



# Standard Operating Procedure

## For More Information

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## Appendices

A – Education and Outreach Implementation Plan

## 1. Minimal Control Measure 1: Public Education and Outreach

### 1.1 Purpose

The MS4 General Permit requires the City of Golden Valley (City) to develop and implement a public education and participation program for the purpose of informing the public of the impact stormwater discharges have on waterbodies and the actions they can take to reduce the discharge of pollutants to stormwater. This manual not only assists the City in meeting the MS4 Permit requirements, will help promote behavior change to improve the water quality of the City's water resources.

### 1.2 Identifying Priority Topics

The City has identified potential priority topics for public education, outreach, and participation, primarily based on land use and overall population demographics (Appendix A). Other topics that the City must provide annual education and outreach on include illicit discharge detection and elimination, pet waste, and deicing salt use.

The City is recommended to evaluate their high priority education topics at least once during each five year permit term, and update as needed.

### 1.3 Distribution of Educational Materials

The City has identified a variety of opportunities to distribute educational materials to their residents and business owners (Appendix A). Distribution of educational materials and information will primarily be done through the City's website, an annual newsletter, and twice-yearly utility bill inserts. The City is recommended to evaluate the distribution methods used annually during the permit term, and update as needed.



## Standard Operating Procedure

### 1.4 Implementation of Educational Program

The City has an Education and Outreach Implementation Plan consisting of:

- a. Identification of a target audience
- b. Designation of the responsible person(s) in charge of overall plan implementation
- c. Specific activities and schedules to reach measurable goals for each target audience
- d. A description of any coordination with and/or use of other stormwater education and outreach programs being conducted by other entities, as applicable
- e. Tracking mechanisms to record estimated quantities of materials, estimate audience, etc.
- f. An annual evaluation to measure the extent to which measurable goals for each target audience are attained.

A copy of the City's Education and Outreach Implementation Plan is provided in the appendices (Appendix A).

### 1.5 Documentation

The City has a procedure to document the public education and outreach program. The City is recommended to evaluate and assess the effectiveness of the education program annually, during the permit term. The program documentation consists of the following:

- a. Identification and description of any specific stormwater-related issues identified by the permittee recorded during each year of the permit coverage
- b. Specific activities and schedules to reach measurable goals for each target audience
- c. Information for any coordination with and/or use of other stormwater education and outreach programs being conducted by other entities, as applicable
- d. Annual evaluation of measurable goals

## 2. Minimal Control Measure 2: Public Participation/Involvement

### 2.1 Purpose

The MS4 General Permit requires the City to provide an annual opportunity to solicit public input on the SWPPP and involve the public in activities that improve or protect water quality.

### 2.2 Annual Opportunity for Public Comment

The City will provide a minimum of one (1) opportunity annually for the public to provide input on the adequacy of the SWPPP. The City will conduct at least one public meeting annually and will provide public notice, per the City's public notice requirements, in advance of the meeting.

The City will provide public access to the SWPPP, annual reports, and other documentation intended to support the SWPPP. Physical copies of the SWPPP may be available at the meeting for interested parties.

The City will consider oral and written input submitted by the public to the permittee, regarding the SWPPP. If input is submitted by the public, City staff will record the comment and the City's response. If any modifications are made to the SWPPP as a result of public input, the amendment will be documented and recorded with the SWPPP.

### 2.3 Annual Public Involvement Activity

Each year, the City will provide a minimum of one (1) public involvement activity that includes a pollution prevention or water quality theme. To meet this requirement, the City will continue to hold its annual Fall Leaf Drop Event in October-November and provide opportunities for the public to participate in storm drain stenciling.

### 2.4 Documentation

The program documentation consists of the following:

- a. All relevant written input submitted by persons regarding the SWPPP
- b. All responses from the City to written input received regarding the SWPPP, including any modifications to the SWPPP as a result of written input received.
- c. Dates, estimated attendance, and locations of events held for purposes of meeting permit requirements
- d. Notices provided to the public of any events scheduled to meet the permit requirements for public input and consideration

# City of Golden Valley Education & Outreach Implementation Plan

## High Priority Topics

- Yard Waste
- Residential BMPs
- Deicing salt use
- Illicit Discharge Detection and Elimination
- Pet waste

## Target Audience(s)

- Residents
- Businesses, commercial facilities, institutions

## Responsible Person(s)

- Drew Chirpich, Environmental Specialist

## Measurable Goals

- Track the number of website hits to the City's stormwater webpage annually.
- Track the number of articles and topics distributed in the City's newsletter annually.
- Track the number of storm drains stenciled annually.
- Track the number of participants and/or quantity of leaf matter collected from the Fall Leaf Drop Event.
- Track the number of illicit discharge reports received annually.

## Schedule

Season	Audience	Topic	Activity		
Winter	Residents	Salt Use	Newsletter Article	-	Website/ Social Media
	Businesses, commercial facilities, institutions	Salt Storage, Salt Use	-	Direct Mailing	Website/ Social Media
Spring	Residents	Pet Waste	-	-	Website/ Social Media
	Residents	Residential BMPs	Newsletter Article	-	Website/ Social Media
Summer	Residents, businesses, commercial facilities, institutions	Illicit Discharges	Newsletter Article	Storm Drain Stenciling Event	Website/ Social Media
Fall	Residents	Fall Lawn Care/Fall Clean- up	Newsletter Article	Fall Leaf Drop Event	Website/ Social Media

## Partnership

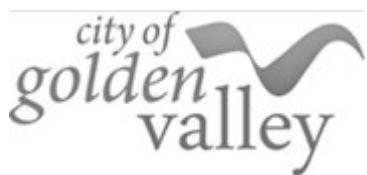
The City of Golden Valley currently has an informal partnership with the following Cities: Plymouth, Robbinsdale, and Brooklyn Park, to meet Minimum Control Measure 1 and 2 requirements. Currently, the education workgroup meets biannually to share educational resources to meet MS4 Permit requirements.

## Program Evaluation

The Environmental Specialist will complete an annual evaluation at the end of each calendar year to measure the successfulness of the education and outreach program. The annual evaluation will include:

- Reviewing whether or not the program's measurable goals were met;
- What activities were held, including dates;
- The quantities and descriptions of educational materials that were distributed, including dates; and,
- The estimated audience (e.g., number of participants, readers, etc.) for each completed education and outreach activity.

If the program is implemented as outlined above and the measurable goals have not been met by the end of the calendar year, the program will be reevaluated and improved, as needed (e.g., increase advertising efforts; update measurable goals; etc.). If the Environmental Specialist determines that the desired behaviors are increasingly adopted by the target audience(s), the Environmental Specialist will consider focusing on new high priority topic(s) and/or target audience(s), and modify the program, as needed.



# Communications Plan

## MS4

### 1. Focus Areas

- Salt use issues
- Pet waste issues
- Disposal of grass clippings and leaves
- Illicit Discharge messaging and who to contact if discovered

### 2. Mission

### 3. Goals and Objectives

- Produce quarterly educational articles/materials
- Distribute de-icing and salt use educational materials to businesses, institutions, and commercial facilities
- Increase public awareness of illicit discharges through various media outlets
- Promote City's availability to conduct free site visits to evaluate residents' drainage issues and recommend solutions

4.1 Strengths	4.2 Challenges
<ul style="list-style-type: none"><li>• CityNews goes to every mailbox in town</li><li>• City website and newsfeed</li><li>• City social media</li><li>• CCX broadcasts</li><li>• Knowledgeable staff</li><li>• Existing materials from state and national agencies</li><li>• </li><li>• </li><li>• </li></ul>	<ul style="list-style-type: none"><li>• Staff and time constraints</li><li>• Limited budget</li><li>• </li><li>• </li><li>• </li></ul>

### 5. Audiences

1. Residents
2. Businesses
3. Low-income residents
4. People of color
5. Non-English speaking residents
6. Schools

7.
8.
9.
10.

## 6. Key Messages

- Salt and other deicing products have a negative effect on water quality. Salt only accumulates over time and cannot be easily removed from surface waters. Only one tablespoon of salt permanently pollutes 5 gallons of water. Salt only works under certain conditions, salt is not effective under 15 degrees. When salting, crystals should be spaced 2-4 inches apart. More salt does not mean more effective, dosing is important for efficacy similar to automotive coolant. (analogy video on youtube). Avoid salting near sensitive areas such as catch basins and surface waters.
- Bacteria from pet waste can have a negative effect on surface water quality. Pet waste should be picked up as soon as possible, placed in a plastic bag, tied off, and thrown away in the garbage.
- Anything that is not stormwater entering the storm sewer system is considered an Illicit Discharge. This includes trash, liquids from vehicles, grass clippings and leaves. Residents should always clean up and dispose of grass clippings and leaves in a designated yard waste container or backyard compost, and avoid sweeping these items into the street, or pushing them into their nearest park or nature area. If an illicit discharge is discovered, contact the Engineering Department at 763-593-8030.
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## 7. Potential Strategies (1 = high priority, 2 = medium priority, 3 = low priority)

- Find and publish rubber ducky video
- Develop dog poop campaign
- Write and schedule quarterly educational stories on each of three focus areas
- Find and distribute links to existing educational materials
- Create and distribute smart salting cups with messaging
- Create video on proper salting techniques
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## 8. Potential Resources

- MPCA
- DNR?
- Bassett Creek Watershed Management Commission
- WMWA
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## 9. Communication Vehicles and Strategies for Target Audiences

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## 10. Evaluation Techniques

- Website analytics
- Social media analytics
- Two surveys
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## Timeline/Calendar

### Notes for 2022

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#### February 2022

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### 3.4 Appendix A: Definitions

**Authorized Enforcement Agency:** the City of Golden Valley

**Best Management Practices (BMPs):** schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

**Clean Water Act:** The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

**Construction Activity:** Activities subject to NPDES Construction Permits. These include construction projects resulting in land disturbance of one acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

**Hazardous Materials:** Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

**Illegal Discharge:** Any direct or indirect non-storm water discharge to the storm drain system, except as exempted in this ordinance.

#### Illicit Discharge Types:

**Transitory illicit discharges:** Typically one-time events resulting from spills, breaks, dumping, or accidents. Transitory illicit discharges are often reported to an authority through a citizen complaint line or following observation by a municipal employee during regular duties. Because they are not recurring, they are the most difficult to identify, trace, and remove. The best method to reduce transitory discharges is through general public education, education of municipal response personnel, tracking of discharge locations, and enforcement of an illicit discharge ordinance.

**Intermittent illicit discharges:** Occur occasionally over a period of time (several hours per day, or a few days per year). Intermittent discharges can result from legal connections to the storm drain system, such as a legal sump pump connection that is illegally discharging anything other than groundwater. Intermittent discharges can also result from activities such as drum washing in exterior areas. These types of discharges are more likely to be discovered, and are less difficult to trace and remove, but can still present significant challenges. These discharges can have large or small impacts on waterbodies depending on pollutant content and the size of the receiving water body.

**Continuous illicit discharges:** These are typically the result of a direct connection from a sanitary sewer, overflow from a malfunctioning septic system, inflow from a nearby subsurface sanitary sewer that is malfunctioning, or an illegal connection from a commercial or industrial facility. Continuous illicit discharges are usually easiest to trace and can have the greatest pollutant load (CWP 2004).

**Illicit Connections:** An illicit connection is defined as any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or, any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

**Industrial Activity:** Activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).

**Minnesota Pollution Control Agency (MPCA):** The Minnesota Pollution Control Agency is a Minnesota state agency that monitors environmental quality, offers technical and financial assistance, and enforces environmental regulations for the State of Minnesota.

**Municipal Separate Storm Sewer Systems (MS4):** A municipal separate storm sewer system is a conveyance or system of conveyances that is owned or operated by a public entity (which can include cities, townships, counties, military bases, hospitals, highway departments, universities, etc.) and is designed or used for collecting or conveying stormwater, which are not part of a publicly owned wastewater treatment system.

**National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit:** means a permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342 (b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual group, or general area-wide basis.

**Non-Storm Water Discharge:** Any discharge to the storm drain system that is not composed entirely of storm water.

**Person:** Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and action as either the owner or as the owner's agent.

**Pollutant:** Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, pesticides, herbicides, and fertilizers; hazardous substances and wastes and

residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

**Premises:** Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

**Standard Operating Procedures (SOPs):** Established or prescribed methods to be followed routinely for the performance of designated MS4 operations or in designated situations.

**Storm Drain System:** Publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

**Stormwater:** Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

**Stormwater Pollution Prevention Plan:** A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater conveyance systems, and/or receiving waters to the maximum extent practicable.

**Wastewater:** Any water or other liquid, other than uncontaminated storm water, discharged from a facility.



*1 Report Initiated By: phone, drop-in, staff, other			
*2 Description of Discharge: ex. dumping, washwater, suds, oil, solvents, chemicals, sewage, unknown, other			





# Best Management Practices – Fact Sheet

## Illicit Discharge Detection and Elimination

Federal regulations define an illicit discharge as “...any discharge to an MS4 that is not composed entirely of stormwater...” with some exceptions. These exceptions include discharges from NPDES-permitted industrial sources and discharges from fire-fighting activities. Illicit discharges are considered “illicit” because MS4s are not designed to accept, process, or discharge such non-stormwater wastes.

Illicit Discharges enter the system through either direct connections (e.g., wastewater piping connected to storm drains) or indirect connections (e.g., cracked sanitary systems, spills collected by storm drains, or paint or used oil dumped into a storm drain). The result is untreated discharges that contribute to high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses, and bacteria to receiving waterbodies. Pollutant levels from these illicit discharges have been shown in EPA studies to be high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.<sup>1</sup>

Some sources of illicit discharge include:

- Sanitary wastewater
- Sediment from construction site runoff
- Car wash wastewater
- Landscape waste
- Paints, solvents
- Used oil, grease
- Cleaning products
- Spills from accidents
- Illegal connections to the storm sewer system



Laundry, washwater

What does an illicit discharge look like?



Petroleum, oil, solvents



Chemical release, sediment



Sediment from construction



Illegal dumping



Washwater, chemical



Concrete, mortar rinse water

<sup>1</sup> USEPA fact sheet <http://water.epa.gov/polwaste/npdes/stormwater/upload/fact2-5.pdf>



# City of Golden Valley – Spill Response Plan

## Contact Information

### *Primary City Contact(s)*

Drew Chirpich, Water and Natural Resource Specialist –  
763-593-8044

Tim Kieffer, Public Works Director – 763-593-3960

### *Emergency Response Contact(s)*

Fire/Paramedics/Police: 911  
Fire Non-Emergency Line: (763) 593-8079  
MN Department of Health: (651) 201-5414  
National Response Center: (800) 424-8802  
State Duty Officer: (651) 649-5451

## Spill Response Plan

### **Step 1: Approach the Scene**

- Use safety first in responding to spills. Do not endanger yourself or others by entering a hazardous environment. If there is a fire or medical attention is needed, call 911 immediately.
- Avoid exposure. Approach the spill from upwind and stay clear of spills, vapors, fumes and smoke.

### **Step 2: Secure the Scene**

- Isolate the spill.
- Keep people away from the scene; divert traffic and pedestrians as needed.
- If possible, stop the source of the spill.
- Eliminate any ignition sources.

### **Step 3: Identify the Hazards**

- Attempt to identify the spilled material.
  - Characteristics (odor, color, sheen), labels/markings, container type, activities in the area, hazard warnings, etc.

### **Step 4: Assess the Situation**

- Determine the appropriate first response actions and if additional response help is needed
- The response will be dictated by the size of the spill and the hazard:
  - Is there a fire, a spill, or a leak?
  - Is there a potential for it to mix with something else?
- Observe your surroundings:
  - Who/what is at risk?
  - Is an evacuation necessary?
  - What resources are required and readily available to contain the spill?

## **Step 5: Report the Spill**

- Report spills that may cause pollution, such as toxic, flammable, corrosive and dangerous industrial chemical spills as soon as possible and within 24 hours of the spill event.
  - Minnesota has a reporting threshold of greater than five-gallons for petroleum spills. Spills of any quantity of all other chemicals or materials should be reported. When in doubt, report.
- Contact the Minnesota Department of Public Safety Duty Officer 651-649-5451 (Metro area), if the spill of any substance or material may cause or has caused pollution of waters of the state.

## **Step 6: Contain the Spill**

- Always wear the appropriate personal protective equipment, such as gloves, boots, and safety glasses. Know the limitations of the personal protective equipment.
- Place booms or available materials around the perimeter of the spill to keep it from spreading.
  - If the spill is a threat to any storm water conveyance, like street gutter, storm drain or inlet, swale, ditch, storm, or river, place absorbent between the spill and storm device.
- Apply absorbent materials starting from the downhill and outside edge of the spill.

## **Step 7: Clean Up the Spill**

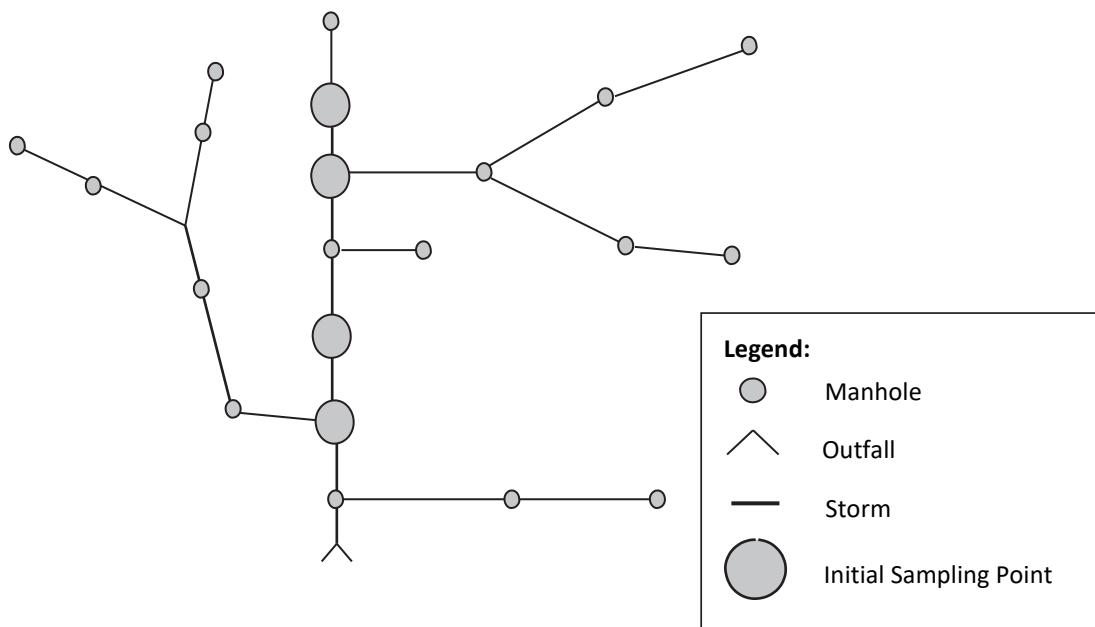
- If you have the proper training, small spills may be cleaned up according to the chemical label and your training.
  - Do not wash or hose down the spill into the street, ditch or storm drain.
  - If flammable liquid is spilled, ventilate the area and eliminate any possible sources of ignition.
  - Clean up the spills, leaks and drips quickly. Use “dry” clean-up methods, such as sweeping or shoveling. If the spill can be moved by wind, cover the material with sheeting to prevent spreading.
  - Place all clean-up waste in appropriate containers. If hazardous, insure that material is placed in a hazardous waste container.
  - Dispose of spill material in compliance with all Federal, State and Local regulations.
- If you do not have proper training, or the spill is a large spill, leave the area and notify Emergency Responders (911). Give the operator the spill location, chemical spilled and approximate amount.

## **Step 8: Complete Spill Documentation and Follow-up**

- Clean and decontaminate all reusable spill cleanup equipment.
- Be sure to restock your spill response materials and personal protection equipment as soon as possible.
- Update facility spill records.
- Notify the City’s Water and Natural Resource Specialist of the spill event and provide spill documentation.

It is necessary to understand the various tracing techniques and limitations in order to select an effective tracing technique. The following is a brief summary of each of the tracing techniques that may be used to locate the source of an illicit discharge:

a. Visual Inspection at manholes/catch basins: This tracing technique is typically used when there is no suspected source site. It is the most cost effective and efficient method of tracing. Structures should be systematically inspected starting at the initial detection location, gradually working upstream through the system. If the crew is tracking a continuous discharge, the inspections may be relatively easy and the flow can be tracked back to its source. If the crew is attempting to track a transitory or intermittent discharge, the crew should make the following observations depending on the information provided from the initial identification: color and clarity of any discharges; staining or deposits on bottom of structure; oil sheen, scum, or foam on any standing fluids in sump of structure; odors, staining or deposits on inlet pipes and outlet pipes. Depending on what the crew is looking for and what they find, they will progressively inspect additional structures until either a potential source is found, or no further evidence is found. If no further evidence is found, the crew may elect to further assess some of the structures by installing sandbags or other damming devices to determine if the discharge recurs. Crews should use standard safety procedures when conducting these inspections such as cone placement and safety vests in traffic areas, confined space entry techniques (if entry is necessary), steel-toed boots, etc.



b. Sampling flowing discharges: Samples should be collected only in the event a discharge is flowing through the outfall. Stagnant pools of water or sump water should not be sampled. If the municipal staff will be collecting the sample, the staff should be trained in safety and proper collection techniques. Table 1 lists the parameters that a sample may be analyzed for and provides a general discussion of how the results may be interpreted.

Parameter	Threshold	Source
Ammonia	>0.1 mg/L	Brown et al (2004)
E. coli	>235 CFU/100 ml (grab sample)	EPA (1986)
Total coliform	>10,000 CFU/100 ml (grab sample)	California state standard (Dorfman and Rosselot, 2011)
Fluoride	>0.25 mg/L	Brown et al (2004)
Detergents	>0.25 mg/L	Brown et al (2004)
Potassium	>6 ppm	Guidance extrapolated from Lilly and Sturm (2010)

Table 1. Threshold Levels for Screening Parameters Used in Illicit Discharge Surveys

This table was taken from the CWP manual (2004) which provides a more detailed discussion of sampling procedures and analysis of results. Sampling and analysis for many of the compounds should be completed by personnel trained in collection, handling, and preservation techniques to ensure accurate data. Environmental Protection Agency guidance recommends collecting a sample when the discharge is initially found and after any source is removed. The sample collected after removing an illicit discharge can indicate if other illicit discharges are present.

c. Sandbagging or damming: Sandbagging and damming is typically only conducted when the discharge flow has ceased since initial detection. Application of this technique will show whether the discharge is one time only (no water pools behind the sandbag or dam) or intermittent (water pools behind the sandbag). CWP provides the following explanation:

1. This technique involves placement of sandbags or similar barriers such as caulk dams within strategic manholes in the storm drain network to form a temporary dam that collects any intermittent flows that may occur. Any flow collected behind the sandbag is then assessed using visual observations or by indicator sampling. Sandbags are lowered on a rope through the manhole to form a dam along the bottom of the storm drain, taking care not to fully block the pipe (in case it rains before the sandbag is retrieved). Sandbags are typically installed at junctions in the network to eliminate contributing branches from further consideration. If no flow collects behind the sandbag, the upstream pipe network can be ruled out as a source of the intermittent discharge. Sandbags are typically left in place for no more than 48 hours, and should only be installed when dry weather is forecast. Sandbags should not be left in place during a heavy rainstorm. They may cause a blockage in the storm drain or they may be washed downstream and lost. The biggest downside to sandbagging and damming is that it requires at least two trips to each manhole (CWP 2004, p. 157).

d. Optical brightener monitoring traps: Optical brightener monitoring (OBM) traps can be used to trace intermittent or transitory discharges that result from washwater with detergent. Detergents usually contain optical brighteners that can be detected at high concentrations using this method. However, the traps only detect highly concentrated discharges. The detergent concentration required to be detected by the light is approximately the same as pure washwater from a washing machine. Consequently, OBM traps may be best suited as a simple indicator of the presence or absence of intermittent flow or to detect the most concentrated flows. The traps can be made using easily acquired materials.

The traps contain an absorbent, unbleached cotton pad or fabric swatch contained inside a wire mesh trap or section of small diameter (e.g., 2-inch) PVC pipe. The traps should be anchored to the inside of an outfall at the invert using wire or monofilament that is secured to the pipe itself. Rocks or bricks with holes can be used as temporary weights to hold the trap in place.

Field crews can retrieve the OBM traps after 24 to 72 hours of dry weather. OBM traps need to be retrieved before coming into contact with stormwater, which will contaminate the trap or wash it away. When placed under a long wave fluorescent ultraviolet or “black” light, an OBM trap will indicate if it has been exposed to detergents. CWP reports that OBM traps have been used with some success in Massachusetts (Sargeant et al. 1998) and northern Virginia (Waye 2000). For more detailed guidance on how to use OBM traps and interpret the results, see the Reference section for World Wide Web links to the studies and guidance manuals cited above.

e. Dye testing: Dye testing is typically conducted when a potential source site has been identified, and the crew is trying to determine whether the site has floor drains or other locations that connect and discharge to the storm drain system. Permission to access the site must be obtained before dye testing can be conducted. Verbal or written requests are both acceptable. The crew should review available sanitary sewer and storm drain maps before conducting the dye testing. The dye testing procedure consists of two steps: (1) discharging the dye into the suspect location, and (2) opening nearby storm drain and sanitary sewer manhole covers to determine where the dye discharges to.

This procedure is fairly effective for confirming direct connections into the storm drain system for short reaches. If a longer pipe network is being evaluated, charcoal packets can be left in selected structures and later collected and analyzed for the presence of the dye. If dye testing occurs on porcelain structures, tablets or charcoal should be wrapped in tissue before depositing. When dye testing, the crew should keep in mind that each structure (sink, toilet, etc.) should be tested separately. Many times a single utility in a basement may be incorrectly connected to a storm drain line instead of a sanitary line.

f. Televising: Televised video inspections are a useful technique when an illicit connection or infiltration from a nearby sanitary sewer is suspected, but little evidence of the illicit discharge remains behind. The following two types of video cameras are available for use:

1. A small camera that can be manually pushed on a stiff cable through storm drains to observe the interior of the piping.
2. A larger remote operated video camera on treads or wheels that can be guided through storm drains to view the interior of the pipe. Typically the operator of the camera has access to a keyboard or audio voice-over to record significant findings on the videotape that is produced for future review and evaluation.

g. Smoke testing: Smoke testing is a useful technique for tracing intermittent discharges or continuous discharges that have no apparent source site. Smoke is introduced into the storm drain system, and emerges at locations that are connected to the system. Smoke testing works best for short reaches of pipe, or in situations where pipe diameters are too small for video testing.

Notifying the public about the date and purpose of smoke testing before starting is critical. The smoke used is non-toxic, but can cause respiratory irritation, which can be a problem for some residents. Residents should be notified at least two weeks prior to testing, and should be provided the following information (Hurco Technologies, Inc. 2003):

1. Date testing will occur
2. Reason for smoke testing
3. Precautions they can take to prevent smoke from entering their homes or businesses
4. What they need to do if smoke enters their home or business, and any health concerns associated with the smoke
5. A number residents can call to relay any particular health concerns (e.g., chronic respiratory problems)

**PURPOSE:** The storm sewer system is designed to convey only natural rainwater runoff and snowmelt. Any material entering the storm sewer other than stormwater is considered an illicit discharge and is prohibited from entering the system. Whenever pollutants are detected in the stormwater system, the City of Golden Valley is responsible for identifying the source and removing the material from the system. In order to protect water quality, the City has in place procedures to detect and eliminate any illicit discharges.

**RESPONSIBLE PARTY:** The Public Works Director or his/her designee is responsible for insuring compliance with the procedure and validating that appropriate records and documentation are in place.

This IDDE procedure is divided into five sections:

1. Reporting
2. Identifying
3. Investigating
4. Eliminating
5. Documenting

## **PROCEDURE:**

### **1. REPORTS:**

- a. Reports of suspicious materials can come from
  - i. Members of the public
    1. Non-emergency Email hot line
    2. Non-emergency Telephone hot line.
  - ii. Other governmental agencies
  - iii. City staff
    1. Police
    2. Fire
    3. Public works
- b. Whenever an IDDE report is received a work order must be created. The work order should include:
  1. Individual making the report and contact information
  2. Location of suspicious material or odor
  3. Time and date of observation
  4. Description of material
  5. Other required standard work order information
  6. All work orders for illicit discharges must be assigned immediately
  7. All IDDE work orders should be treated as high priority or emergency
- c. Staff will consult a City GIS map of stormwater structures and conveyances of the area to get an idea of possible problem areas and site conditions.

## **2. IDENTIFYING:**

Staff will visit the site as soon as possible and attempt to identify the illicit material.

Methods may include:

- a. Initial site inspection
  - i. Threat to health or safety
    - 1. Contact proper authorities
      - a. MPCA duty office
      - b. Police
      - c. Fire
  - b. Visual observation
    - i. Where discharge is coming from
    - ii. Type of material
    - iii. Oder
    - iv. Color of material/shine
  - c. Sampling – if material cannot be identified a sample should be taken for testing and for retention. All sampling should be done using sterile sample containers and appropriate sampling methods.

## **3. INVESTIGATION:**

Staff should attempt to trace the source of the discharge. Methods that are commonly used include:

- a. Determine receiving water using GIS mapping
- b. Using GIS mapping find locations where the substance can be contained and cleaned up before entering an outfall.
- c. Following the discharge upstream to the source
- d. Televise storm sewer for illicit connections
- e. Dye testing (to verify source)
- f. Sampling upstream and downstream to find the isolated area
- g. Remove manhole covers and check for discharge

## **4. ELIMINATION:**

Depending on the situation, response will vary.

- a. One time discharges (oil down catch basin, paint in catch basin, etc.)
  - 1. Verbally speak to identified source and explain that the discharge is illegal. Determine the severity of the problem and whether legal follow up is needed
  - 2. Make sure the stormwater system and/or environment is cleaned.
  - 3. Notify other agencies if appropriate (a report may be necessary depending on the size of the spill and whether it is contained). Contacts required may include the MPCA, DNR, and the Coast Guard. Follow up reporting may be required.
  - 4. Complete work order report for incident.
- b. Sanitary sewer leakage (CCTV identified problems in public system)
  - 1. Review extent and nature of problem. Repair infrastructure.
  - 2. Verify correction with further testing.

3. Notify agencies if appropriate (a report may be necessary depending on the size of the spill and whether it is contained). Contacts required may include the MPCA and the Duty Officer. Follow up reporting may be required.
4. Refer to Enforcement Response Procedure if necessary

- c. Cross connections from private system:
  1. Immediately initiate the letter to correct
  2. Utility Supervisor or Program Coordinator will track the problem
  3. Dye test following correction to verify.
  4. Notify agencies if appropriate (a report may be necessary depending on the size of the spill and whether it is contained). Contacts required may include the MPCA and the Coast Guard duty officer. Follow up reporting may be required
- d. Non-point source pollution (animal waste, street run off, yard runoff)
  1. Determine if problem can reasonably be corrected
  2. Document with photographs
  3. Perform corrective action
  4. Share information with other agencies as appropriate.
- e. Proactively identify sources
  - i. The city conducts investigation of 20% of the outfalls annually
  - ii. Areas identified as high priority will be inspected more often
  - iii. Televising storm sewer lines as available

## **5. Documenting and tracking**

All IDDE incidents should be documented as they occur. All reports will be documented in an IDDE folder. Telephone calls and verbal conversations will be recorded as a word document and saved in the proper folder. An annual summary report will be done to track results and ongoing issues. The Storm water Program Coordinator will continue to monitor work orders until they are closed.



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## For More Information

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## Possible Pollutants

Organics  
Chemicals  
Fuel

## Procedures

- Storm Sewer System Mapping
- Inventory and Inspection of Priority Areas
- Detection Process
  - Opportunistic Observation
  - Citizen Reporting
- Tracking of Illicit Discharges
- Training

## Appendices

A – Outfall Inspection Form  
B – High Priority Illicit Discharge Map  
C – Illicit Discharge Inspection Form  
D – Spill Response Plan  
E – Enforcement Response Procedures

## Minimal Control Measure 3 Illicit Discharge Detection and Elimination

### 3.1 Purpose

The MS4 General Permit requires the City of Golden Valley (City) to develop written procedures for the purpose of eliminating non-stormwater discharges through the development of an Illicit Discharge Detection and Elimination Program.

### 3.2 Definition of Illicit Discharge

The definition of an illicit discharge is any direct or indirect that is not entirely composed of stormwater to the storm drain system, except as exempted by City Code. Examples of illicit discharges include: leaking sanitary sewers or water mains, illegal sewage connections, illegal floor drain connections, seasonal draining of swimming pools (pools are recommended to be dechlorinated prior to discharge), break-out from failing septic systems, discharge of vehicle/equipment washing into the storm sewer, restaurant discharge including grease, cleaning solution, grass clippings, fertilizer, pesticides, salt, spills and dumping.

Illicit discharges are common, and are categorized into three types:

- a. Transitory illicit discharges: Typically one-time events resulting from spills, breaks, dumping, or accidents. Transitory illicit discharges are often reported to an authority through a citizen complaint line or following observation by a municipal employee during regular duties. Because they are not recurring, they are the most difficult to identify, trace, and remove. The best method to reduce, or eliminate before they occur, transitory discharges is through general public education, education of municipal response personnel, tracking of discharge locations, and enforcement of an illicit discharge ordinance.
- b. Intermittent illicit discharges: Occur occasionally over a period of time (several hours per day, or a few days per year). Intermittent discharges can result from legal connections to the storm drain system, such as a legal sump



## Standard Operating Procedure

pump connection that is illegally discharging anything other than groundwater. Intermittent discharges can also result from activities such as drum washing in exterior areas. These types of discharges are less likely to be discovered, and are more difficult to trace and remove because they generally occur on private property and require probable cause and/or a search warrant for further investigation. These discharges can have large or small impacts on waterbodies depending on pollutant content and the size of the receiving water body.

- c. Continuous illicit discharges: Typically the result of a direct connection from a sanitary sewer, overflow from a malfunctioning septic system, inflow from a nearby subsurface sanitary sewer that is malfunctioning, or an illegal connection from a commercial or industrial facility. Continuous illicit discharges are usually easiest to trace and can have the greatest pollutant load (CWP 2004).

### 3.3 Storm Sewer System Mapping and Inspection

Maintaining an accurate record of the City's storm sewer system is essential for effective operations and maintenance, and to comply with the MS4 General Permit. The following components must be included in the City's storm sewer system map:

- a. All pipes 12-inches or greater in diameter, including flow direction
- b. Outfalls, including a unique identifier and associated geographic coordinates
- c. Structural stormwater BMPs that are part of the MS4
- d. All receiving waters

The City of Golden Valley's system is mapped using GIS. If certain areas of the City need to be updated, the City will use their existing maps as a basis for locations. Field personnel, if necessary will start a mapping verification process by walking all named waterbodies within the area that needs to be updated. The field personal will collect outfall location and design information using global positioning system (GPS) equipment capable of sub-meter (approximately 3 foot) accuracy. Field personnel will also review and field check other structures, catch basins, culverts, pipes, ditches, drain manholes, etc. Use of a data logger and data collection software, will allow the generation of GIS files that will be useful for many years.

Long-term, regular inspections of outfalls are a primary part of an effective IDDE program. All outfalls must be inspected at least once during the five-year MS4 General Permit term. Routine outfall inspections will be completed during dry-weather conditions (e.g., periods of 72 or more hours of no precipitation). The Outfall Inspection Form must be used to document each inspection. If an illicit discharge is discovered, the inspector will follow the procedure for 3.5.1 Opportunistic Illicit Discharge Observation.

### 3.4 Inventory and Inspection of Priority Areas

A map has been provided within the appendix that identifies potential priority outfall areas for detecting potential illicit discharges based on land use, areas with prior illicit discharges, and areas where significant storage of materials could result in an illicit discharge.

In accordance with the MS4 General Permit, the City will conduct additional inspections of the priority outfall areas identified in Appendix B. Additional inspections of priority outfall areas will be completed on an annual basis. City staff or their designee will complete the priority inspections during dry-weather conditions (e.g., periods of 72 or more hours of no precipitation) and document each outfall inspection using the City's Outfall Inspection Form. If an illicit discharge or connection is discovered, the inspector will follow the procedure for 3.5.1. Opportunistic Illicit Discharge Observation.

## 3.5 Detection Process

Illicit discharges and connections are often discovered by staff during routine activities, or after a complaint is received from a resident or community stakeholder. This is why it is important for field staff to always be on the lookout for potential illicit discharges and connections during all inspection and maintenance activities.

If a staff person observes evidence of an illicit discharge during their routine work activities, they should collect as much information about the potential illicit discharge as possible then contact the Water and Natural Resource Specialist so that appropriate action can be taken. It is important to collect as much information as possible at the time of initial observation because of the likelihood that a discharge may be transitory or intermittent. Initial identification of the likely or potential sources of the discharge is also very important.

Once an illicit discharge has been reported or detected through an inspection, the next step is to locate the source. Selection of tracing techniques will depend on the type of illicit discharge detected, the information collected during initial discovery and observation (whether through an inspection by a municipal employee or through a citizen call-in), and the resources/technology available to the municipality. A single technique may be used or several techniques may need to be combined to identify the source of the discharge.

The investigative techniques used will depend on whether or not a potential source location was identified during the initial observation. Examples of investigative techniques are as follows:

- a. Potential source identified: If a potential source for the illicit discharge was initially identified, steps should be taken to investigate the potential source site, such as inspecting the site and storm drain system in the vicinity of the site. If floor drains, sumps, or other suspect discharge locations are observed during this inspection, dye testing, smoke testing, electronic location of subsurface pipes, or televising may be used. These techniques should definitively show whether the suspect site was the source of the illicit discharge.

- b. **Potential source not identified:** If no source site is suspected, and only the general area of the illicit discharge is known, it may be possible to trace the evidence of the illicit discharge by visual inspection of the storm drain access points. If this catch basin/manhole inspection technique is not fruitful, some interim steps could be taken to try to trap water from an intermittent discharge. For example, sand bagging and damming or block testing of selected storm drain access points, combined with installation of an optical brightener trap to assess if detergents are present in a discharge, can help reveal the source of the discharge. If these techniques have no positive result (no water pools behind the weir or sand bag), the discharge was likely transitory (one time only), and it may not be possible to determine its origin. In this case, the location of the originally reported illicit discharge should be added to a regular inspection program to provide for the possibility of future incidents. If the original report of the illicit discharge was severe or gross pollution, then smoke testing or televising of the storm drain system may be warranted.

### 3.5.1 Opportunistic Illicit Discharge Observation

#### Activities and Definition

- a. The opportunity to discover illicit discharges can occur during normal work activities by any City staff. By offering training to all field personnel, they will be ready to actively locate illicit discharges and resolve potential issues.

#### Preparation

- a. Be alert for potential illicit discharges while going about normal work activities.

#### Process

- a. If an illicit discharge is discovered, immediately contact the Environmental Specialist.
- b. Assess the general area of the illicit discharge to see if you can identify its source. Whenever possible, take photographs of the suspected illicit discharge.
- c. All reports of illicit discharges will be investigated by the Environmental Specialist or their designee within one business day.
- d. If the illicit discharge is from an unknown source, follow the procedure of tracing illicit discharges in 3.5 Detection Process.
- e. If the illicit discharge is from a known source:
  1. For Non-Emergency Situations, the City will follow their Enforcement Response Procedure for Illicit Discharges and require the responsible party to remove the illicit discharge or spill. If the responsible party is unable or unwilling, the City will remove the illicit discharge with a vac truck, floor-dri, street sweeper, etc.
  2. For Spills and Emergency Situations: Follow the City's Spill Response Plan and involve the fire department, as needed.

## Documentation

- a. Complete the Illicit Discharge Inspection Report in Cartegraph.
- b. Document any enforcement actions taken in accordance with the City's Enforcement Response Procedures for Illicit Discharges.

## 3.5.2 Citizen Reporting

### Activities and Definition

- a. A citizen reporting program is an effective way to have residents help identify illicit discharges. A citizen reporting form or complaint line will be publicized to the community to aid illicit discharge reporting from community members. To maximize the effectiveness of citizen reporting, dispatch personnel will be instructed to report potential illicit discharges and connections to the Water and Natural Resource Specialist within 24 hours of receiving a complaint.
- b. If the report is a result of a spill or emergency situation the caller should be directed to call 911.

### Preparation

- a. Have a system in place to receive reports from the public and collect information regarding suspected illicit discharges.

### Process

- a. Use the IDDE Inspection Form to collect the information. This information will be transferred to the Water and Natural Resource Specialist, for non-hazardous materials and spills, and the Fire Chief for hazardous spills or emergency situations.
- b. All reports of illicit discharges will be investigated by the Water and Natural Resource Specialist or their designee within one business day.
- c. If the illicit discharge is from an unknown source, follow the procedure of tracing illicit discharges in 3.5 Detection Process.
- d. If the illicit discharge is from a known source:
  1. For Non-Emergency Situations, the City will follow their Enforcement Response Procedure for Illicit Discharges and require the responsible party to remove the illicit discharge or spill. If the responsible party is unable or unwilling, the City will remove the illicit discharge with a vac truck, floor-dri, street sweeper, etc.
  2. For Spills and Emergency Situations: Follow the City's Spill Response Plan (Appendix D) and involve the fire department, as needed.



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## Documentation

- a. File all completed forms as provided (i.e., Incident Tracking Form or Outfall Inspection Form).
- b. Document any enforcement actions taken in accordance with the City's Enforcement Response Procedures for Illicit Discharges.

## 3.7 Training

### Activities and Definition

Training of City staff is important so that they are knowledgeable in illicit discharge recognition and reporting illicit discharges for further investigation. City staff should be trained as follows:

- a. Field Staff, including Seasonal staff:  
Identification, investigation, termination, cleanup, and reporting of illicit discharges.
- b. Police, Fire, and Dispatch:  
Identification and reporting of illicit discharges.
- c. Office Staff:  
Illicit discharge reporting.

### Preparation

- a. Develop a presentation to train all field staff, office staff, and the Police and Fire Chiefs in illicit discharge recognition (including conditions which could cause illicit discharges), and reporting illicit discharges for further investigation.

### Process

- a. Invite all field staff, office staff, and the Police and Fire Chiefs to the training. Record the training, if feasible.
- b. Provide the Police and Fire Chiefs with illicit discharge training materials to share with their departments.
- c. Share the recorded training with staff that were absent.
- d. Repeat the training annually for new staff. Other staff that have been previously trained may attend a refresher training every three calendar years following the initial training.

### Documentation

- a. Record the subject covered, names and departments of individuals in attendance and/or that viewed the training, and the date training was completed.



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### 3.8 Documentation

The program documentation consists of the following for all illicit discharge-related reports and investigations:

- a. Date(s) and location(s) of IDDE inspections
- b. Reports of alleged illicit discharges received, including date(s) and any follow-up action(s) taken
- c. Date(s) of discovery of all illicit discharges
- d. Identification of outfalls, or other areas, where illicit discharges have been discovered
- e. Sources (including a description and the responsible party) of illicit discharges (if known)
- f. Action(s) taken by the City, including date(s), to address discovered illicit discharges.



