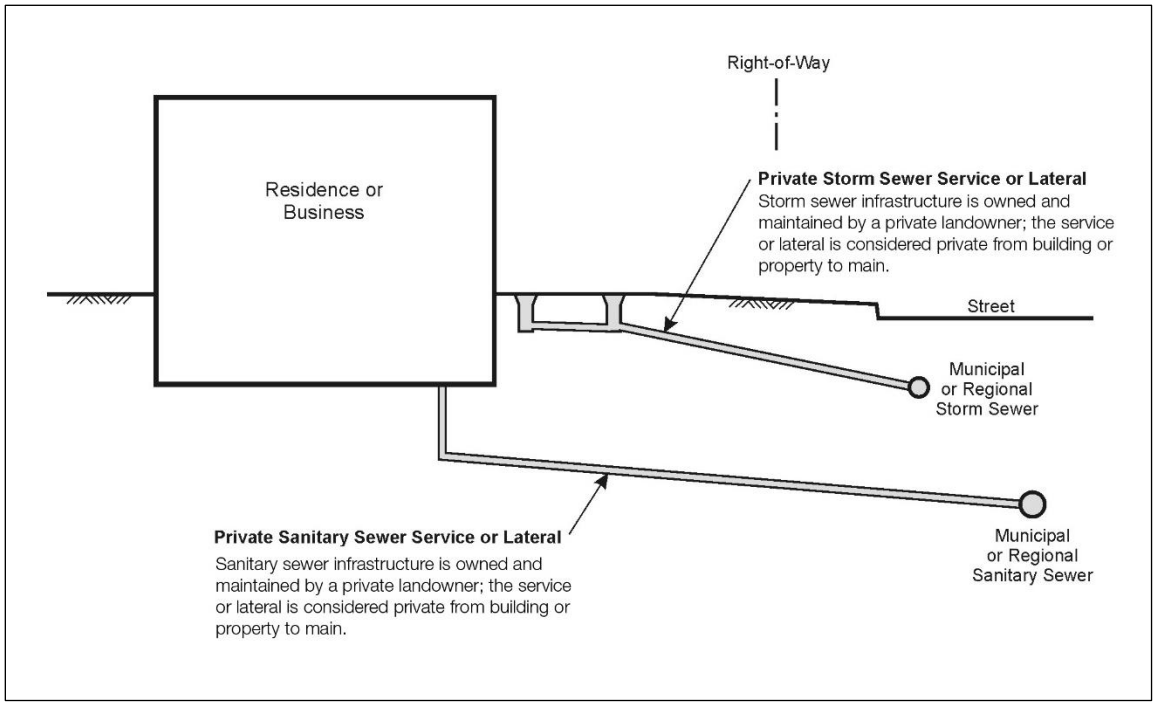


Figure 6-1 Typical private sanitary and storm sewer service connections

6.2 General permitting guidance

6.2.1 Utility Connection Permit requirement

- A Utility Connection Permit is required for the following work in the City of Minneapolis:
  - Private sanitary or storm sewer connections to the municipal or regional sanitary or storm sewer system
  - Extension or modification of a private sanitary or storm sewer system
  - Repair of an existing private sanitary or storm sewer system

- Disconnection of a private sanitary or storm sewer system from a municipal or regional sanitary or storm sewer

- A Utility Connection Permit will only be issued to a licensed, bonded plumbing contractor registered in the City of Minneapolis.
- Once the permit is approved, the permit holder will be held responsible for any infraction of City Ordinances or standards under the permit.
  - Applicable City of Minneapolis Ordinances may include:
    - Chapter 50: Waste Control and Waste Discharge Rules
    - Chapter 52: Erosion and Sediment Control and Drainage
    - Chapter 54: Stormwater Management
    - Chapter 56: Prohibited Discharges to Sanitary or Combined Sewer
    - Chapter 429: Right-of-Way Administration
    - Chapter 505: General Water, Sewer, and Sewage Disposal
    - Chapter 509: Water
    - Chapter 510: Stormwater Management System and Operation of a Stormwater Utility
    - Chapter 511: Sewers and Sewage Disposal

6.2.2 Additional City permits and approvals

The following City of Minneapolis permits may also be required, depending on the project. See the links below for more information.

- Preliminary Development Review (PDR) Process
  - If the sewer work is part of a larger project, the project may need to be routed through the development review process, outlined in Section 2 of this Guide.
- Right-of-Way Excavation Permit, Lane Use/Obstruction Permit
  - See https://www2.minneapolismn.gov/business-services/licenses-permits-inspections/streets-sidewalks-utility/water-utility-permits/
- Plumbing Permit
  - Any work on a private sewer line inside a building or within 5 feet of a building may require a City Plumbing Permit and inspection; state plumbing codes may also need to be met.
  - See https://www2.minneapolismn.gov/business-services/licenses-permits-inspections/construction-permits/permits-overview/permit-types/plumbing-permits/
- Rainleader Disconnect Permit
  - See https://www2.minneapolismn.gov/government/departments/public-works/surface-water-sewers/programs-policy/combined-sewer-overflow/rainleader-disconnections-commercial/

6.2.3 Additional Metropolitan Council Environmental Services (MCES) Permit and approvals

MCES approval and permitting are required when the proposed work involves a direct connection to a regional sanitary sewer or interceptor owned and operated by MCES. City of Minneapolis staff will determine if an MCES Direct Connection Permit is applicable for the proposed work. Refer to Section 6.5.3 for fee information.

Industrial users discharging into municipal or regional sanitary sewers shall apply for an MCES Industrial Discharge Permit, unless MCES determines that the wastewater impact on sewers is insignificant. An industrial user requiring an MCES Industrial Permit should not discharge into municipal or regional sanitary sewers until a permit has been issued by MCES. The City of Minneapolis will not issue a Utility Connection Permit until the MCES Industrial Discharge Permit has been granted or MCES has documented that the permit is not necessary.