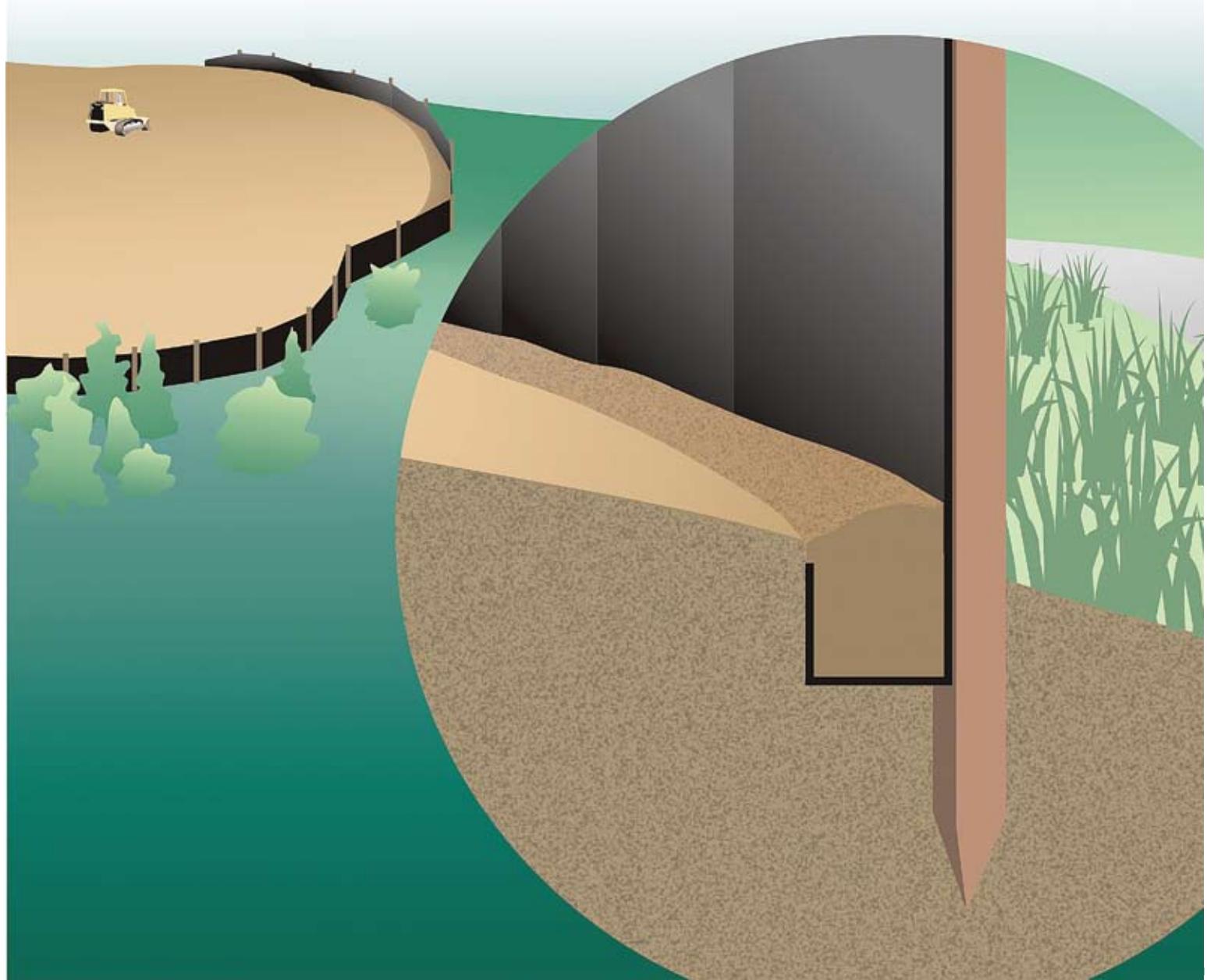
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# Stormwater Construction Inspection Guide



Minnesota Pollution Control Agency

**August 2008**

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## ***Comments welcome***

This is the first edition of the *Inspection Guide*. We welcome comments and suggestions on how it might be changed in future editions to better assist stormwater inspectors. Send comments to:

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# Chapter 1

## Introduction

### Purpose of this Inspection Guide

This stormwater construction inspection guide is designed to assist construction site inspectors, such as staff representing various local units of government, in the procedures for conducting a compliance inspection at construction sites. The focus of this guide is on inspecting construction sites less than five disturbed acres; however, the principles of this inspection guide can be applied to construction sites of any size.

After a brief overview of the Minnesota Pollution Control Agency (MPCA) construction stormwater permit, this inspection guide covers three main topics: How to conduct a stormwater inspection, tips on inspecting BMPs, and information about referring enforcement cases to the MPCA.

### Construction Stormwater Permit Overview

The MPCA issued the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) General Stormwater Permit for Construction Activity in August 2008. Owners and operators of construction activity disturbing one acre or more of land need to obtain the construction stormwater permit. Sites disturbing less than one acre within a larger common plan of development or sale that is more than one acre also need permit coverage.

Regulated parties are required to develop a stormwater pollution prevention plan (SWPPP) and submit a completed application and a \$400 application fee. Applications and other forms are available by calling 651-296-6300 and asking for “Construction Stormwater” or visiting [www.pca.state.mn.us/water/stormwater/stormwater-c.html](http://www.pca.state.mn.us/water/stormwater/stormwater-c.html).

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#### What is a “larger common plan of development or sale?”

A common plan of development or sale means a contiguous area where multiple separate and distinct construction activities are occurring under one overall plan (e.g., the operator is building on three half-acre lots in a 6-acre development). The “plan” in a common plan of development or sale is broadly defined as any announcement or documentation or physical demarcation indicating that construction activities may occur on a specific plot.

In addition to developing the SWPPP, regulated parties must implement the SWPPP, conduct regular inspections, and maintain best management practices (BMPs).

Inspections are required once every seven days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours. The next inspection must

be conducted within seven (7) days after that. At the end of the project, after all disturbed surfaces are stabilized, the regulated party must submit a notice of termination/permit modification form to let the MPCA know that the construction activity is complete.

For most sites, construction may begin seven days after the application is postmarked. For sites that are more than 50 acres and discharging to outstanding natural resource value waters or impaired waters, the SWPPP and application materials must be submitted at least 30 days prior to commencing construction.

## Changes in Owner/Operator

When the owner or operator or a portion of a site or entire site changes, the former owner or operator and the new owner or operator needs to submit a Notice of Termination/Permit Modification to the MPCA. The form is available on the MPCA construction stormwater

Web site and must be submitted within seven days of assuming operational control of the site, commencing work on their portion of the site, or of the legal transfer, sale or closing on the property.

For stormwater discharges from construction activities where the owner or operator changes, the new owner or operator can implement the original SWPPP created for the project or develop and implement their own SWPPP. Permittee(s) shall ensure either directly or through coordination with other permittee(s) that their SWPPP meets all terms and conditions of the permit and that their activities do not render another party's erosion prevention and sediment control BMPs ineffective.

Additional information on the MPCA's Stormwater Program is available on the Web at [www.pca.state.mn.us/water/stormwater](http://www.pca.state.mn.us/water/stormwater).

# Chapter 2

## *How to Conduct a Stormwater Inspection*

### **Construction Site Inspector: Role and Responsibilities**

The inspector determines compliance with permit conditions, applicable regulations, and other requirements and assesses the adequacy of best management practices to protect natural resources. This is primarily accomplished by reviewing on-site activities for permit compliance and the construction operator's SWPPP.

#### ***Legal responsibilities***

Part V.H of the Construction Stormwater Permit provides inspectors the authority to inspect construction sites. This section of the permit requires the construction operator to "allow representatives of the MPCA or any member, employee or agent thereof, when authorized by it, upon presentation of credentials, to enter upon any property, public or private, for the purpose of obtaining information or examination of records or conducting surveys or investigations." An inspector's first responsibility is to be familiar with the specific requirements in the general permit, and applicable regulations. Inspectors must always have and display their inspection credentials.

#### ***Professional Responsibilities***

Inspectors are expected to perform their duties with a high degree of professionalism. Facts are to be noted and reported completely, accurately and objectively. Inspectors should also be tactful, courteous and diplomatic when working with construction operators and other members of the public. During an inspection, inspectors should not speak derogatorily of any product, manufacturer or person.

When problems are found that are not significant, inspectors should provide technical assistance on approaches for dealing with minor issues that do not warrant a violation notice. This could include minor issues that, if not corrected, could lead to a violation. Technical assistance refers to providing general guidance on how to solve erosion and sediment control problems without providing specific design details. In other words, the inspector does not provide engineering advice.

# Inspection Procedures

An on-site construction site inspection will typically consist of the following components, followed by the development of an inspection report:

- Pre-Inspection Preparation
- Entry
- Records Review
- Site Inspection
- Exit Interview

## ***Pre-Inspection Preparation***

Plan your inspections by targeting construction sites in priority areas (i.e., sites discharging to special waters, sites near surface waters, areas undergoing rapid development), large construction sites, or sites with a history of compliance problems. Be flexible, and plan your inspections immediately prior to or during anticipated rain events, or immediately following actual rain events (this is the best time to conduct stormwater inspections!). Identify more inspection candidate sites than you can visit in a day so you have back-up sites in case changes occur.

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### **Always keep safety in mind!**

- Use safety equipment such as hard hats, reflective vests, and steel-toed shoes.
- Maintain safety equipment in good condition and proper working order.
- Watch where you are walking, and be careful of what is going on overhead.
- Never enter confined spaces, such as a ditch or manhole, unless properly trained, equipped, and certified.

In preparing for an inspection, also review available files such as permits, copies of SWPPPs or erosion and sediment control plans, past inspection reports, downstream water quality problems from monitoring/assessment reports, and other correspondence such as maintenance records on the construction sites you will be inspecting. Copy relevant information that may be useful in the field. This could include past inspection reports in order to verify that problems have been corrected. Use the special waters search on the MPCA Web site to determine whether any of the construction sites you

plan to visit are located near special waters or impaired waters. Discharges to special waters, wetlands, and impaired waters have additional requirements that are described in Appendix A of the permit.

Find all the construction sites you'll be inspecting on a map to plan out your day. Group inspections by geographic area when possible to minimize your drive time.

Finally, be prepared for the inspection. Dress for the weather and take appropriate safety gear. Make sure you have the following: inspection credentials, digital camera, copies of inspection forms, copy of the general permit, logbook for taking notes, and personal protective equipment (steel-toed shoes, hard hat, safety vest). Always take extra copies of materials such as the general permit, inspection forms, and application forms.

## **Entry**

Before entering the construction site, observe the surroundings and various stages of construction. Note areas for in-depth review and any clear violations. This is also a good time to view construction site vehicle exit locations and perimeter controls. Indicate on the inspection form the date/time and weather conditions (e.g., light rain, sunny, some rain in previous 24 hours).

When entering the site, review all postings and then ask for the owner or contractor whose name is on the application. If these people are not available, ask to speak with someone who is familiar with the construction site's SWPPP. Always note the names of the individuals with whom you meet. Present your credentials and explain the purpose of your inspection. Inform the individual of the typical sequence of events for the inspection (introductions, file review, site tour, exit interview, report preparation, delivery and follow-up). Ensure that the construction operator participates during the records review and accompanies you during the inspection. Ask if there are any specific safety issues or requirements for this site.

## **Records Review**

Ask to see a copy of their SWPPP and application for coverage under the general stormwater permit, including a copy of all construction site inspections (i.e. the weekly inspections owners/operators are required to make weekly as well as within 24 hours of a rain event greater than 0.5 inches in a 24-hour period).

Review the SWPPP to ensure it addresses all the requirements in the permit. Specific items in the SWPPP to review and record in your notes include:

- The most recent date of the SWPPP, and who prepared it.
- Primary erosion prevention and sediment control BMPs used on-site.
- Inspection and maintenance records, which are required to be kept with the SWPPP. Operator is required to inspect the site once every seven days and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours.
- Permanent stormwater management practices.
- Pollution prevention practices (especially for fueling, solid waste, hazardous materials, and vehicle washing).
- Discharge points from the project to surface waters and wetlands.

## **What if the site does not have a permit?**

If a construction site disturbing more than one acre has not applied for the stormwater permit, notify your Regional MPCA construction contact. Explain to the site representative the requirement to apply for a stormwater permit, continue the inspection, and leave compliance assistance materials such as a copy of the permit and application. Note the violation on the inspection form.

## **What to do if denied entry?**

Stay calm and explain that the permit provides the MPCA and MPCA representatives with the authority to conduct inspections. Inquire as to why you are denied entry and record this information in your notes. Explain that you will need this information so that you can accurately portray their reasons for denial to your supervisor. Evaluate what they said were their reasons and determine if there are ways you can mitigate their concerns. Many times their concerns are unfounded. In no case should you threaten or indicate that their denial may lead to future punitive penalties.

Include in your notes a general narrative of the construction activity (e.g., construction of five single family homes on 2.5 acre parcel). Ask the construction operator to describe the project as you review the SWPPP. Questions you can ask include:

- How large is the project, how long has construction been underway, and when do you plan to complete construction?
- Do you store or use hazardous materials or waste fluids on-site? Do you refuel vehicles or equipment on-site?
- Does this project include concrete pouring, and how do you handle washout of concrete trucks?
- Does the project have a rain gage, and how do you track rainfall amounts?
- What procedures do you institute in advance of forecasted rain events?
- Where are the critical areas of protection?
- Where is the construction draining to?

The SWPPP must include a narrative describing the timing for installation of all erosion prevention and sediment control BMPs. The SWPPP must also address phasing.

Ask for a copy of the site map and the BMP list to determine if it is specific to the construction site you're inspecting. The site map and BMP list can be marked up during your inspection to indicate locations of potential violations and as a reminder to ensure that BMPs are implemented. Remember that these items are enforceable and that the permit requires them to fully implement their SWPPP.

Remember SWPPPs are dynamic documents; they should be updated when (Part III.A.5):

- A change in design, construction, operation, maintenance, weather or seasonal conditions have a significant effect on stormwater discharges,
- Inspections indicate the SWPPP is not effective, or
- The SWPPP is not consistent with the terms of the permit.

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#### **The SWPPP must be on-site!**

Part III.D of the permit requires that "the SWPPP (original or copy), all changes to it, and inspections and maintenance records must be kept at the site during construction by the Permittee who has operational control of that portion of the site." The SWPPP can be kept in either the field office or in an on-site vehicle.

If the SWPPP is not available, ask why and note the response in your report. There are no legitimate excuses for not having stormwater paperwork on-site and available for review. Inform the construction operator that the permit requires the SWPPP to be on-site and available for review. If issues on-site indicate an in-depth review of the SWPPP is necessary, request that a copy of the SWPPP be submitted to the MPCA in the corrective actions.

Discuss with the site contact whether any amendments have been made to the SWPPP. The constantly changing conditions at a construction site (from rough grading to building construction) mean that the BMPs in the SWPPP must change as the site conditions change.

If their SWPPP is not available for review, this will make your inspection more difficult. Ask for a copy of a map of the construction site, if possible, and continue with your inspection. Note the lack of an on-site SWPPP on the inspection form.

## **Site Inspection**

A keen eye, an understanding of the construction sequencing process and accurate documentation are the keys to an effective construction site inspection. Use the inspection form, and take notes regarding the location and condition of BMPs, discharge points, and inlets. Use photos to document concerns/violations and indicate on a rough diagram where the photos were taken. Keep a written log of preliminary findings during your inspection to facilitate your exit interview. Bring extra copies of relevant documents (such as the permit, application form, and construction stormwater permit overview fact sheet) to explain the requirements, and to leave for the construction operator if they need it.

### **A note about construction activity:**

Construction activity, by its very nature, is a “dirty” business. In many cases, land is cleared and graded to conform to the new site requirements. During a rain event, even the best-managed construction sites will look “muddy.” Your role as a construction inspector is to ensure that sediment and other pollutants in stormwater leaving the site do not impact waters of the state. Become familiar with typical construction practices, terminology, and conditions and use this experience during your inspection.

### **A recommended construction inspection sequence follows:**

#### *1. Plan your inspection*

Review the site map and plan how you will conduct the inspection (this is particularly important for large construction sites). Identify the significant pollutant sources and BMPs you want to inspect (silt fence installation, sediment basins, slope stabilization, material storage areas, etc.). Consider the direction stormwater will flow as you plan the inspection. Begin your inspection at the low point on the construction site, observing all discharge points and walk up the slope to inspect the rest of the site. Consider the current sequence of construction phasing when planning your inspection.

#### *2. Inspect discharge points and downstream, off-site areas for signs of impact*

When inspecting discharge points from the site, if it appears that sediment is leaving the site, walk downstream to document the extent of travel and impact on receiving waters or storm drain systems. Make sure you walk “down the street” if necessary to inspect off-site areas for signs of discharge. This is particularly important in areas with existing curbs and gutters. Inspect down-slope municipal catch basin inlets to ensure that they are adequately protected. Note on the inspection form all environmental impacts and document with photographs when possible.

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### **Seasonal Considerations**

During frozen ground conditions, construction activity may be suspended. BMPs must be in place; however, inspections may be suspended until runoff occurs at the site or when construction resumes. If possible, conduct inspections during the spring thaw period.

In some limited situations, it may be useful to collect samples of stormwater discharges from construction sites. Contact your MPCA Regional construction stormwater staff contact if you feel sampling may be useful in a specific situation.

*3. Inspect perimeter controls*

Note the type of perimeter controls installed at the site, and whether these have been properly installed and maintained. Inspect the construction exit to determine if there is excessive tracking of sediment from the site. Is street sweeping being used? If so, what is the frequency? Is there evidence of additional construction exits being used that are not in the SWPPP or are not stabilized?

Check all sediment controls. All storm drains must be protected, temporary stockpiles must have sediment controls and cannot be placed in surface water, including stormwater conveyances.

*4. Compare BMPs in the SWPPP with construction site conditions*

Are all BMPs required by the SWPPP in place? Are additional BMPs needed? Evaluate whether BMPs have been adequately installed and maintained (see Chapter 3 for more information on inspecting BMPs). Describe in your notes the potential violations and their location. Look for areas where BMPs are needed, but are missing and are not included in the SWPPP.

*5. Inspect disturbed areas not currently being worked*

Disturbed areas need to have temporary or permanent cover when they are not being actively worked. All exposed soil areas must be stabilized no later than 14 days, after the construction activity in that portion of the site has temporarily or permanently ceased. Note in the inspection report any unseeded and/or unmulched bare soils that have been dormant for two weeks or more.

*6. Inspect areas with final stabilization*

Inspect any stabilized areas to ensure that excessive erosion is not occurring. Estimate whether the site has been stabilized with uniform perennial vegetative cover with a density of 70 percent over the entire pervious area. Temporary BMPs in areas with final stabilization must be removed and sediment must be cleaned out of all conveyances and temporary sediment basins that will be used as permanent water quality management basins. Areas where temporary BMPs have been removed must be stabilized and seeded.

*7. Inspect wetted perimeter areas*

The normal wetted perimeters of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization must be completed within 24 hours of connecting to a surface water. The remainder of the ditch must be stabilized within 14 days.

Guidance on inspecting individual BMPs is discussed in Chapter 3.

## **Common compliance problems at construction sites**

The following compliance problems are commonly found at small construction sites. Keep these common problems in mind as you conduct inspections.

### *Problem #1 – No temporary or permanent cover*

All exposed soil areas must be stabilized no later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Ask the contractor when particular exposed soils were last worked to help you determine if there is compliance.

### *Problem #2 – No sediment controls on site*

The permit requires established sediment control practices (e.g., sediment traps/basins, down-gradient silt fences or sediment barriers, check dams, etc.) on down-gradient perimeters before up-gradient land disturbing activities begin.

### *Problem #3 – No sediment control for temporary stock piles*

Temporary stockpiles must have silt fence or other effective sediment controls, and cannot be placed in surface waters (or curb and gutter systems).

### *Problem #4 – No inlet protection*

All storm drain inlets that receive a discharge from the construction site must be protected before construction begins, and must be maintained until the site is stabilized. Inlet protection may be removed for a particular inlet if a specific safety concern has been identified. Written correspondence must be documented in the SWPPP or available within 72 hours upon request.

### *Problem #5 – No BMPs to minimize vehicle tracking on to the road*

Vehicle exits must use BMPs such as stone pads, concrete or steel wash racks, or equivalent systems to prevent vehicle tracking of sediment.

### *Problem #6 – Sediment on the road*

If BMPs are not adequately keeping sediment off the street, then the permit requires tracked sediment to be removed (e.g., street sweeping).

### *Problem #7 – Improper solid waste or hazardous materials management*

Solid waste must be disposed of properly, and hazardous materials (including oil, gasoline, and paint) must be properly stored (which includes secondary containment).

### *Problem #8 – Dewatering at the construction site*

Typically dewatering occurs where building footings are being constructed. Have measures been taken to ensure that the pumped discharge is not causing erosion? Is the discharge turbid and if so is it treated before discharging from the site? Has ditching been used to dewater and if so is that water resulting in the discharge of sediment and causing water quality impairments?

### *Problem #9 – Concrete washout*

All liquid and solid wastes generated by concrete washout operations must be contained in a leak-proof containment facility or impermeable liner.

### **Taking photographs**

A digital camera is extremely useful during an inspection. Take digital photographs to document your findings and provide a site overview as you write your report. Take photos of the site entry sign, all potential violations, and a general view(s) of the construction site. Be certain to photograph impacts to waters of the state and try to document with photos that the construction project is the only source of the impact (not other upstream sources), so take shots above and below the project at the impacted waterbody. Remember that you do not need to incorporate all of the photos you take into your inspection report. Photograph model BMPs that could be useful as examples to other construction operators.

On the site map, indicate approximate locations of where you took photos, and the direction of the photograph. Keep notes for each photograph you take, as you need to describe the potential violation in your report.

When taking a photograph, make sure you keep perspective in mind. If the viewer will have difficulty understanding how large something is (for example, a rill/gully), then use a prop such as a person, hardhat or other object for perspective.

### ***Exit Interview***

Prior to conducting your exit interview, break away from the assembled group to gather your thoughts and prepare a list of preliminary findings. Review the inspection forms and determine the severity of any identified deficiencies. It is best to lead off your exit interview with one or more positive comments regarding the site and then list your negative findings in order of severity. Therefore, come up with a few positives examples of what they are doing right.

Debrief the person in charge. Explain that the results of the inspection are preliminary and are not final until all documents and photos have been reviewed and a supervisor has reviewed your report. Explain the identified deficiencies and any areas of concern (parts of SWPPP are missing, inspections are not being done, silt fence was down, etc.). Where possible, cite the section of the permit that requires these missing practices. While it is important that you provide a comprehensive site assessment, it is acceptable to indicate that you are uncertain about certain deficiencies/points and that additional review is required.

Leave copies of any compliance assistance information, such as the MPCA fact sheets “Overview of Minnesota’s NPDES/SDS Construction Stormwater Permit” or “Sediment and Erosion Control for New Homeowners.” Share information on permit compliance, and direct them to contact the MPCA office (contact phone numbers are noted on the bottom of the inspection forms), or explain how to obtain technical guidance materials.

Lastly, don’t tell the construction operator which BMP to use. Explain the problem or the permit requirement that must be met, and describe how other construction sites have addressed typical problems. It’s OK to tell the construction operator about what typically works and what doesn’t work in the field, but don’t specify the BMP to use (especially if it is a proprietary BMP). Ultimately, it is up to the construction operator to decide which BMPs to use.

## Report Writing and Follow-up

Inspection reports consist of inspection forms, a site map and a photo log. If possible, complete all the relevant fields on the inspection forms and write your inspection report while you are still on the construction site. This will allow you to double check any observations and ask follow-up questions.

Remember that your inspection report is a legal document. Write legibly, accurately and objectively. Report all violations observed at the site, and always cite the section of the permit that was violated. Be careful not to include any information that you are unsure of (i.e., product names). The inspection report may be the first step in a compliance process that could reasonably be expected to be contentious. Factual errors in the report will bring the entire report and inspection into question, and will hurt the inspector's credibility.

Therefore, if there is any doubt about the information, it should be left out.

When writing the description of violations, items that were stated to occur but were not observed should always be attributed to the construction operator or their representative. For example, the representative may state that the street is swept daily, but you do not know this as an observed fact.

Be consistent when writing your inspection reports. Identify potential violations in such a way that another inspector can take your report and locate the problem area easily. Be specific when you describe your observations. Don't write "a discharge was entering the storm drain" but rather "a discharge was entering the storm drain on the east side of the project below the construction entrance." As a rule, descriptions of potential violations should be in past tense, i.e., "the silt fence was installed without being toed in."

The photo log provides an important visual link between the written inspection report and the actual inspection. The photo log will also help determine the severity of potential violations. The inspection checklist should reference the photo log.

Photo log should include:

1. Size the photos so that the shortest side is 3.5 inches. Center the photos and captions on the page. Generally, a page will have two landscape oriented photos or one portrait. See Attachment A, page 28, for a sample photo log.
2. Include a photo(s) that illustrates general construction site conditions. A macro level shot provides insight into whether the site is generally in good shape or poorly maintained. For a site that is generally in compliance, the general construction site conditions photo may be the only picture in the log.
3. Provide photos for all potential violations. The photo serves as a record that the findings actually occurred and provides a means of comparing future site conditions with those on the day of inspection. Also, it's easier to resolve potential disputes with the construction operator if findings are documented with photographs.
4. Photo captions should briefly describe what is observed in the picture. Avoid references to the "normal" conditions in that area ("per the construction operator" statements); these are better discussed in the inspection report.

5. Check to make sure the construction site name and NPDES/SDS permit number match the inspection report. The best way to do this is to create a new photo log for each construction site; problems seem to arise when inspectors recycle photo logs by erasing the photos from one site and add those from another.

Save the photo log as the nine digit NPDES/SDS permit number followed by the facility name, or first word of a long facility name (i.e., C00012345 Acme.doc). The NPDES/SDS permit number is the unique value used to organize the photo logs with the reports and make sure that none are missing.

# Chapter 3

## *Tips on Inspecting BMPs*

### **Inspecting BMPs**

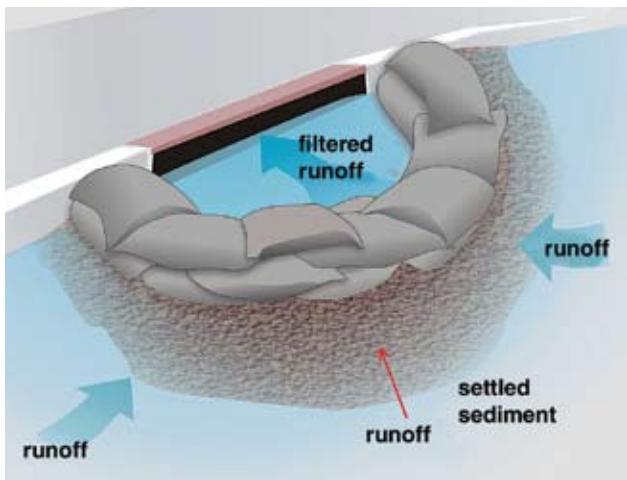
The following BMPs are commonly implemented on small construction sites. Tips for inspecting these BMPs are described on the following pages. For more information on BMPs, see:

- Protecting Water Quality in Urban Areas: Best Management Practices for Dealing with Stormwater Runoff from Urban, Suburban and Developing Areas of Minnesota, Minnesota Pollution Control Agency, March 2000.  
[www.pca.state.mn.us/water/pubs/sw-bmpmanual.html](http://www.pca.state.mn.us/water/pubs/sw-bmpmanual.html).
- Minnesota Urban Small Sites BMP Manual: Stormwater Best Management Practices for Cold Climates, Metropolitan Council, 2001.  
[www.metrocouncil.org/environment/Watershed/bmp/manual.htm](http://www.metrocouncil.org/environment/Watershed/bmp/manual.htm)

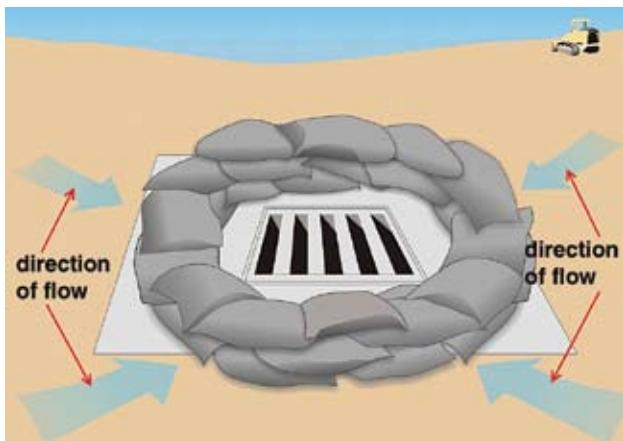
Both manuals provide details on the standards and specifications for installing and maintaining these and other stormwater BMPs.

The BMPs are generally organized by the order an inspector will typically encounter them in the field when conducting an inspection.

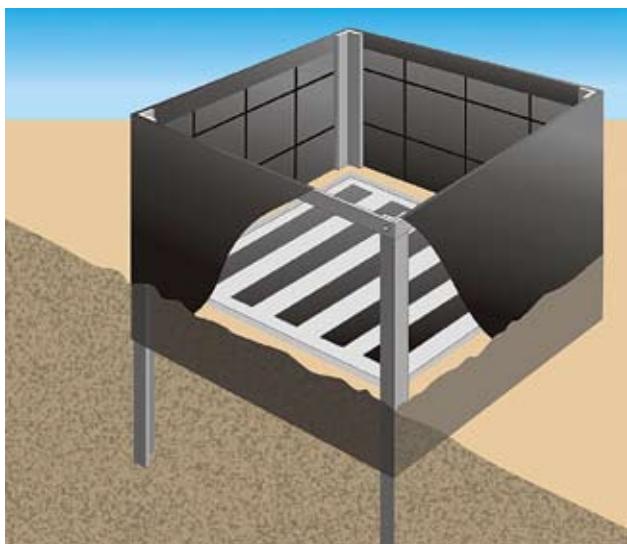
The BMPs in this list were selected because they are commonly found on construction sites disturbing less than five acres of soil.



**Figure 1.** Sand or gravel bags can be used to filter stormwater runoff before entering a catch basin. Commercial products are also available that fit in front of or inside the catch basin.



**Figure 2.** Sand or gravel bags used to protect a drop inlet.



**Figure 3.** Silt fence can also be used to protect a drop inlet.

## Storm drain inlet protection

Storm drain inlet protection prevents sediment from entering a storm drain by surrounding or covering the inlet with a filtering material. This allows sediment-laden runoff to pond and settle before entering the storm drain.

Several types of filters are commonly used for inlet protection: silt fence, sand bags or block and gravel. The type of filter used will depend on inlet type (curb inlet, drop inlet), slope, and amount of flow. Many different commercial inlet filters are also available. Some commercial inlet filters are placed in front of or on top of an inlet, others are placed inside the inlet and under the grate.

### Permit requirements:

- All storm drain inlets must be protected by appropriate BMPs during construction until all sources with potential for discharging to the inlet have been stabilized. Inlet protection may be removed if a specific safety concern has been identified and the Permittee(s) have received written correspondence from the jurisdictional authority (Part IV.C.4).
- All sediment control BMPs must be inspected to ensure integrity and effectiveness. All nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs. (Part IV.E.4).

### Inspection tips:

- ✓ Inlet protection is a secondary BMP. Make sure that erosion controls or additional sediment controls are also in place.
- ✓ The inlet protection must not block the storm drain or cause flooding.
- ✓ Inlet protection must be in place immediately after storm drains are installed (or before land disturbance activities begin in an area with existing storm drains).
- ✓ Sediment accumulation must be removed after each storm event if it impedes flow through the filter.
- ✓ Make sure there are not any “gaps” allowing unfiltered stormwater to enter the inlet.

## ***Stabilized construction exit***

A rock construction exit can reduce the amount of sediment transported onto paved roads by vehicles. The construction exit does this by knocking mud off the vehicle tires before the vehicle enters a public road.

### **Permit requirements:**

- Vehicle tracking of sediment from the construction site must be minimized by BMPs such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used if such BMPs are not adequate to prevent sediment from being tracked onto the street (Part IV.C.6).
- Construction site vehicle exit locations must be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment must be removed from all off-site paved surfaces within 24 hours of discovery, or if applicable, within a shorter time (Part IV.E.4.d).

### **Inspection tips:**

- ✓ Is there evidence of sediment tracking from the site? (Street sweeping may be necessary if sediment tracking is evident).
- ✓ Is there evidence that vehicles are leaving the site from other locations, and not using the designated construction exits?
- ✓ Does the aggregate need to be replaced or replenished?
- ✓ Is the construction exit long enough to remove mud from the tires (50 ft. minimum)?
- ✓ Is the site graded away from the construction exit to prevent runoff from leaving the site?

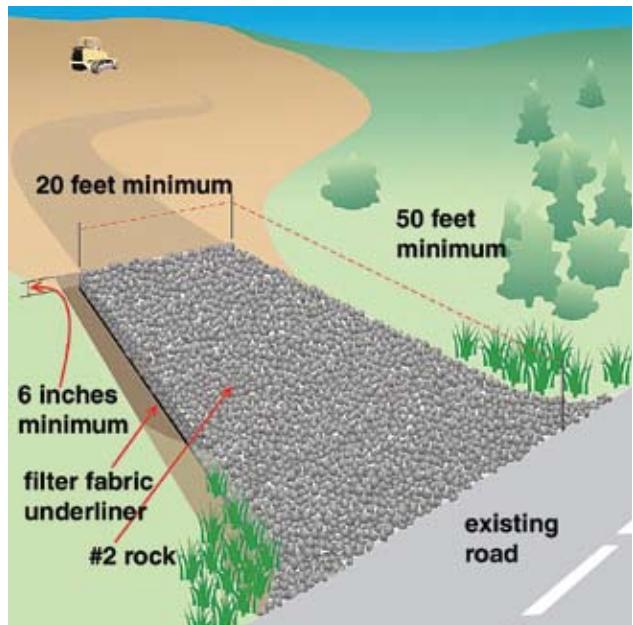
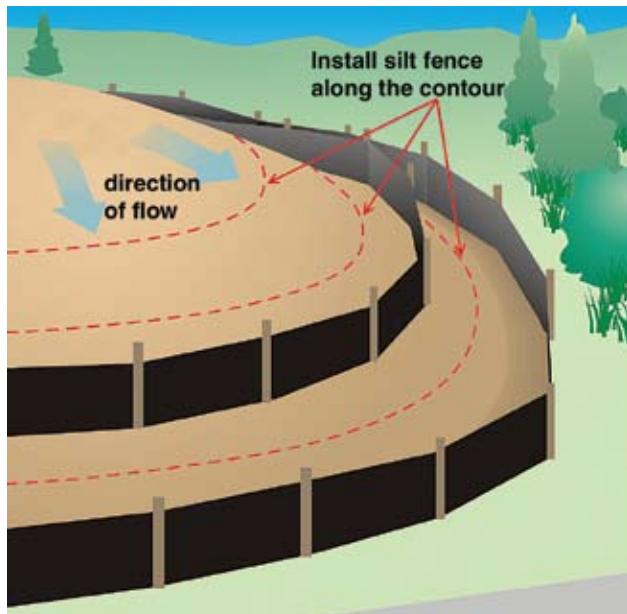


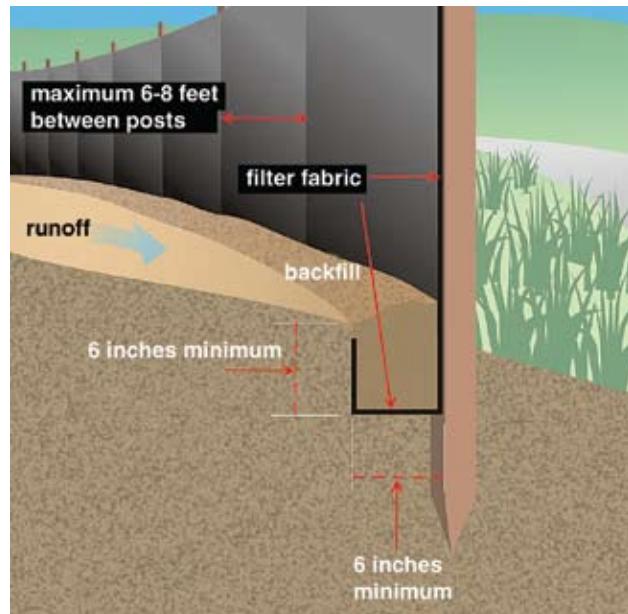
Figure 4. *Stabilized construction exit.*

## **Silt fence/other sediment barrier**

A silt fence or sediment filter (such as a fiber roll or wattle) is a down-gradient barrier intended to intercept sheet flow runoff and settle out sediment upslope while allowing runoff to filter through.



**Figure 5.** Illustration of silt fence installed along the contour.



**Figure 6.** Detail of silt fence installation.



**Figure 7.** Illustration of "J-hooks" used during silt fence installation.

### **Permit requirements:**

Sediment control practices must be established on all down-gradient perimeters before any upgradient land disturbing activities begin. These practices must remain in place until final stabilization has been established (Part IV.C.2). All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. These repairs must be made within 24 hours of discovery, or as soon as field conditions allow access (Part IV.E.4.a).

### **Inspection tips:**

- ✓ Is the silt fence installed along the contour (on a level horizontal plane)?
- ✓ Are the ends turned up (J-hooks) to help pond the water behind the filter?
- ✓ Is the filter trenched-in with the stakes on the downhill side (trench must be 6 inches deep by 6 inches wide)?

- ✓ Has sediment been removed when it reaches 1/3 the height of the barrier?
- ✓ Sediment barriers should not be used as check dams or where concentrated flow is expected.

#### Key inspection area: Inadequate installation

- Soil should be compacted after trenching.
- The stakes used to hold the silt fence must be on the down-slope side.

#### Key inspection area: Improper placement

- A silt fence is not adequate protection for steep, long slopes. The drainage area must be no greater than  $\frac{1}{4}$  acre per 100 feet of fence; i.e., silt fences must be spaced 60-110 ft. apart on long slopes.

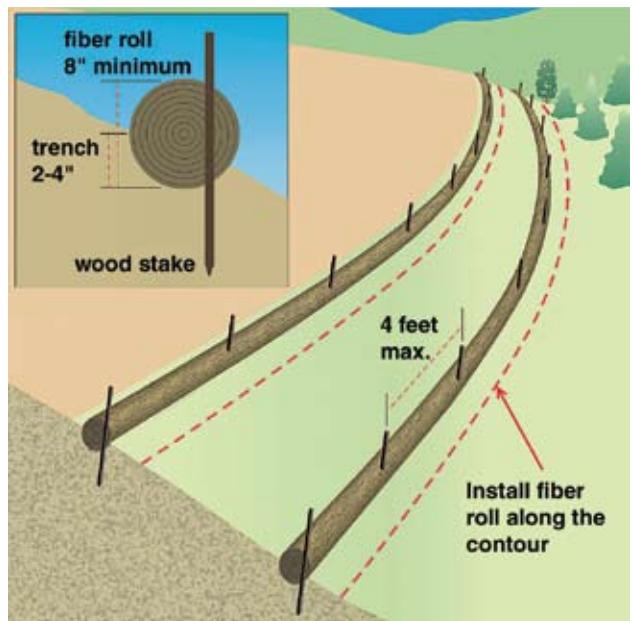


Figure 8. Fiber roll installation and detail.

#### Key inspection area: Maintenance

- Torn or degraded silt fence fabric must be replaced immediately.

### Diversion ditches/berms

Diversion ditches or berms direct off-site runoff away from unprotected slopes or direct sediment-laden runoff to a sediment trapping structure. A diversion ditch can be located at the upslope side of a construction site to prevent surface runoff from entering the disturbed area. Ditches or berms on steeper slopes may need to consider erosive velocities. Also, ensure that the diverted water is released through a stable outlet and does not cause downstream flooding.

#### Inspection tips:

- ✓ Check to make sure the diversion discharges to a stable outlet or channel.
- ✓ Check to see if diversion ditches and berms have been seeded.
- ✓ Is the diversion eroding? (channel grades should be relatively flat).
- ✓ Check dams may be necessary if high velocity flows are present.

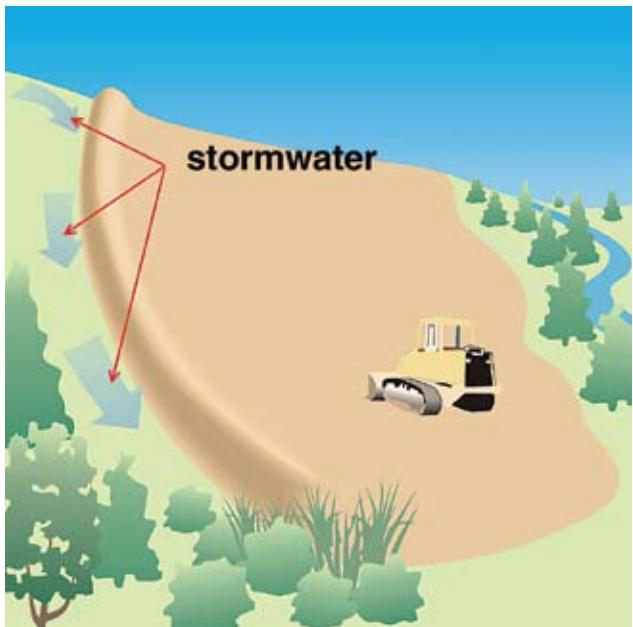


Figure 9. Diversions should be used to divert stormwater away from disturbed areas.

## Mats, mulches, and blankets

Mats, mulches and blankets are used for temporary stabilization and establishing vegetation of disturbed soils. Mats and blankets are typically used on slopes or channels while mulches are effective in helping to protect the soil surface and foster the growth of vegetation.

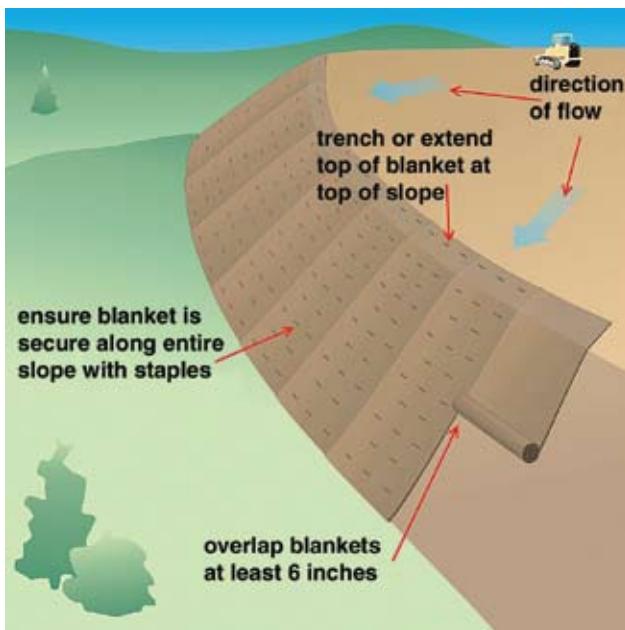


Figure 10. Erosion control blanket.

### Inspection tips:

- ✓ The blanket or mat must come into complete contact with the soil.
- ✓ Check that the top of the blanket is trenched-in (there should be no evidence of water flowing under the blanket or mat).
- ✓ Mulch should not be placed in concentrated flow areas.
- ✓ Check to see if erosion is occurring in the mulched area (more mulch may need to be applied).
- ✓ Check blankets and mats to see if sections are overlapped 4-6 inches and staples are 12 inches apart on tops and 24 inches apart down the sides and in the middle.

## Temporary sediment trap or pond

A temporary sediment trap or pond is a small, temporary ponding area formed by constructing an earthen embankment with an outlet across a swale. Temporary sediment traps are intended to detain sediment-laden runoff from small, disturbed areas long enough to allow the majority (at least 75 percent) of the sediment to settle out.

Sediment traps are designed for small areas. The volume of the trap must be at least 1,800 cubic feet per acre of contributing drainage.

### Inspection tips:

- ✓ Check the location of the sediment trap. Failure of the trap should not pose a risk to life or property.
- ✓ Sediment in the trap should be removed after it reaches about 1/3 the design volume.
- ✓ The trap should not be installed in a main stream or near culvert outlets.
- ✓ Check the outlet for needed maintenance.

## ***Vegetative stabilization***

Vegetative stabilization includes temporary or permanent seeding and sodding. Vegetative stabilization helps prevent erosion at construction sites by reestablishing vegetation on exposed soils. Native and noninvasive species are highly preferred to introduced grasses.

### **Permit requirement (Part IV.B.2):**

All exposed soil areas must be stabilized as soon as possible to limit soil erosion but in no case later than 14 days, after the construction activity in that portion of the site has temporarily or permanently ceased. Temporary stock piles without significant silt, clay or organic components and the constructed based components of the roads, paving lots and similar surfaces are exempt from this requirement.

### **Inspection tips:**

- ✓ Are all exposed soil areas stabilized?
- ✓ Check for signs of erosion in vegetated areas.
- ✓ Concentrated flows should not be allowed across newly seeded slopes.
- ✓ If late in the year, a slope may need to be mulched rather than seeded.

## ***Permanent stormwater management system***

For projects that replace pervious surfaces with one or more acres of cumulative impervious surface, a permanent stormwater management system that treats  $\frac{1}{2}$  inch of runoff from the new impervious surface is required (one (1) inch of runoff must be treated when discharging to special waters). See Part III.C of the permit for additional information.

For those areas of the project where there is no feasible way to meet the requirements for the water quality volume, then up to three acres or one percent of project size (whichever is larger) can use other treatment such as grassed swales, smaller ponds or grit chambers.

Documentation must be provided in the SWPPP.

The construction operator can choose one of the following approaches to meet this requirement:

- *Wet sedimentation basin.* Permanent storage volume (dead storage) of 1800 cubic feet of storage per acre that drains to the basin must be provided. The water quality volume (live storage) must be discharged at no more than 5.66 cubic feet per second (CFS) per acre of surface area of the pond. The water quality volume treated should be  $\frac{1}{2}$  inch times of new impervious surface. (Part III.C.1).
- *Infiltration/filtration.* Treatment can include infiltration basins and trenches, rainwater gardens, sand filters, bioretention areas, and enhanced swales. The water quality volume treated should be  $\frac{1}{2}$  inch of new impervious surface. (Part III.C.2).

- *Regional Ponds.* Written authorization to discharge to a regional pond must be included in the SWPPP, and the pond must meet the permit's design requirements. (Part III.C.3)
- *Combination of the above practices.* SWPPP must document the volume that each practices addresses. (Part III.C.4)
- *Alternative method.* An alternative method must be approved in advance by the MPCA. Check the SWPPP to see if approval and additional documentation is provided. (Part III.C.5)

### ***Solid waste/hazardous materials management***

Part IV.F of the permit requires construction sites to implement pollution prevention measures. At a minimum, sites are required to:

- Properly dispose of solid waste.
- Hazardous materials must be properly stored, including secondary containment, with restricted access to prevent vandalism. Oil, gasoline and paint are hazardous materials often used at construction sites.
- Limit external washing of vehicles and contain runoff. Engine degreasing is prohibited.

#### **Permit requirements:**

- Solid Waste: Collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with MPCA disposal requirements. (Part IV.F.1).