6.2.4 Additional Minnesota Pollution Control Agency (MPCA) Permit and approvals

Industrial users discharging into the municipal or regional storm or sanitary sewer system must apply for an MPCA National Pollutant Discharge Elimination System (NPDES) Permit. Non-stormwater industrial discharges to the municipal or regional storm sewer system are not allowed without an MPCA NPDES Industrial Stormwater Permit. An industrial user requiring an MPCA Industrial Stormwater Permit may not discharge into the municipal or regional storm or sanitary sewer system until a Utility Connection Permit has been issued by the City.

6.3 Prohibited discharges

The following are prohibited discharges to the sanitary sewer system.

- Stormwater or clear water conveyed by rainwater pipes, rainleaders, area drains, or other connections cannot be discharged to the sanitary sewer system. An exception is made for floor drains in new parking ramps (not an uncovered top deck). Ramp drains that discharge to the sanitary sewer system must include separators to prevent discharge of oil and grease.
- Industrial discharges cannot be made to the sanitary sewer system unless permitted or waived by MCES (see Section 6.2.3).
- Industrial discharges cannot be made to the storm sewer system unless permitted or waived by the MPCA (see Section 6.2.4).
- No person shall cause or allow groundwater discharges to the municipal or regional sanitary sewer system without first receiving approval from the City of Minneapolis. See Section 5, Groundwater Discharge, for more information.

The following are prohibited discharges to the storm sewer system.

- According to the Minneapolis Code of Ordinances (MCO, Title 19, Chapter 511), “No person shall build or repair any ditch or lay or repair any pipe or conduit for the purpose of discharging storm, surface, cooling, or condenser water into the Mississippi River or any stream or watercourse within or adjacent to the boundaries of the City.”
- No person shall cause or allow groundwater discharges to the municipal or regional storm sewer system without first receiving approval from the City of Minneapolis. See Section 5, Groundwater Discharge, for more information.

- Discharges from parking ramp floor drains (other than an uncovered top deck) are prohibited.
- Industrial discharges to the storm sewer system (other than permitted stormwater runoff from an industrial site) are prohibited.

6.4 Utility Connection Permit process

6.4.1 Contact information

Utility Connections Office
(612) 673-2451

MCES Sewer Permitting
(651) 602-1125

The following flow charts describe the process for obtaining a Utility Connection Permit for sanitary sewers (Figure 6-2) and storm sewers (Figure 6-3). Specific permit submittal requirements and fees are outlined in Section 6.5 of this Guide.