**Figure 11. Example of hazardous materials storage (doors removed for illustrative purposes only). Access to hazardous materials must be restricted.**

- Hazardous Materials: Oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Access to storage areas must be restricted to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations. (Part IV.F.2).
- Spills must be reported to the Minnesota Duty Officer 1-800-422-0798.
- External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site. (Part IV.F.3).

- Concrete washout onsite: All liquid and solid wastes generated by concrete washout operations must be contained in a leak-proof containment facility or impermeable liner. A compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner. The liquid and solid wastes must not contact the ground, and there must not be runoff from the concrete washout operations or areas. Liquid and solid wastes must be disposed of properly and in compliance with MPCA regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities. (Part IV.F.4).

**Inspection tips:**

- ✓ Does the construction site have dumpsters or other containers for debris and solid waste?
- ✓ Is there evidence of solid waste or debris in the storm drain system?
- ✓ Are oil, gasoline and paint properly stored?
- ✓ Does the construction operator allow vehicles to be washed on-site?
- ✓ Are solid waste and hazardous materials stored away from receiving waters and catch basins?
- ✓ Is there evidence of hazardous materials being disposed of in the solid waste bins?
- ✓ Is there evidence that the solid waste or hazardous materials containers have leaked?
- ✓ Are vehicles or equipment fueled on-site? Is this area bermed or away from receiving waters and storm drains?
- ✓ Are all hazardous materials containers properly labeled?
- ✓ Are concrete washouts properly installed away from receiving waters and storm drains?
- ✓ Is there a sign adjacent to each washout facility to inform concrete equipment operators to utilize the proper facility.

## *Referring Enforcement Cases to the MPCA*

Specific referral procedures are detailed in contracts between the MPCA and non-MPCA inspectors. In most instances, referrals will follow this general practice. Cases may be referred directly to the MPCA from approved agencies. At this point the MPCA determines if enforcement actions are warranted and if proper documentation has been filed. If the MPCA determines that no action is required, because of the lack of documentation or insufficient information or evidence, the case will be referred back with a letter of explanation. If MPCA staff determine that action is required the case will be pursued. Cases that meet MPCA requirements will be brought through the MPCA enforcement process in conjunction with the referring approved agency. Most times a parallel request will be made by the referring approved agency to engage with local enforcement measures. These measures may include: having the plan-approving agency (zoning and planning departments) refrain from issuing or, in some cases, revoking any building or grading permits until outstanding violations are remedied.

The following are three common violations at small construction sites and the potential level of enforcement response by the MPCA and approved partners. Further information and details on MPCA enforcement response or guidance on inspection reports and field letter of warning use can be obtained from the MPCA Enforcement Response Plan (ERP).

### ***For failure to obtain an NPDES stormwater permit***

*Citation:* 7001.1035, 7001.1040 and 7001.1030.

*Suggested enforcement action:* Administrative Penalty Order (APO).

*Evidence needed:* photos of the construction activity, DELTA permit search, a completed inspection report, pollutant discharge documentation (when occurring), size of site, cite the “failure to obtain a permit” violation,

*Required action:* Immediately cease construction work. Create corrective actions that will prevent harm or correct/minimize releases. Apply for permit ASAP and prior to continued site activity. Follow up with appropriate enforcement action.

## ***For discharging sediment into waters of the state***

*Citation:* Minnesota Statute 115.061 or Minnesota Rule 7001.0210.

*Suggested enforcement action:* APO/Stipulation Agreement.

*Evidence needed:* Delineation of sediment plume, photos, and inspection report which describes the impacts with good factual records.

*Required action:* Create corrective actions to stop discharge and prevent harm or correct/minimize releases, report discharges to appropriate agencies. Proceed with appropriate enforcement action; most cases involving discharges typically involve penalties depending on the seriousness, length of time and response to the discharge.

## ***For violations of the NPDES/SDS stormwater permit requirements***

*Citation:* NPDES/SDS permit MN R100001

*Suggested enforcement action:* Letter of Warning, APO or Stipulation Agreement.

*Evidence needed:* Review erosion and sediment control plans, photos, and inspection reports that describes any impacts with good factual records of failure of the permit conditions.

*Required action:* Clearly and concisely document any violations, including the location of the violation and the part of the permit that the construction operator is violating. Create corrective actions that will result in compliance with the permit and, if appropriate, establish a time frame for compliance. Write clearly and concisely. Proceed with enforcement as appropriate. Cases involving environmental harm or potential for harm may involve penalties depending on the seriousness, length of time and response to the corrective actions. Case by case evaluation is necessary to make these determinations. If a reinspection is necessary, set a time or date for this (either scheduled with the construction operator or an unannounced inspection).

## ***Enforcement options available***

*There are a suite of enforcement options available to local government or state agencies ranging from field requests to formal notices and various penalty actions, including local citations, administrative penalty orders, stipulation agreements, stop work orders and permit revocations.*

# Chapter 5

## Additional Resources

This *Stormwater Inspection Guide* is available online, as are the additional resources on stormwater BMPs listed below:

### **MPCA Stormwater Inspection Guide**

[www.pca.state.mn.us/publications/wq-strm2-10.pdf](http://www.pca.state.mn.us/publications/wq-strm2-10.pdf).

### **MPCA Stormwater Manual**

[www.pca.state.mn.us/water/stormwater/stormwater-manual.html](http://www.pca.state.mn.us/water/stormwater/stormwater-manual.html). The first half of the manual is dedicated to the general Minnesota context for stormwater management. The second half includes diagrams and formulas, it is intended for professional, but useful for homeowners.

### **MPCA Stormwater Program**

[www.pca.state.mn.us/water/stormwater/index.html](http://www.pca.state.mn.us/water/stormwater/index.html). Click on the construction stormwater program to get copies of the construction permit, application, fact sheets, information on special waters and staff contacts.

### **MPCA Stormwater BMP Manual**

[www.pca.state.mn.us/water/pubs/sw-bmpmanual.html](http://www.pca.state.mn.us/water/pubs/sw-bmpmanual.html). An electronic copy of the MPCA's *Protecting Water Quality in Urban Areas: Best Management Practices for Dealing with Stormwater Runoff from Urban, Suburban and Developing Areas of Minnesota* (2000). Includes information on all types of stormwater control practices.

### **Metropolitan Council's Urban Small Sites BMP Manual**

[www.metrocouncil.org/environment/Watershed/bmp/manual.htm](http://www.metrocouncil.org/environment/Watershed/bmp/manual.htm).

An electronic copy of the *Minnesota Urban Small Sites BMP Manual: Stormwater Best Management Practices for Cold Climates* (2001). This BMP manual provides information on construction and permanent stormwater BMPs.

### **Minnesota Erosion Control Association**

[www.mnerosion.org](http://www.mnerosion.org). An organization that is advancing effective stormwater management and erosion and sediment control techniques and practices.

### **International Erosion Control Association**

[www.ieca.org](http://www.ieca.org) Association for erosion and sediment control professionals.

## *Definitions*

The following selected definitions are reprinted from the MPCA's construction permit. For additional definitions, see the construction permit.

### **“Best Management Practices (BMPs)”**

Erosion and sediment control and water quality management practices that are the most effective and practicable means of controlling, preventing, and minimizing degradation of surface water, including avoidance of impacts, construction-phasing, minimizing the length of time soil areas are exposed, prohibitions, and other management practices published by state or designated area-wide planning agencies. Individual BMPs found in the construction permit are described in the current version of *Protecting Water Quality in Urban Areas*, Minnesota Pollution Control Agency 2000. BMPs must be adapted to the site and can be adopted from other sources. However, they must be similar in purpose and at least as effective and stringent as the MPCA's BMPs. (Other sources include manufacturers specifications, *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices*, U.S. Environmental Protection Agency 1992, and Erosion Control Design Manual, Minnesota Department of Transportation, et al, 1993).

### **“Common Plan of Development or Sale”**

A contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. One plan is broadly defined to include design, permit application, advertisement or physical demarcation indicating that land-disturbing activities may occur.

### **“Construction Activity”**

Construction activity as defined in 40 C.F.R. part 122.26(b)(14)(x) and small construction activity as defined in 40 C.F.R. part 122.26(b)(15). This includes a disturbance to the land that results in a change in the topography, existing soil cover (both vegetative and non-vegetative), or the existing soil topography that may result in accelerated stormwater runoff, leading to soil erosion and movement of sediment into surface waters or drainage systems. Examples of construction activity may include clearing, grading, filling and excavating. Construction activity includes the disturbance of less than one acre of total land area that is a part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) acre or more.

### **“Erosion Prevention”**

Measures employed to prevent erosion including but not limited to: soil stabilization practices, limited grading, mulch, temporary or permanent cover, and construction phasing.

### **“Final Stabilization” requires all of Parts 1-5 or Part 6:**

1. All soil disturbing activities at the site have been completed and all soils must be stabilized by a uniform perennial vegetative cover with a density of 70 percent over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions.
2. The permanent stormwater treatment system meets all requirements in Part III, C. This includes but is not limited to, a final clean out of temporary or permanent sedimentation basins that are to be used as permanent water quality management basins and final construction or maintenance of infiltration basins. All sediment must be removed from conveyance systems and ditches must be stabilized with permanent cover.
3. Prior to submission of the Notice of Termination, all temporary synthetic and structural erosion prevention and sediment control BMPs (such as silt fence) must be removed on the portions of the site for which the Permittee is responsible. Best Management Practices designed to decompose on site (such as some compost logs) may be left in place.
4. For residential construction only, individual lots are considered finally stabilized if the structure(s) are finished and temporary erosion protection and downgradient perimeter control has been completed and the residence has been sold to the homeowner. Additionally, the Permittee must distribute the MPCA’s “Homeowner Fact Sheet” to the homeowner to inform the homeowner of the need for, and benefits of, permanent cover.
5. For construction projects on land used for agricultural purposes (e.g., pipelines across crop or range land) Final Stabilization may be accomplished by returning the disturbed land to its preconstruction agricultural use.
6. A Permittee may terminate permit coverage prior to completion of all construction activity if all of the following conditions are met in addition to Part 2 and 3 and where applicable, Part 4 or Part 5.
  - a. Construction activity has ceased for at least 90 days.
  - b. At least 90 percent (by area) of all originally proposed construction activity has been completed and permanent cover established on those areas.
  - c. On areas where construction activity is not complete, permanent cover has been established.

### **“Operator”**

The person (usually the general contractor), designated by the owner, who has day-to-day operational control and/or the ability to modify project plans and specifications related to the SWPPP. The person must be knowledgeable in those areas of the permit for which the operator is responsible. (Part II.B. and Part IV.).

**“Owner”**

The person or party possessing the title of the land on which the construction activities will occur; or if the construction activity is for a lease, easement, or mineral rights license holder, the party or individual identified as the lease, easement or mineral rights license holder; or the contracting government agency responsible for the construction activity.

**“Permittee”**

A person(s), firm, or governmental agency or other institution that signs the application and is responsible for compliance with the terms and conditions of the permit.

**“Sediment Control”**

Methods employed to prevent sediment from leaving the site. Sediment control practices include silt fences, sediment traps, earth dikes, drainage swales, check dams, subsurface drains, pipe slope drains, storm drain inlet protection, and temporary or permanent sedimentation basins.

**“Stormwater”**

Defined under Minn. R. 7077.0105, subp. 41(b), and includes precipitation runoff, stormwater runoff, snow melt runoff, and any other surface runoff and drainage.

**“Stormwater Pollution Prevention Plan”**

A plan for stormwater discharge that includes erosion prevention measures, sediment controls and permanent stormwater Management System that, when implemented, will decrease soil erosion on a parcel of land and decrease off-site nonpoint pollution.

**“Surface Water or Waters”**

All streams, lakes, ponds, marshes, wetlands, reservoirs, springs, rivers, drainage systems, waterways, watercourses, and irrigation systems whether natural or artificial, public or private.

**“Temporary Erosion Protection”**

Methods employed to prevent erosion. Examples of temporary cover include; straw, wood fiber blanket, wood chips, and erosion netting.

**“Waters of the State”**

Defined in Minn. Stat. § 115.01, subd. 22 as all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the state or any portion thereof.

# Attachment A - Photo Log

## Acme Construction (permit number)

Inspected by: (Inspector's name, office, phone number)

Construction site name and inspector's last name, office, and phone number are centered in the header and must appear on all pages.



**Photo 1:** Well-maintained and labeled concrete truck washout

Generally each page will have two landscape or one portrait picture(s). To size each picture, right-click on the picture and select Format Picture for sizing. For landscape view, set height to 3.5" and width is set by MS Word (make sure Lock Aspect Ratio is checked ON.) For portrait view, set width to 3.5" and height is set by MS Word.



**Photo 2:** Hay bales and silt fence that are in need of maintenance

Inspection Date: January 5, 2004

Page 1 of 3

Inspection date and sequential page numbering in the footer must appear on all pages.

# Attachment B - Violation Citations

## NPDES/SDS General Stormwater Permit for Construction Activity Violation Citations

### Citation

No permit

### Permit section or rule

Minn. R. 70090.2010

Subparts 1, 2, 3 (permit required, permit application deadline, and compliance requirements for unpermitted construction, respectively)

### Change of Coverage

II. B. 5

### Erosion Control Practices during Construction

- a) All exposed soil must be stabilized no later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased IV. B. 2
- b) Normal wetted perimeter of drainage system - 200' within 24 hours of connecting IV. B. 3
- c) Energy dissipation (temp. or perm.) within 24 hours IV. B. 4

### Sediment Control Practices during Construction

- a) Lacking sediment control practices Overloaded systems eliminated, no unbroken slopes 75' @ 3:1> IV. C. 1
- b) Temporary sediment basin required III. B
- c) Inlet BMPs not functional IV. C. 4
- d) Perimeter controls/soil disturbance IV. C. 2

### Inspections and Maintenance

- a) Maintenance of erosion and sediment temporary/permanent cover IV. E. 4
- b) Temporary sediment basin 1/2-volume IV. E. 4. b
- c) Recovery of sediment in waters (name water body)
  - Duty to notify, avoid and recover water pollution IV. E.4. c
  - Nuisance conditions prohibited (define discharge) Minn. Stat.115.061§
- d) Vehicle tracking Minn. R 7050.0210, subp. 2 IV. E.4. d

### Inspections and Records Retention

- a) SWPPP development required III. D
- SWPPP requirements:
  - BMPs/locations procedures III. A
  - Site map/flow arrows III. A. 4
  - Areas not to be disturbed III. A. 4. a
  - Phased areas III. A. 4. b
  - Surface waters/wetlands 1 mile III. A. 4. c
  - Methods for final stabilization III. A. 4. d
  - Amend SWPPP modify BMP III. A. 4. e
  - III. A. 4. f
- b) Inspections (specifically note failed maintenance) III. A. 4
- c) Training requirement documentation IV. E.

III. A

III. A. 4

III. A. 4. a

III. A. 4. b

III. A. 4. c

III. A. 4. d

III. A. 4. e

III. A. 4. f

III. A. 4

IV. E.

III.A.2

### **Permanent Stormwater Treatment**

>One (1) acre impervious, permanent treatment required III. C

- a) Wet sedimentation basin
  - Regional ponds III. C. 1
  - Infiltration/filtration (hydro analysis) III. C. 3
  - Alternative methods, 90-day review, monitoring III. C. 2
- b) Pretreatment required III. C
- c) Dewatering IV. D
- d) Turbid discharges off site or waters of the state Minn. R 7050. 0210, subp.2
- e) Wetland impacts: authorization and mitigation

### **Management Pollution Prevention**

- a) Solid waste disposed of properly IV. F. 1
- b) Hazardous materials in secondary containment and restricted access IV. F. 2
- c) Defined areas for construction vehicles external washing IV. F. 3
- d) Defined concrete washout on site and with a sign IV. F. 4

# ***Attachment B - Violation Citations***

## ***(continued)***

### ***Letter of Warning (LOW)***

A notice to a regulated party (RP) that documents violations discovered during an inspection, complaint follow-up or review of submittals. The LOW typically includes a reference of the statute, rule, permit condition or checklist that are violated. The LOW typically requires the regulated party to complete specific corrective actions to return the facility to compliance. The LOW usually gives a regulated party between 7-30 days to complete required corrective actions.

### ***Request for Information (RFI)***

A notice to an RP requiring information. Occasionally additional information is required to determine the status of compliance or for an RP to respond to violations discovered. This information can be used to determine if elevated enforcement (including penalties) is appropriate.

### ***Corrective Actions (LOW or RFI)***

Requirements to correct field conditions and to come into compliance with the permit, statute or rules and must be responded to in the period noted on this field report. This response (including any lack of response) is considered by the MPCA and future enforcement for the violations discovered.

# **Attachment C - Temporary, Permanent Sediment Basin Checklist**

**Site Name/Location** \_\_\_\_\_ **Date of inspection** \_\_\_\_\_

Permanent – temporary (circle) sedimentation basins: (location/ID) \_\_\_\_\_

Required basin installed (> 10 acres/ single point (T) or >1 acre new impervious (P))?	Yes	No
Does basin have energy dissipation for outlet?	Yes	No
Stabilized emergency overflow outlet?	Yes	No
Was basin constructed /operational concurrent with construction?	Yes	No
Are slopes stabilized with perm cover or temp erosion protection?	Yes	No
Is basin connected to surface waters? Yes Name/description waters: _____		
Was discharge- connection stabilized within 24 hours of connecting?	Yes	No
Dewatering: Onsite to a temp. settling basin? Yes No If offsite, is water turbid?	Yes	No
If no settling basin, was appropriate BMPs for turbidity and scour applied?	Yes	No
Is discharge from site creating a nuisance conditions or WQ violations?	Yes	No
Observations:		

Permanent – temporary (circle) sedimentation basins: (location/ID) \_\_\_\_\_

Required basin installed (> 10 acres/ single point (T) or >1 acre new impervious (P))?	Yes	No
Does basin have energy dissipation for outlet?	Yes	No
Stabilized emergency overflow outlet?	Yes	No
Was basin constructed /operational concurrent with construction?	Yes	No
Are slopes stabilized with perm cover or temp erosion protection?	Yes	No
Is basin connected to surface waters? Yes Name/description waters: _____		
Was discharge- connection stabilized within 24 hours of connecting?	Yes	No
Dewatering: Onsite to a temp. settling basin? Yes No If offsite, is water turbid?	Yes	No
If no settling basin, was appropriate BMPs for turbidity and scour applied?	Yes	No
Is discharge from site creating a nuisance conditions or WQ violations?	Yes	No
Observations:		

Permanent – temporary (circle) sedimentation basins: (location/ID) \_\_\_\_\_

Required basin installed (> 10 acres/ single point (T) or >1 acre new impervious (P))?	Yes	No
Does basin have energy dissipation for outlet?	Yes	No
Stabilized emergency overflow outlet?	Yes	No
Was basin constructed /operational concurrent with construction?	Yes	No
Are slopes stabilized with perm cover or temp erosion protection within 200' of surface water?	Yes	No
Is basin connected to surface waters? Yes Name/description waters: _____		
Was discharge- connection stabilized within 24 hours of connecting?	Yes	No
Dewatering: Onsite to a temp. settling basin? Yes No If offsite, is water turbid?	Yes	No
If no settling basin, was appropriate BMPs for turbidity and scour applied?	Yes	No
Is discharge from site creating a nuisance conditions or WQ violations?	Yes	No
Observations:		



# STORM WATER MANAGEMENT PERMIT

## Security Deposit Worksheet

### Temporary Erosion Control

All costs related to installation of temporary erosion control measures, including, but not limited to:

Silt Fence	\$ _____
Rock Construction (Filter Berm) Entrance	\$ _____
Catch Basin Inlet Protection	\$ _____
Temporary Sediment Basins, Swales, Silt Traps	\$ _____
Street Sweeping	\$ _____
Other Erosion Control Efforts	\$ _____

\_\_\_\_\_

\_\_\_\_\_

### Final Stabilization

All costs related to establishing final stabilization, including, but not limited to:

Seeding and Mulching	\$ _____
Fiber Blankets with Seed	\$ _____
Hydroseeding	\$ _____
Sod	\$ _____
Other _____	\$ _____

### TOTALS

1. Total of above costs \$ \_\_\_\_\_
2. Multiply by 1.5 x 1.5
3. **Total Required Security** = \$ \_\_\_\_\_

### Warranty Period

If no action has been filed against the security, the security deposit will be released one year after the City approves the *project complete inspection*.



This document is available in alternate formats upon a 72-hour request. Please call 763-593-8006 (TTY: 763-593-3968) to make a request. Examples of alternate formats may include large print, electronic, Braille, audiocassette, etc.



**Request for Taxpayer  
Identification Number and Certification**Give Form to the  
requester. Do not  
send to the IRS.Print or type  
See Specific Instructions on page 2.

Name (as shown on your income tax return)					
Business name/disregarded entity name, if different from above					
Check appropriate box for federal tax classification: <input type="checkbox"/> Individual/sole proprietor <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate  <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ► _____  <input type="checkbox"/> Other (see instructions) ► _____					
Address (number, street, and apt. or suite no.)			Requester's name and address (optional)		
City, state, and ZIP code					
List account number(s) here (optional)					

**Part I Taxpayer Identification Number (TIN)**

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

**Note.** If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

<b>Social security number</b>											
			-			-					

<b>Employer identification number</b>											
			-								

**Part II Certification**

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below), and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

<b>Sign Here</b>	Signature of U.S. person ►	Date ►
----------------------	-------------------------------	--------

**General Instructions**

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** The IRS has created a page on IRS.gov for information about Form W-9, at [www.irs.gov/w9](http://www.irs.gov/w9). Information about any future developments affecting Form W-9 (such as legislation enacted after we release it) will be posted on that page.

**Purpose of Form**

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, payments made to you in settlement of payment card and third party network transactions, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the

withholding tax on foreign partners' share of effectively connected income, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct.

**Note.** If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

**Definition of a U.S. person.** For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

**Special rules for partnerships.** Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States:

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity,
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust, and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

**Foreign person.** If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

**Nonresident alien who becomes a resident alien.** Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

**Example.** Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

**What is backup withholding?** Persons making certain payments to you must under certain conditions withhold and pay to the IRS a percentage of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

## **Payments you receive will be subject to backup withholding if:**

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code* on page 3 and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships* on page 1.

**What is FATCA reporting?** The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code* on page 3 and the Instructions for the Requester of Form W-9 for more information.

## **Updating Your Information**

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account, for example, if the grantor of a grantor trust dies.

## **Penalties**

**Failure to furnish TIN.** If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

**Civil penalty for false information with respect to withholding.** If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

**Criminal penalty for falsifying information.** Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

**Misuse of TINs.** If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

## **Specific Instructions**

### **Name**

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

**Sole proprietor.** Enter your individual name as shown on your income tax return on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name/disregarded entity name" line.

**Partnership, C Corporation, or S Corporation.** Enter the entity's name on the "Name" line and any business, trade, or "doing business as (DBA) name" on the "Business name/disregarded entity name" line.

**Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulation section 301.7701-2(c)(2)(iii). Enter the owner's name on the "Name" line. The name of the entity entered on the "Name" line should never be a disregarded entity. The name on the "Name" line must be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on the "Name" line. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on the "Business name/disregarded entity name" line. If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

**Note.** Check the appropriate box for the U.S. federal tax classification of the person whose name is entered on the "Name" line (Individual/sole proprietor, Partnership, C Corporation, S Corporation, Trust/estate).

**Limited Liability Company (LLC).** If the person identified on the "Name" line is an LLC, check the "Limited liability company" box only and enter the appropriate code for the U.S. federal tax classification in the space provided. If you are an LLC that is treated as a partnership for U.S. federal tax purposes, enter "P" for partnership. If you are an LLC that has filed a Form 8832 or a Form 2553 to be taxed as a corporation, enter "C" for C corporation or "S" for S corporation, as appropriate. If you are an LLC that is disregarded as an entity separate from its owner under Regulation section 301.7701-3 (except for employment and excise tax), do not check the LLC box unless the owner of the LLC (required to be identified on the "Name" line) is another LLC that is not disregarded for U.S. federal tax purposes. If the LLC is disregarded as an entity separate from its owner, enter the appropriate tax classification of the owner identified on the "Name" line.

**Other entities.** Enter your business name as shown on required U.S. federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name/disregarded entity name" line.

### **Exemptions**

If you are exempt from backup withholding and/or FATCA reporting, enter in the *Exemptions* box, any code(s) that may apply to you. See *Exempt payee code* and *Exemption from FATCA reporting code* on page 3.

**Exempt payee code.** Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends. Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.

**Note.** If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

The following codes identify payees that are exempt from backup withholding:

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)

2—The United States or any of its agencies or instrumentalities

3—A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities

5—A corporation

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States

7—A futures commission merchant registered with the Commodity Futures Trading Commission

8—A real estate investment trust

9—An entity registered at all times during the tax year under the Investment Company Act of 1940

10—A common trust fund operated by a bank under section 584(a)

11—A financial institution

12—A middleman known in the investment community as a nominee or custodian

13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 <sup>1</sup>	Generally, exempt payees 1 through 5 <sup>2</sup>
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

<sup>1</sup> See Form 1099-MISC, Miscellaneous Income, and its instructions.

<sup>2</sup> However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney, and payments for services paid by a federal executive agency.

**Exemption from FATCA reporting code.** The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Reg. section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Reg. section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

## Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on page 2), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

**Note.** See the chart on page 4 for further clarification of name and TIN combinations.

**How to get a TIN.** If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at [www.ssa.gov](http://www.ssa.gov). You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at [www.irs.gov/businesses](http://www.irs.gov/businesses) and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

**Note.** Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

**Caution:** A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

## Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, or 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on the "Name" line must sign. Exempt payees, see *Exempt payee code* earlier.

**Signature requirements.** Complete the certification as indicated in items 1 through 5 below.

**1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983.** You must give your correct TIN, but you do not have to sign the certification.

**2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983.** You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

**3. Real estate transactions.** You must sign the certification. You may cross out item 2 of the certification.

**4. Other payments.** You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

**5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions.** You must give your correct TIN, but you do not have to sign the certification.

## What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account <sup>1</sup>
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor <sup>2</sup>
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee <sup>1</sup>
5. Sole proprietorship or disregarded entity owned by an individual	The actual owner <sup>1</sup>
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulation section 1.671-4(b)(2)(i)(A))	The owner <sup>3</sup> The grantor*
For this type of account:	Give name and EIN of:
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity <sup>4</sup>
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulation section 1.671-4(b)(2)(i)(B))	The trust

**Note.** If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

## Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, social security number (SSN), or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

**Protect yourself from suspicious emails or phishing schemes.** Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to [phishing@irs.gov](mailto:phishing@irs.gov). You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: [spam@uce.gov](mailto:spam@uce.gov) or contact them at [www.ftc.gov/idtheft](http://www.ftc.gov/idtheft) or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

<sup>1</sup> List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

<sup>2</sup> Circle the minor's name and furnish the minor's SSN.

<sup>3</sup> You must show your individual name and you may also enter your business or "DBA" name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

<sup>4</sup> List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 1.

\*Note. Grantor also must provide a Form W-9 to trustee of trust.

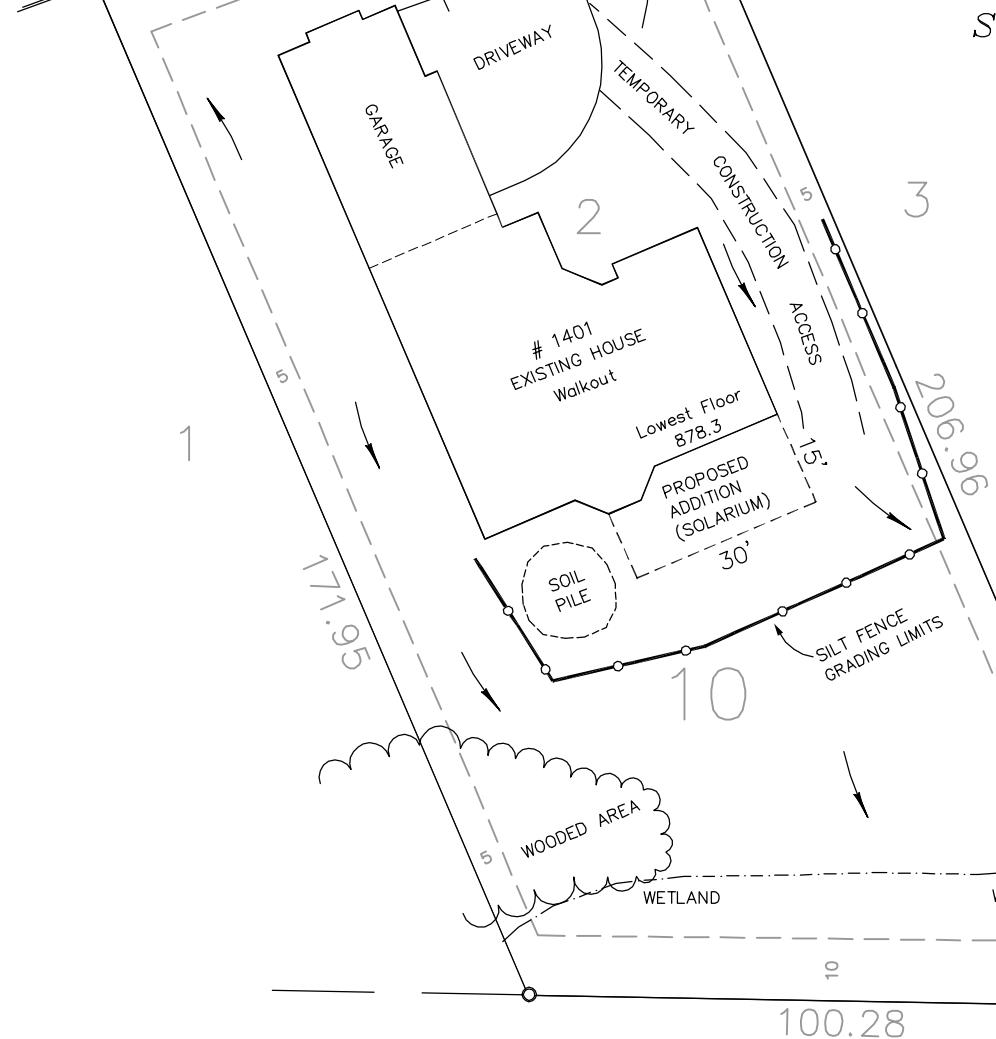
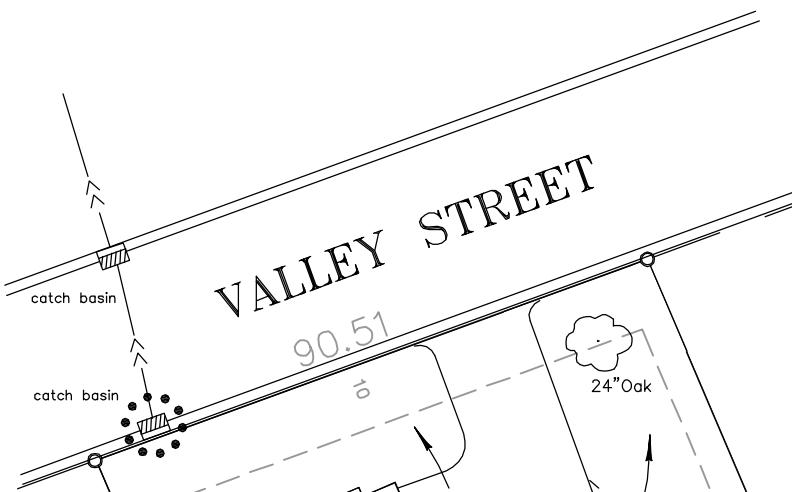
## Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.



PUBLIC WORKS: 763-593-8030

# SAMPLE PLAN FOR SMALL ADDITION



Lot Survey  
for  
RESIDENT  
Lot 2, Block 10  
ADDITION NAME

HENNEPIN COUNTY, MINNESOTA  
Subject to easements of record, if any.

## LEGEND

- ← = Drainage arrow, flow direction
- <<— = Storm Sewer Pipe
- ▀ = Catch Basin
- EROSION CONTROL MEASURES**
- = Silt Fence
- = Storm Sewer Inlet Protection
- SOIL PILE = Temporary Soil Stockpile

## STORMWATER MANAGEMENT PLAN

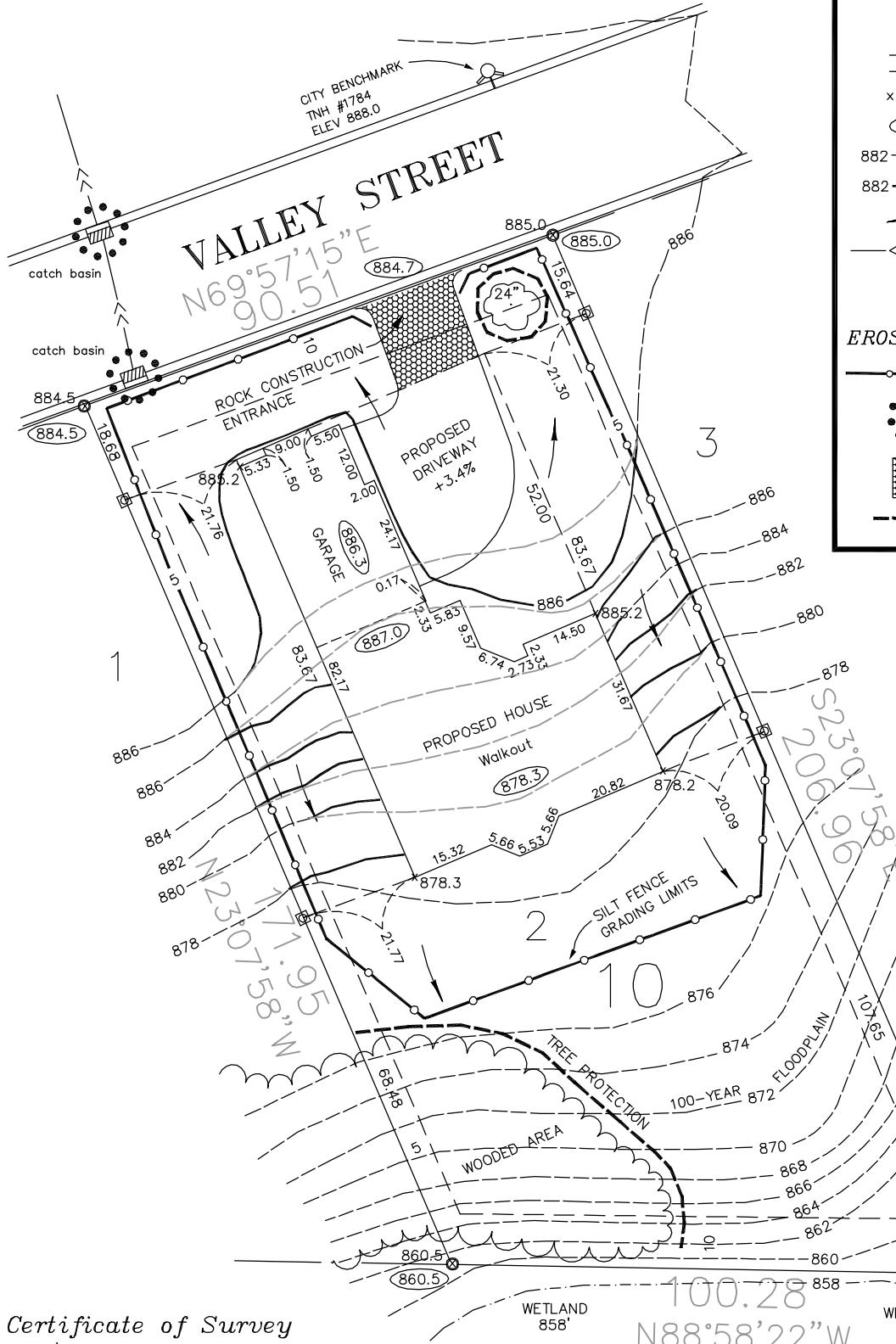
NOTES:

1. Adjacent street must be swept daily, or as directed by the city, to remove all accumulated materials.
2. Any excavated material will be used as backfill or topsoil for sod.
3. Sod will be placed on all disturbed areas immediately following final grading.
4. Total Area of Property: 17,414 s.f.  
Disturbed Area: 1,000 s.f.



PUBLIC WORKS: 763-593-8030

# SAMPLE PLAN FOR NEW CONSTRUCTION



Certificate of Survey  
for AAA COMPANY

Lot 2, Block 10

ADDITION NAME

HENNEPIN COUNTY, MINNESOTA

Subject to easements of record, if any.

I hereby certify that this survey, plan or report was prepared by me or under my direct supervision and that I am a duly Registered Land Surveyor under the laws of the State of Minnesota.

March 23, 2001

Surveyor, MN License No. XXXXX

Date

## LEGEND

- = Iron monument found
- = Iron monument set and marked with license No. XXXXX.
- = Offset iron
- = Drainage & utility easement
- × 800.0 = Existing spot elevation
- 800.0 = Proposed finished elevation
- 882— = Existing contours
- 882— = Proposed contours
- = Drainage arrow, flow direction
- = Storm Sewer Pipe
- = Catch Basin

## EROSION CONTROL MEASURES

- = Silt Fence
- = Storm Sewer Inlet Protection
- ▨ = Rock Construction Entrance
- = Tree Protection Fence

## PROPOSED ELEVATIONS

Garage floor elev. = 886.3  
Top of block elev. = 887.0  
Lowest floor elev. = 878.3

## STORMWATER MANAGEMENT PLAN



1 INCH = 30 FEET

NOTES:

1. Adjacent street must be swept daily, or as directed by the city, to remove all accumulated materials.
2. Sod will be placed on all disturbed areas immediately following final grading.
3. Total Area of Property: 17,414 s.f.  
Disturbed Area: 10,616 s.f.
4. 100-year Floodplain Elevation = 872



# Homeowner fact sheet

## Erosion prevention and sediment control

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wq-strm2-07 • Nov. 2008

If your new home is like most, the builder did some grading of your lot, removing some or all of the existing vegetation or ground cover. You may have new sod, or you might just have a bare soil yard.

When rain falls on exposed soil, it can wash soil away from the land. This runoff can erode bare ground, wash away valuable topsoil and make landscaping more difficult. It also carries soil, nutrients and other pollutants into streets, gutters and ditches, where it then travels untreated to lakes, rivers, streams or wetlands. Polluted runoff can cause excessive growth of weeds and algae in water bodies and reduce recreational opportunities such as swimming and fishing. Sediment-laden runoff can also clog ponds and wetlands and reduce floodwater retention.

Your homebuilder was required to take steps to keep soil and sediment from leaving your lot. Permanent stabilization such as sod may have been installed on part or all of your property. If not, you can help protect the environment by ensuring that soil and sediment are not washed off your property and that grass or other ground cover become well established.

### Temporary stabilization

When construction on your home is complete, verify that your builder installed temporary stabilization measures to minimize erosion and prevent sediment-laden runoff from discharging into streets, gutters, ditches, streams, lakes and wetlands. Silt fence or other sediment control should be in place on the down slope perimeter, and near curb and gutters, ditches, streams, lakes and

wetlands. Mulch or similar material must cover exposed soil. In addition, any piles of soil on your lot must be at least 200 feet from surface water and curb and gutters. Soil piles must also be stabilized.

As a homeowner, you are responsible for inspecting and maintaining temporary stabilization measures until permanent ground cover is established on your yard.

*Commonly used temporary stabilization methods include:*

**Temporary vegetation** includes annual grasses that sprout quickly such as annual rye, oats and winter wheat. These grow quickly with little care and can protect the soil from rain, slow runoff, and act as a filter. They will not provide permanent cover. You may need to fertilize, water or reseed to ensure the vegetative cover is maintained until permanent cover is installed.

**Mulching** (straw, wood chips, wood fiber blanket, and so on) provides temporary cover to protect the soil from rain. Mulching may be the only option during the winter when seeding or sodding is not possible. Mulch must stay in place to be effective. Netting, stakes or chemical binders are used to anchor some types of mulch. Be sure to reinstall washed-out mulch and anchor if necessary until permanent cover is established.

**Silt fences** are curtains of permeable fabric erected on stakes to restrict run off. The silt fence slows runoff and allows it to puddle or pond, so soil and sediment can settle out before water leaves a site. Other sediment control devices include berms, biologs, and

more. Proper installation and maintenance of sediment control devices is essential for their performance. Reinstall or replace ripped, collapsed, undermined or decomposed fencing. Remove sediment if deposits reach 1/3 of the silt fence height. Remove silt fences and other sediment control devices only after permanent stabilization is established.

**Downspout extenders** may be used to protect temporarily stabilized areas from roof runoff. Extenders can direct water from your roof gutters to paved or grassed areas. Be aware that direct discharge to storm sewers (as in the photo) may not be allowed in your area. Be sure to check with your local authorities. Check extenders regularly to insure proper performance. Remove extenders following permanent stabilization.

### Permanent stabilization

Establish permanent vegetation or ground cover as soon as possible. Mulch, silt fences, downspout extenders, or other temporary stabilization measures can be removed following permanent stabilization.

*Please consider the following as you make your landscaping decisions:*

- Keep and protect existing native trees, bushes and plants on your property.
- Schedule landscaping projects for dry weather.
- Terrace slopes to slow the flow of runoff.
- Plant fast-growing annual and perennial grasses.
- Water new seed or sod lightly, every day or two, for two weeks to keep soil moist.
- Use well adapted native plants that reduce runoff and require little maintenance.
- Plant plenty of trees and shrubs to reduce runoff.
- Plant lawn alternatives like rain gardens, prairie plants, or no mow lawn mixes.
- Route downspouts and other drainage to heavily vegetated areas.
- Use crushed rocks, pavers or other alternatives that allow rainwater to seep into the ground for walkways, recreational vehicle (RV) pads, decks, patios and drives.
- Leave an unmowed buffer strip of thick vegetation along stream banks and lakeshores.
- Use caution when landscaping near your home, especially next to the foundation. Changes in the final grade can lead to water pooling and basement water damage.
- Use a landscaping firm experienced in stormwater design.



**Extenders can direct water from your roof gutters to paved or grassed areas. Be aware that direct discharge, like this, to storm sewers may not be allowed in your area. Be sure to check with your local authorities.**

- Check with your local government to make sure your landscape design meets any local regulations.

### Control stormwater pollution

Finally, you can also help area lakes and streams for as long as you own your home. Stormwater runoff does not go to a wastewater treatment plant. It flows directly into our lakes and streams. There are many ways you can reduce polluted runoff:

- Keep trash, leaves and grass clippings off streets and out of storm drains, streams and lakes.
- Pick up and bury or flush pet wastes.
- Keep cars tuned up and repair leaks.
- Properly dispose of hazardous wastes.
- Don't pour oil, pesticides, paint or other materials down the storm drain.
- Minimize the use of pesticides, fertilizers and de-icing materials.
- Test your soil and use zero phosphate fertilizer if possible.
- Wash your car on the lawn or use a commercial car wash.

For more information on stabilization measures, contact your local building inspector or Soil and Water Conservation District Office.

You can also visit Minnesota Pollution Control Agency Stormwater Web site at [www.pca.state.mn.us/water/stormwater/index.html](http://www.pca.state.mn.us/water/stormwater/index.html) or call the Stormwater Program at 651-757-2119 or 800-657-3804.

## Standard Operating Procedures for Stormwater Management Inspections

**PURPOSE:** Construction site inspections will determine compliance with the City's regulatory mechanism(s). Inspections are used to verify that permit holders are properly managing their construction site in regards to the Stormwater Management permit. Inspections allow the City to record information about violations and make corrections before problems arise.

### ***PREPARATION***

Construction Site inspectors; Water and Natural Resource Specialist, Water Resource Intern.

- a) Identify whether inspecting priority site.
- b) Priority sites are sites having one or more of the following criteria; new construction, over one acre of land disturbance, compliance history, within the floodplain or shoreland area, and/or no current stormwater treatment.
- c) Non priority sites are all other construction sites.
- d) Priority sites will be inspected for initial, project completion, and final warranty inspections. Also, routine inspections will be done after rain fall of 0.5 inch or greater, after complaints, and once per week, or more if deemed necessary.
- e) Non priority sites will be inspected for initial, project complete, and final warranty. Routine inspections will be performed after .5 inch rainfalls, after complaints, or more if deemed necessary.
- f) Ensure staff has proper training pertaining to Erosion and Sediment Control techniques and Post-Construction Stormwater BMP's

### ***PROCESS***

- a) Identify sites that require erosion and sediment control inspection.
- b) Perform inspection using the erosion control inspection check list (Forms Tab/Folder) or equivalent City Works check list in Cartegraph.
- c) Document construction activities permitted through the City and follow up with site owner/permittee about findings from inspection. If feasible, prior to leaving the site talk to responsible person to ensure corrections can be made in timely fashion.
- d) Perform a follow up inspection of the site if deficiencies are found during initial inspection. Ensure that correction items have been completed.
- e) Failure to comply with the permit requirements may require initiating enforcement action as described in the City's Enforcement Response Procedure (ERPs) as follows:
  - a. Notice of Violations
    - i. Failure to respond
    - ii. Acts against security
  - b. Stop Work Order

c. Coordination of Enforcement through Watershed Partnership

***DOCUMENTATION***

- a) Keep logs of number of inspections
- b) Keep records of inspection reports and reports sent.
- c) Update inspections into PIMMS
- d) Keep records of escalation of penalties
  - a. Verbal Warnings
  - b. Notice of Violations
  - c. Stop Work Orders

## SOP Retaining Stormwater Inspection Forms

### **Purpose**

Record retention is very important for controlling stormwater management issues. It allows the City to look back see what problems have been encountered and solved. It also gives the City written evidence that notices for corrections have been sent. It allows us to go forward with enforcement procedures to correct problems. Holding onto the records gives information about the contractor and what issues should be looked out for. Retaining the documents also helps cover the city if questions are raised later about the process.