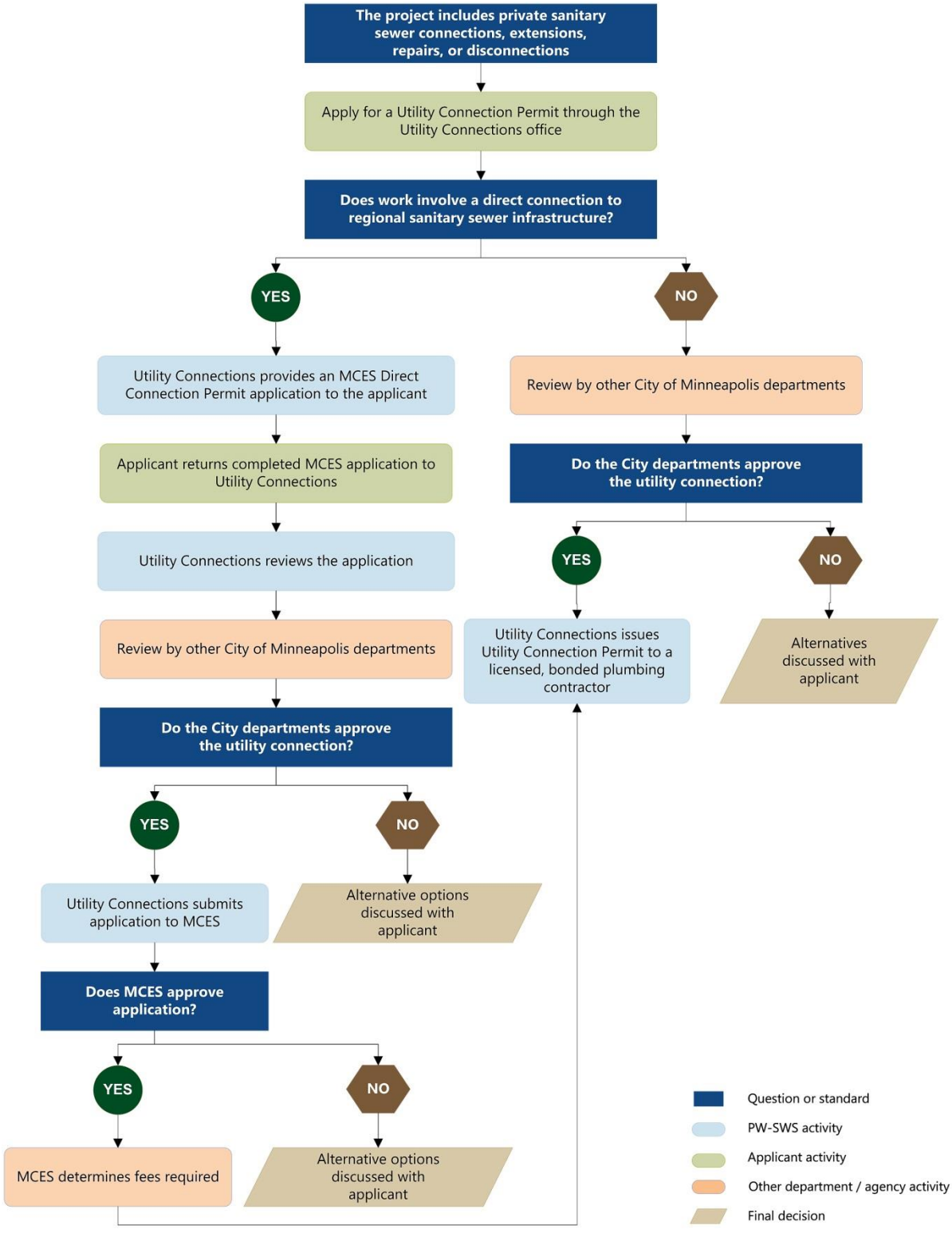


Figure 6-2 Utility Connection Permit process—sanitary sewer

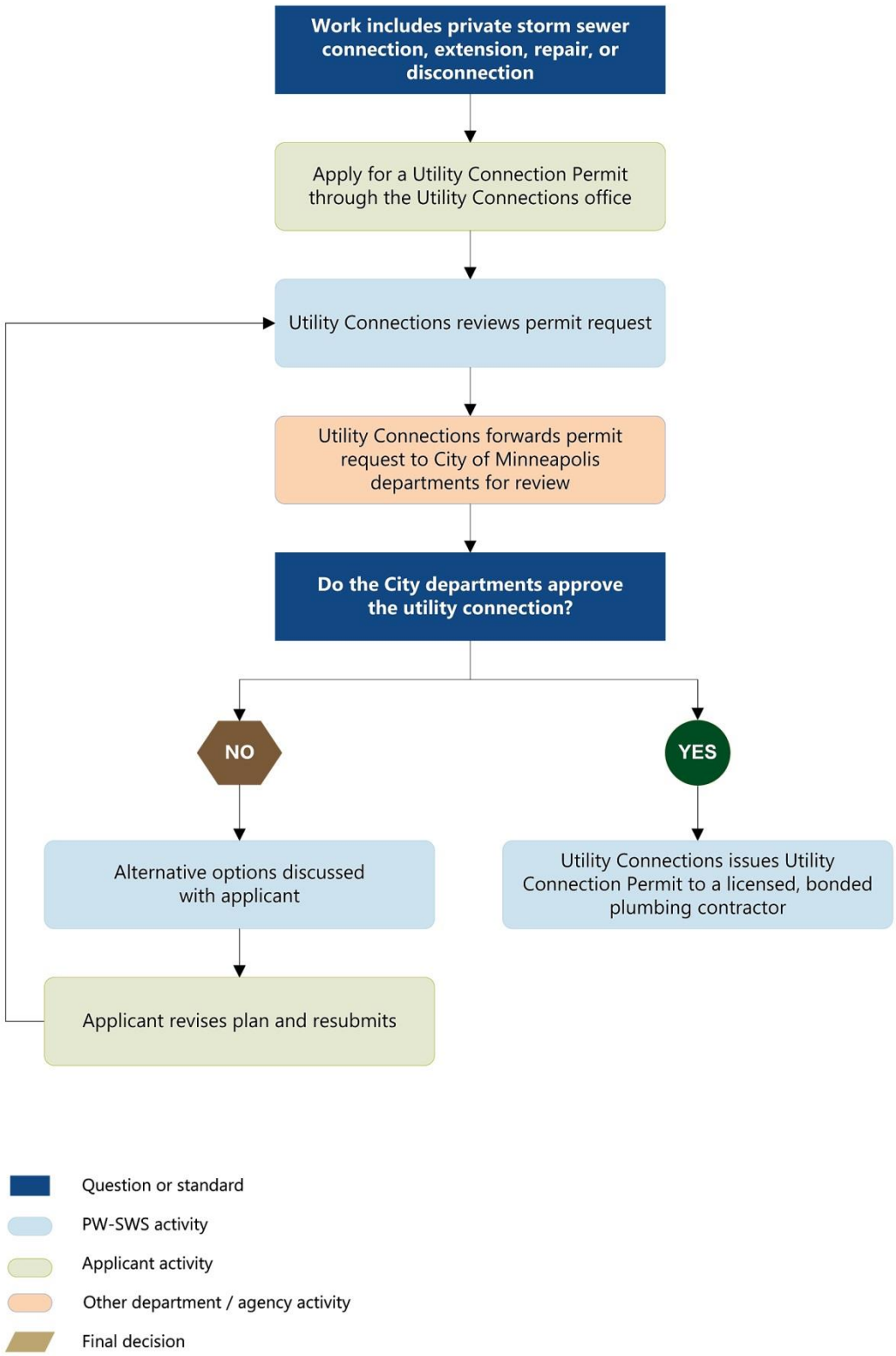


Figure 6-3 Utility Connection Permit process—storm sewer

6.5 Utility Connection Permit requirements and standards

6.5.1 Submittal requirements

The following must be completed and submitted to obtain a Utility Connection Permit:

- Utility plans
- Property address
- Name of property owner
- The proposed service connection
- All associated pipe sizes and materials
- Means or method of connecting to the municipal or regional sewer
- Adjacent streets
- Project contact name and phone number

Storm sewer work should also detail the following:

- Associated buildings and connected impervious area to be drained
- Total area in square feet connected to the proposed storm line

Combined sewer separation should also detail the following:

- Sanitary sewer connection
- Point of separation
- Any abandonment of structures or pipes
- Any backflow prevention

For projects that require additional MCES approval, MCES submittal requirements will be outlined separately on the MCES Direct Connection Permit application that will be forwarded to the applicant by the Utility Connections Office.

6.5.2 Inspections and testing requirements

The following are requirements for the approved Utility Connection Permit.

- The contractor or permit holder must notify the Utility Connections Office at (612-673-2451) 48 hours prior to working on, inspecting, or accessing any part of the private, municipal, or regional sanitary or storm sewer system as covered by the approved Utility Connection Permit.
- The Utility Connections Office will inspect connections, extensions, repairs, or disconnections to the municipal sanitary or storm sewer system before the completed work is covered up or concealed.

All sanitary and storm sewer connections, extensions, connection repairs, and disconnections must be installed according to the approved permit documents and must conform to all applicable requirements. All design changes or field modifications made after the Utility Connection Permit has been issued must

be reapproved by the City of Minneapolis prior to the work. All design changes shall be resubmitted to the applicable permit and inspections office 72 hours before work is to commence.

6.5.3 Permit and connection fees

- Contact the Utility Connections Office for current fee information.
- If City staff determines that MCES approval and permitting is required, a Direct Connection application fee or other fees may be required.
    - http://www.metrocouncil.org/Wastewater-Water/Funding-Finance/Rates-Charges.aspx

6.5.4 General design guidelines and standards

All connections to the municipal sanitary or storm sewer systems and portions of private sanitary or storm sewer systems within the public right-of-way shall meet minimum City of Minneapolis standards including:

- Standard Supplemental Specifications for the Construction of Public Infrastructure
    - https://www2.minneapolismn.gov/business-services/doing-business-with-the-city/construction-infrastructure/standard-specifications-detail-plates/
        - Section 1507: Utility and Property Service
        - Excavation and Preparation of Trench
        - Section 2503: Pipe Sewers
        - Section 2506: Manholes and Catch Basins
- Minneapolis Ordinance Title 19, Chapter 511, Sewers and Sewage Disposal, Rules for Sewer Connections

It is recommended that private sanitary and storm sewer systems be designed and constructed in accordance with the following standards:

- Recommended Standards for Wastewater Facilities (2014)
- *Minnesota Stormwater Manual*
    - http://stormwater.pca.state.mn.us/index.php/Main_Page

In general, private sanitary and storm sewer connections to the municipal sanitary or storm sewer system must be made by the following methods:

- All private connections to the municipal system must be gravity connections.
- Private drain tile and foundation drains must connect to a structure or cleanout within the property prior to connection to the municipal system.
- The preferred location for a connection is at an existing connection or manhole if the private service can be installed perpendicular or nearly perpendicular to the main.
- Connections to municipal catch basins will not be permitted.
- A new manhole on the municipal sewer main for the purpose of making a private connection will not be permitted unless the standards below cannot be achieved.

    - Proposed service connections directly to the municipal sewer main must be core-drilled with a saddle-tee fitting installed for the following connections:
        - Clay municipal sewer main where the proposed service size is one-third the size of the clay municipal main or less
        - Municipal sewer main material other than clay where the proposed service size is two standard pipe sizes below the municipal sewer main size
- Where the municipal sewer main is clay and the proposed private sewer service size is greater than one-third the size of the main, service connections must meet the following standards:
    - The connection must be made by removing a section of the municipal sewer main and replacing it with a branch tee or wye section.
    - The branch tee or wye must be of the same material as the municipal sewer main.
    - Rubber couplings with stainless steel shear rings and stainless steel clamps must be provided.
- Due to the number of failures to old private sanitary sewer connections, the City requires old private sanitary sewer connections which are going to be reused by a new house/new construction to be lined.
- The City may apply additional standards to ensure the integrity and functionality of the municipal sanitary and storm sewer systems.

6.5.5 Additional disconnection guidelines

When disconnecting a private sanitary or storm sewer connection from the municipal sanitary or storm sewer system the following standards must be followed:

- All disconnection work must be permanent; no temporary caps or plugs are allowed.
- All disconnections in the downtown area must occur at the municipal sanitary or storm sewer.
- Any existing private sanitary or storm sewer services abandoned in place are still the responsibility of the property owner—as are bulkheads, plugs, or caps installed on the municipal sanitary or storm sewer system in association with a disconnection.
- Any private storm sewer disconnection must be redirected in a manner such that flows do not negatively impact adjacent properties, right-of-way, or public infrastructure.

6.5.6 Additional guidelines

If an extension of the municipal sanitary or storm sewer system is necessary to make a private connection see Section 7 of this Guide.

6.5.7 Additional resources

- Utility Connection Permit records are available by calling the Utility Connections Office at (612) 673-2451.
- MCES records are available by calling (651) 602-1125.

7 Public Stormwater or Sanitary Sewer Infrastructure Construction/Reconstruction

7.1 Introduction

The intent of this section is to provide guidance to developers for obtaining approvals for work affecting the municipal storm sewer or sanitary sewer systems and to describe possible construction, inspection, certification, and acceptance processes.

7.2 Need for public improvements

In some instances, development or redevelopment of a property may result in expanded storm sewer or sanitary sewer needs at the development site and/or improved service to the site. The applicant will be responsible for the costs of the necessary improvements which may include (but not be limited to) the following:

- Extending storm sewer or sanitary sewer mains to serve the property
- Increasing the capacity of existing storm sewer or sanitary sewer mains serving the property
- Modifying the existing storm sewer or sanitary sewer system to accommodate proposed developments and/or connections
- Repairing existing portions of the storm sewer or sanitary sewer that serve the property

The necessity for improvements to the municipal storm sewer or sanitary sewer may be identified either by the applicant or the City; however, all proposed improvements are subject to City approval. The City may deny proposed improvements to the municipal storm sewer or sanitary sewer system at its discretion.

7.2.1 Expanded public improvements scope

The City may determine that additional improvements to the public storm or sanitary sewer system are necessary beyond the requirements of the development property. This may include upsizing a proposed sewer main to accommodate future connections from other properties, extending service to properties beyond the development site, or modifying the existing municipal storm or sanitary sewer system to improve service. In these instances, the City will work with the applicant to coordinate design and construction of these improvements.

7.3 Approval process

The applicant should work with Public Works-Surface Water and Sewers Division (PW-SWS) staff as early in the planning and design process as possible to identify any potential need for improvements to the municipal storm sewer or sanitary sewer system. Approval for a development project will not be granted until the design of the public improvements has been completed and all agreements and/or contracts have been signed by the applicant.

The design of all public improvements must be in conformance with the Standard Supplemental Specifications for the Construction of Public Infrastructure in the City of Minneapolis and Standard Detail Plates:

- https://www2.minneapolismn.gov/business-services/doing-business-with-the-city/construction-infrastructure/standard-specifications-detail-plates/

If improvements to the municipal storm sewer or sanitary sewer system are necessary as a result of the proposed development, the applicant and City shall determine how the design and construction of the improvements will be done. Improvements may be either:

1. Designed by an engineer hired by the applicant and constructed by a contractor hired by the applicant (see Section 7.4 for further details).
2. Designed and constructed by the City through its standard design and construction process (see Section 7.5 for further details).