### **Process**

- Inspection will be done in the field with Cartegraph.
- Corrections will be noted onsite to appropriate personnel or an Inspection Notice will be emailed to the Stormwater Permit holder.
- A follow up inspection will be conducted the following day or as soon as feasible to ensure that the called out corrections were made.
- Records will be retained within Cartegraph.



#### For More Information

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eeckman@goldenvalleymn.gov

#### Possible Pollutants

Sediment  
Erosion  
General Housekeeping

#### Procedures

- Plan Review
- Training
- Inspections
- City Projects Erosion and Sediment Control BMPs
- Private Projects
- Private Projects Long-Term Operation and Maintenance

#### Appendices

A – Construction Site Guidance  
B – Stormwater Permit Application  
C – MPCA Homeowner Fact Sheet  
D – Field Inspection Procedures  
E – Document Retention Procedures

## Standard Operating Procedure

### Minimal Control Measure 4 Construction Erosion and Sediment Control & Minimum Control Measure 5 Post-Construction Stormwater Management

#### 4.1 Purpose

The MS4 General Permit requires the City of Golden Valley (City) to develop written procedures for the purpose of conducting site plan reviews and site inspections, prioritize sites for inspection, and receive and consider reports of noncompliance from the public.

#### 4.2 Development Plan Review

##### Activities and Definition

The City is the permitting authority for land disturbing activities within the boundaries of the Bassett Creek Watershed Management Commission (BCWMC) and the Minnehaha Creek Watershed District (MCWD). A stormwater permit will be triggered for the following activities:

- $\geq 4,000$  sq. ft. disturbance
- $\geq 30$  c.y. grading, excavation, filling or storing of soil or earth material
- Any activity involving construction, installation, demolition, modification, or expansion of a building foundation wall
- Construction or demolition of a retaining wall of sufficient height to require a building permit
- Construction or demolition of a swimming pool
- Any land-disturbing activity within the City right-of-way that has a duration greater than 72 hours and are not covered by a right-of-way excavation, utility, or plumbing permit
- Construction or demolition of a swimming pool
- any land-disturbing activities within City right-of-way that have a duration greater than 72 hours and are not covered by a right-of-way excavation, utility, or plumbing permit
- construction, reclamation, expansion, removal, or modification of a parking lot
- construction, expansion, or modification of a storm water management facility or storm water BMP



## Standard Operating Procedure

- any land-disturbing activities within the 100-year floodplain or calculated high water level of any water body, or immediately adjacent to any wetland or public water body, including shoreline restoration and creek bank stabilization

Plans that are submitted to the City for approval will have a review process to verify that erosion and sediment control, and post-construction stormwater standards are being met.

### Preparation

- a. Review City Code and Engineering Guidelines, Comprehensive Water Resource Management Plan Policies, Bassett Creek Watershed Management Organization policies, the Minnehaha Creek Watershed District rules, the NPDES Construction General Permit, and the MS4 post-construction stormwater standards.

### Process

- a. The City engineering staff will review plans and for sites equal to or greater than one acre.
- b. A plan review checklist will be used for each plan review to ensure accuracy and thoroughness of submitted plans with the City's requirements for erosion and sediment control and post-construction stormwater management.
- c. The City will defer to the Bassett Creek Watershed Management Organization, Minnehaha Creek Watershed District for enforcement of their stormwater rules.

### Follow-up

- a. When plans are submitted by the applicant, the City engineering staff will ensure that all comments are addressed before work can take place on site.
- b. City staff will provide written notification to owners and operators proposing construction activity of the need to apply for and obtain coverage under the NPDES Construction General Permit.
- c. The applicant shall address comments offered by the City prior to permit issuance. The City has 60 days to make a final decision on a development or redevelopment review.

### Documentation

- a. File all plan submittals, including the City's stormwater related comments and the supporting completed checklist, for each plan review.



## Standard Operating Procedure

- b. Maintain an inventory of all maintenance agreements that are filed with the City.

### 4.3 Training

#### Activities and Definition

Training of City staff will be important so that they are aware of the importance of effective erosion and sediment control practices as well as techniques regarding the proper installation of post-construction stormwater BMPs. This includes knowledge in installation and inspection techniques as well as record keeping and maintenance activities. It is important for City staff to be able to recognize deficiencies in BMPs on construction sites. Inspection staff will be responsible for the tracking and enforcing permit requirements.

City staff that are responsible for plan review, inspections, and enforcement will attend the University of Minnesota's Erosion and Stormwater Management training once every three years. Supplementary employee training will be provided through annual staff training sessions, and other opportunities as they arise.

### 4.4 Inspections

#### Activities and Definition

Construction site inspections will determine compliance with the City's regulatory mechanism(s).

The MCWD has staff that actively inspects construction sites throughout the entire district. The City may wish to coordinate with the district to reduce the potential for duplication or regarding enforcement cases.

The City will also oversee the installation of BMPs for post-construction stormwater management

#### Preparation

- a. Annually, identify high-priority and low-priority sites for inspection based on topography, soil characteristics, type of receiving water, stage of construction, compliance history, weather conditions, or other local characteristics and issues (Appendix D).
- b. Ensure City inspection staff has received training pertaining to Erosion and Sediment Control techniques and Post-Construction Stormwater BMPs in accordance with section 4.4. Training.

#### Process

Identify a tentative schedule to perform erosion and sediment control inspections based on the prioritization in Appendix D.



## Standard Operating Procedure

- a. Prior to initiating land disturbing activities, verify the following erosion and control BMPs have been installed:
  1. Perimeter control
  2. Stabilized construction exit
  3. Inlet protection
  4. Protection of rear lot catch basins
- b. Perform inspection using the erosion control inspection checklist In Cartegraph.
- c. Document construction activities and follow-up with site owner/permittee about findings from the inspection.
  1. If feasible, prior to leaving the site talk to the responsible person to ensure corrections can be made in a timely fashion.
  2. Send the Erosion Control Notice(s) to the permit applicant responsible within 24 hours of the inspection.
- d. Perform a follow-up inspection using the erosion control inspection checklist to complete a review of the site if deficiencies were found during the initial inspection. Ensure that correction items have been completed.

Failure to comply with the permit requirements may require initiating enforcement action as described in the City's Enforcement Response Procedures (ERPs).

- e. Continue to inspect active construction sites based on the prioritization in Appendix D until the Notice of Termination has been filed with the MPCA to terminate permit coverage.

### Documentation

City staff shall record the following items in an inspection log to track the status of erosion and sediment control violations, enforcement actions and follow-up:

- a. Keep logs of number of inspections.
- b. Keep records of inspection reports and reports sent.
- c. Keep records of escalation of penalties.
  1. Verbal Warning



## Standard Operating Procedure

2. Written Warning
3. Notice of Violations
4. Stop required inspections (electrical, occupancy, etc.)
5. Stop-Work Orders
6. Draw on surety or other monetary deposit

### 4.5 Receipt and Consideration of Reports of Non-Compliance

#### Activities and Definition

- a. The City shall have a process for receipt and consideration of reports of noncompliance or other stormwater-related information on construction activity submitted by the public to the City.
- b. A citizen call-in program is an effective way to identify noncompliance of construction sites within the community. A citizen comment or complaint line will be publicized on the City's website. To maximize the effectiveness of citizen reporting, administrative personnel will also be instructed as to where to direct the information gathered from complaints to ensure that appropriate action is taken.

#### Preparation

- a. Have a system in place to receive phone calls and collect information regarding reports of noncompliance or other stormwater-related information on construction activities within the City.

#### Preparation

- a. Use the complaint intake form to identify the concern and then transfer the form to the Water and Natural Resource Specialist.
- b. Reports of noncompliance will be investigated by the Water and Natural Resource Specialist or their designee within one business day.
- c. If stormwater noncompliance is confirmed, follow the City's Enforcement Response Procedures to attain compliance. This may include issuing a verbal warning, notice of violation, or stop work order.

#### Documentation

- a. Keep records of reports of non-compliance from the public.
- b. Keep records of inspections performed to confirm reports of non-compliance.

### 4.6 City Projects Erosion and Sediment Control BMPs

#### Activities and Definition

City projects that will disturb one acre or greater will use proper erosion and sediment control BMPs.

#### Preparation

- b. Provide BMPs for City projects including: inlet protection, perimeter control, temporary and permanent stabilization methods.



## Standard Operating Procedure

- c. Ensure staff responsible for inspections, BMP installation, and maintenance has University of Minnesota's erosion and sediment control certification and/or have been trained by a certified staff person on proper erosion and sediment control techniques.

### Process

- a. All qualified construction and land disturbing activities within the City should follow the City Code as well as the City's Construction and Design Standards.
- b. All construction projects that have the potential to impact the MS4 system or any natural resource will have BMPs installed prior to initiating construction activity.
- c. Sites should be inspected weekly or after a rainfall event greater than 0.5 inches in 24 hours where the soil disturbance is 1 acre or greater in accordance with the NPDES Construction General Permit.
- d. All perimeter control BMPs are required to be fixed, substituted, or enhanced if they are no longer working or sediment fills one-half (1/2) of the height of the BMP. This must be done by the end of the next business day or as soon as site conditions permit.
- e. Temporary or permanent sediment basins are required to be drawn down and have sediment removed when the depth of the captured sediment reaches one-half (1/2) the storage volume of the basin.
- f. Tracked sediment from the construction site entrance/exit is required to be removed from all paved surfaces both on and off site. This must be done as soon as possible or within 24 hours of being found.
- g. Install down gradient perimeter control where needed on the site.
- h. Provide inlet protection for adjacent inlets and outlets, to prevent sediment and debris from discharging into the storm sewer.
- i. Stabilize all exposed soil areas and stockpiles as soon as possible or upon completion of work. If work is not complete, temporary stabilization methods will be used if the work will not continue for more than 7 days.
- j. If any sediment reaches the MS4 system (including surface waters, drainage ditches, and conveyance systems, etc.), the sediment is required to be removed within seven (7) days after it is found.

### Documentation

- a. Record all inspections and maintenance using the Erosion Control Inspection form (Appendix X).

## 4.7 Public and Private Projects Long-Term Operation and Maintenance

### Activities and Definition





## Standard Operating Procedure

All structural stormwater BMPs installed to meet the post-construction stormwater management standard must develop a maintenance agreement and maintenance plan to ensure the conditions for post-construction stormwater management continue after construction is complete. The City will use the following procedure to ensure post-construction structural stormwater BMPs will continue to function as designed.

**Commented [MML1]:** Rephrased this section.

### Process

- a. Develop a questionnaire for owners of post-construction stormwater BMPs.
- b. Once during each permit cycle request applicants to fill out and return the questionnaire.
- c. If any applicants do not return the questionnaire to the City, the City may inspect the post-construction stormwater BMP on behalf of the applicant and bill the property owner for administrative costs incurred.
- d. Notify all owners of post-construction stormwater BMPs with deficiencies and require repair within a timeframe that is established by the notice of non-compliance from the City's Enforcement Response Procedures.
- e. If any owners of post-construction stormwater BMPs with deficiencies are not repaired within the given timeframe of the notice of non-compliance, the City will follow the enforcement response procedure outlined in this section.

### Documentation

- a. Maintain an inventory privately owned structural stormwater BMP locations and obtain contact information for owners and operators on file at the City.
- b. Obtain as-built plans for all public and private post-construction stormwater BMPs that are installed within the City.
- c. Continue to update the GIS system to include all public and private storm sewer and post-construction BMPs installed within the City.
- d. Maintain an inventory of long-term maintenance agreements on file at the City.
- e. Keep records of returned questionnaires, completed inspection reports, and all correspondence sent to the owners and operators.

## Stormwater Plan Submittal Checklist

Applicants for all projects requiring the development of a Golden Valley stormwater management plan must complete this checklist. Please provide a comment for any item checked with a no.

Site name		Date submitted				
Address		PID				
Site size (acres)	Area of disturbance (acres)	Existing impervious (acres)	Proposed impervious (acres)			
Permits				Yes	No	N/A
1. Has an NPDES Construction General Permit been obtained?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are wetlands shown on plans, and has wetland permitting been completed?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is any work being proposed within a DNR Public Water? If yes, have all applicable permits been obtained?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are any other permits necessary and have they been obtained?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments						
Tree Preservation				Yes	No	N/A
1. Are the following standards shown for when a Tree Preservation Permit is required? (See Tree Preservation ordinance for more requirements and information.)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are all significant tree removals on site identified, tallied, and located, with the tally shown graphically on plan?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are all locations of tree preservation fencing required by ordinance specifications shown? (Heavy-duty silt fence can also be used for tree protection.)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments						

Plan Details			Yes	No	N/A
1. Are the north arrow, street names, and lot and block numbers for property or subdivision included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is the location of benchmark, based on the City/County benchmark system, included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Is there a key with all line types, symbols, shading, and cross-hatching denoted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is there an illustration key showing symbols for all information pertaining to lot and building design (including grades, easements, lot and block, setbacks, etc)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Is the plan scale (shown graphically on a bar scale) in the proper format (1 inch = 20 ft, 30 ft, 40 ft, or 50 ft)? Plans in other scales will not be reviewed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Is the total area of subject property shown, with subtotals of disturbed and undisturbed areas (tabulation permitted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Are the subject property's boundary lines, lot lines, and right-of-way lines shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Are all existing and proposed drainage and utility easements shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Are all man-made features, including existing and proposed buildings, structures, and paved areas shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Are all existing storm sewer facilities within 150 ft of the subject parcel shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. Are all proposed storm sewer facilities (including grades and size of structures) shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12. Are all existing and proposed natural features shown, including, but not limited to, significant trees and tree lines, wetlands, ponds, lakes, streams, drainage channels, and floodplain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
13. Are all setbacks and buffers for wetlands, ponds, lakes, streams, and floodplains shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
14. Are all adjacent plats, parcels, rights-of-way, and section lines extended a minimum of 150 ft (50 ft for single family home construction) beyond the subject parcel in all directions shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Topography			Yes	No	N/A
1. Are the topography details in a minimum of two-foot contour intervals with existing contours as dashed lines and proposed contours as dark, solid lines, labeled at each edge of the plan and at other appropriate locations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is the standard lot benching detail shown where appropriate (maximum slopes: 3:1)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Are the direction arrows indicating swales and lot drainage patterns (with percent grades along drainage swales) shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

Elevation Information			Yes	No	N/A
1. Are the proposed top of curb elevations at lot corners and driveway or entrances shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are the finished spot elevations at all high and low points shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Are the proposed elevations at garage and lowest floor for proposed buildings shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Are the proposed finished ground elevations around home for final grading shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Temporary Erosion Control Best Management Practices (BMPs)			Yes	No	N/A
1. Does the plan show the location of erosion control measures (with standard detail plates and maintenance information for each)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are temporary rock entrances/exits for all vehicle access points shown (provide detail)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Is the perimeter silt fence shown? Silt fence and/or rock checks should also be placed along swales or slopes greater than 50 feet in length (flare ends of silt fence up slope).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is the type of each storm sewer inlet protection and location graphically shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Are temporary sediment basins shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Does the plan provide temporary measures to stabilize the soils no later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased, and no later than seven days after construction activity in that portion of the site has temporarily or permanently ceased when discharge points on the project are within one mile of a special or impaired water and flows to that special or impaired water? Options for temporary or permanent stabilization may include erosion control mat, fiber blankets, netting, temporary seed, or temporary mulch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Are soil stockpile areas (indicating temporary stabilization measures) shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Is street sweeping required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Does the plan include a note indicating that all adjacent streets will be swept daily, or as directed by the City, to remove all accumulated materials? Failure to perform any street sweeping within 24 hours of notice by the City will result in the work being performed by the City and all associated costs billed. The City also requires removal of accumulated materials on streets during winter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Does the SWPPP include an erosion and sediment control inspection schedule along with a person responsible for conducting inspections and ensuring maintenance is being performed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

Final Stabilization			Yes	No	N/A
1. For new resident construction, is required vegetated stabilization present from the front curb line to the back of the structure for the entire width of the lot? Show seeding and/or turf establishment locations and specifications, including type of seeding (permanent, temporary, dormant); seed type and application rate; fertilizer type and application rate; mulch type, application rate, and method of anchoring; specifications for installation and maintenance of erosion control mats, blankets, or netting; note requiring seeding/restoration to be completed within 48 hours of final grading; location of all areas to be vegetated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. It is a requirement of all new residential construction to connect the residences sump pump to the drain tile stub in front of the house if available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Wetland Impacts			Yes	No	N/A
1. Is there a delineation of wetlands prepared by an approved wetland specialist and field-verified/approved by the administrator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are there two copies of the WCA applications, sequencing, wetland delineation, and impact/mitigation reports?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Floodplain Impacts			Yes	No	N/A
<b>Note: Building or filling in the floodplain is generally not allowed.</b>					
1. Are flood elevations and locations shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is there a cut/fill diagram and earthwork computations for work in floodplain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Is there an illustration showing that the lowest floor is a minimum of two feet above floodplain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

Stormwater Management Plan			
	Yes	No	
	N/A		
1. Has a subwatershed delineation map been provided for the existing and proposed conditions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have modeling calculations been provided comparing the existing and proposed runoff conditions for the 2-year, 10-year, and 100-year 24-hour storm event using Atlas 14?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has the directly connected impervious been modeled separately (Composite CN Approach)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Has off-site drainage been included and accounted for with modeling calculations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are skimmer structures being proposed on the outlets of all ponds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has a maintenance plan been provided to satisfy the requirements of the City of Golden Valley's maintenance agreement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

Volume Control			
	Yes	No	
	N/A		
1. Does the plan provide volume control (1.1" of retention from new impervious surfaces)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. What is the required volume?			
3. What is the proposed volume?			
4. Soil Borings Do the design infiltration rates match the soil conditions? Is there at least 3 feet of separation to seasonally high groundwater or bedrock? Will the proposed system draw down within 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Has pretreatment been provided for prior to the discharge to all proposed infiltration/filtration features?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

Water Quality			Yes	No	N/A
1. Is volume control provided?  If yes, then are water quality requirements satisfied?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. If volume control is not provided, does the plan provide for water quality in accordance with Option 1, 2, or 3 as specified in the City of Golden Valley's Stormwater Plan Standards.  If yes, which option?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Was the MIDs Design Flow Chart used to determine what option would be used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is an appropriate water quality model provided to demonstrate compliance (P8, PondNet, WinSLAMM, etc)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Stormwater Treatment			Yes	No	N/A
1. Has the BCWMC reviewed new development and redevelopment to evaluate compliance with the MPCA's MIDs performance goals (which are adopted by the Commission as water quality management standards), including the MIDs' flexible treatment options for when volume control is unattainable as defined in the MIDs design flow chart?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Has the BCWMC reviewed projects that are proposing to impact creeks or lakes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Maintenance Plan			Yes	No	N/A
1. Is there a maintenance plan that shows how access to the site will be provided, identifies who will be performing maintenance, and describes the type and interval of maintenance to be conducted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Have easements been obtained that will allow access for the responsible party and City of Golden Valley staff to inspect and maintain the facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Has a maintenance agreement been provided that can be executed by the City of Golden Valley and the applicant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

## Stormwater Plan Submittal Checklist

Applicants for all projects requiring the development of a Golden Valley stormwater management plan must complete this checklist. Please provide a comment for any item checked with a no.

Site name		Date submitted				
Address		PID				
Site size (acres)	Area of disturbance (acres)	Existing impervious (acres)	Proposed impervious (acres)			
Permits				Yes	No	N/A
1. Has an NPDES Construction General Permit been obtained?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are wetlands shown on plans, and has wetland permitting been completed?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is any work being proposed within a DNR Public Water? If yes, have all applicable permits been obtained?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are any other permits necessary and have they been obtained?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments						
Tree Preservation				Yes	No	N/A
1. Are the following standards shown for when a Tree Preservation Permit is required? (See Tree Preservation ordinance for more requirements and information.)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are all significant tree removals on site identified, tallied, and located, with the tally shown graphically on plan?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are all locations of tree preservation fencing required by ordinance specifications shown? (Heavy-duty silt fence can also be used for tree protection.)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments						

Plan Details			Yes	No	N/A
1. Are the north arrow, street names, and lot and block numbers for property or subdivision included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is the location of benchmark, based on the City/County benchmark system, included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Is there a key with all line types, symbols, shading, and cross-hatching denoted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is there an illustration key showing symbols for all information pertaining to lot and building design (including grades, easements, lot and block, setbacks, etc)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Is the plan scale (shown graphically on a bar scale) in the proper format (1 inch = 20 ft, 30 ft, 40 ft, or 50 ft)? Plans in other scales will not be reviewed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Is the total area of subject property shown, with subtotals of disturbed and undisturbed areas (tabulation permitted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Are the subject property's boundary lines, lot lines, and right-of-way lines shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Are all existing and proposed drainage and utility easements shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Are all man-made features, including existing and proposed buildings, structures, and paved areas shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Are all existing storm sewer facilities within 150 ft of the subject parcel shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. Are all proposed storm sewer facilities (including grades and size of structures) shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12. Are all existing and proposed natural features shown, including, but not limited to, significant trees and tree lines, wetlands, ponds, lakes, streams, drainage channels, and floodplain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
13. Are all setbacks and buffers for wetlands, ponds, lakes, streams, and floodplains shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
14. Are all adjacent plats, parcels, rights-of-way, and section lines extended a minimum of 150 ft (50 ft for single family home construction) beyond the subject parcel in all directions shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Topography			Yes	No	N/A
1. Are the topography details in a minimum of two-foot contour intervals with existing contours as dashed lines and proposed contours as dark, solid lines, labeled at each edge of the plan and at other appropriate locations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is the standard lot benching detail shown where appropriate (maximum slopes: 3:1)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Are the direction arrows indicating swales and lot drainage patterns (with percent grades along drainage swales) shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

Elevation Information			Yes	No	N/A
1. Are the proposed top of curb elevations at lot corners and driveway or entrances shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are the finished spot elevations at all high and low points shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Are the proposed elevations at garage and lowest floor for proposed buildings shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Are the proposed finished ground elevations around home for final grading shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Temporary Erosion Control Best Management Practices (BMPs)			Yes	No	N/A
1. Does the plan show the location of erosion control measures (with standard detail plates and maintenance information for each)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are temporary rock entrances/exits for all vehicle access points shown (provide detail)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Is the perimeter silt fence shown? Silt fence and/or rock checks should also be placed along swales or slopes greater than 50 feet in length (flare ends of silt fence up slope).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is the type of each storm sewer inlet protection and location graphically shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Are temporary sediment basins shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Does the plan provide temporary measures to stabilize the soils no later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased, and no later than seven days after construction activity in that portion of the site has temporarily or permanently ceased when discharge points on the project are within one mile of a special or impaired water and flows to that special or impaired water? Options for temporary or permanent stabilization may include erosion control mat, fiber blankets, netting, temporary seed, or temporary mulch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Are soil stockpile areas (indicating temporary stabilization measures) shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Is street sweeping required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Does the plan include a note indicating that all adjacent streets will be swept daily, or as directed by the City, to remove all accumulated materials? Failure to perform any street sweeping within 24 hours of notice by the City will result in the work being performed by the City and all associated costs billed. The City also requires removal of accumulated materials on streets during winter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Does the SWPPP include an erosion and sediment control inspection schedule along with a person responsible for conducting inspections and ensuring maintenance is being performed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

Final Stabilization			Yes	No	N/A
1. For new resident construction, is required vegetated stabilization present from the front curb line to the back of the structure for the entire width of the lot? Show seeding and/or turf establishment locations and specifications, including type of seeding (permanent, temporary, dormant); seed type and application rate; fertilizer type and application rate; mulch type, application rate, and method of anchoring; specifications for installation and maintenance of erosion control mats, blankets, or netting; note requiring seeding/restoration to be completed within 48 hours of final grading; location of all areas to be vegetated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. It is a requirement of all new residential construction to connect the residences sump pump to the drain tile stub in front of the house if available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Wetland Impacts			Yes	No	N/A
1. Is there a delineation of wetlands prepared by an approved wetland specialist and field-verified/approved by the administrator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are there two copies of the WCA applications, sequencing, wetland delineation, and impact/mitigation reports?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Floodplain Impacts			Yes	No	N/A
<b>Note: Building or filling in the floodplain is generally not allowed.</b>					
1. Are flood elevations and locations shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is there a cut/fill diagram and earthwork computations for work in floodplain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Is there an illustration showing that the lowest floor is a minimum of two feet above floodplain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

Stormwater Management Plan			
	Yes	No	
	N/A		
1. Has a subwatershed delineation map been provided for the existing and proposed conditions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have modeling calculations been provided comparing the existing and proposed runoff conditions for the 2-year, 10-year, and 100-year 24-hour storm event using Atlas 14?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has the directly connected impervious been modeled separately (Composite CN Approach)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Has off-site drainage been included and accounted for with modeling calculations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are skimmer structures being proposed on the outlets of all ponds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has a maintenance plan been provided to satisfy the requirements of the City of Golden Valley's maintenance agreement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

Volume Control			
	Yes	No	
	N/A		
1. Does the plan provide volume control (1.1" of retention from new impervious surfaces)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. What is the required volume?			
3. What is the proposed volume?			
4. Soil Borings Do the design infiltration rates match the soil conditions? Is there at least 3 feet of separation to seasonally high groundwater or bedrock? Will the proposed system draw down within 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Has pretreatment been provided for prior to the discharge to all proposed infiltration/filtration features?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

Water Quality			Yes	No	N/A
1. Is volume control provided?  If yes, then are water quality requirements satisfied?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. If volume control is not provided, does the plan provide for water quality in accordance with Option 1, 2, or 3 as specified in the City of Golden Valley's Stormwater Plan Standards.  If yes, which option?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Was the MIDs Design Flow Chart used to determine what option would be used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is an appropriate water quality model provided to demonstrate compliance (P8, PondNet, WinSLAMM, etc)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Stormwater Treatment			Yes	No	N/A
1. Has the BCWMC reviewed new development and redevelopment to evaluate compliance with the MPCA's MIDs performance goals (which are adopted by the Commission as water quality management standards), including the MIDs' flexible treatment options for when volume control is unattainable as defined in the MIDs design flow chart?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Has the BCWMC reviewed projects that are proposing to impact creeks or lakes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Maintenance Plan			Yes	No	N/A
1. Is there a maintenance plan that shows how access to the site will be provided, identifies who will be performing maintenance, and describes the type and interval of maintenance to be conducted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Have easements been obtained that will allow access for the responsible party and City of Golden Valley staff to inspect and maintain the facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Has a maintenance agreement been provided that can be executed by the City of Golden Valley and the applicant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

CITY OF GOLDEN VALLEY  
COUNTY OF HENNEPIN  
STATE OF MINNESOTA

**STORMWATER FACILITIES MAINTENANCE AGREEMENT  
WITH ACCESS RIGHTS AND CONENANTS**

( Insert Project Reference Numbers )

This AGREEMENT, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for the maintenance and repair of certain Stormwater Management Facilities is entered into between

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(hereinafter referred to as "OWNER") and the City of Golden Valley (hereinafter referred to as "CITY") for the benefit of the CITY, the OWNER, the successors in interest to the CITY or the OWNER, and the public generally.

**WITNESSETH**

WHEREAS, the undersigned is the owner of that certain real property lying and being in the \_\_\_\_\_ Land Lot/District, \_\_\_\_\_ identified as [Tax Map/Parcel Identification Number] \_\_\_\_\_ and being more particularly described by deed as recorded in the land records of the City of GOLDEN VALLEY, Minnesota, Deed Book \_\_\_\_\_ Page \_\_\_\_\_, hereinafter called the "Property".

WHEREAS, the undersigned is proceeding to build on and develop the property; and has submitted the Site Plan/Subdivision Plan known as \_\_\_\_\_, (Name of Plan/Development) hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the City, provides for detention of stormwater within the confines of the property; and

WHEREAS, the City and the undersigned, its successors and assigns, including any homeowners association, (hereinafter the "Landowner") agree that the health, safety, and welfare of the residents of the City of Golden Valley Minnesota, requires that on-site stormwater management facilities be constructed and maintained on the Property; and

WHEREAS, the City requires that on-site stormwater management facilities as shown on the Plan (the "Facilities") be constructed and adequately maintained by the Landowner.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

- (1) When a new drainage control facility is installed, the party having the facility installed shall obtain a copy of the as-built plans from the City of Golden Valley Engineering Department. Responsible parties shall make records of the installation and of all maintenance and repair, and shall retain the records for at least ten years. These records shall be made available to the City of Golden Valley's City Engineer during Inspection of the facility and at other reasonable times upon request of the City Engineer.

(2) The following operational maintenance activities shall be performed on all permitted systems on a regular basis or as needed:

- a) Removal of trash and debris,
- b) Inspection of inlets and outlets,
- c) Removal of sediments when the storage volume or conveyance capacity of the stormwater management system is below design levels
- d) Ensure systems designed for infiltration are drawing down within 48 hours, and
- e) Stabilization and restoration of eroded areas.

(3) Specific operational maintenance activities are required, depending on the type of permitted system, in addition to the practices listed in subsection (2), above.

- a) Retention, swale and underdrain systems shall include provisions for:
  1. Mowing and removal of grass clippings, and
  2. Aeration, tilling, or replacement of topsoil as needed to restore the percolation capability of the system. If tilling or replacement of the topsoil is utilized, vegetation must be established on the disturbed surfaces.
- b) Exfiltration systems shall include provisions for removal of sediment and debris from pretreatment or sediment collection systems.
- c) Wet detention systems shall include provisions for operational maintenance of the littoral zone. Replanting shall be required if the percentage of vegetative cover falls below the permitted level. It is recommended that native vegetation be maintained in the littoral zone as part of the system's operation and maintenance plan. Undesirable species such as cattail and exotic plants should be controlled if they become a nuisance.
- d) Dry detention systems shall include provisions for mowing and removal of grass clippings.

(4) If the system is not functioning as designed and permitted, operational maintenance must be performed immediately to restore the system. If operational maintenance measures are insufficient to enable the system to meet the design and performance standards of this chapter, the permittee must either replace the system or construct an alternative design.

(5) In the event the Landowner fails to maintain the Facilities in good working condition acceptable to the City, the City will no longer provide credits towards a reduction in the landowners' stormwater utility fee. The City may enter upon the Property and take such steps as are necessary to correct deficiencies identified in the inspection report and to charge the costs of such repairs to the Landowner. This provision shall not be construed to allow the City to erect any structure of permanent nature on the land of the Landowner outside of the easement for the stormwater management facilities. It is expressly understood and agreed that the City is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the City. The Landowner grants to the City, its authorized agents and employees, a non-exclusive, perpetual easement over, across, under and through the Property for such purposes.

IN WITNESS THEREOF, the parties hereto acting through their duly authorized agents have caused this Agreement to be signed, sealed and delivered:

**(Insert Company/Corporation/Partnership Name) [SEAL]**

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By: (Type Name and Title)

The foregoing Agreement was acknowledged before me  
this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by

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Unofficial Witness

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NOTARY PUBLIC

My Commission Expires: \_\_\_\_\_  
CITY OF GOLDEN VALLEY, MINNESOTA

**ATTACHMENT 1: CITY OF GOLDEN VALLEY  
ENGINEERING STANDARDS FOR STORM WATER  
TREATMENT FACILITIES**

**The following are the maintenance requirements required for the proper operation of water quality treatment structures provided by the *Minnesota Stormwater Manual* (MPCA):**

**Pond Maintenance Requirements**

1. Annual inspection, maintenance reporting and certification by a professional engineer (Provided by Owner). Information must be submitted to the City annually.
2. Excavate pond to original design capacity when one half (1/2) of the wet volume of the pond is lost due to sediment deposition.
3. Remove floatable debris in and around the pond area including, but not limited to: oils, gases, debris and other pollutants.
4. Maintain landscape adjacent to the facility per original design, including but not limited to: maintenance of the buffer strip and other plant materials as per original plan design.
5. Maintenance of all erosion control measures including but not limited to: rip rap storm sewer outlets, catch basin inlets, etc.

**Water Quality Manhole Maintenance Requirements**

1. Annual inspection, maintenance reporting and certification by a professional engineer (Provided by Owner). Information must be submitted to the City annually.
2. Maintenance should be performed once the sediment or oil depth exceeds the established requirements recommended by the manufacturer.
3. Maintenance should occur immediately after a spill takes place. Appropriate regulatory agencies should also be notified in the event of a spill.
4. Disposal of materials shall be in accordance with local, state and federal requirements as applicable.

## Rain Garden Maintenance Requirements

1. Inlet and Overflow Spillway – Remove any sediment build-up or blockage and correct any erosion.
2. Vegetation
  - a. Maintain at least 80% surface area coverage of plants approved per plan.
  - b. Removal of invasive plants and undesirable woody vegetation.
  - c. Removal of dried, dead and diseased vegetation.
  - d. Re-mulch void or disturbed/exposed areas.
3. Infiltration
  - a. Verify the rain garden is drawing down within 48 hours.
  - b. Remove sediment accumulation or replace filter media to ensure system drawdown.
4. Annual inspection and maintenance efforts must be documented and submitted to the City.

## Filtration Basin Maintenance Requirements

1. Sweep sediment from parking lot 4 times per year
2. Ongoing and as needed:
  - a. Prune and weed to maintain appearance
  - b. Remove trash and debris
  - c. Maintain at least 80% surface area coverage of plants approved per plan.
  - d. Removal of invasive plants and undesirable woody vegetation.
  - e. Removal of dried, dead and diseased vegetation.
  - f. Re-mulch void or disturbed/exposed areas.
3. Semi-annually:
  - a. Remove sediment from inflow points (off-line systems)
  - b. Inspect aggregate filter system and clean as needed
  - c. Shrubs should be inspected to evaluate health. Remove dead and diseased vegetation.
4. Annually:
  - a. Inspect and remove any sediment and debris build-up in pre-treatment areas
  - b. Inspect inflow points and bioretention surface for buildup of road sand associated with spring melt period. Remove and replant as necessary.
  - c. Verify the basin is drawing down within 48 hours. Remove sediment or replace filter material if system is not drawing down.
5. 2 to 3 years:
  - a. Test pH of planting soils. If pH is below 5.2, add limestone. If pH is 7.0 to 8.0, add iron sulfate plus sulfur.
6. Annual inspection and maintenance efforts must be documented and submitted to the City.

## BMP Matrix

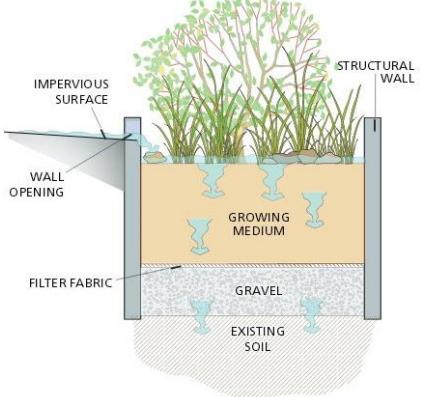
BMP Type <sup>1</sup>	Benefits	Negatives	Implementation Considerations	Examples
Better Site Design	<ul style="list-style-type: none"> <li>• Minimizes need for structural BMPs</li> <li>• Preserves natural areas</li> <li>• Provides buffers for waterbodies</li> <li>• Reduces the amount of regulatory compliance</li> </ul>	<ul style="list-style-type: none"> <li>• May conflict with local ordinances</li> </ul>	<ul style="list-style-type: none"> <li>• Is there local buy in (developers, officials, etc.)?</li> </ul>	
Infiltration/Rain Garden	<ul style="list-style-type: none"> <li>• Manages stormwater</li> <li>• filters pollutants</li> <li>• Wildlife habitat</li> <li>• Little maintenance</li> <li>• Adds beauty</li> </ul>	<ul style="list-style-type: none"> <li>• Plants can take 2-3 years to establish</li> <li>• More maintenance required in first few years</li> </ul>	<ul style="list-style-type: none"> <li>• Construct downslope of runoff to be captured</li> <li>• Plant in spring or fall</li> <li>• Locate at least 10 feet from building foundations</li> </ul>	
Filtration/Riparian Buffer	<ul style="list-style-type: none"> <li>• Increases infiltration and groundwater recharge</li> <li>• Improves water quality</li> <li>• Controls erosion &amp; sedimentation</li> <li>• Provides wildlife habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Not as effective on steep slopes</li> <li>• More difficult to implement than some other practices</li> </ul>	<ul style="list-style-type: none"> <li>• Plant in spring or fall</li> <li>• Locate at least 10 feet from building foundations</li> </ul>	

## BMP Matrix

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Permeable Pavement	<ul style="list-style-type: none"><li>• Reduces runoff quantity, TSS, and TP loads, as well as temperature of runoff water</li><li>• Well suited to high density urban areas that may not have space for other BMPs</li></ul>	<ul style="list-style-type: none"><li>• Require regular vacuuming to maintain infiltration capabilities</li><li>• Suitable for low volume roads, ped only areas, parking stalls, etc.</li><li>• Winter sanding may clog the surface material</li></ul>	<ul style="list-style-type: none"><li>• Should be located at least 10 feet from structures and 100 feet from water supply wells</li><li>• Surface slopes should be at least 1% to provide an alternate means of drainage should the surface pavement become clogged</li></ul>	
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## BMP Matrix

Infiltration Planters	<ul style="list-style-type: none"> <li>Increases infiltration and evapotranspiration of stormwater</li> <li>Filters pollutants</li> <li>Requires little maintenance</li> <li>Provides wildlife habitat</li> <li>Large canopy of native trees maximized benefits</li> </ul>	<ul style="list-style-type: none"> <li>Takes many years before trees grow to provide maximum benefit</li> <li>Regular maintenance is required where invasive plant species exist</li> <li>Must guard against deer browsing and vole damage</li> </ul>	<ul style="list-style-type: none"> <li>Plant in spring or fall</li> <li>Watering may be necessary after planting during dry weather (25 gallons/week)</li> </ul>	
Stormwater Reuse	<ul style="list-style-type: none"> <li>Protects water supplies by reducing use during peak summer months</li> <li>Results in cost savings by reducing municipal water bill</li> <li>Mimics the natural hydrology of the area by infiltrating rainwater</li> </ul>	<ul style="list-style-type: none"> <li>May act as a mosquito breeding site</li> <li>Human exposure to pathogens</li> <li>Cross contamination of potable water supply</li> <li>No well-defined operation and maintenance plan</li> </ul>	<ul style="list-style-type: none"> <li>Some roof types are not conducive since they have the potential to introduce contaminants into the system</li> <li>Systems needs to remain watertight and be located on level ground</li> </ul>	

## BMP Matrix

Green Roofs	<ul style="list-style-type: none"> <li>• Double the lifespan of traditional roof</li> <li>• Reduce the urban heat island effect</li> <li>• Can reduce flow rate by up to three hours and reduce flow of stormwater by up to 65%<sup>2</sup></li> <li>• Reduces energy costs by insulating the structure; less swing in diurnal temperatures</li> </ul>	<ul style="list-style-type: none"> <li>• Installation costs double that of a traditional roof</li> <li>• Significant maintenance obligations to ensure establishment</li> </ul>	<ul style="list-style-type: none"> <li>• Roofs must be able to structurally support vegetation and growing medium</li> <li>• Quality installation and leak prevention a must</li> <li>• Historic buildings may require special authorization</li> </ul>	 <p>Source: U.S. Government Services Agency</p>
Iron Enhanced Sand Filters	<ul style="list-style-type: none"> <li>• High pollutant removal rates</li> <li>• Use as a retrofit for existing ponds or other BMPs</li> <li>• Can be used at sites with restrictions where infiltration may not be appropriate or feasible</li> </ul>	<ul style="list-style-type: none"> <li>• Disposal of iron-sand bed will be required when the iron is consumed</li> <li>• Long inundation periods and dead vegetation can cause low oxygen conditions and iron loss</li> <li>• Head required for drawdown</li> </ul>	<ul style="list-style-type: none"> <li>• Adjacent slopes must be less than 20% and greater than 1%</li> <li>• Depth to bedrock and water table must be more than 3 feet or an impermeable liner must be used</li> </ul>	

## BMP Matrix

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Stormwater Ponds	<ul style="list-style-type: none"><li>• Provides flood control by reducing the rate that stormwater enters receiving waters</li><li>• Removal of pollutants such as phosphorous, total suspended solids, and metals through settling of stormwater</li><li>• May reduce channel erosion by reducing peak stormwater flows to receiving waters</li></ul>	<ul style="list-style-type: none"><li>• Space requirements could be high since the pond footprint should be 1-3% of the drainage area</li><li>• Have the potential for nuisance insects or odor</li><li>• May pose safety concerns</li></ul>	<ul style="list-style-type: none"><li>• Need to maintain dead storage or permanent pool</li><li>• Pretreatment highly recommended to reduce sedimentation and reduce maintenance requirements</li><li>• Soil groups A and B may require a liner to maintain dead storage</li><li>• Adjacent slopes should be less than 25% but greater than 0.5%</li><li>• May not be appropriate if receiving waters are coldwater fisheries</li></ul>	
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## BMP Matrix

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Hydrodynamic Separators	<ul style="list-style-type: none"><li>• Units are underground, reducing space requirements</li><li>• Can be used as pretreatment devices</li><li>• Can be used in cold climates if installed below the frost line</li></ul>	<ul style="list-style-type: none"><li>• May not meet local standards when used alone</li><li>• Not very effective for removing nutrients and bacteria</li></ul>	<ul style="list-style-type: none"><li>• May require a bypass if high flows are common or expected</li><li>• Consider pollutant of concern; solids and floatables are removed much more effectively than dissolved pollutants</li></ul>	 A photograph showing a construction site. In the center, a large, rectangular, stainless steel hydrodynamic separator unit is being lowered into a deep, rectangular trench. Two construction workers in high-visibility vests and hard hats are standing inside the unit, guiding its placement. To the right of the trench, a yellow excavator is parked. The ground is dirt, and the background shows some trees and other construction equipment.
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<sup>1</sup>The list of the BMPs provided are an example of potential BMPs that could be implemented throughout the City of Golden Valley. The sites should be evaluated using the Minnesota Stormwater Manual's criteria for selecting BMPs. If infiltration is not determined feasible the applicant shall demonstrate credits using the Minimal Impact Design Standards (MIDS)s Flexible Treatment Options.

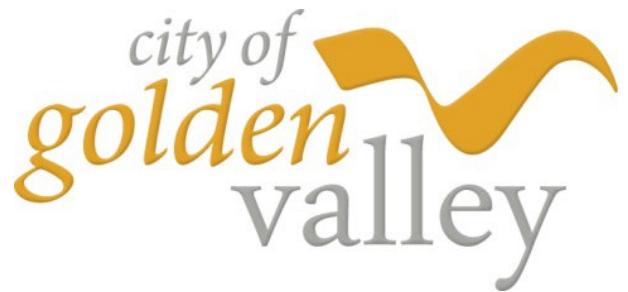
<sup>2</sup>Source: U.S. General Services Administration <http://www.gsa.gov/portal/content/166443>

## Standard Operating Procedures for Site Plan Review

**PURPOSE:** Site plan reviews are one of the tools used to be able to make changes to proposed landscape changes. Site plan review allows the City to look over the proposed construction site to make sure it fits all of the City's standards. This allows the City to make recommendations to the storm water system before the construction starts. Having a check list makes reviewing every plan consistent and makes sure all needed criteria are present.

### PROCEDURE:

- Applicant submits plans, stormwater management permit, and associated fees/security to the City of Golden Valley Engineering department.
- Engineering staff review plans with stormwater management plans and record drawings engineering standards checklist.
- Staff will review plans to see if other agency review of the permits are needed (MPCA, BCWMC, MCWD).
- Engineering standards checklist will be filled out and placed with plans as needed.
- Applicant will be sent comments/recommendations of changes needed
- Updated plans will be reviewed using the same process.
- Once plans are approved a Stormwater management permit will be issued.
- Issued permits will be filed and kept in the engineering department.
- Permits will be documented in Project Docs and Cartegraph.



# Stormwater Plan Standards

**City of Golden Valley**

**September 2015**

**Prepared by WSB & Associates**



# Stormwater Plan Standards

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## APPENDICES

- Appendix A Stormwater Management Plan Submittal Checklist
- Appendix B Maintenance Agreement
- Appendix C BMP Matrix
- Appendix D Site Plan Review Procedures

# Stormwater Plan Standards

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## 1. DESIGN OVERVIEW

The City of Golden Valley's Stormwater Pollution Prevention Plan (SWPPP) identifies the goals and policies that define the City's stormwater management program, which are implemented via the City Stormwater Management ordinance (4.31) and these Engineering Design Standards. Golden Valley's stormwater requirements were written to meet the City's goals to preserve, protect, and manage its water resources as well as to meet federal, state, and watershed stormwater regulations and to meet the following objectives:

- Minimize increases in stormwater runoff rates from any development in order to reduce flooding, siltation and erosion and in order to maintain the integrity of stream channels;
- Minimize increases in nonpoint source pollution caused by stormwater runoff from development which may otherwise degrade local water quality;
- Minimize the total annual volume of surface water runoff that flows from any specific site during and following development so as not to exceed the predevelopment hydrologic regime to the maximum extent practicable;
- Ensure that these management controls are properly maintained and pose no threat to public safety; and
- Implement stormwater management controls to help meet current and future total maximum daily load (TMDL) goals, to address the need to improve water quality, and to meet objectives in the City's Surface Water Management Plan and Bassett Creek Watershed Management Commission's Watershed Management Plan.