7.4 Developer-designed and installed improvements

If the applicant takes responsibility for the design and construction of public improvements, those improvements must be designed by a licensed engineer in the State of Minnesota and plans must be submitted to the City for review and approval. At the City's discretion, this review can take place as part of the preliminary development review (PDR) process, or separately.

Once the plans have been approved by the City, the applicant must enter into a Testing and Inspection Agreement with the City. Permits will not be issued until the Testing and Inspection Agreement has been executed and all bonds, securities, insurance, and/or certifications identified in the agreement have been provided.

Upon satisfactory completion of the improvements and submittal of all testing and inspection records and record drawings, the City will provide initial written acceptance of the improvements and a 1-year warranty period will begin. This warranty period is identified in the Testing and Inspection Agreement and may be revised. If the City notifies the applicant of deficiencies in the improvements prior to final acceptance, the applicant will be responsible for taking corrective action. If no issues have been identified by the end of the warranty period and all bills associated with the Testing and Inspection Agreement have been paid the City will provide final written acceptance and release any bonds and/or securities.

7.4.1 Record drawings

Record drawings of public improvements shall be submitted to the City within 90 days of construction completion. The record drawings must be signed by a licensed engineer or surveyor in the State of Minnesota and conform to the standards identified in the Standard Supplemental Specifications for the Construction of Public Infrastructure in the City of Minneapolis.

- https://www2.minneapolismn.gov/business-services/doing-business-with-the-city/construction-infrastructure/standard-specifications-detail-plates/

7.5 City-designed and installed improvements

If the City undertakes the design and construction of the public improvements, the City's standard procedures for public-improvement projects shall apply. The applicant shall be aware that this process may have implications in terms of project timelines and approvals.

7.6 General design guidelines and standards

All municipal sanitary or storm sewer systems shall meet minimum City of Minneapolis standards including the following:

- Standard Supplemental Specifications for the Construction of Public Infrastructure and Detail Plates
    - https://www2.minneapolismn.gov/business-services/doing-business-with-the-city/construction-infrastructure/standard-specifications-detail-plates/

8 Stormwater Utility

8.1 Stormwater utility fee

Chapter 510 of the Minneapolis Code of Ordinances (MCO, Stormwater Management System and Operation of a Stormwater Utility) establishes requirements for stormwater utility fees.

The stormwater utility user fees pay for the City's stormwater system, annual operations and maintenance costs, capital investments, and debt service. The fees are billed monthly for properties in Minneapolis including properties that are tax exempt and those owned by city, county, state, and federal governments.

The following are exempt from these charges:

- Public rights-of-way for streets, alleys, and sidewalks
- Public trails
- Railroad tracks that are not in railroad yards
- Public lands and/or easements upon which the stormwater management system is constructed or located

Prior to 2005, the utility fee for stormwater was combined with the utility fee for sanitary sewer service. Fees for the two services were separated in March 2005.

8.1.1 Stormwater utility fee calculation (except single-family home category)

Stormwater utility fee calculations relate to property impervious area. Fees are calculated in the same manner for all property types, except for the category that includes single-family homes, duplexes, and triplexes (see Section 8.1.2).

The calculation used to determine stormwater utility fees is shown below. Calculation terms are explained on the following page and an example is provided in Section 8.1.1.1.

Gross square footage of property	Multiplied by	Runoff coefficient	Divided by	1,530 sq. ft. (1 ESU*)	Multiplied by	Monthly rate per ESU*	Equals	Monthly charge
(a)	X	(b)	÷	(c)	x	(d)	=	(e)

* ESU: equivalent stormwater unit

(a) **Gross square footage of property:** The total area of the property is determined from county records (Hennepin County, Minnesota).

(b) **Runoff coefficient:** Generally, Minneapolis fees are based on the gross parcel area factored by a runoff coefficient, designed to be representative of the relative surface imperviousness of each land-use category, providing an estimate of the relative responsibility for stormwater runoff. The current runoff coefficients are shown in Table 8-1.

(c) **1 equivalent stormwater unit (ESU)** = 1,530 square feet

One ESU is the unit of measure for applying the monthly stormwater utility rate. The ESU of 1,530 square feet has been established by ordinance to represent the average impervious area of a medium-sized, single-family, residential, developed property in Minneapolis. This serves as the unit of measure for all land-use categories.

(d) **Monthly stormwater utility rate per ESU:** The monthly rate for one ESU is set by annual City Council resolution. The current stormwater utility fee rate can be found online at this location: https://www2.minneapolismn.gov/government/departments/public-works/surface-water-sewers/storm-utility-fee/

(e) **Monthly charges:** The result of the calculation using values established in steps (a) through (d).

Table 8-1 Runoff coefficients by land-use category

Land Use	Runoff Coefficient
Bar, restaurant, entertainment	.75
Car sales lot	.95
Cemetery with monuments	.20
Central business district	1.00
Common area	.20
Garage or miscellaneous residence	.55
Group residence	.75
Industrial warehouse/factory	.90
Industrial railway	.85
Institution, school, church	.90
Miscellaneous commercial	.90
Mixed commercial—residential/apartment	.75
Multi-family apartment	.75
Multi-family residential	.40
Office	.91
Parks and playgrounds	.20
Public accommodations	.91
Retail	.91
Single-family (attached)	.75
Single-family (detached)	ESU
Sport or recreational facility	.60
Utility	.90
Vacant land use	.20
Vehicle-related use	.90

The runoff coefficients are published in the annual Utility Rate Resolution and are subject to change; however, they have remained constant since 2006.

8.1.1.1 Stormwater utility fee calculation example

Example: Miscellaneous commercial property on a 10,000-square-foot parcel

Gross square footage of property	Multiplied by	Runoff coefficient	Divided by	1,530 sq. ft. (1 ESU)	Multiplied by	Monthly rate per ESU	Equals	Monthly charge
10,000	X	0.90	÷	1,530	x	$15.59	=	$91.71

8.1.2 Stormwater utility fee calculation (single-family residential category)

There are three tiers for the single-family residential category, which includes duplexes and triplexes (Table 8-2). A single-family home with an estimated impervious surface area of 1,485 to 1,578 square feet is in the medium tier and is charged 1 ESU. A single-family home with an estimated impervious surface area less than 1,485 square feet is in the low tier and is charged 0.75 ESUs. A single-family home with an estimated impervious surface area greater than 1,578 square feet is in the high tier and is charged 1.25 ESUs.

Table 8-2 Monthly stormwater utility fee calculation (single-family home)

Tier	ESUs	2025 Monthly Charge
Low	0.75	$11.69
Medium	1.00	$15.59
High	1.25	$19.49

8.1.3 Adjustments to stormwater utility fee calculation

Stormwater utility fees may be reduced in one of the following ways:

1. **Adjustment to impervious area or runoff coefficient calculation:** A review of the account may be requested by the property owner or conducted by administrative staff to confirm the impervious area or land-use category and runoff coefficient. If it is apparent that the assigned runoff coefficient (Table 8-1) does not fairly represent the impervious area of the property, runoff coefficients may be corrected or replaced with the actual square footage of impervious area. These adjustments may be based on an examination of aerial photographs, site visits, development plans, or other data. To request a review of the stormwater utility fee calculation, contact:

   Minneapolis Stormwater Utility
   Email: SWSUtility@minneapolismn.gov

   As described in Section 510.70 of the ordinance, calculation of the stormwater charge, assigned land-use category, property benefit from the stormwater utility, or credit status can be appealed by the property owner.

2. **Reduction of impervious area:** A property owner may elect to replace impervious area on the property with a pervious surface to reduce the fee. Impervious surfaces restrict the infiltration of

rainfall or snowmelt into the soils below and are the main cause of many challenges associated with stormwater runoff (e.g., increased runoff volumes, peak flows, and pollutant loads).

Examples of impervious surfaces include (but are not limited to) the following:

- Roofs (buildings, garages, sheds)
- Driveways
- Parking lots
- Sidewalks
- Patios
- Decks
- Brick pavers
- Gravel areas subject to vehicles, storage, compaction

Examples of reducing the amount of impervious area on a property are:

- Replacement of pavement with a pervious surface such as turf grass of other vegetation.
- Replacement of patios, sidewalks, or other hard surface areas with permeable pavers or other porous surfaces.
- Installation of a "green roof" on a conventional roof. A green roof is one that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane.

3. **Installation of stormwater management practices:** Effective stormwater management practices help the City address the challenges associated with stormwater runoff (increased runoff volumes, peak flows, and pollutant loads). Property owners who use these practices can apply to receive reductions in their monthly stormwater utility fees through the Stormwater Credit Program (see Section 8.2), administered by the City of Minneapolis Public Works-Surface Water and Sewers Division (PW-SWS). In addition to controlling runoff, many types of stormwater management practices can be constructed as attractive landscape features that add green space, create a more sustainable urban environment, improve aesthetics, and add habitat for birds and pollinators.

8.2 Stormwater Credit Program

There are two categories of credits for constructed stormwater management practices:

- Category 1: Stormwater quality credits
- Category 2: Stormwater quantity-reduction credits

While quality credits are more commonly issued, it is possible to use the two categories in combination. The total of quality and quantity credits cannot exceed 100% of the stormwater utility fee.

Before applying for a stormwater credit:

- Property owners must complete a final Stormwater Management Report (Section **Error! R eference source not found.**).
- City inspectors must find the site to be in compliance, as documented by a Stormwater Management Inspection Report (Section 4.3.3.2).

Note: Owners of single-family properties do not need to comply with Sections 4.3.3.1, 4.3.3.2, and 4.3.3.3.

8.2.1 Category 1: Stormwater quality credits

Property owners can apply for a stormwater quality credit if properly designed and constructed on-site stormwater best management practices (BMPs) are installed. The purpose of the credit is to encourage removal of pollutants from stormwater to protect lakes, creeks, and the Mississippi River. The amount of the quality credit (up to 50 percent of the stormwater utility fee) is based on the percentage of the total impervious area on the parcel treated by BMPs. Water quality modeling may be required to calculate pollutant load removals.

Common stormwater BMPs include (but are not limited to):

- Rain gardens (also called bio-infiltration cells or bio-retention cells)
- Infiltration trenches
- Water quality ponds and wetlands
- Vegetated swales
- Sand filters
- Water quality underground structures
- Porous pavement (pervious concrete, porous asphalt, or porous pavers)

8.2.2 Category 2: Stormwater quantity-reduction credits

Property owners who can demonstrate that all stormwater is retained onsite without discharge during the 10-year design storm (50% credit) or the 100-year design storm (100% credit), may be eligible for a stormwater quantity-reduction credit. The 10-year or 100-year design storm is defined by NOAA Atlas 14, Volume 8, Version 2, Midwestern States, with the NRCS MN MS3 distribution.

To be eligible, the property owner must demonstrate that natural topographic features and/or properly designed and constructed BMPs provide volume control for the entire property, with no discharge up to

the 10- or 100-year event. The BMPs and any natural topographic features incorporated as stormwater tools must be on land wholly owned by the applicant(s). These natural features are required to meet the same standards for performance and maintenance as constructed stormwater BMPs. All applications for stormwater quantity-reduction credits must be certified by a state-licensed professional engineer or landscape architect.

8.2.3 Stormwater Credit Program applications and submissions

Before applying for a stormwater credit, the property owner must comply with the requirements outlined in Sections 4.3.3.1 and 4.3.3.2. (These requirements do not apply to owners of single-family properties.) A completed Stormwater Credit Program application form, signed by the property owner, can then be submitted with all necessary review items. Checklists, application forms, and instruction guides for quality and quantity-reduction credits can be found at the following locations:

Quality credit

- http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/webcontent/convert_276373.pdf

Quantity-reduction credit

- http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/webcontent/convert_255956.pdf

Submit the application and required submittal items to:

Minneapolis Stormwater Utility
Email: SWSUtility@minneapolismn.gov

Appendix A

Operations and Maintenance Plan Inspection Template

Site Name or Location BMP Maintenance and Inspection Specifications (Template)

How to use this template and guide in developing site and BMP specific inspection forms and reporting:

The purpose of the inspection process including site inspection, recording the results, and creating the inspection report, is to determine and recommend the maintenance types, activities, and frequencies to maintain or restore a BMP's original design function. The inspection process must lead to a maintenance recommendation including taking no actions if the BMP is found in full compliance. Inspection frequency can be modified based on maintenance recommendations.