## 2. DEFINITIONS

For the purpose of this Design Manual, the following definitions describe the meaning of the terms used in this Design Manual:

*Channel* means a natural or artificial watercourse with a definite bed and bank that conveys water continuously or periodically.

*Impervious Area* means a constructed hard surface that either prevents or retards the entry of water into the soil and causes water to run off the surface in greater quantities and at an increased rate of flow than prior to development. Examples include rooftops, sidewalks, patios, driveways, parking lots, storage areas, and concrete, asphalt or gravel roads.

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*Land Disturbance or Land-Disturbing Activities* means any land change that may result in Soil Erosion from water or wind and the movement of Sediments into or upon waters or lands. This may include, but is not limited to, a disturbance that results in a change in topography, or disturbance of the existing Soil cover (both vegetative and nonvegetative). Land-Disturbing Activities including clearing and grubbing, Grading, excavating, transporting Earth Material and filling of land for all new construction and redevelopment. Activities that do not meet the thresholds for projects identified in Subdivision 4(A) are not considered Land-Disturbing activities.

*Redevelopment* means for projects with 1 acre or greater of impervious surfaces either being reconstructed.

*Responsible Party* means the entity which will be responsible for ownership and maintenance of Stormwater Treatment Practices.

*Stop Work Order* means an order which requires that all construction activity on a site be stopped immediately.

*Stormwater Management Facilities* means the structural or non-structural components of the Stormwater Management System associated with the quality and quantity of Stormwater runoff.

*Stormwater Management Plan* means a plan which describes how Stormwater runoff and associated water quantity and water quality impacts resulting from the proposed Development project will be controlled and managed.

*Stormwater reviews* means any site that either increases impervious surface by greater than 1 acre or redevelops 1 acre or greater of impervious. The review will be completed to evaluate compliance with the MPCA's Minimal Impact Design Standards (MIDS). For sites either creating or redeveloping less than 1 acre of impervious the City will work with the applicant to determine if water quality practices can be incorporated into the site. Sites less than 1 acre will also not be allowed their drainage to negatively impact downstream properties (or water bodies).

*Stormwater Runoff* means flow on surface of the ground, resulting from precipitation.

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*Water Quality Volume (WQ<sub>v</sub>)* means that runoff storage volume needed to treat the specified phosphorus loading as determined in the Golden Valley Engineering Design Guidelines.

*Watercourse* means a permanent or intermittent stream or other body of water, either natural or fabricated, which gathers or carries surface water.

*Watershed* means the total drainage area contributing runoff to a single point.

### 3. PROCEDURE FOR REVIEWING STORMWATER MANAGEMENT PLANS

Every applicant for a building permit, subdivision approval or permit to allow land disturbing activity must submit a Stormwater Management Plan to the City. All applicants for a building permit, subdivision approval, or grading permit to allow land disturbing activities must also address the requirements of Section 7.0 for erosion and sediment control:

The general review process, from the submittal of the concept and final plans to the issuance of the Stormwater Management Plan approval, is summarized in the following six steps:

- 1) Determine what stormwater management provisions apply (stormwater management, erosion control, buffers, floodplain management).
- 2) What permits, or approvals, are required for the project site, and what waivers and/or exemptions are applicable (COE, DNR, MPCA, Watershed, WCA, etc.)
- 3) Determine if the project falls with the Bassett Creek Watershed Management Commission or Minnehaha Creek Watershed District.
- 4) Are the selected practices appropriate for this site?
- 5) Are the practices designed to meet the minimum performance criteria?
- 6) Does the Plan meet other resource protection requirements as specified in the City of Golden Valley City Code and Comprehensive Plan?
- 7) Are provisions for long-term maintenance adequate? Do long-term maintenance provisions include access and methods for maintenance defined?

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### 4. SUBMITTAL REQUIREMENTS

#### Requirements for Stormwater Management Plan Approval

##### **Stormwater Management Plan Required**

No stormwater management permit will be approved unless it includes a Stormwater Management Plan detailing how runoff and associated water quality impacts resulting from the development will be controlled or managed (note the exceptions in Section 3.). This plan must indicate whether stormwater will be managed on-site or off-site and, if on-site, the general location and type of practices.

The Stormwater Management Plan must be signed by a licensed professional engineer in the State of Minnesota, who will verify that the design of all stormwater management practices meet the submittal requirements outlined in the Submittal Checklist found in Appendix A.

No building permit, grading permit, sediment control permit, or subdivision approval shall be issued until a satisfactory final Stormwater Management Plan, or a waiver thereof, shall have undergone a review and been approved by the City after determining that the plan waiver is consistent with the requirements of this manual. A Stormwater Management Plan may not be necessary for projects disturbing less than 1 acre.

##### **Stormwater Management Conceptual Plan Requirements (Optional)**

A stormwater management concept plan submittal is optional, but highly encouraged. A concept plan identifies basic site information, locations of proposed development features, and preliminary locations and sizing of STPs. The concept submittal has a greater chance of identifying major obstacles and can facilitate alternative stormwater management arrangements in a timely fashion and at the onset of project planning. If a concept plan is submitted for review, it should include sufficient information (e.g., maps, basic hydrologic and water quality calculations etc.) to evaluate the environmental characteristics of the project site. This information should show the potential impacts of all proposed development of the site, both present and future, on the water resources, and show the effectiveness and acceptability of the measures proposed for managing stormwater generated at the project site. The intent of this conceptual planning process is to determine the type of stormwater management of stormwater runoff from future development, and to identify major issues prior to completing final plans. The concept plan is less time consuming and more efficient to evaluate proposed development plans with this step of the review process.

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The final plan provides more detailed design information for the proposed STPs, and includes much more detail in terms of hydrologic conditions and site features.

For redevelopment an applicant should include within a concept plan measures for controlling existing stormwater runoff discharges and water quality from the site in accordance with the standards of this Manual. After review of the concept plan and modifications are made to that plan as deemed necessary by the City, a final Stormwater Management Plan may be submitted for approval.

### Stormwater Management Plan Requirements (Required)

Record drawings are required for all projects that impact wetlands and/or the floodplain, require water quality ponding, have significant grade changes, and/or have other unusual circumstances. Record drawings must be certified by a professional land surveyor or civil engineer. (Record drawings should not include temporary erosion control measures.)

### Procedures for Review of Development Proposals

- The BCWMC will review the developer's submittal only after the developer demonstrates that the project has received preliminary approval from the City of Golden Valley, indicating compliance with existing municipal permits.
- BCWMC meetings are held the third Thursday of each month. For a proposed project to be included on the agenda, submit plans to BCWMC staff by the last Friday of the previous month. Complex projects may require additional review time.
- The applicant shall submit an application form and two sets of plans and specifications for BCWMC review. One set to be returned to the City of Golden Valley with BCWMC comments and one will be retained in BCWMC files. The application form must be signed by City staff.
- Upon receipt of a submittal, BCWMC staff will review the submittal and prepare recommendations to the BCWMC. A memorandum describing each project and the staff recommendations will be sent to the Commissioners and applicant about one week before each meeting.
- The BCWMC will review and comment on the submittal at its regularly scheduled meeting and then approve, conditionally approve, or reject the submittal. A letter with BCWMC comments, including a list of deficiencies or required modifications, will be sent to the City of Golden Valley.

Refer to *Requirements for Improvements and Development Proposals* at [www.bassettcreekwmo.org](http://www.bassettcreekwmo.org). The *Requirements for Improvements and Development*

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*Proposals* requires preparation and submittal of project plans and a runoff water quality management plan.

### 5. LIST OF ACCEPTABLE PRACTICES

In the development of the Stormwater Management Facilities (SMF) appropriate for the development or redevelopment, infiltration (water quality volume) is foremost in importance to apply in the design. Filtration is warranted when site conditions do not allow for an effective infiltration facility. For flooding or rate control, detention systems are typically the preferred practice. Low Impact Design (LID) practices are encouraged when they can be functionally incorporated into the design. Alternative practices may be approved at the discretion of the City Engineer. For when infiltration is not feasible the SMF proposed shall meet the performance identified in the MIDS Flexible Treatment Options (FTO).

#### **Volume Control Systems:**

- Infiltration trench
- Infiltration basin
- Raingarden
- Underground storage
- Reuse
- Green Roofs/Infiltration Planters
- Other, as approved by the City of Golden Valley

#### **Filtration Systems:**

- Surface sand filter
- Underground sand filter
- Perimeter sand filter
- Organic filter
- Bioretention system
- Raingarden with underdrain
- Pervious pavement with underdrain
- Underground storage with underdrain/Above ground storage
- Tree trench

#### **Detention Systems:**

- Wet pond
- Stormwater re-use systems

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- Multiple pond systems
- Extended detention basin
- Micro-pool extended detention basin
- Dry detention ponds
- Underground storage
- Other, as approved by the City of Golden Valley

### **Wetlands:**

- Shallow wetland
- Pond/wetland systems

### **Open Channel Systems:**

- Dry swale
- Wet swale
- Grass swale
- Natural channel, or stream

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### 6. GUIDANCE ON STORMWATER MANAGEMENT FACILITIES (SMF)

Designers are expected to follow the Minimal Impact Design Standards (MIDS) flowchart detailed in the *Minnesota Stormwater Manual* (Appendix D). Deviations from recommended guidance in the *Minnesota Stormwater Manual* will require detailed written explanation. Approval of any deviation from the *Minnesota Stormwater Manual* guidance will be at the discretion of the City.

### 7. CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

All Stormwater Pollution Prevention Plan (SWPPP) and erosion control plan submittals must meet the minimum requirements of the MPCA's most current Construction Stormwater General Permit (MNR100001) for erosion, sediment, and waste controls. The following conditions apply:

#### 7.1 Erosion Control

1. The Permittee must plan for and implement appropriate construction phasing vegetative buffer strips, horizontal slope grading, and other construction practices to minimize erosion. All areas not to be disturbed shall be marked (e.g. with flags, stakes, signs, silt fence etc.) on the project site before any work begins.
2. All exposed soil areas must be stabilized as soon as possible to limit soil erosion but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased and no later than seven (7) days after construction activity in that portion of the site has temporarily or permanently ceased when discharge points on the project is within one mile of a special or impaired water and flows to that special or impaired water.
3. Additional BMPs together with enhanced runoff controls are required for discharges to special waters and impaired waters. The BMPs identified for each special or impaired water are required for those areas of the project draining to a discharge point on the project that is within one mile of a special or impaired water and flows to that water.
4. The permittee must stabilize the normal wetted perimeter of any temporary or permanent drainage ditch or swale that drains water from any portion of the construction site, or diverts water around the site, within 200 lineal feet from the property edge, or from the point of discharge into any surface water. Stabilization of the last 200 lineal feet must be completed within 24 hours after connecting to a surface water or property edge.
5. Pipe outlet must have temporary or permanent energy dissipation before connecting to surface water.

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6. When possible, all slopes must be graded in such a fashion so that tracking marks made from heavy equipment are perpendicular to the slope.
7. All areas disturbed during construction must be restored as detailed in these requirements. The type of permanent restoration shall be clearly shown on the plans including but not limited to sod, seed, impervious cover and structures. A minimum of 6 inches of topsoil must be installed prior to permanent restoration. Areas in which the top soil has been placed and finish graded or areas that have been disturbed and other grading or site building construction operations are not actively underway must be temporary or permanently restored as set forth in the following requirements.
  1. Areas with slopes that area less than 3:1 must be seeded and mulched within 14 days of the area not being actively worked.
  2. Areas with slopes that area greater or equal to 3:1 must be seeded and erosion control blanket placed within 14 days of the area not being actively worked.
  3. All seeded area must be either mulched and disc anchored, hydro- mulched, or covered by erosion control blanket to reduced erosion and protects the seed. Temporary or permanent mulch must be disc anchored and applied at a uniform rate of 2 tons per acre and have 90% coverage.
  4. If the disturbed area will be re-disturbed within a six month period, temporary vegetative cover shall be required consisting of an approved seed mixture and application rate.
  5. If the disturbed area will not be re-disturbed within a six month period, permanent vegetative cover shall be required consisting of an approved seed mixture and application rate.
  6. All areas that will not have maintenance done such as mowing as part of the final design shall be permanently restored using an approved seed mixture and application rate.
  7. Restoration of disturbed wetland areas shall be accomplished using an approved seed mixture and application rate.
  8. All erosion control measures must be maintained for the duration of the project until final stabilization has been achieved in accordance with Section 1.7. If construction operations or natural events damage or interfere with any erosion control measures, they shall be restored to serve their intended function.
  9. Additional erosion control measures shall be added as necessary to effectively protect the natural resources of the City. The temporary and permanent erosion control plans shall be revised as needed based on current site conditions and to comply with all applicable requirements

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## 7.2 Sediment Control Practices

1. Sediment control practices must be established on all down gradient perimeters before any upgradient land disturbing activities begin. These practices must remain in place until final stabilization has been achieved.
2. If down gradient treatment system is overloaded additional up gradient sediment control practices must be installed to eliminate overloading. The SWPPP must be amended to identify the additional practices.
3. All storm drain inlets must be protected by approved BMPs during construction until all potential sources for discharge have been stabilized. These devices must be maintained until final stabilization is achieved. Inlet protection may be removed if a specific safety concern (street flooding/freezing) has been identified.
4. Temporary stockpiles must have silt fence or other effective sediment controls on the down gradient side of the stockpile and shall not be placed at least twenty five (10) feet from any road, wetland, protected water, drainage channel, or storm water inlets. Stockpile left for more than fourteen (14) days must be stabilized with mulch, vegetation, tarps or other approved means.
5. Vehicle tracking of sediment from project shall be minimized by approved BMPs. These shall be installed and maintained at the City approved entrances. Individual lots shall each be required to install and maintained entrances throughout the construction building until a paved driveway is install.
6. Sediment that has washed or tracked from site by motor vehicles or equipment shall be cleaned from paved surfaces throughout the duration of construction.
7. Silt fence or other approved sediment control devices must be installed in all areas as shown on the SWPPP.
8. Silt fence or other approved sediment control devices shall be required along the entire curb line, except for approved opening where construction entrance will be installed or drainage flows away from curb. This device must be maintained until final stabilization is achieved. Ditch checks shall be required in ditch bottoms. Spacing for the check must be as followed:[*Height in feet* (of the sediment device used)]  $\times 100 / \text{Slope Gradient}$
9. Dust control measures, such as application of water must be performed periodically due to weather, construction activity, and/or as directed by the City.
10. Flows from diversion channels or pipes (temporary or permanent) must be routed to sedimentation basins or appropriate energy dissipaters to prevent the transport of sediment to outflow or lateral conveyors and to prevent erosion and sediment buildup when runoff flows into the conveyors.
11. A concrete washout shall be installed on projects that require the use of concrete. All liquid and solid wastes generated by concrete washout operations must be contained in a leak-proof containment facility or impermeable liner. A sign must be installed adjacent to each washout facility to inform operators to utilize the proper facilities.
12. All sediment control measures shall be used and maintained for the duration of

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the project until final. If construction operations or natural events damage or interfere with any erosion control measures, they must be restored to serve their intended function.

13. Additional sediment control measures shall be added as necessary to effectively protect the natural resources of the City. The temporary and permanent erosion control plans shall be revised as needed based on current site conditions and to comply with all applicable requirements.
14. Restrict clearing and grading within 20 feet of an existing wetland boundary to provide for a protective buffer strip of natural vegetation.

### **7.3 Temporary Sediment Basins**

1. A temporary sediment basin (or permanent) shall be provided when 10 or more acres of disturbed soil drain to a common location prior to the runoff leaving the site or entering surface waters. The Permittee is also encouraged, but not required to install temporary sediment basins in areas with steep slope or highly erodible soils even if the area is less than 10 acres and it drains to one common area. The basins shall be designed and constructed according to the following requirements.
  1. The basins must provide storage below the outlet pipe for a calculated volume of runoff from a 2 year, 24 hour storm from each acre drained to the basin, except that in no case shall the basin provide less than 1800 cubic feet of storage below the outlet pipe from each acre drained to the basin.
  2. Where no such calculation has been performed, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage below the outlet pipe per acre drained to the basin shall be provided where attainable until final stabilization of the site.
  3. Temporary basin outlets will be designed to prevent short-circuiting and the discharge of floating debris. The basin must be designed with the ability to allow complete basin drawdown (e.g., perforated riser pipe wrapped with filter fabric and covered with crushed gravel, pumps or other means) for maintenance activities, and provide a stabilized emergency overflow to prevent failure of pond integrity. Energy dissipation must be provided for the basin outlet.
  4. Temporary (or permanent) basins must be constructed and made operational concurrent with the start of soil disturbance that is up gradient of the area and contributes runoff to the pond.
  5. Where the temporary sediment basin is not attainable due to site limitations, equivalent sediment controls such as smaller sediment basins, and/or sediment traps, silt fences, vegetative buffer strips or any appropriate combination of measures are required for all down slope boundaries of the construction area

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and for those side slope boundaries deemed appropriate as dictated by individual site conditions. In determining whether installing a sediment basin is attainable, the Permittee must consider public safety and may consider factors such as site soils, slope, and available area on site. This determination must be documented in the SWPPP.

6. The Permittee shall maintain the sedimentation basins and will remain functional until an acceptable vegetative cover is restored to the site, resulting in a pre-development level rate of erosion. The city will not issue building permits for lots containing sediment basins until they have been removed or relocated based on the projects restoration progress.
7. Basins designed to be used for permanent stormwater management shall be brought back to their original design contours prior to acceptance by the City.

### **7.4 Dewatering and Basin Draining**

1. If water cannot be discharged into a sedimentation basin before entering a surface water it must be treated with the appropriate BMPs, such that the discharge does not adversely affect the receiving water or downstream landowners. The Permittee must make sure discharge points are appropriately protected from erosion and scour. The discharge must be dispersed over riprap, sand bags, plastic sheeting or other acceptable energy dissipation measures. Adequate sediment control measures are required for discharging water that contains suspended soils.
2. All water from dewatering or basin draining must discharge in a manner that does not cause nuisance conditions, erosion in receiving channels, on down slope properties, or inundation in wetlands causing significant adverse impact to wetlands.

### **7.5 Inspections and Maintenance**

1. The Permittee shall be responsible for inspecting and maintenance of the BMPs
2. The Permittee must routinely inspect the construction project once every 7 days during active construction and within 24 hours of a rainfall event of 0.5 inches or greater in 24 hours.
3. All inspections and maintenance conducted during construction must be recorded in writing and must be retained with the SWPPP. Records of each inspection and maintenance activity shall include:
  1. Date and time of inspection.
  2. Name of person(s) conducting the inspections.
  3. Findings of inspections, including recommendations for corrective actions.

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4. Corrective actions taken (including dates, times, and the party completing the maintenance activities).
5. Date and amount of all rainfall events 0.5 inches or greater in 24 hours.
6. Documentation of changes made to SWPPP.
4. Parts of the construction site that have achieved final stabilization, but work continues on other parts of the site, inspections of the stabilized areas can be reduced to once a month. If work has been suspended due to frozen ground conditions, the required inspections and maintenance must take place as soon as runoff occurs or prior to resuming construction, which ever happens first.
5. All erosion and sediment BMPs shall be inspected to ensure integrity and effectiveness. All nonfunctional BMPs shall be repaired, replaced or supplemented with a functional BMP. The Permittee shall investigate and comply with the following inspection and maintenance requirements.
6. All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. These repairs shall be made within 24 hours of discovery, or as soon as field conditions allow access.
7. Temporary and permanent sedimentation basins must be drained and the sediment removed when the depth of sediment collected in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery, or as soon as field conditions allow access.
8. Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment being deposited by erosion. The Permittee shall remove all deltas and sediment deposited in surface waters, including drainage ways, catch basins, and other drainage systems, and restabilize the areas where sediment removal results in exposed soil. The removal and stabilization shall take place within 7 days of discovery unless precluded by legal, regulatory, or physical access constraints. The Permittee shall use all reasonable efforts to obtain access. If precluded, removal and stabilization shall take place within 7 calendar days of obtaining access. The Permittee is responsible for contacting all local, regional, state and federal authorities and receiving any applicable permits, prior to conducting any work.
9. Construction site vehicle exit locations shall be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment shall be removed from all off-site paved surfaces, within 24 hours of discovery, or if applicable, within a shorter time.
10. The Permittee is responsible for the operation and maintenance of temporary and permanent water quality management BMPs, as well as all erosion prevention and

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sediment control BMPs, for the duration of the construction work at the site. The Permittee is responsible until another Permittee has assumed control over all areas of the site that have not been finally stabilized or the site has undergone final stabilization, and a NOT has been submitted to the MPCA.

11. If sediment escapes the construction site, off-site accumulations of sediment shall be removed in a manner and at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in streets could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets).
12. All infiltration areas shall be inspected to ensure that no sediment from ongoing construction activities is reaching the infiltration area and these areas are protected from compaction due to construction equipment driving across the infiltration area.

### **7.6 Pollution Management Measures/Construction Site Waste Control**

1. The Permittee must implement the following pollution prevention management measures on the site.
  1. Solid Waste – Collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with MPCA disposal requirements.
  2. Hazardous Materials such as oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas shall be provided to prevent vandalism. Storage and disposal of hazardous waste shall be in compliance with MPCA regulations.
  3. External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff shall be contained and waste properly disposed of. No engine degreasing is allowed on site.
  4. The City of Golden Valley prohibits discharges of any material other than storm water, and discharges from dewatering or basin draining activities. Prohibited discharges include but are not limited to vehicle and equipment washing, maintenance spills, wash water, and discharges of oil and other hazardous substances.

### **7.7 Final Stabilization**

1. The Permittee must ensure final stabilization of the project. Final stabilization can be achieved in one of the following ways.

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2. All soil disturbing activities at the site have been completed and all soils will be stabilized by a uniform perennial vegetative cover with a density of at least 70 percent over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions and;
  1. All drainage ditches, constructed to drain water from the site after construction is complete, must be stabilized to preclude erosion; and
  2. All temporary synthetic, and structural erosion prevention and sediment control BMPs (such as silt fence) must be removed as part of the site final stabilization; and
  3. The Permittee must clean out all sediment from conveyances and from temporary sedimentation basins that are to be used as permanent water quality management basins. Sediment must be stabilized to prevent it from washing back into the basin, conveyances or drainage ways discharging off-site or to surface waters. The cleanout of permanent basins must be sufficient to return the basin to design capacity.
3. For residential construction only, final stabilization has been achieved when:
  1. Temporary erosion protection and down gradient perimeter control for individual lots has been completed and the residence has been transferred to the homeowner.
  2. The Permittee must distribute the MPCA “homeowner factsheet” to the homeowner so the homeowner is informed for the need, and benefits, of final stabilization.

### 7.8 **Training**

1. The SWPPP must provide a chain of command showing who prepared the SWPPP, who is responsible for the management of the construction site and inspections.
2. The training shall consist of a course developed by a local, state or federal agency, professional organization, water management organization, or soil and water conservation district and must contain information that is related to erosion prevention, sediment control, or permanent stormwater management and must relate to the work that you are responsible for managing.

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### 8. STORMWATER MANAGEMENT BASIC SIZING CRITERIA

Proposed Stormwater Management Plans must incorporate Volume Control, Water Quality Control, and Rate Control as the basis for stormwater management in the proposed development plan. The City of Golden Valley, as a permitted MS4, requires for new development projects to have a no net increase from pre-project conditions of total volume, TSS, and TP; in addition, for redevelopment projects within the city, it is required to have a net reduction from pre-project conditions of total volume, TSS and TP.

#### 8.1 Volume Control Requirements

Volume control measures are required on projects to meet the water quality criteria of the City of Golden Valley's Surface Water Management Plan and to meet the requirements of the City of Golden Valley's MS4 Permit obligations. Volume control shall be required for proposed new impervious areas greater than 1 acre or redevelopment of impervious greater than 1 acre. If an applicant can demonstrate that the volume control standard has been met, then the water quality sizing criteria shall be considered satisfied.

#### 8.2 Volume Control Calculations

Depending on applicability, a proposed development shall capture and retain on site 1.1 inches of runoff from the impervious surfaces in post-construction conditions for increases in impervious greater than 1 acre in accordance with the Minimal Impact Design Standards (MIDs). For redevelopment projects, the performance goal is to capture and retain on site 1.1 inches of runoff from the new and/or fully redeveloped impervious surfaces over 1 acre. For projects less than 1 acre the City encourages applicants to incorporate volume control or the water quality provisions to the extent feasible. For linear projects, the performance goal is to capture and retain onsite the larger of the following:

- 0.55 inches of runoff from the new and fully reconstructed impervious surfaces
- 1.1 inches of runoff from the net increase in impervious surfaces

#### 8.3 Water Quality Control

For New Development, the water quality control standard shall be considered satisfied if the volume control standard has been satisfied. In the event that it is infeasible to meet the volume control standard due to contaminated soils, site constraints, etc., the proposed STP will need to satisfy the water quality standards using the MIDS flexible treatment options as outlined below in the MIDs Design Sequence Flowchart:

[http://stormwater.pca.state.mn.us/index.php/MIDS\\_design\\_sequence\\_flow\\_chart\\_-\\_Box\\_1](http://stormwater.pca.state.mn.us/index.php/MIDS_design_sequence_flow_chart_-_Box_1).

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### Flexible Treatment Options:

#### Option 1:

- Applicant attempts to comply with the following conditions:
  - Achieve at least 0.55 inch volume reduction goal, and
  - Remove 75 percent of the annual total phosphorus load, and
  - Options considered and presented shall examine the merits of relocating project elements to address varying soil conditions and other constraints across the site

#### Option 2:

- Applicant attempts to comply with the following conditions:
  - Achieve volume reduction to the maximum extent practicable (as determined by the Local Authority), and
  - Remove 60 percent of the annual total phosphorus load, and
  - Options considered and presented shall examine the merits of relocating project elements to address varying soil conditions and other constraints across the site.

#### Option 3:

- Off-site mitigation (including banking or cash or treatment on another project, as determined by the local authority) equivalent to the volume reduction performance goal can be used in areas selected in the following order of preference:
  - Locations that yield benefits to the same receiving water that receives runoff from the original construction activity.
  - Locations within the same Department of Natural Resources (DNR) catchment area as the original construction activity.
  - Locations in the next adjacent DNR catchment area up-stream.
  - Locations anywhere within the local authority's jurisdiction.

When off-site treatment is required, off-site treatment projects must include new structural stormwater treatment BMPs, the retrofit of an existing structural stormwater treatment BMP, or the use of a properly designed regional structural stormwater treatment BMP. Routine maintenance of structural stormwater treatment BMPs cannot be used to satisfy this requirement. Further, off-site treatment projects must be completed no later than 24 months after the start of the original construction activity.

The City of Golden Valley does not accept payment in lieu of off-site treatment when water quality volume cannot cost effectively be treated on the site of the original construction activity.

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### 8.4 **Rate Control**

1. At a minimum, detention basins should maintain existing flow rates for the 2,10, and 100-year 24-hour rainfalls in accordance to the Atlas14 data as shown in the table below:

Event	Rainfall/Snowmelt Depth (inches)
2-year, 24 hour	2.9
10-year, 24 hour	4.3
100-year, 24 hour	7.4
100-year, 10 day snowmelt	10.2

2. Detention basins shall be designed with capacity for the critical 100-year event, which is defined as the 100-year event that produces the highest water level among a 2-hour, 6-hour, 12-hour, or 24 hour rainfall events or the 10-day, 10.2 - inch snowmelt runoff event.
3. The maximum duration for rainfall critical event analysis shall be 24 hours except in cases where basins are landlocked, where back to back 24-hour events and the 10-day 10.2-inch snowmelt runoff event shall also be used. In all cases a hydrograph method of analysis should be used. For the 24-hour rainfall event, or back to back 24-hour rainfall events, an SCS Type II distribution should be used. For shorter duration critical events other distributions may be used with the approval of the City Engineer.
4. All drainage system analyses and designs shall be based on proposed full development land use patterns.
5. Development adjacent to a landlocked basin and the basin is not provided an outlet, freeboard should be determined based on one of three methods (whichever provides for the highest freeboard elevation):
  1. Three feet above the HWL determined by modeling back to back 100- year, 24-hour events,
  2. Three feet above the highest known water level, or
  3. Five feet above the HWL determined by modeling a single 100-year, 24- hour event.
6. When modeling landlocked basins, the starting water surface elevation should be the basins Ordinary High Water elevation, which can be determined through hydrologic modeling or, in the case of a DNR regulated basin, from a DNR survey.
7. For basins with a suitable outlet, freeboard will be 2-feet above the HWL determined by modeling the 100-year critical event. Emergency overflows a

## Stormwater Plan Standards

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minimum of 1.5 feet below lowest ground elevation adjacent to a structure should also be provided.

8. Adjacent to channels, creeks, and ravines freeboard will also be 2 feet to the 100-year critical event elevation.
9. A Type II 24-hour rainfall distribution with average antecedent moisture conditions should be utilized for runoff calculations.
10. The recommended minimum outlet diameter is 6 inches due to plugging susceptibility and may supersede the rate control requirement for the 2-year event.
11. City standard detail plates should be utilized for pond outlet structures.
12. Outlet structures should be designed in three phases with primary outlet structure and secondary overflow structure routed to the storm sewer and a defined emergency overflow as the tertiary outlet structure.

### **8.5 Freeboard**

Elevation separations of buildings with respect to ponds, lakes, streams, basins, wetlands, and stormwater management facilities shall conform to the following:

1. All new and existing structures and uses located inside the Floodplain are subject to Section 11.60 of the City Code.
2. For structures and uses located outside the Floodplain, the following shall apply:
  - a. The lowest floor elevation of all new principal and accessory structures, and additions to existing structures, shall be at least two (2) feet above the Calculated High Water Level of adjacent wetlands, basins, ponds, and Stormwater Management Facilities. Calculated High Water Levels shall be determined by the City based on the relevant federal, state, BCWMC, and City studies.
3. Drainage easements and outlots for ponds, lakes, wetlands, streams, etc., shall encompass an area to the calculated two foot above the 100-year HWL.

### **8.6 Floodplain Management**

The City prohibits filling activities within the 100-year floodplain that will cause an increase in the stage of the 100-year or regional flood or cause an increase in the flood damages in the reach affected unless compensatory storage is provided and/or channel improvement is provided that will not result in the flood stage. Filling within the floodway is prohibited unless the filling meets FEMA, DNR, and BCWMC requirements, and City Code Section 11.60. Applications proposing to alter the floodplain shall submit the following:

1. Cut/fill diagrams along with calculations demonstrating that the filling or alteration of the floodplain is not resulting in a reduction in the flood stage/storage.

## Stormwater Plan Standards

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2. Plans must be submitted to the BCWMC for review and approval.
3. Pedestrian Bridges Over Creek must not result in changing the 100-year HWL. All submittals will need to meet the requirements as identified in City Code Section 11.60, BCWMC, DNR, and FEMA.

### 8.7 **Buffers**

Native or natural vegetative buffers are required adjacent to wetlands and streams.

Buffers are encouraged adjacent to lakes for projects requiring a stormwater management permit as defined in City Code Section 4.31: Stormwater Management.

1. The following standards shall guide the creation or restoration of buffers to achieve the goals and policies of the City's Surface Water Management Plan and the BCWMC's Watershed Management Plan. The Administrator may modify or waive standards depending on each project site.
2. The buffers zones are as follows:
  - b. Stream – 10 feet or 25% of the distance between the ordinary high water level and the nearest existing structure, whichever is less
  - c. Lakes (encourage buffer width measured from delineated OHWL)
    - i. Natural environment lake - 100 feet
    - ii. Recreational development lake – 50 feet
    - iii. General development lake – 25 feet
  - d. Wetlands: Buffers based on a MnRAM classification or similar classification system will be as follows (measured from the delineated wetland edge):
    - i. Preserve – 75 feet average and minimum of 50 feet
    - ii. Manage 1 – 50 feet average and minimum of 30 feet
    - iii. Manage 2 or 3 – 25 feet average and a minimum of 15 feet
  - e. The use of a meandering buffer strip to maintain a natural appearance is encouraged in areas of flat topography.
  - f. An access corridor, not to exceed twenty (20) feet in width or twenty percent (20%) of the buffer edge, whichever is less, is permitted.
  - g. Accessory structures intended to provide access to Wetlands such as stairways and docks are permitted in the access corridor.
  - h. The buffer may be placed in a conservation easement.
  - i. Monuments identifying the conservation easement, designed in accordance with City standards, should be placed every one hundred (100) feet to delineate the buffer edge and at intersections with property lines.
  - j. Buffer strip vegetation should be appropriate to the goals for the water body. Where acceptable natural vegetation exists in buffer strip areas, the retention of such vegetation in an undisturbed state is preferred. The Minnesota PCA's

## Stormwater Plan Standards

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manual “Plants for Stormwater Design: Species Selection for the Upper Midwest” provides guidance on buffer plant selection.

- k. Allowable land uses and vegetative criteria for buffers are specified in the BCWMC’s *Requirement for Development and Redevelopment* (as amended).
- l. The BCWMC will allow exemptions for public recreational facilities parallel to the shoreline (e.g. trails) up to 20 feet in width, with that width being added to the required.

### 8.8 Shoreland Management

The City of Golden Valley has an established adopted shoreland management Code Section 11.65: Shoreland Management. The City code has established setbacks for placement of structures and impervious and also requirements for shoreland alterations, which are as follows:

## Stormwater Plan Standards

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	Natural Environment Waters	Recreational Development Waters	General Development Waters
Water frontage and lot width at building line (ft.)	125	80	80
Structure setback from Ordinary High Water (ft.)	150	75	50

The following exceptions to structure setback requirements include:

1. Setback requirements from the ordinary high water mark shall not apply to boathouses and docks. Locations of docks shall be controlled by applicable State and local regulations. Boathouses may be allowed as conditional use provided they are not used for habitation and do not contain sanitary facilities.
2. On undeveloped shoreland lots that have two (2) adjacent lots with existing principal structures on both such adjacent lots, any new residential structure may be set back the average setback of the adjacent structures from the ordinary high water mark or fifty (50) feet, whichever is greater, provided all other provisions of the Shoreland Overlay District are complied with.

1. The City also encourages the following for work occurring within the shoreland zone:
  1. Encourage the use of natural vegetation or bioengineering techniques for the stabilization of shorelines.
  2. Use materials such as fieldstone, granite, gneiss, or schiss for shoreline stabilization projects where hard armoring is necessary.
  3. Encourage the use of techniques that will minimize runoff and improve water quality associated with new development and redevelopment. When possible use existing natural drainage ways, wetlands, and vegetated soil surfaces to convey, store, filter, and retain stormwater runoff before discharge to public waters. When development density, topographic features, and soil and vegetation conditions are not sufficient to adequately handle stormwater runoff using natural features and vegetation, various types of constructed facilities such as diversions, settling basins, skimming devices, dikes, waterways, and ponds may be used. Preference shall be given to designs using surface drainage, vegetated filter strips, bioretention areas, rainwater gardens, enhanced swales, off-line retention areas, and natural depressions for infiltration rather than buried pipes and human-made materials and facilities (*MnDNR Alternative Shoreland Standards, 2005*).

## Stormwater Plan Standards

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### 8.9 Long Term Inspection and Maintenance of Stormwater Facilities

1. No private stormwater facilities may be approved unless a maintenance plan is provided that defines how access will be provided, who will conduct the maintenance, the type of maintenance and the maintenance intervals. At a minimum, all private stormwater facilities shall be inspected annually and maintained in proper condition consistent with the performance goals for which they were originally designed and as executed in the stormwater facilities maintenance agreement.
2. Access to all stormwater facilities must be inspected annual and maintained as necessary. The applicant shall obtain all necessary easement or other property interests to allow access to the facilities for inspection or maintenance for both the responsible party and the City of Golden Valley.
3. All settled materials including settled solids, shall be removed from ponds, sumps, grit chambers, and other devices, and disposed of properly.

## 9. STORMWATER MANAGEMENT FACILITY DESIGN STANDARDS

### 9.1 Storm Sewers

1. Manhole spacing shall not exceed 400 feet.
2. Where more than one pipe enters a structure, a catch basin/manhole shall be used.
3. Storm sewer pipe should match top of pipe on top of pipe unless grade constraints prevent this. In that case, hydraulic calculations will be necessary to verify that excessive surcharging will not occur.
4. Stormwater pipes shall be designed utilizing the Rational Method. Channel design shall be hydrograph method only. All methods are subject to the City Engineer's approval.
5. Lateral systems shall be designed for the 10-year rainfall using the Rational Method. State Aid roadway storm sewer shall be designed per the State Aid requirements.
6. The minimum full flow velocity within the storm sewer should be 3 feet per second (fps). The maximum velocity shall be 10 fps, except when entering a pond, where the maximum velocity shall be limited to 6fps.
7. Trunk storm sewer should be designed at a minimum to carry 100-year pond discharge in addition to the 10-year design flow for directly tributary areas. The following table shall be used for the calculation of peak rates using the Rational Method:

## Stormwater Plan Standards

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Cover Type	10-Year Runoff Coefficient
Single-family Residential	0.4
Multi-family Residential	0.5
Commercial	0.7
Industrial	0.7
Parks, Open Space	0.2
Ponds, Wetlands	1.0

8. For storms greater than the 10-year event, and in the case of plugged inlets, transient street ponding may occur. For safety reasons, the maximum depth in streets should not exceed 1.5 feet at the deepest point.
9. To promote efficient hydraulics within manholes, manhole benching shall be provided to 1/2 diameter of the largest pipe entering or leaving the manhole.
10. The maximum design flow at a catch basin for the 10-year storm event shall be 3 cubic feet per second (cfs), unless high capacity grates are provided. Catch basins at low points will be evaluated for higher flow with the approval of the City Engineer.
11. All structures located in the street are to be a minimum of four feet deep (rim to invert) and a minimum of three feet deep elsewhere. Two-by-three catch basins are to be four feet deep.

### 9.2 Outlet and Inlet Pipes

1. Inlet pipes of stormwater ponds shall be extended to the pond normal water level whenever possible.
2. Outfalls with velocities greater than 4 fps into channels, where the angle of the outfall to the channel flow direction is greater than 30-degrees, requires energy dissipation or stilling basins.
3. Outfalls with velocities of less than 4 fps, that project flows downstream into a channel in a direction 30-degrees or less from the channel flow direction, generally do not require energy dissipaters or stilling basins, but will require riprap protection or approved alternates.
4. In the case of discharge to channels, riprap or approved alternates shall be provided on all outlets to an adequate depth below the channel grade and to a height above the outfall or channel bottom. Riprap shall be placed over a suitably graded filter material and filter fabric to ensure that soil particles do not migrate though the riprap and reduce its stability. Riprap shall be placed to a thickness at least 2.5 times the mean rock diameter to ensure that it will not be undermined or rendered ineffective by displacement. If riprap is used as protection for overland drainage routes, grouting may be recommended.

## Stormwater Plan Standards

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5. Discharge velocity into a pond at the outlet elevation shall be 6 fps or less. Riprap or approved alternate protection is required at all inlet pipes into ponds from the NWL to the pond bottom.
6. Where outlet velocities to ponds exceed 6 fps, the design should be based on the unique site conditions present. Submergence of the outlet or installation of a stilling basin approved by the City is required when excessive outlet velocities are experienced.
7. Submerged outlet pipes from ponds are not allowed.

### **9.3 Channels, Swales, and Overland Drainage**

1. Overland drainage routes where velocities exceed 4 fps should be reviewed by the City Engineer and approved only when suitable stabilization measures are proposed.
2. Open channels and swales are recommended where flows and small grade differences prohibit the economical construction of an underground conduit. Open channels and swales can provide infiltration and filtration benefits not provided by pipe.
3. The minimum grade in all unpaved areas shall be 2%.
4. Maximum length for drainage swales shall be 400 feet.
5. Channel side slopes should be a maximum of 4:1 (horizontal to vertical) with gentler slopes being desirable.
6. Riprap or an approved alternate shall be provided at all points of juncture, particularly between two open channels and where storm sewer pipes discharge into a channel.
7. Open channels should be designed to handle the expected velocity from a 10-year design storm without erosion. Riprap or an approved alternate may need to be provided.
8. Periodic cleaning of an open channel is required to ensure that the design capacity is maintained. Therefore, all channels shall be designed to allow easy access for equipment.

### **9.4 Ponds**

1. Maximum allowable pond slopes above the outlet elevation are 4:1.
2. All constructed ponds and wetland mitigation areas shall have an aquatic or safety bench around their entire perimeter. The aquatic bench is defined as follows:
  - a. Cross-slope no steeper than 10:1.
  - b. Minimum width 10 feet.
  - c. Located from pond outlet elevation to one foot above pond outlet elevation.

## Stormwater Plan Standards

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3. All constructed ponds shall be provided a maintenance access from an adjacent roadway. The maintenance access shall be provided in the form of an easement no narrower than 20 feet. The maintenance access shall have a longitudinal slope no steeper than 6:1 and minimal cross slope. Maintenance access routes, due to their extra width, also serve well as emergency overflow (EOF) routes.
4. All constructed ponds and wetland mitigation areas shall have a maintenance access bench around sufficient perimeter to provide access to all inlets and outlets. The maintenance bench shall be located within a designated outlot or within a permanent easement. The maintenance bench shall extend from the outlet elevation to one foot above the outlet elevation and its cross slope shall be no steeper than 10:1. The maintenance bench shall connect to the maintenance access.
5. Maximum pond wet volume depth is 10 feet.
6. Mean depth for wet ponds shall be a minimum of 4 feet. If the pond is smaller than 3 acre-feet in volume, mean depths of 3 to 4 feet may be used. Mean depth is defined as the area at outlet elevation divided by the wet volume.
7. All ponds shall be graded to one foot below design bottom elevation. This “hold down” allows sediment storage until site restoration is complete.
8. The top berm elevation of ponds shall be a minimum of one foot above the 100-year pond HWL.
9. Grading shall not block or raise emergency overflows from adjoining properties unless some provision has been made for the runoff that may be blocked behind such an embankment.
10. All ponds shall have a protected EOF that is a minimum of 2 feet below the lowest building opening or lowest grade adjacent to a building.

### 9.5 **Infiltration/Filtration Practices**

1. Sizing of filtration/infiltration practices, or STPs, shall be in conformance with the volume control requirements of this manual and the *Minnesota Stormwater Manual*.
2. When designing an infiltration practice for volume control and water quality management, on-site testing and detailed analysis are strongly encouraged in order to determine the infiltration rates of the proposed infiltration facility. Documented site-specific infiltration or hydraulic conductivity measurements (double-ring infiltrometer) completed by a licensed soil scientist or engineer is required. In the absence of a detailed analysis, the saturated infiltration rates listed in the Infiltration Rates for Infiltration STPs table found on the *Minnesota Stormwater Manual* shall be used. A piezometer shall be installed in order to

## Stormwater Plan Standards

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ascertain the level of the local groundwater table and demonstrate at least three feet of separation between the bottom of the proposed facility and the groundwater. The soil boring is required to go to a depth of at least five feet below the proposed bottom of the STP. The soils shall be classified using the Unified Soil Classification system. The least permeable soil horizon will dictate the infiltration rate. Infiltration practices shall be designed to infiltrate the required runoff volume within 48 hours.

3. Pretreatment, in the form of ponds, forebays, filter strips, or other approved methods, shall be provided for all infiltration areas. Pretreatment upstream of volume management practices is a key element in the long-term viability of infiltration areas. The level of pretreatment varies largely depending on the STP and drainage area BCWMC, City staff, and *Minnesota Stormwater Manual* recommendations shall be utilized for determining the appropriate level of pretreatment on a case-by-case basis.
4. The infiltration practice shall not be used within fifty feet of a municipal, community or private well, unless specifically allowed by an approved wellhead protection plan.
5. The infiltration practice shall not be used for runoff from fueling and vehicle maintenance areas and industrial areas with exposed materials posing contamination risk, unless the infiltration practice is designed to allow for spill containment.
6. The infiltration practice shall not be used in Hydrologic Soil Group (HSG) C & D soils without soil corrections.
7. Vegetation of infiltration/filtration practices shall be as shown in the City of Golden Valley Standard Details. A plan for management for vegetation shall be included in the Stormwater Pollution Prevention Plan.
8. If soils are unsuitable for infiltration, then filtration may be used with drain tile, provided in accordance with the City of Golden Valley Standard Details.
9. Subgrade soils for infiltration/filtration practices shall be as presented in the City of Golden Valley Standard Details. Assume a 40% void ratio for clean washed rock and 20% for construction sand for the purposes of volume calculations.
10. Rock storage beds shall be constructed using crushed angular granite that has been thoroughly washed to remove all fine particles that could result in clogging of the system.
11. For infiltration benches adjacent to ponds, benches shall have slopes no steeper than 5:1 over the proposed infiltration zone. A slope of 10:1 is preferred. The *Minnesota Stormwater Manual* cites concerns with locating infiltration features immediately adjacent to ponds. To address this, benches shall be located to

## Stormwater Plan Standards

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maintain hydraulic separation from the saturated zone of the pond in order to minimize the loss of infiltration potential over time.