The property owners may use any BMP inspections forms that are approved by the City, provided by the Minnesota Stormwater Manual (https://stormwater.pca.state.mn.us/index.php?title=Forms_(including_field_inspection_forms)), or use this template for developing site and BMP specific inspection forms and reporting. Examples of BMP specific inspection forms and reporting are provided in the other appendixes, such as:

- Wet Ponds
- Detention Basins
- Pervious Asphalt
- Rain Garden
- Simple Rock Infiltration Trench
- Sump Manhole
- Wet Vault
- Dry Detention Basin
- Proprietary Manhole

Examples of essential components of typical inspection forms, recording BMP information, and results and maintenance recommendation:

- Property contact form
- Inspection Type: routine scheduled inspection, preventive, corrective, responding to a complaint or emergency inspection
- Projected maintenance equipment and materials needed
- Maintenance Log: past work orders and checklist
- Detail/cross-section of each BMP
- Weather conditions and time of last rain fall (inches)
- Inspection Activity (What to look for)
- Permanent pool elevations fluctuations
- Debris blocking outlet structure
- Damage to pipes
- Invasive plants outcompeting the desired plants
- Sediment accumulated in the pond, volume reduction
- Slope stabilizing vegetation- condition
- The structural integrity of the embankment, weir, or riser
- Snow removal or storage plan
- Landscaping, buffer, vegetations management (mowing) / plans
- Tree plans and protections
- Site Specific Chloride reduction management plan or Addendum
- Maintenance recommendations including a timeline (schedule) for preventive and structural maintenance.

Site Name or Location BMP Maintenance and Inspection Specifications (Template)

<table>
<tr><th colspan="3">BMP Type and Practice</th></tr>
<tr><td colspan="2">Include a site map clearly detailing:
The location of each BMP
Curb Cuts and Forebays
Contributing areas
Emergency overflows
SAFL Baffles
Isolator row or sumps
Clean outs and inspection ports
Drain tile and any associated piping
Screens or filters
Relevant drainage structures</td><td>Include a relevant detail labeling structures and features so they correspond with the inspection activities outlined in page 2</td></tr>
<tr><td>BMP ID:</td><td>Location:</td><td>Inspection Frequency:</td></tr>
<tr><td>Assigned By Public Works</td><td>Property Address</td><td>To be determined</td></tr>
<tr><td colspan="3">Description of Device: Describe device, how it functions and any details that will be helpful for the inspector and maintenance crew.</td></tr>
<tr><td colspan="3">Structure Access: (For underground only) What type of access structure is it, where is it (Traffic, boulevard park area, garage, etc.)</td></tr>
<tr><td colspan="3">Notes and Comments: Confined Space required, SAFL BAFFL, weir wall, skimmer plate, back flow preventer, etc. Anything pertinent can be placed here including snow removal/storage plan or salt and vegetation management plan references.</td></tr>
</table>

Site Name or Location BMP Maintenance and Inspection Specifications (Template)

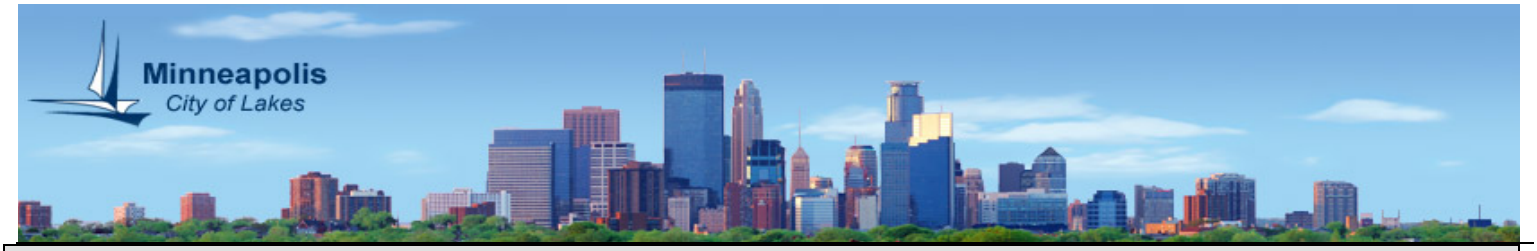
Site ID ***Provided by Public Works***		**BMP Type/Number**		
Inspection Date / /		**Inspector:**		
Inspection Activity	**Observations Measurements** *(Filled in by the inspector)*	**Maintenance**	**Maint. Required**	**Actions Required/Date Completed/Responsible Foreman**
What to look for ***Where to look,*** ***What to expect***	***Notes*** ***Observations*** ***Measurements*** ***Standing Water***	***When to clean/provide maintenance*** ***How to maintain or fixed*** ***Who to notify if there are problems?***	***Yes No***	***What needs to be done and who did it*** / / Responsible Party:
				/ / Responsible Party:
				/ / Responsible Party:
				/ / Responsible Party:

Complete this self-inspection form for each site inspection, and return a copy annually to: stormwater@minneapolisMN.gov

Minneapolis Surface Waters and Sewers
Attention: Stormwater Inspections
250 South 4th Street Room 300, Minneapolis, MN 55415

Appendix B

Stormwater Management Device Property Contact Form



City of Minneapolis Private Stormwater Management Device Contact and Responsibility Form:			
Property Address			
Location of BMP (provide a description or include a site map)			
Owner Contact Information		**Site Plan ID**	
Name:		**Email**	
Address:		**Telephone**	
City, State, Zip Code:			