### **9.6 Emergency Overflow Paths**

1. Emergency Overflows (EOFs) shall be sized with a minimum bottom width of five feet and 4:1 side slopes.
2. The maximum flow depth in EOFs shall be less than equal to one foot as calculated for a 100-year back-to-back storm event.

## **10. DESIGN EXAMPLES**

The design process for each of the acceptable Stormwater Treatment Facility is detailed in the *Minnesota Stormwater Manual*, [http://stormwater.pca.state.mn.us/index.php/Main\\_Page](http://stormwater.pca.state.mn.us/index.php/Main_Page).

## **11. STORMWATER MANAGEMENT FACILITY DETAIL DRAWINGS**

Please refer to the *Minnesota Stormwater Manual* for the following list of potential practices:

- Bioretention
- Media Filter System
- Vegetative Filter System
- Infiltration Systems
- Stormwater Pond/Wetland
- Prereatment Options

## **12. CONSTRUCTION SPECIFICATIONS**

Construction specifications and details are found in the *Minnesota Stormwater Manual* for each of the acceptable SMFs, unless otherwise restricted by this manual.

## **13. CHECKLIST**

- Checklists for Construction Inspection and Operation & Maintenance (Appendix A)
- Construction Inspection and Operation & Maintenance Checklists for each of the approved Stormwater Treatment Practices are available in the *Minnesota Stormwater Manual* and may be provided by the City of Golden Valley.

## Stormwater Plan Standards

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### APPENDIX A

## Stormwater Plan Standards

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### APPENDIX B

## Stormwater Plan Standards

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### APPENDIX C

## Stormwater Plan Standards

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### APPENDIX D

## Stormwater Plan Submittal Checklist

Applicants for all projects requiring the development of a Golden Valley stormwater management plan must complete this checklist. Please provide a comment for any item checked with a no.

Site name		Date submitted				
Address		PID				
Site size (acres)	Area of disturbance (acres)	Existing impervious (acres)	Proposed impervious (acres)			
Permits				Yes	No	N/A
1. Has an NPDES Construction General Permit been obtained?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are wetlands shown on plans, and has wetland permitting been completed?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is any work being proposed within a DNR Public Water? If yes, have all applicable permits been obtained?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are any other permits necessary and have they been obtained?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments						
Tree Preservation				Yes	No	N/A
1. Are the following standards shown for when a Tree Preservation Permit is required? (See Tree Preservation ordinance for more requirements and information.)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are all significant tree removals on site identified, tallied, and located, with the tally shown graphically on plan?				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are all locations of tree preservation fencing required by ordinance specifications shown? (Heavy-duty silt fence can also be used for tree protection.)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments						

Plan Details			Yes	No	N/A
1. Are the north arrow, street names, and lot and block numbers for property or subdivision included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is the location of benchmark, based on the City/County benchmark system, included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Is there a key with all line types, symbols, shading, and cross-hatching denoted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is there an illustration key showing symbols for all information pertaining to lot and building design (including grades, easements, lot and block, setbacks, etc)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Is the plan scale (shown graphically on a bar scale) in the proper format (1 inch = 20 ft, 30 ft, 40 ft, or 50 ft)? Plans in other scales will not be reviewed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Is the total area of subject property shown, with subtotals of disturbed and undisturbed areas (tabulation permitted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Are the subject property's boundary lines, lot lines, and right-of-way lines shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Are all existing and proposed drainage and utility easements shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Are all man-made features, including existing and proposed buildings, structures, and paved areas shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Are all existing storm sewer facilities within 150 ft of the subject parcel shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. Are all proposed storm sewer facilities (including grades and size of structures) shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12. Are all existing and proposed natural features shown, including, but not limited to, significant trees and tree lines, wetlands, ponds, lakes, streams, drainage channels, and floodplain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
13. Are all setbacks and buffers for wetlands, ponds, lakes, streams, and floodplains shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
14. Are all adjacent plats, parcels, rights-of-way, and section lines extended a minimum of 150 ft (50 ft for single family home construction) beyond the subject parcel in all directions shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Topography			Yes	No	N/A
1. Are the topography details in a minimum of two-foot contour intervals with existing contours as dashed lines and proposed contours as dark, solid lines, labeled at each edge of the plan and at other appropriate locations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is the standard lot benching detail shown where appropriate (maximum slopes: 3:1)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Are the direction arrows indicating swales and lot drainage patterns (with percent grades along drainage swales) shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

Elevation Information			Yes	No	N/A
1. Are the proposed top of curb elevations at lot corners and driveway or entrances shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are the finished spot elevations at all high and low points shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Are the proposed elevations at garage and lowest floor for proposed buildings shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Are the proposed finished ground elevations around home for final grading shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Temporary Erosion Control Best Management Practices (BMPs)			Yes	No	N/A
1. Does the plan show the location of erosion control measures (with standard detail plates and maintenance information for each)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are temporary rock entrances/exits for all vehicle access points shown (provide detail)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Is the perimeter silt fence shown? Silt fence and/or rock checks should also be placed along swales or slopes greater than 50 feet in length (flare ends of silt fence up slope).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is the type of each storm sewer inlet protection and location graphically shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Are temporary sediment basins shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6. Does the plan provide temporary measures to stabilize the soils no later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased, and no later than seven days after construction activity in that portion of the site has temporarily or permanently ceased when discharge points on the project are within one mile of a special or impaired water and flows to that special or impaired water? Options for temporary or permanent stabilization may include erosion control mat, fiber blankets, netting, temporary seed, or temporary mulch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7. Are soil stockpile areas (indicating temporary stabilization measures) shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. Is street sweeping required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Does the plan include a note indicating that all adjacent streets will be swept daily, or as directed by the City, to remove all accumulated materials? Failure to perform any street sweeping within 24 hours of notice by the City will result in the work being performed by the City and all associated costs billed. The City also requires removal of accumulated materials on streets during winter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Does the SWPPP include an erosion and sediment control inspection schedule along with a person responsible for conducting inspections and ensuring maintenance is being performed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

Final Stabilization			Yes	No	N/A
1. For new resident construction, is required vegetated stabilization present from the front curb line to the back of the structure for the entire width of the lot? Show seeding and/or turf establishment locations and specifications, including type of seeding (permanent, temporary, dormant); seed type and application rate; fertilizer type and application rate; mulch type, application rate, and method of anchoring; specifications for installation and maintenance of erosion control mats, blankets, or netting; note requiring seeding/restoration to be completed within 48 hours of final grading; location of all areas to be vegetated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. It is a requirement of all new residential construction to connect the residences sump pump to the drain tile stub in front of the house if available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Wetland Impacts			Yes	No	N/A
1. Is there a delineation of wetlands prepared by an approved wetland specialist and field-verified/approved by the administrator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Are there two copies of the WCA applications, sequencing, wetland delineation, and impact/mitigation reports?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Floodplain Impacts			Yes	No	N/A
<b>Note: Building or filling in the floodplain is generally not allowed.</b>					
1. Are flood elevations and locations shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Is there a cut/fill diagram and earthwork computations for work in floodplain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Is there an illustration showing that the lowest floor is a minimum of two feet above floodplain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					

Stormwater Management Plan			
	Yes	No	
	N/A		
1. Has a subwatershed delineation map been provided for the existing and proposed conditions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have modeling calculations been provided comparing the existing and proposed runoff conditions for the 2-year, 10-year, and 100-year 24-hour storm event using Atlas 14?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has the directly connected impervious been modeled separately (Composite CN Approach)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Has off-site drainage been included and accounted for with modeling calculations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are skimmer structures being proposed on the outlets of all ponds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has a maintenance plan been provided to satisfy the requirements of the City of Golden Valley's maintenance agreement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

Volume Control			
	Yes	No	
	N/A		
1. Does the plan provide volume control (1.1" of retention from new impervious surfaces)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. What is the required volume?			
3. What is the proposed volume?			
4. Soil Borings Do the design infiltration rates match the soil conditions? Is there at least 3 feet of separation to seasonally high groundwater or bedrock? Will the proposed system draw down within 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Has pretreatment been provided for prior to the discharge to all proposed infiltration/filtration features?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

Water Quality			Yes	No	N/A
1. Is volume control provided?  If yes, then are water quality requirements satisfied?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. If volume control is not provided, does the plan provide for water quality in accordance with Option 1, 2, or 3 as specified in the City of Golden Valley's Stormwater Plan Standards.  If yes, which option?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Was the MIDs Design Flow Chart used to determine what option would be used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Is an appropriate water quality model provided to demonstrate compliance (P8, PondNet, WinSLAMM, etc)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Stormwater Treatment			Yes	No	N/A
1. Has the BCWMC reviewed new development and redevelopment to evaluate compliance with the MPCA's MIDs performance goals (which are adopted by the Commission as water quality management standards), including the MIDs' flexible treatment options for when volume control is unattainable as defined in the MIDs design flow chart?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Has the BCWMC reviewed projects that are proposing to impact creeks or lakes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					
Maintenance Plan			Yes	No	N/A
1. Is there a maintenance plan that shows how access to the site will be provided, identifies who will be performing maintenance, and describes the type and interval of maintenance to be conducted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Have easements been obtained that will allow access for the responsible party and City of Golden Valley staff to inspect and maintain the facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Has a maintenance agreement been provided that can be executed by the City of Golden Valley and the applicant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comments					



# City of Golden Valley

## Standard Operating Procedures for

### Facility Inspection

#### **Purpose:**

The purpose of this SOP is to prolong the functional life of city owned facilities within Golden Valley. Performing maintenance to city owned facilities is critical for the long-term operation of the MS4 system and to minimize the discharge of pollutants into the MS4 system. Equipment will also have prolonged life when properly maintained.

#### **Description:**

City owned facilities are those facilities that contribute pollutants to stormwater discharges. Facility operators are required to use the facility inspection checklist to evaluate whether the activities and the best management practices are functioning in accordance with the MS4 permit. The following City of Golden Valley municipal facilities that need to be inspected quarterly are as follows:

- City Campus
- 10<sup>th</sup> Avenue
- Brookview Hill
- Golf Maintenance



#### **Primary Operational Procedures:**

##### **Maintenance:**

There are several maintenance activities that may be associated with facility inspections. The appropriate activity will be chosen to correspond to the reported condition and based on the BMPs identified on the facility maps. The following activities are addressed:

1. Good Housekeeping
2. General Practices
3. Landscape Maintenance
4. Building Maintenance
5. Material Storage
6. Secondary Containment
7. Equipment Storage
8. Vehicle and Equipment Fueling
9. Vehicle and Equipment Maintenance
10. Loading Docks
11. Waste Management
12. Hazardous Waste Management
13. Spill Cleanup and Prevention

# Managing Stormwater Sediment Best Management Practice Guidance for Municipalities



Minnesota Pollution Control Agency

June 2012

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# Stormwater Sediment Best Management Practices

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These stormwater sediment best management practices (BMPs) provide guidance for the removal of sediment from stormwater collection and conveyance systems. This guidance document will help you think through important steps associated with sediment removal projects. These may include:

- Who is responsible for managing stormwater sediment
- Land use within a drainage area
- Sampling sediment and what laboratory analysis is required
- How to calculate benzo[a]pyrene (B[a]P) equivalents for carcinogenic polycyclic aromatic hydrocarbons (cPAHs)
- Management requirements for contaminated sediment
- Where contaminated stormwater sediments are accepted for disposal
- Who to contact if you have questions

This document is intended to help those responsible for operation and maintenance of stormwater systems determine when sediment removal is needed, and what steps to consider during the course of managing a sediment removal project. This is guidance. It is not a comprehensive list of everything you may need to do when managing a sediment removal project. Other considerations may also include:

- Geographic or environmental sensitivities
- Landscape variations, and soil types
- Management of native or invasive species
- A wide range of variables that may be encountered from one municipality to the next, or one project to the next

This guidance was developed to give local units of government, and others responsible for managing stormwater collection and conveyance systems, a big picture understanding about how to manage sediment removal projects and what you may need to consider before, during, and after a project.

This guidance was developed with special assistance from the cities of Burnsville, Circle Pines, Maplewood, Roseville, St. Paul, White Bear Lake, and Woodbury, Minnesota.

## Background

Action was taken during the 2009 Minnesota legislative session which included funding to conduct research on stormwater pond sediment contamination and to help Minnesota cities clean-out stormwater contaminated ponds. (*House File Number 1231 Passed by the Minnesota Legislature on May 18, 2009 and Approved by Governor Tim Pawlenty on May 22, 2009.*)

Research concluded that polycyclic hydrocarbons (PAHs) are often responsible for the greatest contamination problems in stormwater pond sediment. PAHs persist in the environment and pose a risk to animals, plants, and people at elevated concentrations. These contaminants are formed by the incomplete combustion of organic materials, such as wood, oil, and coal, as well as occurring naturally in crude oil and coal (Crane et al. 2010). Coal tar-based sealants are a major source of PAHs in urban sediments (Mahler et al. 2012). The Minnesota Pollution Control Agency's (MPCA) research determined that coal tar-based sealants were the most important source of PAHs (58.2 percent), followed by oil-based PAHs (15.0 percent) and vehicle emission sources (14.7 percent).

The legislation also provided funding for municipalities who agree to pass ordinances banning or restricting the use of coal tar-based sealants; as of June 2012, 20 municipalities have passed such ordinances (<http://www.pca.state.mn.us/index.php/view-document.html?gid=16180>).

The 2009 legislation also directed the MPCA to develop BMPs to avoid or mitigate impacts of PAH contamination from coal tar-based sealants. The MPCA provides guidance for the operation and maintenance of stormwater conveyance and collection systems. Stormwater collection and conveyance systems are commonly referred to as stormwater ponds, stormwater control devices, wet detention basins, or National Urban Runoff Program (NURP) ponds.

This document provides guidance for sediment removal projects from stormwater ponds of any sort. Sediment may also be generated in other stormwater devices such as sumps, traps, pipes, or other conveyance structures. This guidance may be adapted for other situations to determine representative concentrations of contaminants of potential concern. The analytical component outlined in Appendix A may be applied to other sediment sampling situations, but the MPCA does not have specific sampling guidance at this time for those situations and it is not necessary to follow this guidance for other types of sediment removal projects. The sampling guidance provided in Appendix A is strictly for sampling sediment from stormwater ponds.

These BMPs will continue to be updated to include new information and data about stormwater sediment and will be incorporated as a chapter in the MPCA Stormwater Manual once updates to the manual are completed. The MPCA Stormwater Manual can be found on the MPCA website at:

<http://www.pca.state.mn.us/index.php/view-document.html?gid=8937>.

## Sediment removal cost

The high cost to manage contaminated stormwater sediment has brought operation and maintenance of stormwater ponds into the public spotlight. Unregulated sediment can be managed locally and without disposal restrictions that make them far less costly to manage. Disposal costs for a stormwater sediment removal project can be as much as three times more expensive depending on the type and level of contamination in the sediment. This emphasizes the value and importance of source control to reduce the loading of contamination into stormwater ponds.

Stormwater collection systems concentrate pollutants by design. These systems include:

- Wetlands converted for the specific purpose of conveying, treating, or otherwise managing stormwater
- Ponds, or small lakes which have been designated for the specific purpose of conveying, treating, or otherwise managing stormwater
- Structures engineered, built, constructed, and/or man-made devices for the specific purpose of conveying, treating, or otherwise managing stormwater.

Stormwater collection systems are intended to help protect infrastructure from flooding and to collect and concentrate pollutants to prevent them from reaching lakes, rivers, streams, wetlands, and other waters of the state where they could have a negative effect on water quality, aquatic animals, or human health. Managing contamination and pollutants in the sediment of stormwater collection systems should be expected. "Sampling is conducted to guide proper management of contaminated sediment".

# Stormwater sediment removal process

1. Inventory and maintenance needs
2. Evaluating and testing sediment
3. Engineering, contracting, and work plans
4. Excavating sediment
5. Site restoration
6. Records and documentation to keep on file.

## 1. Inventory and maintenance needs

Assessing need and planning sediment removal projects includes a number of steps that range from estimating lost capacity to notifying neighbors about plans to maintain the stormwater collection system. For municipalities who are managing dozens, or sometimes hundreds of stormwater ponds, starting with an inventory and a maintenance prioritization process is recommended.

Some municipalities find it helpful to develop a flowchart or other prioritization scheme to triage and track priority sediment removal projects. Topics of importance may include:

- Priorities identified by city inspections – sediment level, lost capacity, other needs.
- Natural wetland verses constructed ponds. Constructed ponds come first.
- Accessibility. Does the city already have access via parkland, easement, or outlot?
- What are the sediment analysis results? Can the city afford to remove and manage the sediment?
- Is the downstream lake or sub-watershed a priority?
- What is the expected cost/benefit from the project?
- Can a stormwater pond be expanded to provide greater benefit?
- Is surveying needed to assess lost capacity and depth of excavation?
- How will you measure or estimate the volume of cubic yards of sediment to be removed?
- Have sediment deltas and inlet/outlet structures been identified/located?
- Where are your access points for machinery?
- Are communications with other stakeholders important/public relations?
- Are visual inspections, notes, checklists, or photos to track maintenance projects needed?

The first phase of work identifies need and determines if a sediment removal project is even necessary. This may include a preliminary survey to gage sediment depth and provide a rough estimate of the number of cubic yards of sediment to be removed. This assessment and planning will help guide work plan development and contracting if a sediment removal project is deemed necessary.

## 2. Evaluating and testing sediment

Collecting sediment samples and testing sediment helps characterize what contaminants are present. This step helps identify contaminants of potential concern and what management options are available. Sampling results limit where sediment can go and this affects work plan development including contract specifications for bidding projects. This is a very important part of the management process. This guidance is summarized in the following appendices:

- Guidance for *collecting samples and testing sediment* are outlined in Appendix A.
- Guidance for calculating *B[a]P equivalents and comparing chemical concentrations to Soil Reference Values* are summarized in Appendix B.

Knowledge about land use categories in the watershed will help with subsequent steps in this process. In urban areas, the following land uses are of greatest interest for stormwater collection systems:

- Residential
- Commercial
- Industrial

**Residential land uses** range from low density (houses are on lots of more than an acre) to high density (multiple-unit structures such as apartments and condominiums). Residential areas generally have a uniform size and spacing of structures, linear driveways, and lawn areas. Most churches and small schools are included in this category, too (Anderson et al. 2001).

**Commercial land uses** include areas where products are sold and services are provided. These land uses include urban central business districts, shopping centers, commercial strip developments, junkyards, and resorts. Institutional land uses such as larger educational, religious, health, correctional, and military facilities are included in this category, too. Office buildings, warehouses, driveways, sheds, parking lots, landscaped areas, and waste disposal areas supporting the basic uses are included in commercial land uses (Anderson et al. 2001).

**Industrial land uses** range from light manufacturing to heavy manufacturing plants. Light industries design, assemble, finish, process, and package products, while heavy industries use raw materials such as iron ore, timber, or coal (e.g., steel mills, pulp and lumber mills, electric power generating stations, oil refineries and tank farms, contaminant plants, and brick making plants). Industrial land uses may include buildings, parking lots, loading docks, access roads, processing facilities, stockpiles, storage sheds, and numerous vehicles (Anderson et al. 2001).

It is the responsibility of the owner or responsible party to evaluate the drainage area of each stormwater collection system to determine whether spills, improper disposal, or the potential for a release from commercial or industrial operations indicate that sampling for other contaminants are needed. For example, if sediment is being removed from a pond in an industrial park and there has been a release of contaminants known to accumulate in sediments (like nickel and silver from a metal plating facility), then the owner or responsible party should include those contaminants on the list for sampling.

Laboratory analysis is required to determine management or treatment options. Guidance for collecting samples and testing sediment are described in Appendix A.

Management options include:

1. **Unregulated fill.** Laboratory analysis determines that contaminants of potential concern are below levels that require special management. Excavated sediment can be managed in accordance with the MPCA's BMP for the Off-Site Use of Unregulated Fill.  
<http://www.pca.state.mn.us/index.php/view-document.html?gid=13503>.
2. **Regulated solid waste.** Laboratory analysis determines that contaminants of potential concern in the stormwater sediment require special management and cannot be used as clean fill.

Contaminated sediment is currently guided to a landfill if it cannot be used as a clean fill. Depending on the types and concentrations of contaminants; sediment may need to be disposed of at a Municipal Solid Waste (MSW) landfill that has an industrial solid waste management plan. This means contaminated sediment must go to a MSW landfill that has a liner and a leachate collection system.

MSW landfills in Minnesota that can accept these types of waste can be found on this webpage: <http://www.pca.state.mn.us/veiz806> or, the list can be accessed directly at this link: <http://www.pca.state.mn.us/index.php/view-document.html?gid=12806>.

Some additional landfills that are permitted to accept industrial waste, and which may also accept contaminated stormwater sediments, include:

1. Voyageur Industrial Landfill in Cannon Falls, Minnesota
2. Vonco II Landfill in Becker, Minnesota
3. Vonco V Landfill in Duluth, Minnesota
4. Shamrock Environmental Landfill in Cloquet, Minnesota
5. Dem-Con Landfill in Shakopee, Minnesota
6. Veolia E S Rolling Hills Landfill in Buffalo, Minnesota
7. SKB Rosemount Industrial Waste Facility in Rosemount, Minnesota

It is recommended that you contact the facility to ensure they will be able to accept your waste and to determine what sampling requirements are required by the facility.

### **3. Engineering, contracting, and work plans**

Work plan development includes a wide range of logistics including, but not limited to:

- Notification of residents and neighbors.
- How to access the site and what machinery will be needed to remove sediment.
- Define how sediment will be removed, measured, and paid for.
- Testing or analysis requirements for the destination disposal or treatment facility.
- Plans for erosion control.
- Tree removal, environmental impact, depth to ground water, and risks associated with the displacement of wildlife or invasive species.
- Lack of design and/or construction documentation (no “as-built” records).
- Estimating water draw-down needs and the amount of time and oversight needed to drain the stormwater collection system.
- What permits (if any) may be required by your local watershed district, county, or the Department of Natural Resources. The MPCA does not require a permit or notification for routine maintenance of stormwater ponds, but cities are advised to keep records and documentation of their sediment removal projects as outlined in this guidance.
- Defining appropriate BMPs for dewatering (e.g., rock riprap, sand bags, plastic sheeting, or other accepted energy dissipation measures), such that the discharge does not adversely affect the receiving water or downstream landowners.
- Ensuring that water from pumping or draw-down activities is discharged in a manner that does not cause nuisance conditions, erosion in receiving channels, or erosion on down-slope properties. This also includes inundation of wetlands causing significant and/or adverse impact. The general rule of thumb is “keep it clear”.
- How sediment will be transported and a process to track the volume of sediment removed.
- Defining logistics, administrative, and engineering requirements, surveys, dewatering processes, site access and easements, rock entrance and off-site tracking needs, coordination with adjacent cities, and/or watershed districts and the Minnesota Department of Transportation.

#### 4. Excavating sediment

Sediment excavation projects are recommended to take place during the winter. Benefits include:

- Winter excavations greatly reduce the risk that rain may cause flooding and erosion of dewatered ponds, or turbid runoff conditions.
- Access with trucks and heavy machinery is easier in the winter when soil surrounding stormwater ponds freezes solid.
- Adjacent residents and neighbors have windows closed and this means less noise, less dust, less odor, and fewer disturbances overall.
- Water can be pumped down so remaining water can freeze solid. Pumping should be discontinued before the bottom of the pond is disturbed and sediment is stirred up making the water turbid. Remaining water should be allowed to freeze solid trapping any suspended sediment in ice. The ice can then be skimmed off with a bulldozer so it can be piled within the pond. This keeps turbid water in the basin after snow and ice melt during spring thaw.

Winter excavation projects also have a few drawbacks. They include:

- Shorter working days
- Problems associated with working in freezing conditions and sub-zero weather
- The use of lights after dark to extend the work day

Sediment removal can begin once snow and ice have been skimmed off and piled within the pond.

A more precise survey is usually conducted at this time to better estimate the amount of sediment to be removed and to identify the depths of excavation to achieve a final grade that restores desired capacity.

If the removal volume is not defined by survey, then establishing a standard volume per truck and counting the number of trucks leaving the site can be used to track the volume in cubic yards.

Once sediment is removed, final grading should achieve a natural (gradual) slope for all banks. Ice and snow that has been stockpiled in the pond should be evenly distributed throughout the basin once sediment has been removed. This will allow water and remaining sediment to be retained in the pond. Temporary stabilization of slopes and banks should ensure control of erosion and prevent site run-off during spring snowmelt and the first rain events of the season. Clean-up and removal of temporary infrastructure should be done working your way out of the site. Once you remove equipment and temporary infrastructure (such as transport roads and rock entrances), it will be cost prohibitive and essentially impossible to make additional corrections.

#### 5. Site restoration

Site restoration work should be conducted as soon as weather conditions permit and may include:

- Additional clean-up or maintenance of inlet and outlet structures
- Additional site stabilization work including sediment and erosion control
- Establishing plants, seed, sod, mulch, or vegetation to prevent erosion (above water line)
- Professional engineer sign-off on project completion.

## 6. Records and documentation to keep on file

It is important to keep good records about the operation and maintenance of stormwater collection systems. Good records will not only assist with an accurate inventory and triage of stormwater ponds, but they can also provide the basis for sound planning in the future. Important records and documentation for sediment removal projects may include:

- Date of excavation
- Amount removed
- Laboratory results
- Place of disposition
- “As Built” prints or plans if they exist
- Contractor information, shipping papers/manifests/contractual agreements
- Any other observations about the removal that will help the city operate and maintain that site in the future.

For more information on PAH-contaminated stormwater sediment, or information about stormwater best management practices, contact Don Berger at 651-757-2223 or e-mail to: [donald.berger@state.mn.us](mailto:donald.berger@state.mn.us).

## References

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## Appendix A: Sediment Sampling and Analytical Technical Guidance

This technical guidance should be shared with the staff or environmental consultants responsible for sampling sediments and interpreting the analytical results for the owner or responsible party. It is the responsibility of the owner or responsible party to either train their staff or select consultants who can perform these tasks.

### What's New?

- The number of sediment samples to be collected now depends on the surface area of the stormwater pond instead of the volume of material to be excavated from the pond.
- For the analysis of polycyclic aromatic hydrocarbons (PAHs) from sediment samples, analytical laboratories must use clean-up columns (instead of only diluting the sample extract) to remove interferences from the sample extract. This will result in lower reporting limits and better data for making management decisions.
- The MPCA has reduced the number of carcinogenic PAHs (cPAHs) to be measured in sediment samples from 25 to 17 compounds.

### Sediment sampling

The U.S. Environmental Protection Agency's report on "Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual" (USEPA 2001) provides guidance on sediment monitoring plans, collection of whole sediments, field sample processing, transport and storage of sediments, sediment manipulations, and quality assurance/quality control (QA/QC) issues. This report should be used as a resource by owners or responsible parties, and their consultants, for sampling and processing stormwater pond sediments. In particular, this user-friendly document provides pictures of sediment sampling equipment, flowcharts for making decisions, check lists, and boxes of important bulleted items.

### Sediment characterization

Stormwater pond sediments are very complex, and chemical results can vary greatly within a few yards of each sample. This feature makes it more difficult to provide generic guidance for a broad suite of stormwater ponds. The ponds themselves may differ based on whether the pond originated as a natural feature or was constructed for the purpose of stormwater management. These ponds also vary in size and shape, and some ponds may have multiple inlets and outlets. Finally, the type of land uses in the drainage areas of the ponds can influence contaminant concentrations in the pond sediments. Based on the MPCA's 2009 stormwater pond study (Crane in review), coal tar-based sealant sources comprised 58 percent of total PAHs (based on a suite of 34 PAHs) in surface sediments of ponds located primarily in residential, commercial, and industrial land use areas. Watersheds where coal tar-based sealants are used on driveways and parking lots will have higher concentrations of PAHs in nearby stormwater pond sediments than those that use either asphalt-based sealants (which have much lower concentrations of PAHs), no sealant, or use other material such as concrete, permeable pavers, or gravel for driveways and parking lots.

The MPCA is requiring owners or responsible parties to sample sediments prior to dredging to determine concentrations of 17 cPAHs, noncarcinogenic PAHs, arsenic, and copper. Analysis of sediment samples for particle size and total organic carbon (TOC) is optional, but this information may be useful for some beneficial reuse scenarios of the dredged material. If the owner or responsible party is aware of other known or suspected sources of contamination, they should collect sufficient volumes of sediment samples to have other parameters evaluated. The analytical laboratory will provide guidance on how much sediment is needed for each analysis. Since it can sometimes take several months from the time field sampling is conducted to when the analytical results become available for assessing management options, the field sampling needs to be conducted early on in the process after conducting an inventory of stormwater ponds and determining maintenance needs.

If the annual volume of sediment to be removed is less than 100 cubic yards, such as from a sump or forebay area near a pond inlet or outfall, then no chemical testing or other sediment characterization is required. The owner or responsible party is responsible for the due diligence in the reuse and/or disposal of this material. When more than 100 cubic yards of sediment need to be removed, some important general guidance for characterizing sediment is as follows:

- Sampling should be to the planned depth of excavation or greater. The MPCA has provided previous guidance to collect sediment samples in two foot intervals (e.g., 0 – 2 ft, 2 - 4 ft), but it is up to the owner or responsible party to collect sediment samples that will cover the depth to be dredged. If it is easier in the field to collect two foot depth intervals, then by all means continue to do this. The important issue is to send a sediment sample to the analytical laboratory that is representative of the entire depth interval to be excavated. Since collecting sediment from two or more long (2 ft) cores may entail a large mass of sediment, it may be easier to slice the core from top to bottom and only analyze half of the slice; this slice can be combined with a deeper layer slice to provide one composite sample for the analytical laboratory to analyze. It is not acceptable to randomly scoop out bits of sediment from different portions of the sediment core to composite together since doing so may miss out on the historical record of sediments (and contaminants) deposited in different depth intervals.
- Core samplers are more appropriate to use to obtain cohesive sediment samples at depth than grab samplers. Grab samplers can be used to collect surface samples if the sediment samples are too floccy (loose) with vegetative detritus (e.g., parts of cattail stalks/leaves) or are too sandy to be retained in a core sampler.
- Geopositional coordinates need to be collected at the location of each sample site.
- The number of samples to be collected depends on the surface area of the pond. **[Note: this is a change in policy from previous MPCA guidance (Stollenwerk *et al.* 2011) that recommended the number of samples per the estimated volume of dredge material.]** The goal is to collect sediment samples that are representative of the material that will be removed to maintain the functionality of the stormwater pond.
  - Multiple samples need to be collected, particularly since some compounds may be not be detected in all areas of the pond.
  - For stormwater ponds with a surface area less than or equal to one acre, at least two stations need to be sampled for chemical analysis. Sample sites may either be selected randomly or by a transect from the main inlet to the outlet of the pond.
  - For ponds greater than one acre and less than four acres, one sampling station should be located in each acre and portion of an acre of the pond. In some cases, multiple samples may need to be collected at the same station and composited together to provide an adequate mass of sediment for the analytical work. Sample sites may either be selected randomly or in a transect from the main inlet to outlet of the pond.

- For ponds larger than four acres, divide the pond into four sections (quadrants) as shown in Figure A-1. Select at least five sites (i.e., subsamples) within each quadrant using either the dice pattern shown in Figure A-1 or using a random sampling strategy. Sediment from each subsample needs to be homogenized (mixed well) in a pre-cleaned container (large 4 L Pyrex mixing cups work well; larger volumes can use pre-cleaned buckets). An equal aliquot of sediment from each subsample is then composited together to form the sediment sample for that quadrant that is submitted to the analytical laboratory.
- For natural ponds larger than 4 acres that have an irregular shape, such as bays off the main pond, each bay should be sampled if it is targeted for dredging. Depending on the size of the bay, use the aforementioned guidance for developing a sampling plan.
- If more than 10 samples are collected for analysis (possibly from a study of multiple ponds during the same time period), a field replicate sample needs to be collected for every 10 samples (i.e., 10% of samples). A field replicate is collected in close proximity to the other sample and provides a measure of field precision.
- Remove any rocks, pebbles, trash, large invertebrates (like beetles), or large pieces of detritus from each subsample and composite sample.
- Overlying water needs to be decanted from the subsamples and composite sediment sample in the field prior to splitting the sample into the sample jars.
- Sediment samples need to be homogenized (mixed well) before splitting the sample into pre-cleaned jars for the PAH and metals analyses. Most analytical laboratories will provide pre-cleaned jars and sample labels for their clients. It is important with PAHs to use amber, pesticide-grade, pre-cleaned glass jars with Teflon™-lined lids since PAHs may be degraded by sunlight. Use a permanent marker to fill out the sample label; it is helpful to wrap clear packing tape around the label to secure it on the jar since sometimes the labels can come loose while the sample jars are stored on ice during field sampling.
- Store the sediment samples on ice (or ice packs) in a cooler during field sampling. Next, either transfer the samples directly to the analytical laboratory or store them in an interim refrigerator or freezer prior to submitting to the laboratory. If the sediment samples are to be frozen, make sure the sample jars are not filled more than two-thirds full to allow room for expansion while the sediment freezes.

#### *Submit samples to analytical laboratories*

The following steps need to be completed before the sediment samples are ready to submit to the analytical laboratory:

- After the sediment has settled in the sample jars in the refrigerator, additional overlying water should be carefully removed prior to submitting the samples to analytical laboratories. Use of a pre-cleaned, wide-bore pipette to remove overlying water is better than decanting the sample since it will not disturb the sediment as much in the jar. If the laboratory receives sediment samples that have a high water content, then there may not be enough mass of sediment available to do their analyses. If the sediments are "soupy" or have a lot of plant detritus (such as from cattails), then it would be a good idea to submit extra sediment to the laboratory.
- Provide the analytical laboratory with recommendations on which sample(s) would make good candidate Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples for the cPAH analysis. This is important since the laboratory receives a subset of the sample collected and does not have the field sampling observations the field sampling crew had with collecting the larger sample. If guidance is not provided and the laboratory ends up selecting a sediment sample high in PAHs (as occurred with the MPCA's stormwater pond study), the results of the MS/MSD will not be useable and the client will still be charged for this analysis. Good candidate samples would

be expected to have lower concentrations of PAHs so that the spike level will be at least five times greater than the background sample. Avoid designating samples that have strong petroleum odors, have an oil sheen overlying the sediment, or are dark black and oily in appearance since these samples are likely to have high concentrations of PAHs.

- Sample tracking forms or chain-of-custody forms are helpful to use during field sampling to record observations about the sediment samples and to provide field sampling information (e.g., sample station, date, time, sampling equipment, analyses to be done). Most analytical laboratories will provide their clients with a chain-of-custody form; provide a copy to the analytical laboratory when the samples are submitted or shipped to them.

#### How to Select an Analytical Laboratory:

1. If the municipality is a Cooperative Purchasing Venture (CPV) member, they can access the State of Minnesota's Sampling and Laboratory Services contract to obtain State-negotiated contract prices. If needed, assistance in accessing the contract is available from Martina Cameron (MPCA) at: [martina.cameron@state.mn.us](mailto:martina.cameron@state.mn.us) or 651-757-2259. If assistance is needed to find a contract laboratory capable of performing cPAH analyses, then contact Bill Scruton (MPCA) at: [bill.scruton@state.mn.us](mailto:bill.scruton@state.mn.us) or 651-757-2710.
2. If the municipality is not currently a CPV member but would like to become one, sign-up for this program from the Minnesota Department of Administration's website at: <http://www.mmd.admin.state.mn.us/cpvfaqs.htm#M>. There is no charge to sign-up, and it is open to all municipalities.
3. If the municipality wants to find a commercial laboratory for cPAHs without using the State contract, go to the following link for the Minnesota Department of Health's Certification website to find a laboratory certified for this analysis in Minnesota: <https://apps.health.state.mn.us/eldo/public/accreditedlabs/labsearch.seam>. From this website, click on the "customized searches" tab. At the Program drop down arrow, click on "Resource Conservation Recovery Program." Next, click "search" at the bottom of the page. Click "view" on the right-hand side of the page in line with the laboratory contact information to scroll down the list of laboratory capabilities. Look for RCRA method 8270D SIM. The Minnesota Department of Health does not actually certify laboratories for either the cPAH method or the extra PAHs beyond the U.S. Environmental Protection Agency (EPA) list of 16 priority pollutant PAHs. The municipality should ask the laboratory if they do the cPAH list, also known as the Minnesota Extended List of PAHs.

## Analytical considerations

This guidance may be updated in the future as new screening and analytical methods become available.

### *Preparation*

Laboratories that freeze dry the sediment samples prior to extraction and analysis for PAHs and metals, as well as other contaminants of potential concern, reduce or eliminate the problems of wet samples. These laboratories are also able to achieve lower detection limits and more quantitative determinations. Freeze drying of the sample also allows for complete homogenization of the sample matrix, which will result in improved precision. Although not a requirement, better results may be obtained using this preparation method.

## *Analytical methods*

The primary analytical methods are provided below:

- The extended list of PAHs, including 17 cPAHs (Table A-1) and noncarcinogenic PAHs, must be analyzed based on EPA Method 8270 by gas chromatography/mass spectrometry (GC/MS) with selective ion monitoring (SIM) as optional.
  - Since sediments from stormwater ponds usually contain interfering compounds, it is required that the analytical laboratory run the sample extracts through clean-up columns, rather than just diluting the sample extract to reduce interfering compounds. An example clean-up process is to pass the sample extract through an alumina (and/or silica gel) column to isolate the hydrocarbon fraction. A layer of activated copper can be added to the bottom of the column or to the sample extract to remove any sulfur that may have been present in the samples. Note that 14 cPAHs were detected in the MPCA's study of stormwater pond sediments (Crane in review), and either more cPAHs or a greater percentage of cPAHs may have been detected if the local laboratory had used clean-up columns instead of diluting the sample extracts (Table A-2). These results, in addition to other factors described in Table A-2, were used to shorten the list of cPAHs from 25 to 17 compounds.
  - The analytical laboratory must be asked to note J-flagged data that are in-between the method detection limit and the reporting limit.
- Metals should be analyzed by inductively coupled plasma—mass spectrometry (ICP—MS) using reference method SW 6020. Occasionally, confirmation of the metal may be needed using graphite furnace atomic absorption spectrophotometry.
- Percent moisture should be determined using reference method ASTM D2216.
- Total organic carbon (TOC), if needed, can be analyzed using EPA method 9060a.
- Particle size, if needed, can be analyzed multiple ways to determine percent sand, silt, and clay.

## *QA/QC data quality indicators*

The field sampling procedures and analytical methods include several QA/QC measures to ensure useable data are collected and measured. In particular, data quality indicators (DQIs) are qualitative and quantitative descriptors used in interpreting the degree of acceptability or utility of data. The principal DQIs are precision, bias, representativeness, comparability, and completeness; these terms are described further in Attachment 1. Establishing acceptance criteria for the DQIs sets quantitative goals for the quality of data generated in the analytical measurement process.

- For cPAHs and noncarcinogenic PAHs by EPA Method 8270, the DQIs are:
  - Blanks: <5 times the method detection limit (MDL); procedural blanks should be prepared with each analytical batch.
  - Surrogate Recovery: 40-120% the recovery of the surrogate compounds are used to measure data quality in terms of accuracy (extraction efficiency).
  - Laboratory Control Sample (LCS) and Matrix Spike (MS) Recovery: 40-120%; the percent recoveries of target analytes are calculated to measure data quality in terms of accuracy
  - MS/Matrix Spike Duplicate (MSD) Precision: relative percent difference (RPD) <30%; this is used to evaluate the data in terms of precision.
  - Reporting Limit of 10-30 µg/kg dry weight for individual PAH compounds.

- For metals (arsenic and copper):
  - Blanks: <5 times the MDL; procedural blanks should be prepared with each analytical batch.
  - Precision (% RPD): <10%
  - Accuracy: 85 – 115%
  - Reporting Limit: 0.10 mg/kg dry wt.

*Electronic data requirements*

- Electronic copies of the data should be obtained from the analytical laboratory in spreadsheet format (e.g., Microsoft Excel).
- In the future, the MPCA may be interested in obtaining electronic copies of the analytical results for archiving it in the MPCA's database system. At the present time, though, the MPCA's database platform, EQuIS, is not set-up to accommodate sediment chemistry data

## References

Crane, J.L. in review. Source apportionment of PAHs and risk considerations in urban stormwater pond sediments in the Upper Midwest USA. Submitted to a peer-reviewed journal on May 8, 2012.

Stollenwerk, J., J. Smith, B. Ballavance, J. Rantala, D. Thompson, S. McDonald, and E. Schnick. 2011. Managing dredged materials in the State of Minnesota. Minnesota Pollution Control Agency, St. Paul, MN. MPCA document number wq-gen2-01. <http://www.pca.state.mn.us/index.php/view-document.html?gid=12959>.

USEPA. 2001. Methods for collection, storage and manipulation of sediments for chemical and toxicological analyses: Technical manual. U.S. Environmental Protection Agency, Office of Water, Washington, DC. EPA-823-B-01-002 (<http://water.epa.gov/polwaste/sediments/cs/collection.cfm>).

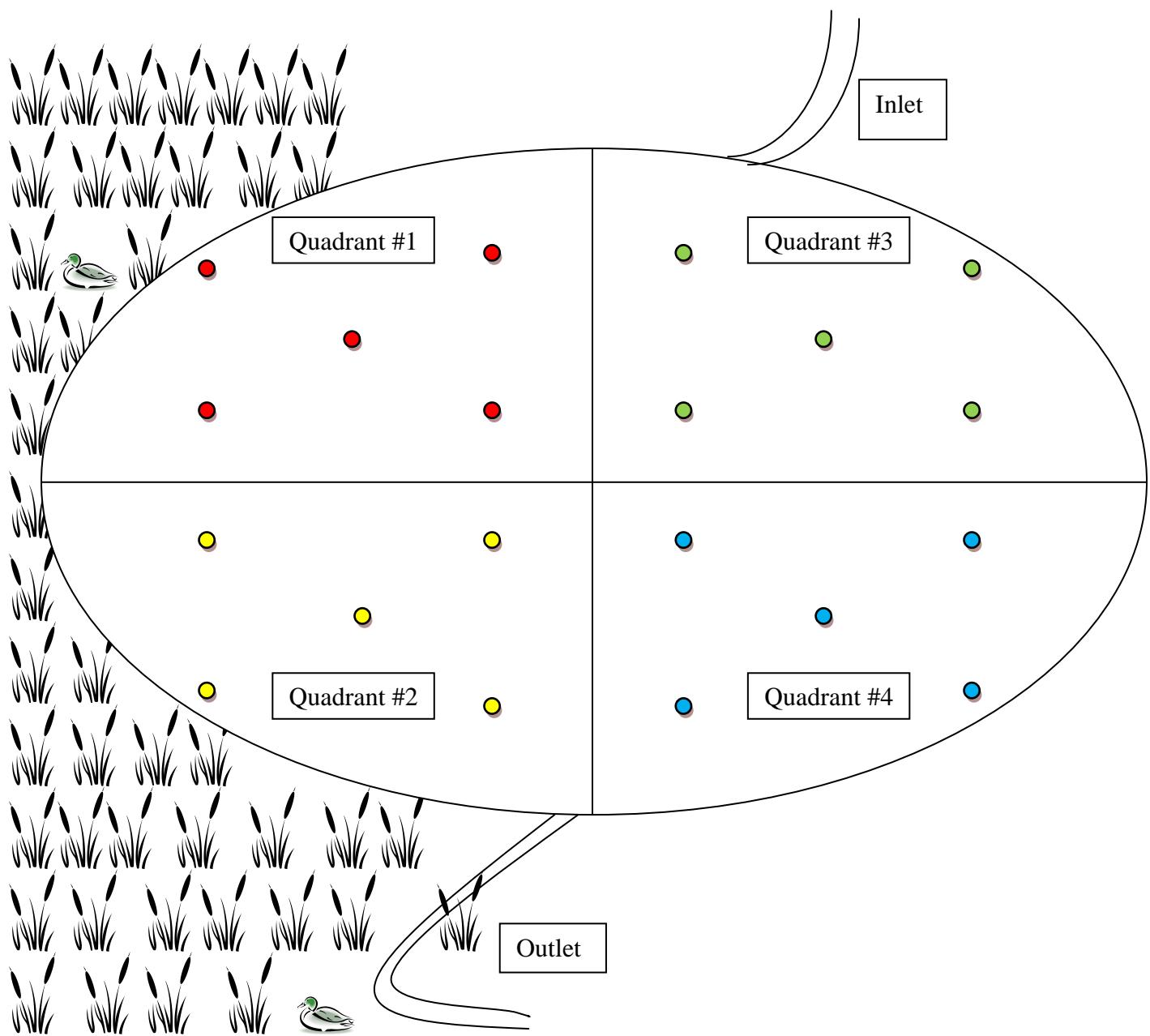


Figure A-1. Sediment sampling scheme for a stormwater pond greater than four acres in size.

Table A-1. List of PAHs to be Analyzed in Stormwater Pond Sediments

PAH Compounds Included in EPA Method 8270	cPAHs	U.S. EPA Group B2 Probable Human Carcinogens
Acenaphthene		
Acenaphthylene		
Anthracene		
Benzo[a]anthracene	X	X
Benzo[a]pyrene	X	X
Benzo[b]fluoranthene	X	
Benzo[j]fluoranthene	X	X
Benzo[e]pyrene		
Benzo[g,h,i]perylene		
Benzo[k]fluoranthene	X	X
Benzofluoranthenes (Total)		
Carbazole		
2-Chloronaphthalene		
Chrysene	X	X
Dibenz[a,h]acridine	X	
Dibenz[a,h]anthracene	X	X
Dibenzo[a,e]pyrene	X	
Dibenzo[a,h]pyrene	X	
Dibenzo[a,i]pyrene	X	
Dibenzo[a,l]pyrene	X	
7H-Dibenzo[c,g]carbazole	X	
Dibenzofuran		
7,12-Dimethylbenz[a]anthracene	X	
Fluoranthene		
Fluorene		
Indeno[1,2,3-cd]pyrene	X	X
3-Methylcholanthrene	X	
5-Methylchrysene	X	
1-Methylnaphthalene		
2-Methylnaphthalene		
Naphthalene		
Perylene		
Phenanthrene		
Pyrene		

Note: A combination of benzo[b]fluoranthene, benzo[j]fluoranthene, and/or benzo[k]fluoranthene frequently coelute together when sediments are analyzed.

Table A-2. Percent of Detected cPAHs in a MPCA Study of Metro Area Stormwater Ponds (Crane in review)\*

Parameter	# of Detects**	% Detected
Chrysene	44	73.3
Benzo[b&j]fluoranthene	42	70.0
Benzo[a]pyrene	41	68.3
Indeno[1,2,3-c,d]pyrene	38	63.3
Benzo[a]anthracene	34	56.7
Benzo[k]fluoranthene	34	56.7
Dibenzo[a,e]pyrene	33	55.0
Dibenzo[a,j]pyrene	32	53.3
Dibenzo[a,h]pyrene	23	38.3
Dibenzo[a,h]anthracene	15	25.0
Dibenz[a,h]acridine	10	16.7
3-Methylcholanthrene	4	6.7
Dibenzo[a,l]pyrene	4	6.7
5-Methylchrysene	1	1.7

\* Sediment samples were analyzed by a local commercial laboratory without using clean-up columns. Instead, the sample extracts were diluted to remove chemical interferences. The reporting limits were elevated as a result of diluting the sample extracts. A higher percentage of detected cPAHs probably would have been achieved if the sample extracts had been run through clean-up columns.

\*\* Results exclude field replicate data; n = 60 samples.

The following cPAHs were not detected in any samples: 1,6-Dinitropyrene, 1,8-Dinitropyrene, 1-Nitropyrene, 2-Nitrofluorene, 4-Nitropyrene, 5-Nitroacenaphthene, 6-Nitrochrysene, 7,12-Dimethylbenz(a)anthracene, 7H-Dibenzo(c,g)carbazole, and Dibenz(a,j)acridine.

Note: the MPCA evaluated this list of 25 cPAHs to determine if some of these cPAHs could be dropped from the analytical list for stormwater pond sediments. As indicated in Appendix B, this list of 25 cPAHs was adopted from an air quality program at California EPA. However, not all of these atmospheric cPAHs in California may be of concern in stormwater pond sediments in Minnesota. The above data set was reviewed, in addition to the percentage of detected cPAHs in other sediment data sets available to the MPCA (including some other metro-area stormwater pond sediments and sites included under the MPCA's Remediation Program). Additional input to the MPCA's evaluation came from recommendations from the Minnesota Department of Health for cPAHs to analyze in stormwater pond sediments, as well as human health-based toxicity data, environmental fate information, the results of the MPCA's environmental forensic work to determine sources of PAHs in metro-area stormwater ponds (Crane in review), and commercial production information. All of this information was used to shorten the list of cPAHs from 25 to 17 compounds (Table A-1). As additional data become available, the MPCA will periodically assess whether further changes are needed to this list.

## Attachment 1. Data quality indicators

This section is based on quality assurance/quality control (QA/QC) guidance provided by the U.S. Environmental Protection Agency (USEPA 2002). Data Quality Indicators (DQIs) are qualitative and quantitative descriptors used in interpreting the degree of acceptability or utility of data. The principal DQIs are precision, bias, representativeness, comparability, and completeness. Establishing acceptance criteria for the DQIs sets quantitative goals for the quality of data generated in the analytical measurement process.

### Precision

Precision is a measure of agreement among replicate measurements of the same property, under prescribed similar conditions. This agreement is calculated as either the range (R) or as the standard deviation (s). It may also be expressed as a percentage of the mean of the measurements, such as relative percent difference (RPD) or relative standard deviation (RSD) (for three or more replicates).

Field precision is assessed through the collection and measurement of field replicates at a rate of one replicate per ten analytical samples. This allows intralaboratory precision information to be obtained on sample acquisition, handling, shipping, storage, preparation, and analysis. Both samples can be carried through the steps in the measurement process together to provide an estimate of short-term precision. An estimate of long-term precision can be obtained by separating the two samples and processing them at different times or by different people and/or analyzed using different instruments.

For duplicate measurements, relative percent difference (RPD) is calculated as follows:

$$RPD = \frac{\lvert D_1 - D_2 \rvert}{(D_1 + D_2)/2} \times 100\%$$

RPD = relative percent difference

$D_1$  = sample value

$D_2$  = duplicate sample value

$\lvert D_1 - D_2 \rvert$  = absolute value of the sample minus the duplicate sample values

For three or more replicates:

$$RSD = (s/x) \times 100$$

RSD = relative standard deviation

s = standard deviation of three or more results

x = mean of three or more results

Standard deviation is defined as follows:

$$s = ((\sum (y_i - \text{mean } y)^2 \times 1/(n-1)))^{0.5}$$

s = standard deviation

$y_i$  = measured value of the  $i$ th replicate

mean  $y$  = mean of replicate measurements

n = number of replicates

### Bias

Bias is the systematic or persistent distortion of a measurement process that causes errors in one direction. Bias assessments for environmental measurements are made using personnel, equipment, and spiking materials or reference materials as independent as possible from those used in the calibration of the measurement system. When possible, bias assessments should be based on analysis of

spiked samples rather than reference materials so that the effect of the matrix on recovery is incorporated into the assessment. A documented spiking protocol and consistency in following that protocol are important to obtaining meaningful data quality estimates. Spikes should be added at different concentration levels to cover the range of expected sample concentrations. The use of spiked surrogate compounds for GC/MS (SIM) procedures for PAH compounds are used to assess for bias.

## Accuracy

Accuracy is a measure of the closeness of an individual measurement of the average of a number of measurements to the true value. Accuracy includes a combination of random error (precision) and systematic error (bias) components that result from sampling and analytical operations.

Accuracy in the field is assessed through the adherence to all sample handling, preservation, and holding times. In order to assure the accuracy of the analytical procedures, an environmental sample will be randomly selected from each sample shipment received at the laboratory, and spiked with a known amount of the analytes to be evaluated. In general, a sample spike will be included in every set of 20 samples tested on each instrument. The spike sample will then be analyzed. The increase in concentration of the analyte observed in the spiked sample, due to the addition of a known quantity of the analyte, compared to the reported value of the same analyte in the unspiked sample determines the percent recovery. The percent recovery for a spiked sample is calculated according to the following formula:

$$\%R = 100\% \times (S-U)/C_{sa}$$

%R = percent recovery

S = measured concentration in spiked sample

U = measured concentration in unspiked sample

C<sub>sa</sub> = actual concentration of spike added

For situations where a standard reference material (SRM) is used in addition to a matrix spike:

$$\%R = 100\% \times C_m/C_{srn}$$

%R = percent recovery

C<sub>m</sub> = measured concentration of SRM

C<sub>srn</sub> = actual concentration of SRM

## Representativeness

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness is a qualitative term that should be evaluated to determine whether *in situ* and other measurements are made and physical samples collected in such a manner that the resulting data appropriately reflect the media and phenomenon measured or studied.

For field data, representativeness is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the field sampling plan is followed and that proper sampling techniques are used.

Representativeness in the laboratory is ensured by using the proper analytical procedures, meeting sample holding times, and analyzing and assessing laboratory duplicates for the chemistry samples.

## Comparability

Comparability is the qualitative term that expresses the confidence that two data sets can contribute to a common analysis and interpolation. Comparability must be carefully evaluated to establish whether two data sets can be considered equivalent in regard to the measurement of a specific variable or groups of variables. In a laboratory analysis, the term comparability focuses on method type comparison, holding times, stability issues, and aspects of overall analytical quantitation.

There are a number of issues that can make two data sets comparable, and the presence of each of the following items enhances their comparability:

- Two data sets should contain the same set of variables of interest;
- Units in which these variables were measured should be convertible to a common metric;
- Similar analytical procedures and quality assurance should be used to collect data for both data sets;
- Time measurements of certain characteristics (variables) should be similar for both data sets;
- Measuring devices used for both data sets should have approximately similar detection levels;
- Rules for excluding certain types of observations from both samples should be similar;
- Samples within data sets should be selected in a similar manner;
- Sampling frames from which the samples were selected should be similar; and
- Number of observations in both data sets should be of the same order or magnitude.

These characteristics vary in importance depending on the final use of the data. The closer two data sets are with regard to these characteristics, the more appropriate it will be to compare them. Large differences between characteristics may be of only minor importance, depending on the decision that is to be made from the data.

## Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. Field completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. Field completeness for sampling stormwater ponds should be greater than 95%. Laboratory completeness is a measure of the amount of valid measurements obtained from all the measurements taken in the project. Laboratory completeness should be greater than 95% of the total number of samples submitted to the analytical laboratories.

The calculation for percent completeness is as follows:

$$\%C = 100\% \times (V/n)$$

$\%C$  = percent completeness

$V$  = number of valid measurements

$n$  = number of measurements planned

## Reference

USEPA. 2002. Guidance for quality assurance project plans. U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC. EPA/240/R-02/009. (<http://www.epa.gov/quality/qs-docs/g5-final.pdf>)

## Appendix B: Technical Guidance for Calculation of Benzo[a]pyrene Equivalents and Comparison of Chemical Concentrations to Soil Reference Values

This technical guidance provides instructions for calculating benzo[a]pyrene (B[a]P) equivalents for carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and guidance for comparing all chemical data from stormwater pond sediment samples to the MPCA's Soil Reference Values (SRVs). Management options for upland disposal of excavated sediment are discussed relative to the SRV values.

### Calculating B[a]P equivalents

The Minnesota Department of Health (MDH) recommends evaluating the 25 cPAHs that the California Environmental Protection Agency (Cal/EPA) has identified as being probable or possible human carcinogens (Cal/EPA 1993, 2009; MDH 2001). Since toxicity data does not exist for all individual cPAHs, they are evaluated according to how potent they are in relation to a reference contaminant, B[a]P. Assuming B[a]P has a toxicity of one, other cPAHs are assigned a potency equivalency factor (PEF) to indicate how toxic they are in comparison to B[a]P. Table B-1 lists B[a]P PEFs for 17 cPAHs to be measured in stormwater pond sediments (see Appendix A, Table A-2 for additional explanation). This section only pertains to cPAHs, which are evaluated by using B[a]P equivalents. Noncarcinogenic PAHs are evaluated individually and are not included in the total B[a]P equivalent concentration.

Table B-1. B[a]P Potency Equivalency Factors (PEFs)

cPAH	PEF	cPAH	PEF
Benz[a]anthracene*	0.1	Dibenzo[a,e]pyrene	1
Benzo[b]fluoranthene	0.1	Dibenzo[a,h]pyrene	10
Benzo[j]fluoranthene	0.1	Dibenzo[a,i]pyrene	10
Benzo[k]fluoranthene	0.1	Dibenzo[a,l]pyrene	10
<b>Benzo[a]pyrene**</b>	<b>1.0</b>	7,12-Dimethylbenzanthracene	34
Chrysene	0.01	Indeno[1,2,3-c,d]pyrene	0.1
Dibenz[a,h]acridine	0.1	3-Methylcholanthrene	3
Dibenz[a,h]anthracene	0.56	5-Methylchrysene	1
7H-Dibenzo[c,g]carbazole	1		

\*A common synonym for this compound is Benzo[a]anthracene

\*\*Benzo[a]pyrene is the reference contaminant

Site sediment concentrations of individual cPAHs are multiplied by the corresponding PEF value in Table B-1 to obtain an individual B[a]P equivalent concentration. These individual B[a]P equivalent concentrations are summed for all cPAHs to arrive at a total B[a]P equivalent concentration that is compared to the appropriate SRV value. The MPCA has developed an Excel file spreadsheet that users can add their detected cPAH data to calculate B[a]P equivalents. The "BaP equiv. calculation" worksheet is provided in the "Summary of Stormwater Pond Sediment Results" Excel file under the "Permit and Program Forms" section of the Stormwater webpage at: <http://www.pca.state.mn.us/sbiza7c>.

For example, Table B-2 shows how the B[a]P equivalents were calculated for a hypothetical stormwater pond where all 17 cPAHs were detected in the sediment sample. The contaminant concentrations are entered into Column C. Each cPAH concentration is multiplied by the corresponding PEF value in Column B to arrive at the individual B[a]P equivalent concentration in Column D. The individual B[a]P equivalent concentrations are then summed to obtain the total B[a]P equivalents concentration listed at the bottom of Column D.

Table B-2. Example – Calculating Total B[a]P Equivalents for Detected cPAH Data

A cPAH Compound	B PEF Potency Equivalent Factor	C Sediment Concentration (mg/kg)	D B[a]P Equivalent (mg/kg)
Benz[a]anthracene	0.1	2.190	0.219
Benzo[b]fluoranthene*	0.1	3.750	0.375
Benzo[j]fluoranthene*	0.1	0.000	0.000
Benzo[k]fluoranthene	0.1	1.320	0.132
Benzo[a]pyrene	1	2.270	2.270
Chrysene	0.01	2.790	0.028
Dibenz[a,h]acridine	0.1	0.219	0.022
Dibenz[a,h]anthracene	0.56	0.270	0.152
7H-Dibenzo[c,g]carbazole	1	0.160	0.160
Dibenzo[a,e]pyrene	1	0.828	0.828
Dibenzo[a,h]pyrene	10	0.419	4.190
Dibenzo[a,i]pyrene	10	0.391	3.910
Dibenzo[a,l]pyrene	10	0.150	1.500
7,12-Dimethylbenzanthracene	34	0.150	5.137
Indeno[1,2,3,-c,d]pyrene	0.1	1.350	0.135
3-Methylcholanthrene	3	0.170	0.512
5-Methylchrysene	1	0.160	0.160
Total B[a]P equivalents =			19.730

\* In this example benzo[b]fluoranthene and benzo[j]fluoranthene coeluted. In other words, the combined concentration of both cPAHs was reported by the laboratory as 3.75 mg/kg benzo[b and j]fluoranthene. Since both compounds have the same PEF value, 3.75 was entered for the sediment concentration of benzo[b]fluoranthene while the concentration of benzo[j]fluoranthene was entered as zero.

### New procedure for addressing nondetect data when calculating B[a]P equivalents:

It is unlikely that all 17 cPAHs will be detected in stormwater pond sediments (e.g., see Table A-2 in Appendix A). Previously, the MPCA's Stormwater Program recommended using one-half the reporting limit for nondetect data. However, this substitution method introduces bias in the results and can artificially inflate the B[a]P equivalent concentrations. The MPCA now recommends the following procedures:

1. Calculate a screening total B[a]P equivalents concentrations with the detected and estimated (J-flagged) cPAH data. If the total B[a]P equivalents exceed 3.0 mg/kg (the current industrial SRV), then no further calculations are needed with the nondetect data.
2. If the screening total B[a]P equivalents are less than 3.0 mg/kg and the percentage of nondetect data for each sample are  $\leq 50\%$ , then the nondetect data need to be included in the calculation of total B[a]P equivalents. The MPCA recommends using Kaplan-Meier statistics for calculating total B[a]P equivalents from the detected, estimated, and nondetect data; this procedure works best when there are  $\leq 50\%$  nondetect data. Kaplan-Meier is a nonparametric statistical method, and no assumptions about the distribution of the data (whether they follow a normal or other distribution) need to be made (Helsel 2010, 2012). Kaplan-Meier has been shown to be superior to substitution methods for nondetect data. Dennis Helsel, a retired statistician from the U.S. Geological Survey, has developed user-friendly guidance on how to use Kaplan-Meier statistics. In particular, he published a paper in 2010 on how to sum nondetect and detected data for calculating a total value. His paper goes through a case study example showing how this can be done using environmental chemistry data (i.e., polychlorinated biphenyls, dioxins, and furans) and toxic equivalence factors to calculate toxic equivalence concentrations (this is analogous to using the sediment cPAH data and the PEFs to calculate the total B[a]P equivalents). His 2010 paper is freely available at: <http://onlinelibrary.wiley.com/doi/10.1002/ieam.31/full>. Reading this paper and following through with the examples will give people the training they need to do Kaplan-Meier statistics. In addition, Dennis Helsel has developed a free Excel worksheet for using Kaplan-Meier statistics at: <http://practicalstats.com/nada/nada/downloads.html>. He also offers training classes/webinars and has a new book that clearly describes procedures for using Kaplan-Meier statistics (Helsel 2012).
3. If the screening total B[a]P equivalents are less than 3.0 mg/kg and the percentage of nondetect cPAH data are  $\geq 50\%$ , then there are increased difficulties with estimating the portion of the total B[a]P equivalents from the nondetect data. In these cases, the MPCA recommends reporting the total B[a]P equivalents based on the measured and estimated data with a qualifier that states the percentage of nondetect cPAH data.
4. If all of the cPAH data are reported as not detected, then the B[a]P equivalents cannot be calculated. In these cases, the municipality should investigate the QA/QC procedures of the laboratory further to determine if they were adequate. Since PAHs are a ubiquitous class of contaminants, a quality laboratory should be able to detect at least some of the cPAHs, especially B[a]P, chrysene, and indeno[1,2,3-cd]pyrene.

The MDH is in the process of reevaluating their recommendations for calculating total B[a]P equivalents. Revised cPAH guidance is expected to be issued later this year. Additional information can be found on the MDH website at: <http://www.health.state.mn.us/divs/eh/risk/guidance/pahmemo.html>.

## Determining restrictions and proper management

The MPCA has developed human health-based SRVs for residential and industrial land use scenarios. Analytical results for metals, noncarcinogenic PAHs, and total B[a]P equivalents (for cPAHs) are compared to these SRVs to determine what restrictions are placed on the excavated sediment, including management options for upland disposal.

An Excel file spreadsheet containing the Residential and Industrial SRVs are provided in the "Summary of Stormwater Pond Sediment Results" Excel file under the "Permit and Program Forms" section of the Stormwater webpage at: <http://www.pca.state.mn.us/sbiza7c>.

If all metal, total B[a]P equivalent (cPAHs), and noncarcinogenic PAH concentrations in the sediment are below the corresponding Residential SRV values, this indicates exposure to the dredged sediment does not present an unacceptable risk to humans in a residential scenario and management options may include disposal of the excavated sediment in residential areas. If all metal, total B[a]P equivalent (cPAHs), and noncarcinogenic PAH concentrations in the sediment are below the corresponding Industrial SRV values, this indicates exposure to the dredged sediment does not present an unacceptable risk to humans in an industrial setting and management options may include disposal of the excavated sediment in industrial areas. If the metal, total B[a]P equivalent (cPAHs), or noncarcinogenic PAH concentrations in the sediment exceed the industrial SRVs, this indicates that a potential risk may exist from exposure to the sediments and appropriate management options are required for the excavated sediment. In this case, contact the Stormwater Program for further guidance.

### ***Soil Reference Values (SRVs):***

SRVs are derived to assess potential human health exposures from soil using a reasonable maximum exposure (RME) scenario. RME scenarios are intended to protect an entire population without being overly conservative by using reasonable upper bound estimates for the most sensitive exposure parameters and central tendency estimates for less sensitive exposure parameters.

SRVs are intended to evaluate both potential non-cancer and cancer risks associated with a contaminant present in the soil. Two separate SRV values are calculated for each contaminant, one for non-cancer risk and one for cancer risk. The final SRV value reported on the Residential or Industrial SRV spreadsheet is the lower of the two. In other words, it is the smallest concentration of the contaminant that could potentially pose either a non-cancer or cancer risk. For example, for contaminant "X", if the non-cancer SRV is 10 mg/kg and the cancer SRV is five mg/kg, then the final SRV is reported as five mg/kg.

The SRVs are currently undergoing revision to ensure they incorporate the latest scientific toxicity data available. In particular, the SRV for total B[a]P equivalents will be revised to incorporate new toxicity data.

## References

Cal/EPA (California Environmental Protection Agency). 1993. Benzo[a]pyrene as a toxic air contaminant. Part B. Health effects of benzo[a]pyrene. Air Toxicology and Epidemiology Section, Office of Environmental Health Hazard Assessment, Berkeley, CA.

Cal/EPA. 2009. Technical support document for cancer potency factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures. Appendix B. Chemical-specific summaries of the information used to derive unit risk and cancer potency values. Office of Environmental Health Hazard Assessment, Oakland, CA.  
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Helsel, D.R. 2012. Statistics for Censored Environmental Data Using Minitab® and R. Second Edition. John Wiley & Sons, Inc.: Hoboken, NJ. (<http://www.wiley.com/WileyCDA/WileyTitle/productCd-EHEP002278.html>)

MDH (Minnesota Department of Health). 2001. Polycyclic aromatic hydrocarbons: Methods for estimating health risks from carcinogenic PAHs. Minnesota Department of Health, St. Paul, MN.  
(<http://www.health.state.mn.us/divs/eh/risk/guidance/pahmemo.html>)



**City of Golden Valley**  
**Standard Operating Procedures for**  
**Stormwater System Inspections**

**Purpose:**

The purpose of this SOP is to prolong the functional life of the Stormwater System within the city of Golden Valley. Performing maintenance to stormwater ponds, outfalls, and structural stormwater BMPs is critical for the long-term operation of the MS4 system. Removing sediment and debris on a regular basis will help insure that the system is getting the most TP and TSS removal from each stormwater BMP and preventing pollutants from migrating into downstream resources.



**Description:**

Stormwater treatments systems will remove pollutants transported by rain events through settling and biological uptake. To function properly, stormwater treatment systems need to have volume to hold water and wetland plants along the pond edges and shallow areas. The stormwater system that needs to be routinely inspections as a part of the City of Golden Valley's MS4 Program includes:

**BMP Type**

- Stormwater Basins
- Outfall
- Structural Stormwater BMPs

**Inspection Frequency**

- Once per Permit Term
- Once per permit Term
- Annually

**Primary Operational Procedures:**

**Maintenance:**

There are several maintenance activities that may be associated with a stormwater treatment system. The appropriate activity will be chosen to correspond to the reported condition. The following activities may be required:

1. Regular and Routine Inspections of BMPs.
2. Maintain and re-establish any eroded areas on side slopes.
3. Repair any undercutting or piping around inflow and/or outflow structure(s).
4. Remove trash and debris from system and dispose of properly.
5. Remove accumulated sediment from the inflow and/or outflow pipe and dispose of properly.
6. Remove any trees or shrubs that may have become established near the discharge structure/pipe.
7. Remove exotic vegetation from the littoral zone (if applicable) and replant as needed.
8. Remove accumulated sediment from basin to restore design storage volume.
9. Ensure infiltration capacity is being maintained, if applicable.

## Basin Inspections – Cartegraph Inspection Forms

Basin ID:	11/20/2014																								
Date:	11/20/2014																								
Inspected By:	Eric Eckman																								
<table border="1"> <thead> <tr> <th>Category</th> <th>Rating</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Buffer Issue</td> <td>No</td> <td></td> </tr> <tr> <td>Cattail Issue</td> <td>No</td> <td></td> </tr> <tr> <td>Debris</td> <td>No</td> <td></td> </tr> <tr> <td>Erosion</td> <td>Yes</td> <td></td> </tr> <tr> <td>Sediments Deposited</td> <td>Yes</td> <td></td> </tr> <tr> <td>Tree Issue</td> <td>No</td> <td></td> </tr> <tr> <td>Volume Decreased</td> <td>No</td> <td></td> </tr> </tbody> </table>		Category	Rating	Notes	Buffer Issue	No		Cattail Issue	No		Debris	No		Erosion	Yes		Sediments Deposited	Yes		Tree Issue	No		Volume Decreased	No	
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## Outfall Inspections – Cartegraph Inspection Forms

<table border="1"> <tr> <td>Category:</td> <td>Sediments Deposited</td> </tr> <tr> <td>Rating:</td> <td>Yes</td> </tr> <tr> <td>Strategy:</td> <td>Medium, Routine</td> </tr> <tr> <td>Notes:</td> <td></td> </tr> </table>	Category:	Sediments Deposited	Rating:	Yes	Strategy:	Medium, Routine	Notes:		<table border="1"> <tr> <td>Outlet ID:</td> <td>11/03/2014</td> </tr> <tr> <td>Date:</td> <td>11/03/2014</td> </tr> <tr> <td>Inspected By:</td> <td>Heather Hegi</td> </tr> </table>	Outlet ID:	11/03/2014	Date:	11/03/2014	Inspected By:	Heather Hegi				
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#### For More Information

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Golden Valley, MN 55427  
(763) 593-8084  
eeckman@goldenvalleymn.gov

#### Possible Pollutants

Sediment  
Chloride  
Pesticides  
Fertilizers  
Hazardous Materials

#### Procedures

- Pollution Prevention for Municipal Practices
- Dumpsters/Garbage Storage
- Parking Lots
- Parks
- Streets/Storm Drain
- Water

#### Appendices

A – Facility Inspection Form  
B – Pond Inspection Form  
C – Sediment Removal  
Guidance

## Standard Operating Procedure

### Minimal Control Measure 6 Pollution Prevention and Good Housekeeping Practices for Municipal Facilities

#### 6.1 Purpose

The purpose of this written procedure is to provide the City of Golden Valley's procedures for storm drainage system inspection and maintenance. The City believes it is in the best interest of the residents for the City to assume the basic responsibility of inspecting and maintaining its public storm drainage system. Reasonable inspection and maintenance are necessary for the protection of property, vehicle and pedestrian safety, water quality issues, environmental concerns and to comply with requirements set forth by the City's Comprehensive Surface Water Resource Management Plan and its MS4 permit. The City will provide these services in a cost-effective manner, keeping in mind safety, budget, personnel, and environmental concerns. The City will use its own employees, equipment and/or private contractors to provide this service. Completion dates are dependent upon weather conditions, personnel, and equipment availability. The Public Works Director, the Public Works Superintendent or their assigns will be responsible for scheduling of personnel and equipment.

#### 6.2 Operations

##### 6.2.1 Work Schedule

Inspection and maintenance is performed in conjunction with and can be impacted by other maintenance operations. Inspection and maintenance will typically be conducted during a regular eight (8) hour workday. Extended workdays and shift changes may be necessary for spring runoff events and emergency conditions to provide maximum efficiency. For safety reasons, no operator will work more than a twelve (12) hour shift in any twenty-four (24) hour period.



## Standard Operating Procedure

### 6.2.2. Training

The City will provide training and information on a regular basis to employees involved in the inspection and maintenance of the City's storm drainage system. Training will include the importance of protecting water quality and the requirements of the MS4 General Permit that are relevant to the responsibilities of the individual, including, but not limited to:

- Inspection/maintenance procedures
- Reasons for inspection/maintenance
- Erosion and sediment control inspection/maintenance practices
- Good housekeeping practices associated with municipal activities
- Daily, intermediate and long-term preventative inspection/maintenance
- Major/minor repairs
- Vegetation inspection
- Storm water basins versus wetlands
- Spills or illegal dumping into the storm sewer system
- Public storm water basins versus private storm water basins
- Storm water basins with vegetation requiring additional inspection/maintenance

All City staff that perform winter maintenance activities will also receive training on the important of protecting water quality, BMPs to reduce the amount of deicers used, and the availability of tools and other resources that are available to assist in winter maintenance.

### 6.2.3 Complaints

Complaints concerning the storm drainage system will be taken during normal working hours and after normal working hours by those designated as emergency contacts. Problems requiring immediate attention will be handled on a priority basis as determined by the Public Works Director and the Public Works Superintendent. The City will document all complaints and update this written procedure as necessary while giving consideration to the constraints of available resources.

### 6.2.4 Documentation

The City will document the inspection, maintenance, complaint and emergency responses actions as defined by this document. The inspection and maintenance activities associated with the storm sewer system and stockpile/storage material handing areas will be completed using the forms provided in this document or through the City's GIS system.



## Standard Operating Procedure

### 6.4 Pollution Prevention

#### 6.4.1 Dumpsters/Garbage Storage

##### Activities and Definition

Potential for pollutants can occur if proper garbage management is not in place. An appropriate number of dumpsters should be located throughout the facility to provide enough storage for daily activities. In addition facility dumpsters are to be marked for proper materials disposal.

##### Preparation

- a. Train employees on proper trash disposal.
- b. Locate dumpsters and trash cans in convenient, easily observable areas.
- c. Provide properly labeled recycling bins to reduce the amount of garbage disposed.
- d. Where applicable install berms, curbing, or vegetation strips around storage areas to control water entering/leaving storage areas.
- e. Whenever possible store garbage containers beneath a covered structure or inside to prevent contact with stormwater.

##### Process

- a. Inspect garbage bins for leaks regularly and have repairs made immediately by responsible party.
- b. Request/use dumpsters and trash cans with lids and without drain holes.
- c. Locate dumpsters on a flat, hard surface that does not slope or drain directly into the storm drain system.

##### Clean-up/Follow-up

- a. Keep areas around dumpsters clean of all garbage.
- b. Have garbage bins emptied regularly to keep from overfilling.
- c. Wash out bins or dumpsters as needed to keep odors from becoming a problem.

##### Documentation

- a. Document training of employees.



## Standard Operating Procedure

### 6.4.2 Parking Lot Maintenance

#### Activities and Definition

Parking Lots can potentially generate increased pollutant loads to the stormwater system from run-off. A well maintained parking surface can help to reduce some of those pollutant concerns.

#### Preparation

- a. Conduct regular employee training to reinforce proper housekeeping.
- b. Restrict parking in areas to be swept prior to and during sweeping using regulations as necessary.
- c. Perform regular maintenance and services in accordance with the recommended vehicle maintenance schedule on sweepers to increase and maintain efficiency.

#### Process

- a. Sweep parking areas, as needed, or as directed by the City's responsible official.
- b. Hand sweep sections of gutter if soil and debris accumulate.
- c. Pick-up litter as required to keep parking areas clean and orderly.

#### Clean-up/Follow-up

- a. Dispose of sweepings properly (appropriate facility).
- b. Street sweepers to be cleaned out in a manner as instructed by the manufacturer and in a location that swept materials cannot be introduced into a storm drain.
- c. Swept materials will not be stored in locations where stormwater could transport fines into the storm drain system.

#### Documentation

- a. Keep accurate maps and logs to track swept parking areas and approximate quantities.
- b. Document training of employees.



## Standard Operating Procedure

### 6.4.3 Stockpile and Storage Material Handling Areas

#### Activities and Definition

The City of Golden Valley completed their Facility Inventory on March 20, 2015. During the inventory they evaluated public works facilities, police stations, parks, open space, and their water treatment facility. It was determined that four facilities have areas with pollutants concerns that will need to be inspected on a quarterly basis. During the inspections the City will evaluate fueling procedures, stockpiles, hazardous wastes storage, landscape areas, and vehicle/equipment washing.

#### Preparation

- a. Conduct regular employee training to reinforce proper housekeeping.
- b. Install proper BMPs as indicated on the facility BMP map.
- c. Perform regular maintenance of BMPs installed.

#### Process

- a. Inspect all areas as shown the BMP facility map and as per the facility inspection form.
- b. Perform maintenance as directed on the facility inspection form.

#### Clean-up/Follow-up

- a. Install/replace failing BMPs.
- b. Purchase new BMPs to ensure adequate quantities are available for maintenance.
- c. Equipment not to be cleaned out unless appropriate inlet project device is put in place.
- d. Fueling areas are to be inspected for leaks and all spill kits re-stocked.

#### Documentation

- a. Keep inspection and maintenance logs.
- b. Logs to be updated quarterly.



## Standard Operating Procedure

### 6.5 Parks

#### 6.5.1. Chemical Application, Pesticides, Herbicides, Fertilizers

##### Activities and Definition

A pivotal part of the beautification of the city is a great parks system. The health and beauty of lawns and natural areas take the application of some chemicals and fertilizers.

##### Preparation

- a. Make sure your state Chemical Handling Certification is complete and up-to-date before handling any chemicals. All City of Golden Valley staff who handle chemicals have the appropriate Applicator's Certification.
- b. Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- c. Use pesticides only if there is an actual pest problem and periodically test soils for determining proper fertilizer use.
- d. Time and apply the application of fertilizers, herbicides or pesticides to coincide with the manufacturer's recommendations for best results ("Read the Label").
- e. Know the weather conditions. Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).

##### Process

- a. Always follow the manufacturer's recommendations for mixing, application and disposal ("Read the Label").
- b. Do not mix or prepare pesticides for application near storm drains and never on impervious surfaces. Employ techniques to minimize off-target application (e.g. spray drift, over broadcasting) of pesticides and fertilizers.

##### Clean-up/Follow-up

- a. Sweep pavements or sidewalks where fertilizers or other solid chemicals have fallen, back onto grassy areas before applying irrigation water.
- b. Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- c. Always follow all federal and state regulations governing use, storage and disposal of fertilizers, herbicides or pesticides and their containers ("Read the Label").



## Standard Operating Procedure

### Documentation

- a. Keep copies of MSD sheets for all pesticides, fertilizers and other hazardous products used.
- b. Record fertilizing and pesticide application activities, including date, individual who did the application, amount of product used and approximate area covered.



## Standard Operating Procedure

### 6.5.2 Cleaning Equipment

#### Activities and Definition

There are many benefits to taking proper care of the City's equipment. Prolonging the life of the equipment by taking the time to maintain critical parts is an essential part of the Parks Department's daily activities.

#### Preparation

- a. Review process with all Parks employees.

#### Process

- a. Ensure appropriate inlet protection is installed within adjacent storm sewer structures that may receive discharge from equipment washing areas.
- b. Wipe off dirt, dust and fluids with disposable towel or air compressor.
- c. If detergents are used wash equipment in approved wash station.

#### Clean-up/Follow-up

- a. Dispose of towels in proper trash receptacle
- b. Sweep floor and dispose of debris.

#### Documentation

- a. N/A



## Standard Operating Procedure

### 6.5.3 Mowing and Trimming

#### Activities and Definition

Regular mowing and trimming activities have potential to deposit materials onto hard surfaces. Care should be taken to insure mowing or trimming refuse is disposed of properly.

#### Preparation

- a. Process overview with employees.
- b. Check the oil and fuel levels of the mowers and other equipment. Fill in proper areas if needed.

#### Process

- a. Put on eye and hearing protection, as required.
- b. Mow and trim the lawn.
- c. Sweep or blow clippings to grass areas, then clear with deck of mower.

#### Clean-up/Follow-up

- a. Mowers are cleaned daily. Refer to equipment cleaning procedures.
- b. Dry spoils are dry swept and disposed of properly
- c. Wash equipment in approved wash station.

#### Documentation

- a. Document and observed deficiencies for correction or repair.



## Standard Operating Procedure

### 6.5.4 Open Space Management

#### Activities and Definition

Open space provides great value to the park system that go beyond ball fields. This includes stormwater retention and potential flood relief.

#### Preparation

- a. Provide a regular observation and maintenance of parks, golf courses, and other public open spaces.
- b. Identify public open spaces that are used for stormwater detention and verify that detention areas are included on the storm drain system mapping, inspection schedules, and maintenance schedules.

#### Process

- a. Ensure that any storm drain or drainage system components on the property are properly maintained.
- b. Avoid placing bark mulch (or other floatable landscaping materials) in stormwater detention areas or other areas where stormwater runoff can carry the mulch into the storm drainage system.
- c. Follow all SOPs related to irrigation, mowing, landscaping, and pet waste management.

#### Clean-up/Follow-up

- a. Keep all outdoor work areas neat and tidy. Clean by sweeping instead of washing whenever possible. If areas must be washed, ensure that wash water will enter a landscaped area rather than the storm drain. Do not use soap for outdoor washing.
- b. Pick up trash on a regular basis.

#### Documentation

- a. Document and observed deficiencies for correction or repair.



## Standard Operating Procedure

### 6.5.5 Pet Waste

#### Activities and Definition

Pet waste has the potential to be a contributor to downstream degradation if not maintained and properly disposed of.

#### Preparation

- a. Enforce ordinance that requires pet owners to clean up pet wastes and use leashes in public areas. If public off-leash areas are designated, make sure they are clearly defined.
- b. Whenever practical and cost effective, install dispensers for pet waste bags and provide disposal containers at locations such as trail heads or parks where pet waste has been a problem. Provide signs with instructions for proper cleanup and disposal. Currently the City has signage installed at the Juneau and Marion Park trail heads.

#### Process

- a. Check parks and trails for pet waste as needed.
- b. Check public open space for pet waste while mowing and watering.
- c. Provide ordinance enforcement as needed. Look for opportunities for increased education.

#### Clean up/Follow-up

- a. Remove all pet waste; provide temporary storage in a covered waste container, and dispose of properly. Preferred method of disposal is at a solid waste disposal facility.

#### Documentation

- a. Document problem areas for possible increased enforcement and/or public education signs.



## Standard Operating Procedure

### 6.5.6 Planting Vegetation (Starters)

#### Activities and Definition

Vegetation is a key component of establishing healthy ecosystems that hold water and nutrients on site.

#### Preparation

- a. Call the appropriate numbers for location of utilities.
- b. Decide where any spoils will be taken.

#### Process

- a. Dig holes; place spoils near the hole where they may easily be placed back around the roots. Avoid placing spoils into the gutter system.
- b. Bring each plant near the edge of the hole dug for it.
- c. Check the depth of the hole, and adjust the depth if necessary. The depth of the hole for a tree should be as deep as the root ball, so that the top of the root ball is level with the top of the hole.
- d. Carefully remove pot or burlap.
- e. Place the plant in the hole.
- f. Backfill the hole with existing spoils, compost, and fertilizer if desired. Do not use excessive amendments.
- g. Water the plant.
- h. Stake the plant if necessary to stabilize it.

#### Clean-up/Follow-up

- a. Remove any extra spoils into truck or trailer. Place the spoils on a tarp if there is likelihood that some of the dirt would be lost through openings in the bed.
- b. Sweep dirt from surrounding pavement(s) into the planter area.
- c. Transport spoils to their designated fill or disposal area.

#### Documentation

- a. N/A



## Standard Operating Procedure

### 6.5.7 Planting Vegetation (Seeds)

#### Activities and Definition

Vegetation is a key component of establishing healthy ecosystems that hold water and nutrients on site.

#### Preparation

- a. Call the appropriate numbers for location of utilities.
- b. Decide where any spoils will be taken.
- c. Decide on the application rate, method, water source, and ensure adequate materials are on hand.
- d. Grade and prepare soil to receive the seed. Place any extra soil in a convenient location to collect.

#### Process

- a. Place the seed and any cover using the pre-determined application method (and rate).
- b. Lightly moisten the seed.

#### Clean-up/Follow-up

- a. Remove any extra spoils into truck or trailer. Place the spoils on a tarp if there is likelihood that some of the dirt would be lost through openings in the bed.
- b. Sweep dirt from surrounding pavement(s) into the planter area.
- c. Transport spoils to their designated fill or disposal area.

#### Documentation

- a. N/A



## Standard Operating Procedure

### 6.5.8 Transporting Equipment

#### Activities and Definition

Equipment Transportation is a pivotal part of the daily activities that occurs on a daily basis.

#### Preparation

- a. Determine equipment needed for transport and method (trailer, truck bed) needed to transport equipment, if required.
- b. Conduct pre-trip inspection of equipment.

#### Process

- a. Load and secure equipment on trailer or truck.
- b. Load and secure fuel containers for equipment usage.

#### Clean-up/Follow-up

- a. Off load equipment.
- b. Store equipment and trailer in proper location.
- c. Conduct post-trip inspection of equipment, if required.
- d. Wash equipment if needed, according to the written procedure for Cleaning Equipment.

#### Documentation

- a. Pre-trip and post-trip inspection report, if required.



## Standard Operating Procedure

### 6.6 Sanitary Sewer – Overflows

#### Activities and Definition

Sanitary sewer system even with high-performing operation and maintenance programs will experience overflows and backups from time to time. A proper response plan will help mitigate the effects of a backup and it will be necessary to contact the Minnesota State Duty Officer.

#### Preparation

- a. Train staff to make them aware of the need to report the spill and spill response/clean-up procedures as found Appendix D of the Illicit Discharge SOPs.
- b. Have all equipment ready to assist with spill clean-up or containment (e.g., confined space entry equipment, safety gear, jet flushing unit/vacuum truck, pumps, disinfectants, televising equipment, etc.)
- c. Have sewer maps available.

#### Process

- a. Report sanitary sewer spill to Minnesota State Duty Officer at (651)-422-0798 or 1-800-422-0798.
- b. Typical information requested by the Minnesota State Duty Officer includes:
  1. Name of caller
  2. Date, time, and location of incident
  3. Telephone number for call-backs at the scene or facility
  4. Whether local officials have been notified
  5. Materials and quantity involved in the incident
  6. Incident location
  7. Responsible party
  8. Any surface waters or sewers impacted
  9. Present situation of the spill (on-going or contained)
- c. Inform the public if they are at risk (e.g., spill nears swimming beached, public drinking water intakes, and recreational areas. Notification mechanisms may include:
  1. Hand delivery of door hangers
  2. Temporary posting at impacted areas
  3. Notifications in newspaper, radio announcements, messages on local access cable TV, messages on website, and social media.



## Standard Operating Procedure

### 6.7 Streets

#### 6.7.1 Curb Painting

##### Activities and Definition

The City coordinates their curb painting program through a joint powers agreement with the surrounding communities. This work is contracted out and it will be the responsibilities of the contractor to follow the Standard Operating Procedures (SOPs) to ensure that pollutants from the curb painting operations do not enter the storm sewer system.

##### Preparation

- a. Calculate the amount of paint required for the job.
- b. Use water based paints if possible.
- c. Determine whether the wastes will be hazardous or not and the required proper disposal of said wastes. Prepare surfaces without generating wastewater by sandblasting and/or scraping.
- d. Thoroughly sweep up all sand, blastings, and/or paint scrapings.
- e. If paint stripping is needed, use a citrus-based paint remover whenever possible.
- f. If wastewater will be generated, use curb, dyke, etc. around the activity to collect and filter debris.

##### Process

- a. Paint curb.
- b. Prevent over-spraying of paints and/or excessive sandblasting.
- c. Use drip pans and drop cloths in areas of mixing paints and painting.
- d. Store latex paint rollers and brushes in air tight bags to be reused later with the same color.
- e. Have available absorbent materials and other BMPs ready for an accidental paint spill.

##### Clean-up/Follow-up

- a. Squeeze excess paint from the brushes and rollers back into the containers prior to cleaning them.
- b. Pour excess paint from trays and buckets back into the paint can containers and wipe with cloth or paper towels. Dispose of the towels according to the recommendations on the paint being used.
- c. Rinse water-based paint brushes in the sink after pre-cleaning. Never pour excess paint or wastewater from cleanup of paint into the storm drain.
- d. Cleanup oil based paints with paint thinner. Never clean oil based brushes in a sink or over a storm drain. Filter solvents for reuse if possible and/or store in approved drum for recycling.
- e. Dispose of waste collected by placing it in a garbage container. Left-over paint and solvents should be stored for later use (do not place these liquids in the garbage).

##### Documentation



## Standard Operating Procedure

- a. The contractor will be responsible for writing up any report of any discharges into the storm drain system.



## Standard Operating Procedure

### 6.7.2 Overlays and Patching

#### Activities and Definition

Pollutants collect on surfaces in between storm events as a result of atmospheric deposition, vehicle emissions, winter road maintenance, construction site debris, trash, road wear and tear. Overlays and patching are a part of the maintenance of these surfaces that help prolong the life of the roadway.

#### Preparation

- a. Measure and mark locations of manholes and valves on the curb.
- b. Cracks should be properly sealed. Alligator cracks and potholes should be removed and patched. Rutting should be milled.
- c. Surface should be clean and dry.
- d. Uniform tack coat applied and cured prior to placement of overlay.
- e. If milling is required, install inlet protection as needed.

#### Process

- a. Check hot asphalt mix for proper temperature, percentage asphalt, gradation, air voids, and any other agency requirements.
- b. Raise manhole lids and valves to elevation of new asphalt surface with riser rings.
- c. Surface texture should be uniform, no tearing or scuffing.
- d. Rolling should be done to achieve proper in-place air void specification.

#### Clean up/Follow-up

- a. Covering should be removed as soon as the threat of imported materials entering the system is reduced and prior to a storm event.
- b. After pavement has cooled, sweep gutters to remove loose aggregate.

#### Documentation

- a. NA



## Standard Operating Procedure

### 6.7.3 Crack Seal

#### Activities and Definition

Pollutants collect on surfaces in between storm events as a result of atmospheric deposition, vehicle emissions, winter road maintenance, construction site debris, trash, road wear and tear. Crack sealing is a part of the maintenance of these surfaces that help prolong the life of the roadway.

#### Preparation

- a. Remove weeds from the road.
- b. Air-blast the cracks to remove sediments from the crack to allow for proper adhesion.
- c. Ensure that surface is clean and dry.
- d. Sweep within 24 hours

#### Process

- a. Proper temperature of material should be maintained.
- b. Sufficient material is applied to form the specified configuration.

#### Clean-up/Follow-up

- a. Excessive sealant application or spills are removed.
- b. Sweep all loose debris from the pavement and dispose of it in the local landfill.

#### Documentation

- a. Record location and date on the maintenance database and map.



## Standard Operating Procedure

### 6.7.4 Shouldering and Mowing

#### Activities and Definition

Pollutants collect on surfaces in between storm events as a result of atmospheric deposition, vehicle emissions, winter road maintenance, construction site debris, trash, road wear and tear, and litter from adjacent lawn maintenance (grass clippings). The shoulders of the road should be properly maintained to insure infiltration and other techniques for stormwater run-off are working with the most efficiency.

#### Preparation

- a. Set up temporary traffic control devices

#### Process

- a. Place import material as needed and perform grading to achieve proper drainage.
- b. Mulch clippings to help reduce the amount of supplemental fertilizer required.

#### Clean up/Follow-up

- a. Clean any loose material off asphalt or gutter.

#### Documentation

- a. Record location and date on the maintenance database and map.



## Standard Operating Procedure

### 6.7.5 Secondary Road Maintenance

#### Activities and Definition

Routine maintenance of secondary roads may be required to prevent erosion and potholing, and to support public safety.

#### Preparation

- a. Determine length amount and type of roadbase or gravel that will be needed.
- b. Determine proper equipment to be used and or any safety hazards.
- c. Design proper drainage: slopes, berms, etc.

#### Process

- a. Have truck drivers follow a designated route for hauling in the soil (See SOP for transporting soil and gravel).
- b. If soils are too dry to achieve compaction, loosen surface material and moisture condition.
- c. Smooth or grade soil with the desired crown or cross-slope.
- d. Compact soil.

#### Clean up/Follow-up

- a. Replace filter fabric with washed rock (if necessary) on monthly maintenance.
- b. Clean up equipment according to the SOP for Cleaning Equipment
- c. Clean up any debris on traveled roads, and dispose of it in the landfill.

#### Documentation

- a. Fill out daily activity report in log book or journal. Include date, time, personnel, and location.



## Standard Operating Procedure

### 6.7.6 Concrete Work

#### Activities and Definition

The use of concrete is a common practice for BMP maintenance, proper management of those materials is critical for pollution prevention.

#### Preparation

- a. Train employees and contractors in proper concrete waste management.
- b. Store dry and wet materials under cover, away from drainage areas.
- c. Remove any damaged concrete that may need to be replaced.
- d. Prepare and compact sub-base.
- e. Set forms and place any reinforcing steel that may be required.
- f. Determine how much new concrete will be needed.
- g. Locate or construct approved concrete washout facility.

#### Process

- a. Install inlet protection as needed.
- b. Avoid mixing excess amounts of fresh concrete on-site.
- c. Moisten sub-base just prior to placing new concrete. This helps keep the soil from wicking moisture out of the concrete into the ground.
- d. Place new concrete in forms.
- e. Consolidate new concrete.
- f. Screed off surface.
- g. Let concrete obtain its initial set.
- h. Apply appropriate surface finish.
- i. Remove forms when concrete will not slump.

#### Clean-up/Follow-up

- a. Perform washout of concrete trucks and equipment in designated areas only.
- b. Do not washout concrete trucks or equipment into stormdrains, open ditches, streets or streams.
- c. Cement and concrete dust from grinding activities is swept up and removed from the site.
- d. Remove dirt or debris from street and gutter.

#### Documentation

- a. N/A



## Standard Operating Procedure

### 6.7.7 Garbage Storage

#### Activities and Definition

Illegal dumping of non-hazardous household waste and improper dumping of yard waste in streets, storm drains, wetlands, lakes, and other water bodies pollutes surface waters. Non-hazardous household waste includes items such as tires, furniture, common household appliances and other bulk items. Yard waste includes any organic debris such as grass clippings, leaves, and tree branches.

#### Preparation

- a. Locate dumpsters and trash cans with lids in convenient, easily observable areas.
- b. Provide properly labeled recycling bins to reduce the amount of garbage disposed.
- c. Provide training to employees to prevent improper disposal of general trash.

#### Process

- a. Inspect garbage bins for leaks regularly, and have repairs made immediately by responsible party.
- b. Locate dumpsters on a flat, impervious surface that does not slope or drain directly into the storm drain system.
- c. Install berms, curbing or vegetation strips around storage areas to control water entering/leaving storage areas.
- d. Keep lids closed when not actively filling dumpster.

#### Clean-up/Follow-up

- a. Keep areas around dumpsters clean of all garbage.
- b. Have garbage bins emptied as often as needed to keep from overfilling.
- c. Wash out bins or dumpsters as needed to keep odors from becoming a problem. Wash out in properly designated areas only.

#### Documentation

- a. N/A



## Standard Operating Procedure

### 6.7.8 Snow Removal and Deicing

#### Activities and Definition

The concentration of chloride is increasing in our surface and ground water largely due to stormwater runoff from road salt storage piles, areas of excessive application, or simply from years of repeated application since chloride does not degrade in soil and water. Chloride in road salt and road salt additives (e.g. ferrocyanide for anti-caking) can create toxic conditions for fish, insects and vegetation.

#### Preparation

- a. Store de-icing material on an impervious surface under a covered storage area or in an area where water coming off the de-icing materials is collected and delivered to the sanitary sewer or reused as salt brine.
- b. Slope loading area away from storm drain inlets.
- c. Design drainage from loading area to collect runoff before entering stormwater system.
- d. Wash out vehicles (if necessary) in approved wash out area before preparing them for snow removal.
- e. Calibrate spreaders to minimize amount of de-icing material used and still be effective.
- f. Provide vehicles with spill cleanup kits in case of hydraulic line rupture or other spill.
- g. Train employees in spill cleanup procedures and proper handling and storage of de-icing materials.

#### Process

- a. Load material into trucks carefully to minimize spillage.
- b. Periodically dry sweep loading area to reduce the amount of de-icing materials exposed to runoff.
- c. Distribute the minimum amount of de-icing material to be effective on the roads.
- d. Do not allow spreaders to idle while distributing de-icing materials.
- e. Park trucks loaded with de-icing materials inside when possible.

#### Clean-up/Follow-up

- a. Sweep up all spilled de-icing material around loading area.
- b. Clean out trucks after snow removal duty in approved washout area.
- c. Provide maintenance for vehicles in covered areas.
- d. If sand is used in de-icing operations, sweep up residual sand from streets when weather permits.

#### Documentation

- a. Fill out daily activity report in log book or journal. Include date, time, personnel, and location, as appropriate.
- b. All City trucks are GPS equipped, and track application rates.



## Standard Operating Procedure

### 6.7.9 Street Sweeping

#### Activities and Definition

Pollutants collect on surfaces in between storm events as a result of atmospheric deposition, vehicle emissions, winter road maintenance, construction site debris, trash, road wear and tear, and litter from adjacent lawn maintenance (grass clippings). Sweeping of materials such as sand, salt, leaves and debris from city streets, parking lots and sidewalks prevents them from being washed into storm sewers and surface waters. Timing, frequency and critical area targeting greatly influence the effectiveness of sweeping.

#### Preparation

- a. Prioritize cleaning routes based on areas with highest priority (i.e., Bassett Creek).
- b. Restrict street parking prior to and during sweeping using regulations as necessary.
- c. Increase sweeping frequency just before the rainy season, unless sweeping occurs continuously throughout the year.
- d. Perform preventative maintenance and services on sweepers to increase and maintain their efficiency.

#### Process

- a. Streets are to be swept as needed or specified by the city; street maps are used to ensure all streets are swept at a specific interval.
- b. Drive street sweeper safely and pickup debris.
- c. When full take the sweeper to an approved street sweeper cleaning station.

#### Clean-up/Follow-up

- a. Street sweepers are to be cleaned out in an approved street sweeper cleaning station.
- b. Street sweeping cleaning stations shall separate the solids from the liquids.
- c. Once solids have dried out, haul them to the local landfill.
- d. Decant water is to be collected and routed to an approved wastewater collection system area only.
- e. Haul all dumped material to the landfill.

#### Documentation

- a. Highlight the City street map to show progress being made as the City sweeps its streets in the spring and fall.
- b. Record quantities of material collected annually.



## Standard Operating Procedure

### 6.7.10 Transporting Soil and Gravel

#### Activities and Definition

Transportation of materials should be handled with pre-planning and contingency planning.

#### Preparation

- a. Dry out wet materials before transporting.
- b. Spray down dusty materials to keep from blowing.
- c. Make sure you know and understand the SWPPP requirements for the site you will be working at.
- d. Determine the location that the truck and other equipment will be cleaned afterwards.

#### Process

- a. Use a stabilized construction entrance to access or leave the site where materials are being transported to/from.
- b. Cover truck bed with a secured tarp before transporting.
- c. Follow the SWPPP requirements for the specific site to /from which the materials are being hauled.
- d. Make sure not to overfill materials when loading trucks.

#### Clean-up/Follow-up

- a. Use sweeper to clean up any materials tracked out on the roads from site.
- b. Washout truck and other equipment when needed in properly designated area.

#### Documentation

- a. Keep records of any material that is tracked out of site and what was done to clean it up and how long it took to clean up and what the weather conditions were at the time.



## Standard Operating Procedure

### 6.8 Storm Drainage System

#### 6.8.1 Catch Basins

##### Activities and Definition

Catch basin cleaning needs to be completed on a regular basis to ensure the functionality of the storm sewer system.

##### Preparation

- a. Clean sediment and trash off of grate.
- b. Do visual inspection on outside of grate.
- c. Make sure nothing needs to be replaced.
- d. Do inside visual inspection to see what needs to be cleaned.

##### Process

- a. Clean using a high powered vacuum truck to start sucking out standing water and sediment.
- b. Use a high pressure washer to clean any remaining material out of catch basin, while capturing the slurry with the vacuum.
- c. After catch basin is clean, send the rodger of the vacuum truck downstream to clean pipe and pull back sediment that might have gotten downstream of pipe.
- d. Move truck downstream of pipe to next catch basin.

##### Clean-up/Follow-up

- a. When vacuum truck is full of sediment, take it to the designated location to dump all the sediment out of truck into a drying bed.
- b. When it evaporates, clean it up with a backhoe/skid loader, put it into dump truck and take to permanent disposal site (landfill).

##### Documentation

- a. Keep logs of number of catch basins cleaned.
- b. Keep any notes or comments of any problems.
- c. Document the landfill location of where material is disposed.



## Standard Operating Procedure

### 6.8.2 Structural Stormwater Best Management Practices

#### Activities and Definition

Structural Stormwater Best Management Practices (SSBMPs) will be inspected annually to determine structural integrity, proper function and maintenance needs. SSBMPs include BMPs put in place that are designed to remove pollutants (i.e., environmental manholes, raingardens, filtration features, etc.).

#### Preparation

- a. Clean sediment and trash off of grate.
- b. Do visual inspection on outside of grate.
- c. Make sure nothing needs to be replaced.
- d. Do inside visual inspection to see what needs to be cleaned.

#### Process

- a. Clean using a high powered vacuum truck to start sucking out standing water and sediment.
- b. Use a high pressure washer to clean any remaining material out of catch basin, while capturing the slurry with the vacuum.
- c. After catch basin is clean, send the rodder of the vacuum truck downstream to clean pipe and pull back sediment that might have gotten downstream of pipe.
- d. Move truck downstream of pipe to next catch basin.

#### Clean-up/Follow-up

- a. When vacuum truck is full of sediment, take it to the designated location to dump all the sediment out of truck into a drying bed.
- b. When it evaporates, clean it up with a backhoe/skid loader, put it into dump truck and take to permanent disposal site (landfill).

#### Documentation

- a. Keep logs of number of catch basins cleaned.
- b. Record the amount of waste collected.
- c. Keep any notes or comments of any problems.
- d. Document the landfill location of where material is disposed.



## Standard Operating Procedure

### 6.8.3 Routine Pond Maintenance

#### Activities and Definition

Stormwater ponds remove pollutants transported by rain events through settling and biological uptake. To function properly, stormwater ponds need to have volume to hold water and wetland plants along the pond edges and shallow areas. Performing maintenance to stormwater ponds is critical for the long-term operation of the MS4 system. Routine maintenance is considered a maintenance project that will remove less than 100 cubic yard of material.

#### Preparation

- a. When sediment removal is required, the City will need to complete further analysis of the pond sediment that will be removed. The sediment will need to be tested and disposed of in accordance with the guidance found in the MPCA's Sediment Removal Guidance (Appendix D).
- b. Testing of the ponds can be done so that areas of the pond can be segregated (e.g., if areas of the pond such as the inlets are identified to have the highest concentrations the areas around the inlet could be disposed of differently as compared to the remainder of the pond, if the areas can be segregated sufficiently).
- c. The sediment samples shall be sent to an analytical laboratory for review.
- d. Once the results from the analytical laboratory have been received, a maintenance and disposal plan will be developed based on the test results. The City shall use sediment removal guidance from the MPCA in **Appendix D**.
- e. Schedule the pond maintenance work for a time when dry weather is expected.
- f. Complete a visual inspection to make sure any grates, structures, manholes, and pipes are in good working order. Remove manhole covers and grates as necessary for inspecting.

#### Process

- a. Provide outlet protection where feasible to minimize the amount of debris that might leave basin during cleaning process.
- b. Perform routine maintenance, which may include:
  1. Removal of trash and other accumulated debris from trash grate.
  2. Removal of vegetation around and/or in front of the outlet structure.
  3. Repair of side slopes to mitigate erosion issues.
  4. Replacement of riprap in front of the outlet to prevent future scour and erosion.
- c. Continue cleaning structures and surrounding area as necessary by sweeping and shoveling.
- d. Put all material removed from the pond into a dump truck.
- e. Some structures might require use of a vacuum truck. If so, use the same procedures described for cleaning catch basins.

#### Clean-up/Follow-up

- a. After performing maintenance, clean off the concrete pads using dry methods (sweeping and shoveling).
- b. Properly dispose of the material that was removed.



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- c. Site restoration work, if applicable, shall be conducted as soon as weather conditions permit and may include:
  1. Additional clean-up or maintenance of inlet and outlet structures.
  2. Additional site stabilization work including sediment and erosion control.
  3. Establishing plant, seed, sod, mulch or vegetation to prevent erosion (above waterline).
  4. Professional engineer to sign-off on project completion

### Documentation

- a. Keep logs of each detention basins/pond cleaned including the unique ID number of the basin, the volume of sediment removed, results from any testing, and the location(s) of final disposal of sediment from each stormwater pond.
- b. Keep any notes or comments of any other observations about the maintenance that will help the City operate and maintain that site in the future.



## Standard Operating Procedure

### 6.8.4 Pond Assessment Process

#### Activities and Definition

The City of Golden Valley is using a Stormwater Asset Management Program (SWAMP) to determine the Total Suspended Solids (TSS) and Total Phosphorous (TP) treatment effectiveness of City owned and operated ponds that are constructed for the collection and treatment of stormwater. The SWAMP program is a web-based GIS program that allows the City to prioritize pond maintenance.

#### Assessment Procedure

Annually the City will use their SWAMP program to evaluate the City-owned and operated stormwater treatment ponds. The SWAMP program will allow the City to prioritize the ponds that have the highest potential for needing maintenance. The SWAMP program factors in the following parameters to allow the City to prioritize pond maintenance:

- Age of pond.
- Average loading rate based on contributing drainage area characteristics (size, land use, upland treatment, etc.).
- Known concerns based on inspections.
- Type and location of receiving water.
- Sensitivity of receiving water.
- Complaints received from the public.

The ponds that have been identified as having the highest priority shall be added to a schedule to be more thoroughly assessed in year 1. The remaining ponds will be reassessed in year 2 using the same criteria, because priorities and other unknown factors (ex: budget, staff time, equipment availability) may change from year-to-year. Similar to year 1, the ponds that have been identified as having the highest priority shall be added to a schedule to be more thoroughly assessed in year 2.

#### Additional Survey of Pond

From the initial assessment of the ponds scored as potentially needing maintenance in the SWAMP program, the City will perform a more thorough analysis of the ponds. Ponds flagged as needing maintenance in SWAMP are those that are found to be half full of sediment, as well as the ponds that are continually showing signs of needing maintenance, in the following years.

- a. The following steps shall be taken to assess the City pond(s) for TSS and TP treatment effectiveness:
  - Original design information, if available (record drawings, design calculations, etc.).
  - As-built survey information, if completed and available.
  - Completing a bathymetric survey of the pond.
  - Other significant information available that pertains to the pond.



## Standard Operating Procedure

### Clean-up/Follow-up

- a. Once the assessment of each pond is complete, a pond maintenance and dredging schedule can be implemented.
- b. The City will either complete the dredging in-house, or contract it out depending on the availability of City staff.
- c. The dredged materials must be tested, and a disposal plan will be developed, based on the test results.
- d. Sediment removal guidance for the testing and removal of sediment can be found in [Appendix D](#).

### Documentation

- a. Create a record of the schedule determined for basin/pond cleaning.
- b. Keep logs of each detention basins/pond cleaned including date, individuals involved in cleaning, and a description of the type of debris removed.
- c. Record the amount of waste collected and the results of the sediment testing (if applicable).
- d. Keep any paperwork/manifests or logs that demonstrate where the material was disposed.
- e. Keep any notes or comments of any problems.



## Standard Operating Procedure

### 6.8.5 Detention Pond Cleaning

#### Activities and Definition

Storm drains are gateways that allow pollutants in stormwater to flow untreated from local streets to lakes, rivers and streams. Residual oil, grease, solids, antifreeze, cigarette butts, yard waste, plastic and other wastes found on roads, parking lots and driveways pollute downstream waters by increasing phosphorus levels, reducing oxygen levels and ultimately impairing aquatic habitat for fish and other organisms as well as drinking water sources. Removing sediment and debris on a regular basis will help the system in getting the most TP and TSS removal.

#### Preparation

- a. The MPCA requires the City to sample sediment prior to dredging to determine concentrations of cPAHs, non-carcinogenic PAHs, arsenic, and copper.
  1. When sediment removal is required, the City will need to complete further analysis of the pond sediment. The sediment will need to be tested and disposed of in accordance with the guidance found in the MPCA's Sediment Removal Guidance (Appendix D).
  2. Testing of the ponds can be done so that areas of the pond can be segregated (e.g., if areas of the pond such as the inlets are identified to have the highest concentrations the areas around the inlet could be disposed of differently as compared to the remainder of the pond, if the areas can be segregated sufficiently).
- b. The sediment samples shall be sent to an analytical laboratory for review.
- c. Once the results from the analytical laboratory have been received, a maintenance and disposal plan will be developed based on the test results. The City shall use sediment removal guidance from the MPCA in Appendix C.1
- d. Discuss maintenance needs with the Public Works Director and the Public Works Superintendent to discuss the next course of action prior to scheduling any maintenance activities.
- e. Schedule the Pond cleaning work for a time when dry weather is expected. Factors that may delay these activities may include temperatures below thirty-two (32) degrees Fahrenheit, wind, rain, snow and frozen storm drainage systems. Inspection and maintenance will typically be conducted during a regular eight (8) hour workday. Extended workdays and shift changes may be necessary for spring runoff events and emergency conditions to provide maximum efficiency. For safety reasons, no operator will work more than a twelve (12) hour shift in any twenty-four (24) hour period.
- f. Unexpected ponding water can create a dangerous condition for vehicles, motorcyclists, bicyclists, pedestrians and property. It is not practical to sign all areas for potentially dangerous conditions. During such events, warning signs indicating a hazard may be placed in the vicinity and other areas as deemed necessary by the Public Works Director and the Public Works Superintendent. These signs will remain in place until the situation has subsided.
- g. Remove any sediment and trash from grates, placing it in a truck for disposal.
- h. Do a visual inspection to make sure any grates, structures, manholes, and pipes are in good working order. Remove manhole covers and grates as necessary for inspecting.



## Standard Operating Procedure

### Process

- a. Provide outlet protection where feasible to minimize the amount of debris that might leave basin during cleaning process.
- b. Start cleaning basin by using backhoe to remove debris and sediment off the bottom.
- c. Continue cleaning structures and pond bottom as necessary by sweeping and shoveling.
- d. Put all material removed from the pond into a dump truck.
- e. Some structures might require use of a vacuum truck. If so use the same procedures described for cleaning catch basins.

### Clean-up/Follow-up

- f. After cleaning basins, clean off the concrete pads using dry methods (sweeping and shoveling).
- g. Make sure they are swept up and clean.
- h. Take the material that was removed to the landfill for final disposal.

### Documentation

- b. Keep logs of each detention basins/pond cleaned including the unique ID number of the basin, the volume of sediment removed, results from any testing, and the location(s) of final disposal of sediment from each stormwater pond.
- c. Keep any notes or comments of any problems.



## Standard Operating Procedure

### 6.8.6 Ditch Management

#### Activities and Definition

Storm drains are gateways that allow pollutants in stormwater to flow untreated from local streets to lakes, rivers and streams. Residual oil, grease, solids, antifreeze, cigarette butts, yard waste, plastic and other wastes found on roads, parking lots and driveways pollute downstream waters by increasing phosphorus levels, reducing oxygen levels and ultimately impairing aquatic habitat for fish and other organisms as well as drinking water sources.

#### Preparation

- a. Monitor ditches as appropriate.
- b. Maintain access to ditch channels wherever possible.
- c. Contact affected property owners and utility owners.

#### Process

- a. Identify areas requiring maintenance.
- b. Determine what manpower or equipment will be required.
- c. Identify access and easements to area requiring maintenance.
- d. Determine method of maintenance that will be least damaging to the channel and adjacent properties or utilities.

#### Clean-up/Follow-up

- a. Stabilize all disturbed soils.
- b. Remove all tracking from paved surfaces near maintenance site, if applicable.
- c. Haul all debris or sediment removed from area to approved dumping site.

#### Documentation

- a. Keep log of actions performed including date and individuals involved.
- b. Keep any notes or comments of any problems.



## Standard Operating Procedure

### 6.9 Vehicles

#### 6.9.1 Fueling

##### Activities and Definition

Fueling of equipment and vehicles should always occur in designated areas when possible. Spill prevention and planning should occur before any fueling takes place.

##### Preparation

- a. Train employees on proper fueling methods and spill cleanup techniques.
- b. Install a canopy or roof over aboveground storage tanks and fuel transfer areas.
- c. Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on mobile fueling vehicles and shall be disposed of properly after use.

##### Process

- a. Shut off the engine
- b. Ensure that the fuel is the proper type of fuel for the vehicle.
- c. Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut off to prevent overfill.
- d. Fuel vehicle carefully to minimize drips to the ground.
- e. Fuel tanks shall not be topped off.
- f. Mobile fueling shall be minimized. Whenever practical vehicles and equipment shall be transported to the designated fueling area in the Facilities area.
- g. When fueling small equipment from portable containers, fuel in an area away from stormdrains and water bodies.

##### Clean-up/Follow-up

- a. Immediately clean up spills using dry absorbent (e.g. kitty litter, sawdust, etc.) sweep up absorbent material and properly dispose of contaminated clean up materials.
- b. Large spills shall be contained as best as possible and the Duty officer and Hazmat team should be notified as soon as possible.

##### Documentation

- a. Comply with underground storage tank records and monitoring requirements.
- b. Document training of employees.



## Standard Operating Procedure

### 6.9.2 Vehicle and Equipment Storage

#### Activities and Definition

When hazardous material comes into contact with rain or snow, the pollutants are washed into the storm sewer system and, ultimately, to surface water bodies and/or ground water. Hazardous materials have negative impacts on fish habitat, ground water drinking water sources, and recreational uses.

#### Preparation

- a. Inspect parking areas for stains/leaks on a regular basis.
- b. Provide drip pans or absorbents for leaking vehicles.

#### Process

- a. Whenever possible, store vehicles inside where floor drains have been connected to sanitary sewer systems.
- b. When inside storage is not available, vehicles and equipment will be parked in the approved designated areas.
- c. Maintain vehicles to prevent leaks as much as possible.
- d. Address any known leaks or drips as soon as possible. When a leak is detected a drip pan will be placed under the leaking vehicle.
- e. The shop will provide a labeled location to empty and store drip pans.
- f. Clean up all spills using dry methods.
- g. Never store leaking vehicles over a storm drain.

#### Clean-up/Follow-up

- a. Any leaks that are spilled on the asphalt will be cleaned up with dry absorbent; the dry absorbent will be swept up and disposed of in the garbage.
- b. The paved surfaces around the building will be swept every two weeks, weather permitting.

#### Documentation

- a. N/A



## Standard Operating Procedure

### 6.9.3 Washing

#### Activities and Definition

Vehicle washing involves the removal of dust and dirt from the exterior of trucks, boats and other vehicles, as well as the cleaning of cargo areas and engines and other mechanical parts. Washing of vehicles and equipment generates oil, grease, sediment and metals in the wash water as well as degreasing solvents, cleaning solutions and detergents used in the cleaning operations.

#### Preparation

- a. Provide wash areas for small vehicles inside the maintenance building that has a drain system which is attached to the sanitary sewer system.
- b. Provide wash areas for large vehicles on an approved outside wash pad that has a drain system which is attached to the sanitary sewer system.
- c. No vehicle washing will be done where the drain system is connected to the storm sewer system.

#### Process

- a. Minimize water and soap use when washing vehicles inside the shop building.
- b. Soap should not be used when washing vehicles outside the shop building.
- c. Use hoses with automatic shut off nozzles to minimize water usage.
- d. When washing outside the building, it is the operator's responsibility to make sure all wash water is contained on the wash pad and does not have access to the storm drain.
- e. Never wash vehicles over a storm drain.

#### Clean-up/Follow-up

- a. Sweep wash areas after every washing to collect what solids can be collected to prevent them from washing down the drain system.
- b. Clean solids from the settling pits on an as needed basis.

#### Documentation

- a. N/A



## Standard Operating Procedure

### 6.10 Water

#### 6.10.1 Planned Waterline Excavation Repair/Replacement

##### Activities and Definition

Waterline excavation and repair of an MS4 system can potentially involve activities that could affect the health of the MS4 system. Planning is critical.

##### Preparation

- a. Determine where discharge flow will go.
- b. Place inlet protection at nearest downstream storm drain inlets.
- c. Clean gutters leading to inlets.
- d. Isolate waterline to be worked on.
- e. Neutralize any chlorine residual before discharging water. This process is a responsibility of the contractor. Contractor shall use such projects as a chlorine diffuser.

##### Process

- a. Make efforts to keep water from pipeline from entering the excavation.
- b. Direct any discharge to pre-determined area.
- c. Backfill and compact excavation.
- d. Haul of excavated material or stock pile nearby.

##### Clean-up/Follow-up

- a. Clear gutter/waterway where water flowed.
- b. Clean up all areas around excavation.
- c. Clean up travel path of trucked material.

##### Documentation

- a. Complete paperwork.



## Standard Operating Procedure

### 6.10.2 Unplanned Waterline Excavation Repair/Replacement

#### Activities and Definition

Waterline Excavation and repair of an MS4 system can potentially involve activities that could affect the health of the MS4 system. Unplanned excavations can be additionally tricky and pre-planning is critical.

#### Preparation

- a. Make sure service trucks have wattles, gravel bags, or other materials for inlet protection.

#### Process

- a. Slow the discharge.
- b. Inspect flow path of discharge water.
- c. Protect water inlet areas.
- d. Follow planned repair procedures.
- e. Haul off spoils of excavation.
- f. Consider use of silt filter bags on pumps.

**Commented [JH1]:** This would cause more potentially damaging life and safety issues if the sanitary sewer system is overwhelmed.

#### Clean-up/Follow-up

- a. Repair eroded areas as needed.
- b. Follow planned repair procedures.
- c. Clean up the travel path of trucked excavated material.

#### Documentation

- a. Complete paperwork.



## Standard Operating Procedure

### 6.10.3 Transporting Dry Excavated Materials and Spoils

#### Activities and Definition

Transportation of materials should be handled with pre-planning and contingency planning.

#### Preparation

- a. Utilize truck with proper containment of materials.
- b. Determine disposal site of excavated materials.

#### Process

- a. Load
- b. Check truck after loading for possible spillage.
- c. Transport in manner to eliminate spillage and tracking.
- d. Utilize one route for transporting.

#### Clean-up/Follow-up

- a. Clean loading area.
- b. Clean transporting route.
- c. Wash off truck and other equipment in a designated equipment cleaning area.

#### Documentation

- a. Complete paperwork.



## Standard Operating Procedure

### 6.10.4 Transporting Wet Excavated Materials & Spoils

#### Activities and Definition

Transportation of materials should be handled with pre-planning and contingency planning.

#### Preparation

- a. Utilize truck with containment for material.
- b. Determine disposal site of excavated material.

#### Process

- a. Load and Transport in manner to minimize spillage & tracking of material.
- b. Check truck for spillage.
- c. Utilize one route of transport.

#### Clean-up/Follow-up

- a. Clean route of transport to provide cleaning of any spilled material.
- b. Washout equipment truck and other equipment in designated wash area.

#### Documentation

- a. Complete paperwork.



## Standard Operating Procedure

### 6.10.5 Waterline Flushing for Routine Maintenance

#### Activities and Definition

Flushing is a process that rapidly removes water from the city's water piping system. Flushing uses water force to scour out materials that accumulate in the city's pipes. Water pipes are usually flushed by opening fire hydrants, where the discharged water flows off the streets the same as rainwater.

#### Preparation

- a. Determine flow path of discharge to inlet of waterway.
- b. Determine chlorine residual.
- c. Neutralize chlorine residual.

#### Process

- a. Clean flow path.
- b. Protect inlet structures.
- c. Use diffuser to dissipate pressure to reduce erosion possibilities.

#### Clean-up/Follow-up

- a. Clean flow path.
- b. Remove inlet protection

#### Documentation

- a. NA



## Standard Operating Procedure

### 6.10.6 Waterline Flushing after Construction/System Disinfection with Discharge to Storm Drain.

#### Activities and Definition

Flushing is a process that rapidly removes water from the city's water piping system. Flushing uses water force to scour out materials that accumulate in the city's pipes. Water pipes are usually flushed by opening fire hydrants, where the discharged water flows off the streets the same as rainwater.

#### Preparation

- a. Determine chlorine content of discharge water, and select de-chlorination equipment to be used.
- b. Determine flow path of discharge.

#### Process

- a. Protect inlets in flow path.
- b. Install de-chlorination equipment.
- c. Sweep and clean flow path.
- d. Use a diffuser to reduce velocities.

#### Clean-up/Follow-up

- a. Pick up inlet protection.
- b. Clean flow paths.
- c. Remove equipment from flush point.

#### Documentation

- a. Residual tests of discharge water.
- b. Complete paperwork.



## Standard Operating Procedure

### 6.10.7 Chemical Handling/Transporting and Spill Release

#### Activities and Definition

Hotspot facilities are facilities that produce higher levels of stormwater pollutants and/or present a higher potential risk for spills, leaks or illicit discharges. Hazardous material storage and handling is of particular concern in these areas.

#### Preparation

- a. Understand MSDS sheets for handling of product.
- b. Determine proper place of handling.
- c. Have necessary containment and spill kits at handling place.

#### Process

- a. Begin transfer process.
- b. Discontinue operations if a spill level occurs.
- c. Disconnect and store handling equipment.

#### Clean-up/Follow-up

- a. Clean up spills with proper material.
- b. Dispose of contaminated material at appropriate facility.

#### Documentation

- a. Report spills to duty officer.
- b. Complete paperwork.



## **Snow Plowing and Ice Control Policy for City Streets, Alleys, Parking Lots, Trails and Sidewalks**

**January 20, 2009**

Amended October 18, 2011

### **1. Introduction**

The City of Golden Valley, Minnesota, finds that it is in the best interest of the residents of the City to assume basic responsibility for control of snow and ice on City streets. Reasonable ice and snow control is necessary for routine travel and emergency services. The City will attempt to provide snow and ice control in a safe and cost-effective manner, keeping in mind safety, budget, personnel, and environmental concerns. The City will use City employees and City-owned equipment, and private equipment when necessary. This policy does not relieve the operator of private vehicles, pedestrians, property owners, residents and all others that may be using public streets, alleys, parking lots, sidewalks and trails, of their responsibility to act in a reasonable, prudent and cautious manner, given the prevailing conditions.

### **2. Initiation of Snow and Ice Control Operations**

The Public Works Maintenance Manager, or his designee, will decide when to begin snow or ice control operations. The criteria for that decision are:

- a. New accumulation of two (2) inches or more;
- b. Drifting of snow that causes problems for travel;
- c. Icy conditions which seriously affect travel; and
- d. Time of snowfall in relationship to heavy use of streets.

Snow and ice control operations are expensive and involve dedication of a significant amount of personnel and equipment. Consequently, snow plowing operations will not generally be conducted for snowfall of less than two (2) inches. However, an accumulation of consecutive snowfall events of less than two (2) inches may constitute initiation of snow plowing operations.

### **3. Plowing Method**

Snow will be plowed in a manner so as to minimize traffic obstructions. The center of the roadway will be plowed first. The snow shall then be pushed from left to right. When a plow goes on a bridge, the driver shall slow down so snow does not go over the bridge, if possible. In times of extreme snowfall, streets may not be immediately cleared of snow. Plowing procedures will be adapted to address field conditions.

## **4. Maintenance Priorities and Schedule of Streets, Alleys, Municipal Parking Lots, Sidewalks and Trails**

### **A. Streets, Alleys and Municipal Parking Lots**

The City has classified city streets based on the street function, traffic volume and importance to the welfare of the community. Those streets classified as minor arterials and collectors will be plowed first. These are high volume routes, which connect major sections of the City and provide access for emergency, fire, police and medical services. The second priority streets are those streets providing access to schools and commercial businesses. The third priority streets are low volume residential streets. The fourth priority areas are alleys and City parking lots, except for those parking lots needed for Public Safety and Public Works functions.

Each year the Public Works Department prepares a map of the City showing the City's streets system. The City is divided into routes, in which ice control and snow removal will be performed. The routes are periodically revised to correspond to budgetary, equipment and personnel resources. Within each route, the major streets are designated as well as areas of steep grades (hazardous areas) that require extra care. Equipment is assigned for the control of snow and ice.

The start of snow and ice control operations for any storm is dependent upon immediate and forecasted weather conditions. The most critical time periods are weekday mornings and evening rush hours. Collector and arterial streets under the City's jurisdictional authority are the first priority. When feasible, the City will attempt to remove snow and ice from the City's collector and arterial streets prior to the rush hour periods. Once the collector and arterial streets are plowed and opened, the remaining streets and cul-de-sacs in the residential, commercial and industrial areas will be plowed and de-iced. The goal is to complete this work within 8 hours of the end of the snow event.

During significant and severe storms, the City must be prepared to move personnel and equipment to maintain priority routes first. In fulfilling the need to have all collector and arterial streets safe and passable, when resources are limited, plowing of all other streets may be suspended at any time so resources can be shifted to the priority routes.

Unforeseeable circumstances may cause delays in completing assigned plow routes. Such circumstances may include weather conditions that endanger the safety of snowplow operators and/or safe and effective operation of equipment, commuter traffic, disabled vehicles, poor visibility conditions, parked cars along streets, assistance to emergency response vehicles, equipment breakdown, and personnel shortages.

## **B. Sidewalks and Trails**

The City will maintain some of the sidewalks and trails in the City. A map of the trails and sidewalks is prepared annually and the sidewalks and trails have been prioritized based on function and use. As there are a limited number of personnel available, the City will only maintain these sidewalks and trails in accordance with personnel and equipment availability.

- a. Priority 1 and 2 trails and sidewalks are typically plowed within 24 hours after a 2-inch snow event occurs, if resources allow.
- b. The City may plow only Priority 1 trails if a snow event occurs with excessive accumulation (greater than 2 inches), in the event of an ice storm, or if equipment or manpower issues require an adjustment in the City's schedule.
- c. Priority 3 trails are plowed only after the maintenance effort for Priority 1 and 2 trails has been completed. This may typically be 48 to 72 hours after a 2-inch snow event. The trails may not be completed if consecutive snow events occur, or if manpower or equipment issues do not allow for plowing.

## **5. Hauling Snow from Rights-of-Way**

The Public Works Maintenance Manager, or designee, will determine if and when snow will be removed from City-owned parking lots and rights-of-way. Such snow removal will occur in areas where there is room on the boulevard for snow storage and in areas where accumulated piles of snow create a hazardous condition. Snow removal operations will not commence until other snow plowing operations have been completed. Snow removal operations may also be delayed depending on weather conditions, personnel and budget availability. The snow will be removed and hauled to a snow storage area. The snow storage area will be located so as to minimize environmental impacts.

## **6. Work Schedule for Snowplow Operators**

In severe snow emergencies, operators may have to work in excess of 12-hour shifts. Operators may be allowed a 10-minute break every 2 hours with a 20-minute meal break after 4 hours. Except for special emergency situations, the operators will be replaced after a 12-hour shift if additional qualified personnel are available. Ideally, snow removal operations should be conducted during early morning hours to avoid interfering with traffic, and allow property owners the time to clear their driveway approaches before traveling to work.

## **7. Traffic Regulations**

The City recognizes that snowplow operators are exempt from traffic regulations set forth in Minnesota Statutes, Chapter 169, while actually engaged in work on streets, except for regulations related to driving while impaired and the safety of school children. Pursuant to this authority, snowplow operators engaged in snow removal or ice control on City streets have discretion to disregard traffic laws set forth in Chapter 169, except for laws relating to impaired driving and school children safety,

when in their judgment, it is safe to disregard such laws. The privileges granted herein to operators of snow removal and ice control vehicles shall apply only if the vehicle is equipped with one lighted lamp displaying a flashing, oscillating, or rotating amber light placed in such a position on the vehicle as to be visible throughout an arc of 360 degrees.

## **8. Weather Conditions**

Snow and ice control operations will be conducted only when weather conditions do not endanger the safety of snowplow operators and equipment. Factors that may delay snow and ice control operations include: severe cold, significant winds, and limited visibility.

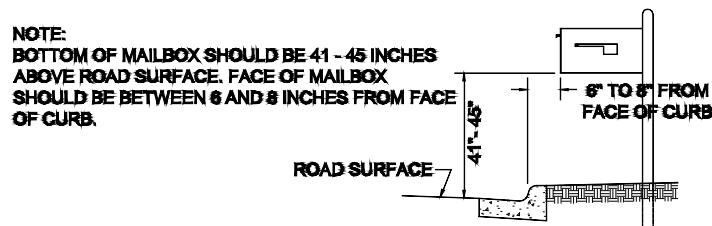
## **9. Use of Sand, Salt, and Other Chemicals**

The City will use sand, salt, and other chemicals when there are hazardous ice or slippery conditions. The City is concerned about the effect of such chemicals on the environment and will limit its use for that reason. With the exception of Winnetka Avenue, south of TH 55, the City of Golden Valley does not strive to achieve bare pavement. Sand, salt, and other chemicals are not placed on City trails and sidewalks, except for those which immediately service a City building that is programmed for use during the winter.

## **10. Mailboxes**

Mailboxes, which are generally an obstruction in City's right-of-way, are sometimes impacted by snow removal operations. The City will conduct a review of each mailbox incident to determine whether a snowplow came into direct contact with the mailbox or support structure. The City will only repair mailboxes actually hit by a snowplow and installed to United States Postal Service Residential Mailbox Standards (see detail below). The City will not be responsible for damage to mailboxes or support posts caused by snow or ice coming into contact with the mailbox.

Based on the City's review, the City will repair the mailbox to an operational state, or if the mailbox is unable to be adequately repaired, the City will replace the mailbox with a standard size, non-decorative metal mailbox. The City may also replace the support post as necessary with a 4" x 4", decay resistance wood support post, if necessary. Dents, scratches, or other superficial damage that does not prohibit normal use of the mailbox will be considered normal wear and tear and will not be repaired or replaced by the City.



## **11. Complaint Procedure**

Complaints will be recorded on telephone logs. Calls requiring service will be transferred to a work request and forwarded to the appropriate supervisor for scheduling. Emergency complaints will be handled in an expeditious manner as resources are available.

## **12. Suspension of Snow Removal Operations/Weather Conditions**

The Public Works Director, or designee, may suspend plowing operations. Generally, suspension of plowing operations will be considered only when weather conditions endanger the safety of City staff and equipment. Factors that may suspend snow and ice control operations include: severe cold, significant winds and limited visibility, or the weather forecast calls for temperatures of 40 degrees within 12 hours.

## Standard Operating Procedures for MS4 Stormwater Training

### Purpose

The Municipal Separate Storm Sewer (MS4) program requires MS4 regulated municipalities to provide a comprehensive training program for municipal staff on MS4 stormwater requirements.

### Description

Regulated municipalities must provide a comprehensive training program that addresses the importance of protecting water quality, ensures employees receive training on requirements of the permit relevant to their job duties, and allows employees (new, seasonal, and existing) to receive training on changes in procedures, practices, techniques and requirements (Part III.D.6.g.). The permit also requires specific training on illicit discharge detection and elimination (Part III.D.3.e.).

### Primary Operational Procedures:

#### Who Should Attend & Why

- Public Works & Engineering - Illicit Discharge Detection and Elimination, Construction Site Enforcement, and Post-Construction Stormwater Management , Municipal Good Housekeeping Practices and Stormwater Pond Maintenance
- Streets & Parks - Illicit Discharge Detection and Elimination, Municipal Good Housekeeping Practices and Stormwater Pond Maintenance
- Planning: Public Education and Participation, Illicit Discharge Detection and Elimination
- Administration: Public Education and Participation, Illicit Discharge Detection and Elimination
- Code Enforcement - Illicit Discharge Detection and Elimination
- Building Officials - Illicit Discharge Detection and Elimination and Construction Site Enforcement
- Fire Department - Illicit Discharge Detection and Elimination , Emergency Spill Response
- Community Service Officers - Illicit Discharge Detection and Elimination

#### Training Opportunities

There are a number of existing training resources and programs available, including:

MCM	Option 1	Option 2	Option 3	Option 4
MCM 1/2	Forester University	Clean Water MN MS4 Tool Kit	Conferences/Workshops	Webinars/Other online training
MCM 3	MECA	In-House Presentation/Training Videos	Conferences/Workshops	Webinars/Other online training
MCM 4/5	U of M Erosion and Stormwater Management	MnDOT	MECA	Webinars/Other online training
MCM 6	U of M Stormwater U	In-House Presentation/Training Videos	Conferences/Workshops	Webinars/Other online training

## **Certifications**

- U of M Erosion and Stormwater Management: Construction Installer
- U of M Erosion and Stormwater Management: Construction Site Management
- U of M Erosion and Stormwater Management: Design of Stormwater Pollution Prevention Plans
- EnviroCert International Certified Professional in Erosion and Sediment Control (CPESC)
- EnviroCert International Certified Erosion, Sediment and Stormwater Inspector (CESSWI)
- EnviroCert International Certified Municipal Separate Storm Sewer System Specialist (CMS4S)
- EnviroCert International Certified Professional in Stormwater Quality (CPSWQ)
- MnDOT ESC Certifications
- U of M Extension Stormwater U: Stormwater Practices Maintenance Certification

## **In-House Training**

It is required that each municipality host an annual in-house MS4 training to address the importance of water quality, IDDE, procedures and requirements, etc. that are specific to their community. Suggested topics for in-house MS4 training may include: a brief background on MS4 permit requirements and the City's MS4 permit, illicit discharge detection and elimination, erosion and sediment control for construction projects, inspection and maintenance of outfalls and ponds, road salt application/salt use, and other best practices for good housekeeping, etc.

## **Recordkeeping & Documentation**

Permittees are required to establish a schedule that establishes initial training for new and/or seasonal employees, and recurring training intervals for existing employees (Appendix A). When documenting staff training, describe the list of topics covered, names of employees in attendance and the date of each event (Appendix B).

## **Resources**

- U of M Erosion & Stormwater Management: [www.erosion.umn.edu](http://www.erosion.umn.edu)
- Clean Water MN MS4 Toolkit: [www.cleanwatermn.org/MS4-Toolkit.aspx](http://www.cleanwatermn.org/MS4-Toolkit.aspx)
- EnviroCert International: [www.envirocertintl.org/](http://www.envirocertintl.org/)
- U of M Extension Stormwater U: [www.extension.umn.edu/environment/stormwater](http://www.extension.umn.edu/environment/stormwater)
- MECA: [www.mnerosion.org](http://www.mnerosion.org)
- Freshwater Society: Annual Road Salt Symposium: [www.freshwater.org](http://www.freshwater.org)
- Excal Visual Training Videos: [www.excalvisual.com/exvhomedpl](http://www.excalvisual.com/exvhomedpl)
- Forester University: [www.foresteruniversity.net](http://www.foresteruniversity.net)

## Appendix A

# Staff Training Schedule

## Appendix B

## Staff Training Log