Best Management Practice(s) Installed

Practice	BMP Installed
☐ Infiltration	☐ Rain Gardens or Bioretention areas
☐ Filtration	☐ Underground Structural
☐ Infiltration/Filtration	☐ Wet or Dry Pond
☐ Hydrodynamic	☐ Proprietary Device
☐ Filter	☐ Pervious Pavers/Pavement/Concrete
☐ Detention	☐ Swales

Inspection / Compliance Responsibility Information			
Name:		E-Mail	
Company:		Telephone:	
Address:			
City, State, Zip Code			
Maintenance Responsibility Information			
Name:		E-mail	
Company:		Telephone:	
Address:			
City, State, Zip			
Signature of Responsible Person:		Date:	

Please complete this form and return self-inspection records for the referenced property annually to:

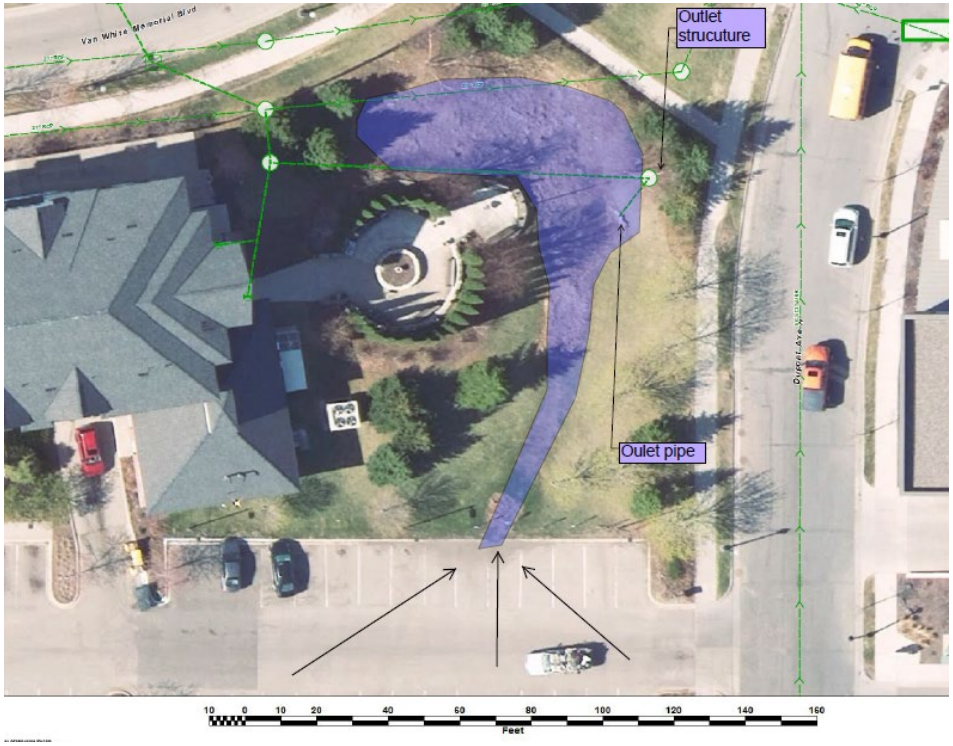
Minneapolis Water Resources **stormwater@minneapolis.mn.gov**
Attention Stormwater BMP Inspection
City of Minneapolis, Department of Public Works
250 South 4th Street Room 300
Minneapolis, MN 55401-2268

Appendix C

Completed Operations and Maintenance Plan Example

Minneapolis Project - Best Management Practice Maintenance and Inspection Specifications

Rain Garden/Bioretention



BMP ID: 7528	**Location:** Adjacent to building see map	**Inspection Frequency:** Fall, Spring and following rain events greater than 2”

Description of Devices: Rainwater runoff from the parking lot and other impervious surfaces sheet flows to an opening in the curb near the entrance. Water then flows across vegetation/sod to depressed, planted rain gardens. These planted areas allow the water to be absorbed into the ground, assisted by drain tile pipe in the bottom of the garden. In large rain events the water will overflow through a 15” Concrete pipe to the public storm drain

Routine Maintenance

- Check for trash debris or areas of erosion
- *Weeding* – Remove weeds routinely. If very dry conditions have existed, it’s helpful to water the area which will loosen the root system
- Keep open areas covered with sufficient mulch, shrubs, or other vegetation

Notes: Return reports annually to Minneapolis Public Works SWS stormwater@minneapolismn.gov

Minneapolis Project - Best Management Practice Maintenance and Inspection Specifications

BMP ID 7528		**Rain Garden/Bioretention**		
Inspection Date / / 20		**Inspector:**		
Inspection Activity	**Observations Measurements**	**Maintenance**	**Maint. Required**	**Actions Required/Date Completed/Responsible Foreman**
General: Inspect contributing areas for dirt, trash, leaves etc. **Basin** Check for sediment build up in the swale or any erosion or bare spots.		Contributing areas Sweep remove litter/debris. Seed, mulch or sod any bare or eroded areas contributing to the BMP Basin 1. Remove accumulated sediment and debris. 2. Seed, blanket and stabilize any bare or denuded areas.	Yes No Yes No Yes No	/ / 20 Responsible Party:
Outlet pipe Inspect pipe and grate for debris or trash **Structure** Inspect overall condition and all pipe connections		Remove debris or vegetation from pipe or structure grate. Verify outlet pipe and drain tile connections are unobstructed Condition of Grate, adjusting rings, connections,	Yes No Yes No Yes No	/ / 20 Responsible Party:
Vegetation/Mulch Visual inspection of Edge, basin bottom and all landscaping adjacent to or contributing to the basin		Remove and replace dead plants; remove cat tails, invasive plants, weeds and woody vegetation, prevent soil loss by protecting bare soils after weeding. Mulch depth should be 4” to 5” add whenever mulch levels are less than 3 using only a double shredded hardwood	Yes No	/ / 20 Responsible Party:
Dewatering Visual inspection for any standing water present in the basins or forebays		*If standing water is present 72 hours after a storm event* Notify maintenance contractor and if unable to drain basin contact City of Minneapolis 612-673-2406.	Yes No	/ / 20 Responsible Party: