

## 928. STORMWATER MANAGEMENT ORDINANCE

### 928.010. STATUTORY AUTHORIZATION AND PURPOSE

- A. Statutory Authorization: This ordinance is adopted pursuant to the authorization and policies contained in Minnesota Statutes Chapters 103B, 105, 462, and 497, Minnesota Rules, Parts 6120.2500-6120.3900, and Minnesota Rules Chapters 8410 and 8420.
- B. Purpose: The purpose of this ordinance is to set forth the minimum requirements for stormwater management that will diminish threats to public health, safety, public and private property and natural resources of the City by establishing performance standards including:
1. Reduce runoff rates to levels that allow for stable conveyance of flow through the watersheds in the City;
  2. Require rate control practices on development and redevelopment to preserve or reduce runoff rates at a level that shall not cause degradation of the watersheds in the City;
  3. Limit runoff volumes by utilizing site designs that limit impervious surfaces or incorporate volume control practices such as infiltration;
  4. Minimize connectivity of impervious surfaces to the stormwater system;
  5. Require the use of effective non-point source pollution reduction BMP's in development and redevelopment projects;
  6. Protect and maintain downstream drainage systems to provide permanent and safe conveyance of stormwater. Reduce the frequency and/or duration of potential downstream flooding;
  7. Reduce the total volume of stormwater runoff to protect surface water quality and provide recharge to groundwater;
  8. Remove sediment, pollutants, and nutrients from stormwater to protect surface water quality;
- C. Scope: No person or company shall commence a land disturbing activity 20,000 sf or greater, unless on an individual lot within a residential subdivision approved by the City after approval of this ordinance if the activity complies with the original common plan of development, without first obtaining a permit from the City that incorporates and approves a stormwater management plan for activity or development.

- D. Definitions: Unless specifically defined below, words or phrases used in this Chapter shall be interpreted so as to give them the same meaning as they have in common usage and to give this Chapter its most reasonable application. For the purpose of this Chapter, the words “must” and “shall” are mandatory and not permissive. All distances, unless otherwise specified, shall be measured horizontally. As used in this Chapter, words and terms shall have the meanings ascribed to them in Appendix B.

## 928.020. STORMWATER MANAGEMENT

The following standards shall apply to all developments and redevelopments within the City:

- A. Stormwater Management Plan. Every applicant for a building permit that involves disturbing 20,000 sq. ft. of land, subdivision approval, or a permit to allow land disturbing activities must submit a stormwater management plan to the City. No building permit, subdivision approval, or permit to allow land disturbing activities shall be issued until approval of this plan. All plans shall be consistent with National Pollution Discharge Elimination Permit (NPDES) requirements, and the filing or approval requirements of relevant Watershed Districts, Watershed Management Organizations, Soil and Water Conservation Districts, or other regulatory bodies.
1. General Policy on Stormwater Runoff Rates - Site plans for new development and redevelopment involving 20,000 sf or more of disturbance of any kind will be assessed for stormwater quantity control and stormwater quality management. The general policy on stormwater runoff rates is to reduce the impacts of development by maintaining pre-development hydrological conditions or improving conditions to positively affect the downstream watershed.
  2. Stormwater Management Plan Requirements - The minimum requirements of the Stormwater Plan shall be consistent with the most recent version of the Minnesota Pollution Control Agency’s NPDES Construction Permit Requirements
    - a. Identification and description
      - (1) Project name;
      - (2) Project type (residential, commercial, industrial, road construction, or other);
      - (3) Project location;
      - (4) County parcel identification number (legal description);

- (5) Names and addresses of the record owner, developer, land surveyor, engineer, designer of the plat, and any agents, contractors, and subcontractors who will be responsible for project implementation;
  - (6) Identification of the entity responsible for long term maintenance of the project. This includes a maintenance plan and schedule for all permanent stormwater practices;
  - (7) Phasing of construction with estimated start date, time frames and schedules for each construction phase, and completion date;
  - (8) Copies of permits or permit applications required by any other governmental entity or agencies including mitigation measures required as a result of any review for the project (e.g. wetland mitigation, EAW, EIS, archaeology survey, etc.)
- b. Existing Conditions - A complete site plan and specifications, signed by the person who designed the plan shall be drawn to an easily legible scale, shall be clearly labeled with a north arrow and a date of preparation, and shall include, at a minimum, the following information:
- (1) Project map – An 8.5 by 11 inch United States Geological Survey (USGS) 7.5 minute quad or equivalent map indicating site boundaries and existing elevations.
  - (2) Property lines and lot dimensions.
  - (3) Existing zoning classifications for land within and abutting the development, including shoreland, floodway, flood fringe, or general floodplain, and other natural resource overlay districts.
  - (4) All buildings and outdoor uses including all dimensions and setbacks.
  - (5) All public and private roads, interior roads, driveways and parking lots.
  - (6) Identify all natural and artificial water features (including drain tiles) on site and within 1/2 mile of project boundary, including, but not limited to lakes, ponds, streams (including intermittent streams), and ditches. Show ordinary high water marks of all navigable waters, 100-year

flood elevations and delineated wetland boundaries, if any. If not available, appropriate flood zone determination or wetland delineation, or both, may be required at the applicant's expense.

- (7) Map of watershed drainage areas, soil types, infiltration rates, depth to bedrock, and depth to seasonal high water table.
  - (8) Steep slopes where areas of 12% or more existing over a distance for 50 feet or more.
  - (9) Bluff areas where the slope rises at least 25 feet above the toe of the bluff and the grade of the slope from the toe of the bluff to a point 25 feet or more above the toe of the bluff averages 30% or greater.
  - (10) Wooded area and tree survey as defined by the zoning authority.
  - (11) Agricultural Land preservation area(s), County Biological Survey sites, or other officially designated natural resource.
  - (12) Hydrologic calculations for volume runoff, velocities, and peak flow rates by watershed, for the 2.0-yr, 10-yr, and 100-yr 24-hour storm events. These shall include:
    - (a) Pre-existing peak flow rates.
    - (b) Assumed runoff curve numbers.
    - (c) Time of concentration used in calculations.
    - (d) If a flood insurance study has been done by the National Flood Insurance Program, the 100-year flood elevation with and without the floodway.
  - (13) Bankfull discharge rate (1.5 year recurrence interval) of creek or stream if there is a waterway on the site or if the site discharges directly to the waterway.
- c. Proposed Conditions - A complete site plan and specifications, signed by the person who designed the plan shall be drawn to an easily legible scale, shall be clearly labeled with a north arrow and a date of preparation, and shall include, at a minimum, the following information:

- (1) Project map – An 8.5 by 11 inch United States Geological Survey (USGS) 7.5 minute quad or equivalent map indicating site boundaries, proposed elevations, and areas not to be disturbed;
- (2) Property lines and lot dimensions of plat.
- (3) The dimensions and setbacks of all buildings and easements.
- (4) The location and area of all proposed impervious surfaces including public and private roads, interior roads, driveways, parking lots, pedestrian ways, and rooftops. Show all traffic patterns and types of paving and surfacing materials.
- (5) Location, size, and approximate grade of proposed public sewer and water mains.
- (6) Elevations, sections, profiles, and details as needed to describe all natural and artificial features of the project.
- (7) Identify all natural and artificial water features on site and within 1/2 mile of project boundary, including, but not limited to lakes, ponds, streams (including intermittent streams), and ditches. Show ordinary high water marks of all navigable waters, 100-year flood elevations and delineated wetland boundaries, if any. If not available, appropriate flood zone determination or wetland delineation, or both, may be required at the applicant's expense.
- (8) Hydrologic calculations for volume runoff, velocities, and peak flow rates by watershed, for the 2.0-yr, 10-yr, and 100-yr 24-hour storm events. These shall include:
  - (a) Pre and Post construction peak flow rates
  - (b) Assumed runoff curve numbers.
  - (c) Time of concentration used in calculations.
  - (d) If a flood insurance study has been done by the National Flood Insurance Program, the 100-year flood elevation with and without the floodway.
- (9) Hydrologic calculations documenting pollution reduction of 90% total suspended solids removal for new construction and 45% total suspended solids removal for redevelopment sites from the runoff generated by a NURP water quality storm (2.5" rainfall).
- (10) Bankfull discharge rate (1.5 year recurrence interval) of creek or stream if there is a waterway on the site or if the site discharges directly to the waterway.

- (11) Locations of all stormwater management practices, infiltration areas, and areas not to be disturbed during construction
- (12) Steep slopes where areas of 12% or more existing over a distance for 50 feet or more.
- (13) Location of temporary sedimentation basins - If more than 10 acres are disturbed and drained to a single point of discharge temporary sediment basins must be installed, however, if the site has sensitive features as determined by the City or the potential of off site impacts, then temporary sediment basins must be installed to protect the resource. This is determined on a site by site basis. When site restrictions do not allow for a temporary sediment basin, equivalent measures such as smaller basins, check dams, and vegetated buffer strips can be included.
- (14) Location and engineered designs for structural stormwater management practices including stormwater treatment devices that remove oil and floatable material (e.g., basin outlets with submerged entrances).
- (15) Normal water level, high water level, and emergency overflow elevations for the site.
- (16) Floodway and flood fringe boundary, if available.

d. All proposed stormwater practices, hydrologic models, and design methodologies shall be reviewed by City and certified for compliance by the City in accordance with their plans and specifications.

**B. Stormwater Management Performance Standards and Design Criteria**

The applicant shall consider reducing the need for stormwater management performance standards by incorporating the use of natural topography and land cover such as natural swales and depressions as they exist before development to the degree that they can accommodate the additional flow of water without compromising the integrity or quality of the receiving waterbody. The development shall minimize impact to significant natural features. Review the site for steep slopes (greater than 12%), wetlands, wooded areas of significance, rare and endangered species habitat, areas designated by the County Biological Survey, metro greenways, or County parks and open space. These areas should not be developed. The development shall limit impervious surface coverage. Impervious surface coverage of a site shall not exceed that allowed by City Ordinance. Proposed design, suggested location and phased implementation of effective, practicable stormwater management measures for plans shall be designed, engineered and implemented to achieve the following results:

1. **Volume Control** - Stormwater runoff volume retention shall be achieved onsite in the amount equivalent to the runoff generated from a one inch rainfall over the impervious surfaces of the development for new

development and from a half inch rainfall over the impervious surfaces of the development for redevelopment. The required stormwater runoff volume reduction shall be calculated as follows:

**New Development**

**Required Volume (ft<sup>3</sup>) = Impervious surfaces (ft<sup>2</sup>) x 1.0 (in) x 0.9 coefficient x 1/12 (ft/in)**

**Redevelopment**

**Required Volume (ft<sup>3</sup>) = Impervious surfaces (ft<sup>2</sup>) x 0.5 (in) x 0.9 coefficient x 1/12 (ft/in)**

- a. When using infiltration for volume reduction, the following requirements must be met:
  - (1) Infiltration volumes and facility sizes shall be calculated using the appropriate hydrological soil group classification and design infiltration rate from Table 1. Select the design infiltration rate from Table 1 based on the least permeable soil horizon within the first five feet below the bottom elevation of the proposed infiltration BMP.
  - (2) The applicant may complete double-ring infiltrometer test measurements at the proposed bottom elevation of the infiltration BMP to the requirements of ASTM D3385. The measured infiltration rate shall be divided by the appropriate correction factor selected from the Minnesota Stormwater Manual. This test must be completed by a licensed soil scientist or engineer.

<b>Soil Group</b>	<b>Soil Textures</b>	<b>ASTM Unified Soil Class Symbols</b>	<b>Rate</b>
<b>A</b>	Gravel, sand, sandy gravel, or silty gravel, loamy sand, sandy loam	GW, GP	1.63 in/hr
		GM, SW, SP	0.80 in/hr
<b>B</b>	Loam, Silt loam	SM	0.60 in/hr
		ML, OL	0.30 in/hr
<b>C</b>	Sandy clay loam	GC, SC	0.20 in/hr
<b>D</b>	Clay loam, silty clay loam, sandy clay, silty clay, or clay	CL, CH, OH, MH	0.00 in/hr

Source: *Minnesota Stormwater Manual, November 2005.*

- (3) The infiltration area shall be capable of infiltrating the required volume within 48 hours for surface and subsurface BMPs.
- (4) Infiltration areas shall be limited to the horizontal areas subject to prolonged wetting.

- (5) Areas of permanent pools tend to lose infiltration capacity over time and shall not be accepted as an infiltration practice.
- (6) Stormwater runoff must be pretreated to remove solids before discharging to infiltration areas to maintain the long term viability of the infiltration areas.
- (7) Design and placement of infiltration BMPs shall be done in accordance with the Minnesota Department of Health guidance called “Evaluating Proposed Stormwater Infiltration Projects in Vulnerable Wellhead Protection Areas.” (Final version to govern.)
- (8) Specific site conditions may make infiltration difficult, undesirable, or impossible. Some of these conditions are listed in Table 2 and may qualify the applicant for Alternative Compliance Sequencing. The applicant may also submit a request to the City for Alternative Compliance Sequencing for site conditions not listed below. All requests shall indicate the specific site conditions present and a grading plan, utility plan, and the submittal requirement listed in the table below.

<b>Table 2. Alternative Compliance Site Conditions*</b>		
<b>Type</b>	<b>Specific Site Conditions</b>	<b>Submittal Requirements</b>
Potential Contamination	Potential Stormwater Hotspots (PSHs)	PSH locations and flow paths
	Contaminated Soils	State Permitted Brownfield Documentation, Soil Borings
Physical Limitations	Low Permeability (Type D Soils)	Soil Borings
	Bedrock within 3 vertical feet of bottom of infiltration area	Soil Borings
	Seasonal High Groundwater within 3 vertical feet of bottom of infiltration area	Soil Borings
	Karst Areas	Soil Borings
Land Use Limitations	Utility Locations	Site Map
	Adjacent Wells	Well Locations

\* Alternative Compliance is allowed for the volume reduction portion only.

**Alternative Compliance Sequencing.** To the maximum extent practicable, the volume reduction standard shall be fully met onsite.



2. Water Quality - Developments must incorporate effective non-point source pollution reduction BMPs to achieve 90% (new construction) or 45% (redevelopment) total suspended solids removal from the runoff generated by a NURP water quality storm (2.5" rainfall). Runoff volume reduction requirement may be considered and included in the calculations showing compliance with achieving the 90% TSS and/or 45% TSS removal requirement. Water quality calculations, documentation and/or water quality modeling shall be submitted to verify compliance with the standard.
3. Runoff rate control – hydrologic calculations - A hydrograph method based on sound hydrologic theory shall be used to analyze runoff for the design or analysis of flows and water levels..
4. Runoff rate control - design standards - Runoff rates for the proposed activity shall not exceed existing runoff rates for the 2-year, 10-year, and 100-year critical storm events, and runoff rates may be restricted to less than the existing rates when the capacity of downstream conveyance systems is limited.
5. Outlets - Discharges from new construction sites must have a stable outlet capable of carrying designed flow at a non-erosive velocity. Outlet design must consider flow capacity and flow duration. This requirement applies to both the site outlet and the ultimate outlet to stormwater conveyance or waterbody.
6. Pond Requirements – For all projects creating more than one acre of impervious surface, ponding shall be required. At a minimum all pond design specifications shall conform to the current City and NPDES construction permit requirements. In addition the following are required:
  - a. A bench shall be provided starting at the normal water level and ending 1 foot below normal water level with side slopes no less than 10 feet horizontal to 1 foot vertical (10:1) for safety considerations. Pond side slopes shall not exceed 4 feet horizontal to 1 foot vertical (4:1) without approval of the City.
  - b. All public and private owned stormwater management facilities shall provide an unobstructed access path (minimum of 10 feet) capable of supporting light truck traffic during normal weather for the purpose of conducting inspections of the facility and maintenance thereof. No private stormwater facility may be approved unless an easement is provided to the City allowing access for maintenance and inspection. Maintenance agreements before, during, and after development are also required.

- c. To provide proper protection for adjacent property within the first tier from the pond, the design storm interval for the ponding area is a 100-year, 24-hour storm with correctly sized conveyances for 100-yr, 24-hour storm flows consistent with standards used by the City in planning for the flood protection of homes and public facilities.
7. Floodplain - No person or political subdivision shall alter or fill land below the 100-year flood elevation of any water body, public water, or public water wetland without first obtaining a permit from the Watershed District.
- a. Placement of fill within the 100-year floodplain is prohibited unless compensatory storage is provided. Compensatory storage must be provided on the development or immediately adjacent to the development within the affected floodplain.
- Compensatory storage shall result in the creation of floodplain storage to fully offset the loss of floodplain storage.  
Compensatory storage shall be created prior to or concurrently to the permitted floodplain filling.
- b. All habitable buildings, roads, and underground parking structures on or adjacent to a project site shall comply with the following flood control and freeboard requirements:

See Table 3 below for freeboard requirements.

<b>Table 3 – Flood Control and Freeboard Requirements</b>			
<b>Condition</b>	<b>Water Bodies with Piped Outlets</b>	<b>Water Bodies without Piped Outlets</b>	<b>Subsurface Stormwater Management BMPs</b>
<b>New Habitable Buildings</b>	<ul style="list-style-type: none"> <li>▪ Low floor must be a minimum of 2 feet above the 100-year flood elevation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low floor must be a minimum of 2 feet above the back to back 100-year flood elevation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low floor must be a minimum of 2 feet above the 100-year flood elevation or one foot above the emergency overflow elevation unless flood proofing measures are constructed with the building.</li> <li>▪ Low opening must be a minimum of 2 feet above the 100-year flood elevation or one foot above the emergency overflow elevation.</li> </ul>
<b>Existing Habitable Buildings – Adjacent to and Potentially Affected by Flood Waters</b>	<ul style="list-style-type: none"> <li>▪ Low opening must be a minimum of 2 feet above the 100-year flood elevation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low opening must be a minimum of 2 feet above the back to back 100-year flood.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low floor must be a minimum of 2 feet above the 100-year flood elevation or one foot above the emergency overflow elevation unless flood proofing measures are constructed with the BMP.</li> <li>▪ Low opening must be a minimum of 2 feet above the 100-year flood elevation or one</li> </ul>

			foot above the emergency overflow elevation.
<b>Underground Parking Structures</b>	<ul style="list-style-type: none"> <li>▪ Low opening must be a minimum of 2 feet above the 100-year flood elevation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low opening must be a minimum of 2 feet above the back to back 100-year flood elevation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low opening must be a minimum of 2 feet above the 100-year flood or one foot above the emergency overflow elevation.</li> </ul>
<b>Public Roadway</b>	<ul style="list-style-type: none"> <li>▪ Roadway shall not flood when adjacent to stormwater storage basin designed to store the 100-year storm event.</li> <li>▪ 2 foot Freeboard requirement</li> </ul>	<ul style="list-style-type: none"> <li>▪ Roadway shall not flood when adjacent to stormwater storage basin designed to store the back to back 100-year storm event.</li> <li>▪ 2 foot Freeboard requirement</li> </ul>	<ul style="list-style-type: none"> <li>▪ Roadway shall not flood when adjacent to stormwater storage basin designed to store the 100-year storm event.</li> <li>▪ 2 foot Freeboard requirement</li> </ul>

c. For water bodies without a piped outlet:

- (1) The normal water level of a water body without a piped outlet shall be determined by a qualified licensed geologist or hydrogeologist. A ground water analysis using existing or installed monitoring wells on or near the site and soil conditions in the basin shall be used. Ideally, the peak groundwater elevation over a continuous three-year monitoring period shall be considered the normal water level of a basin without a piped outlet, provided soil conditions allow full drainage of recent storm event within 48 hours.
- (2) For existing water bodies without piped outlets, mottled soils may be considered in establishing a water body's normal water level in lieu of groundwater analysis.
- (3) An emergency response plan shall be developed for addressing potential flooding in homes below the overland emergency overflow swale around each water body without a piped outlet. The plans shall be adopted by the City and be included in a maintenance agreement for the development.

d. For underground parking structures:

- (1) Underground parking structures shall be flood protected to minimize impacts from high groundwater during flood events.
- (2) All drainage structures within underground parking shall include an anti-backflow device to prevent stormwater from surcharging into the area.

Emergency overflow swales or areas shall be constructed to convey the peak 100-year discharge from each water body to the next downstream water body and away from buildings.

8. Minimum Protection for Rivers, Lakes and Wetlands - Rivers, streams, lakes, and wetlands shall be protected from runoff generated during construction and after completion of the development. Runoff shall not be discharged directly into wetlands without appropriate quality and quantity runoff control, depending on the individual wetland's vegetation. Wetlands must not be drained or filled, wholly or partially, unless replaced by either restoring or creating wetland areas of at least equal public value. Compensation, including the replacement ratio and quality of replacement should be consistent with the requirements outlined in the Board of Water and Soil Resources rules that implement the Minnesota Wetland Conservation Act 1991 including any and all amendments to it.

- a. Buffer protection for Rivers, Streams, Lakes, and Wetlands – Buffers shall meet those required by the Watershed District guidelines. The City may allow buffer area averaging in cases where averaging will provide additional protection to either the resource or environmentally valuable adjacent upland habitat, provided that the resources total buffer area remains the same. Care should be taken in averaging so that the buffers usefulness is not short circuited. Detailed buffer design is site specific, and therefore, the City can require a larger buffer than the minimum specified.

#### C. Stormwater and Urban Runoff Pollution Control

##### 1. Illegal Disposal

- a. No person shall throw, deposit, place, leave, maintain, or keep or permit to be thrown, placed, left, maintained or kept, any refuse, rubbish, garbage, or any other discarded or abandoned objects, articles, or accumulations, in or upon any street, alley, sidewalk, storm drain, inlet, catch basin conduit or drainage structure, business place, or upon any public or private plot of land in City, so that the same might be or become a pollutant, except in

containers, recycling bags, or other lawfully established waste disposal facility.

- b. No person shall intentionally dispose of grass, leaves, dirt, or other landscape debris into a water resource buffer, street, road, alley, catch basin, culvert, curb, gutter, inlet, ditch, natural watercourse, flood control channel, canal, storm drain or any fabricated natural conveyance.

## 2. Illicit Discharges and Connections

- a. Connection to the City's MS4 System.

- (1) *New direct connections and replacement of existing connections shall be completed using a method that is approved by the City.*

- (2) Peak flow rate, the total volume of flow, and the timing of the flow for new connections must be managed to not cause new water conveyance problems.

- b. Discharge Prohibitions.

- (1) **Prohibition of Illegal Discharges.** No person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials, including but not limited to pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water.

- (2) **Prohibition of Illicit Connections.** The construction, use, maintenance or continued existence of illicit connections to the storm drain system without a City permit is prohibited.

- (i) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

- (ii) A person is considered to be in violation of this Rule if the person connects a line conveying sewage to the City's MS4, or allows such a connection to continue.

- c. Suspension of MS4 Access.

- (1) Suspension due to Illicit Discharges in Emergency Situations. The City may, without prior notice, suspend MS4 discharge access when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the City's MS4 or Waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the City may take such steps as deemed necessary to prevent or minimize damage to the City's MS4 or Waters of the United States, or to minimize danger to persons or the environment.
- (2) Suspension due to the Detection of Illicit Discharge. Any person discharging to the City's MS4 in violation of this Rule may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The City shall notify a violator of the proposed termination of its MS4 access. The violator may petition the City for a reconsideration and hearing. A person commits an offense subject to enforcement if the person reinstates MS4 access to facilities terminated pursuant to this Section, without the prior approval of the City.

d. Monitoring of Discharges.

- (1) Applicability. This section applies to all facilities that have storm water discharges associated with industrial activity, including construction activity.
- (2) Access to Facilities.
  - (a) The City shall be permitted to enter and inspect facilities subject to regulation under this Rule as often as may be necessary to determine compliance with this Rule. The discharger shall make the necessary arrangements to allow access to representatives of the City.
  - (b) Facility operators shall allow the City ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of an NPDES permit to discharge storm water, and the performance of any additional duties as defined by state and federal law.

- (c) If the City has been refused access to any part of the premises from which stormwater is discharged, the City may seek issuance of a search warrant from any court of competent jurisdiction.
- e. Requirement to Prevent, Control, and Reduce Stormwater Pollutants by the Use of Best Management Practices. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMPs. Any person responsible for a property or premise, which is, or may be, the source of an illicit discharge, may be required by the City to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the municipal separate storm sewer system.
- f. Watercourse Protection. Every person owning property through which a watercourse passes shall keep and maintain that part of the watercourse within the property free of trash, debris, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures shall not become a hazard to the use, function, or physical integrity of the watercourse.
- g. Notification of Spills. Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which result or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or water of the U.S. said person shall take all necessary steps to ensure the containment and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the release. In the event of a release of non-hazardous materials, said person shall notify the City in person or by phone or facsimile no later than the next business day following discovery of the release.
- h. Enforcement.
  - (1) Notice of Violation. Whenever the City finds that a person has violated a prohibition or failed to meet a requirement of

this Rule, the City may order compliance by written notice of violation to the responsible person. Such notice may require without limitation and at the owners expense:

- (a) The performance of monitoring, analyses, and reporting;
  - (b) The elimination of illicit connections or discharges;
  - (c) That violating discharges, practices, or operations shall cease and desist;
  - (d) The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property;
  - (e) Payment of a fine to cover administrative and remediation costs; and/or
  - (f) The implementation of source control or treatment BMPs.
- (2) Abatement. If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work shall be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.
- (3) Appeal of Notice of Violation. Any person receiving a Notice of Violation may appeal the determination of the City. The notice of appeal must be received by the City within 5 days working days from the date of the Notice of Violation. Hearing on the appeal before the City Board of Managers shall take place within 15 days from the date of receipt of the notice of appeal. The decision of the City shall be final.
- (4) Enforcement Measures after Appeal. If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, or, in the event of an appeal, within 3 days of the decision of the City Council, then representatives of the City are authorized to take any and all measures necessary to abate the violation and/or restore



the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the City or its agents to enter upon the premises for the purposes set forth above.

- (5) Cost of Abatement. The City may assess costs for abatement. Within 30 days after abatement of the violation, the City shall notify the property owner of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within 10 calendar days. If the amount due is not paid within a timely manner as determined by the decision of the municipal authority or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment.
- (6) Injunctive Relief. It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this Rule. If a person has violated or continues to violate the provisions of this Rule, the City may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.
- (7) Violations Deemed a Public Nuisance. In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this Rule is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.
- (8) Relation to Other Rules. None of the enforcement provisions of this Rule shall abridge or alter the right of the City to seek remedies provided for under Rule H herein.

i. EXCEPTIONS.

- (1) The following discharges are exempt from discharge prohibitions established by this Rule: water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water,

ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wetland flows, swimming pools (if dechlorinated - typically less than one PPM chlorine), street wash water, fire fighting activities, and any other water source not containing Pollutants.

- (2) Discharges specified in writing by the City as being necessary to protect public health and safety.
  - (3) Dye testing is an allowable discharge, but requires a verbal notification to the City prior to the time of the test.
  - (4) Any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.
3. Good Housekeeping Provisions - Any owner or occupant of property within City shall comply with the following good housekeeping requirements:
- a. No person shall leave, deposit, discharge, dump, or otherwise expose any chemical or septic waste in an area where discharge to streets or storm drain system may occur. This section shall apply to both actual and potential discharges.
    - (1) For pools, water should be allowed to sit seven days to allow for chlorine to evaporate before discharge. If fungicides have been used, water must be tested and approved for discharge to the wastewater treatment plant.
  - b. Runoff of water from residential property shall be minimized to the maximum extent practicable. Runoff of water from the washing down of paved areas in commercial or industrial property is prohibited unless necessary for health or safety purposes and not in violation of any other provisions in City codes.
  - c. Storage of Materials, Machinery, and Equipment

- (1) Objects, such as motor vehicle parts, containing grease, oil or other hazardous substances, and unsealed receptacles containing hazardous materials, shall not be stored in areas susceptible to runoff.
    - (2) Any machinery or equipment that is to be repaired or maintained in areas susceptible to runoff shall be placed in a confined area to contain leaks, spills, or discharges.
  - d. Removal of Debris and Residue - Debris and residue shall be removed, as noted below:
    - (1) Fuel and chemical residue or other types of potentially harmful material, such as animal waste, garbage or batteries, which is located in an area susceptible to runoff, shall be removed as soon as possible and disposed of properly. Household hazardous waste may be disposed of through City collection program or at any other appropriate disposal site and shall not be place in a trash container.
- D. Review - City shall review the stormwater management plan. This review shall be completed as part of the other reviews and approvals by the City.
  - 1. Permit Required. If the City determines that the stormwater management plan meets the requirements of this ordinance, City shall issue a permit valid for a specified period of one year (unless otherwise specified by the City), that authorizes the land disturbance activity contingent on the implementation and completion of this plan.
  - 2. Denial. If City determines that the stormwater management plan does not meet the requirements of this ordinance, City shall not issue a permit for the land disturbance activity. This plan must be resubmitted for approval before the land disturbance activity begins. All land use and building permits shall be suspended until the developer has an approved stormwater management plan.
- E. Modification of Plan. An approved stormwater management plan may be modified on submission of an application for modification to City, and after approval by the City. In reviewing such an application, the City may require additional reports and data.
- F. Variance Requests. The City may grant a variance on a case-by-case basis. The content of a variance shall be specific, and shall not affect other approved provisions of a SWPPP.
  - 1. The variance request shall be in writing and include the reason for requesting the variance. The request must follow the procedures listed in Section 922 of the City Ordinances.

2. Economic hardship is not sufficient reason for granting a variance.
  3. City shall respond to the variance request in writing and include the justification for granting or denying the request.
- G. Financial Securities. The applicant shall install or construct, or pay City fees for all stormwater management performance standards necessary to maintain design criteria as outlined in this section. The City may require the applicant to provide an in-kind or monetary contribution to the development and maintenance of City stormwater management facilities designed to serve multiple land disturbing and development activities undertaken by one or more persons.
- H. Inspections and Enforcement. Inspections will be performed by the City during construction to ensure that stormwater management plan measures are properly installed and maintained. In all cases the inspectors will attempt to work with the applicant or developer to maintain proper stormwater management.
1. Construction stop order -The City may issue construction stop orders until stormwater management measures meet specifications. A second stormwater management inspection must then be scheduled and passed before the final inspection will be done.
  2. Perimeter breach - If stormwater management measures malfunction and breach the perimeter of the site, enter streets, other public areas, or waterbodies, the applicant shall immediately develop a cleanup and restoration plan, obtain the right-of-way from the adjoining property owner, and implement the cleanup and restoration plan within 48 hours of obtaining permission. If in the discretion of the City, the applicant does not repair the damage caused by the stormwater runoff the City can do the remedial work required and charge the cost to the applicant.
  3. Actions to ensure compliance -The City can take the following action in the event of a failure by applicant to meet the terms of this ordinance:
    - a. Withhold inspections or issuance of certificates or approvals
    - b. Revoke any permit issued by the City to the applicant
    - c. Conduct remedial or corrective action on the development site or adjacent site affected by the failure
    - d. Charge applicant for all costs associated with correcting the failure or remediating damage from the failure. If payment is not made within thirty days, payment will be made from the applicant's financial securities.

- e. Bring other actions against the applicant to recover costs of remediation or meeting the terms of this ordinance.
  - f. Any person, firm or corporation failing to comply with or violating any of these regulation, shall be deemed guilty of a misdemeanor and be subject to a fine or imprisonment or both. Each day that a separate violation exists shall constitute a separate offense.
- I. Maintenance of Stormwater Facilities. The City requires that stormwater facilities be maintained.
- 1. Private Stormwater Facilities - All private stormwater facilities shall be maintained in proper condition consistent with the performance standards for which they were originally designed.
  - 2. Removal of settled materials - All settled materials from ponds, sumps, grit chambers, and other devices, including settled solids, shall be removed and properly disposed of as needed to ensure proper function of the device.
  - 3. Maintenance plan required - No private stormwater facilities may be approved unless a maintenance plan is provided that defines who will conduct the maintenance, the type of maintenance and the maintenance intervals.
  - 4. Maintenance-friendly design - All stormwater facilities must be designed to minimize the need for maintenance, to provide easy vehicle and personnel access for maintenance purposes, and be structurally sound. It shall be the responsibility of the applicant to obtain any necessary easements or other property interests to allow access to the facilities for inspection or maintenance.
  - 5. Inspection - The City shall have the right to inspect all stormwater facilities during construction and at the City's discretion after construction is completed.
- J. Severability. The provisions of this ordinance are severable, and if any provisions of this ordinance, or application of any provision of this ordinance to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this ordinance must not be affected thereby.

## APPENDIX A. SPECIAL WATERS

### A. GENERAL REQUIREMENTS

All requirements in this Appendix are in addition to **BMPs** already specified in the permit. Where provisions of Appendix A conflict with requirements elsewhere in the permit the provisions in Appendix A take precedence. All **BMPs** used to comply with this Appendix must be documented in the **SWPPP** for the project. If the terms and conditions of this Appendix cannot be met, an individual permit will be required in accordance with Minn. R. ch. 7001.

### B. REQUIREMENTS FOR DISCHARGING TO WETLANDS

If the project has any **storm water** discharges with the potential for significant adverse impacts to a **wetland** (e.g., conversion of a natural **wetland** to a **storm water** pond) , the **Permittee(s)** must demonstrate that the **wetland** mitigative sequence has been followed in accordance with D.1 or D.2 of this appendix.

1. If the potential adverse impacts to a **wetland** on a specific project site have been addressed by permits or other approvals from an official statewide program (U.S. Army Corps of Engineers 404 program, Minnesota Department of Natural Resources, or the State of Minnesota Wetland Conservation Act) that are issued specifically for the project and project site, the **Permittee** may use the permit or other determination issued by these agencies to show that the potential adverse impacts have been addressed. For the purposes of this permit, de minimus actions are determinations by the permitting agency that address the project impacts, whereas a non-jurisdictional determination does not address project impacts.
2. If there are impacts from the project that are not addressed in one of the permits or other determinations discussed in Appendix A, Part D.1 (e.g., permanent inundation or flooding of the **wetland**, significant degradation of water quality, excavation, filling, draining), the **Permittee** must minimize all adverse impacts to **wetlands** by utilizing appropriate measures. Measures used must be based on the nature of the **wetland**, its vegetative City types and the established hydrology. These measures include in order of preference:
  - a. Avoid all significant adverse impacts to **wetlands** from the project and post project discharge.
  - b. Minimize any unavoidable impacts from the project and post project discharge.
  - c. Provide compensatory mitigation when the **Permittee** determines that there is no reasonable and practicable alternative to having a significant adverse impact on a **wetland**. For compensatory mitigation, wetland restoration or creation shall be of the same type, size and whenever reasonable and practicable in the same watershed as the impacted wetland.

### E. DISCHARGES REQUIRING ENVIRONMENTAL REVIEW

This permit does not replace or satisfy any environmental review requirements, including those under the Minnesota Environmental Policy Act (MEPA) or the National Environmental Policy Act (NEPA). The **owner** must complete any environmental review required by law, including any required Environmental Assessment Work Sheets or Environmental Impact Statements, Federal environmental review, or other required review.

F. DISCHARGES AFFECTING ENDANGERED OR THREATENED SPECIES

This permit does not replace or satisfy any review requirements for Endangered or Threatened species, from new or **expanded discharges** that adversely impact or contribute to adverse impacts on a listed endangered or threatened species or adversely modify a designated critical habitat. The **owner** must conduct any required review and coordinate with appropriate agencies for any project with the potential of affecting threatened or endangered species, or their critical habitat.

G. DISCHARGES AFFECTING HISTORIC PLACES OR ARCHEOLOGICAL SITES

This permit does not replace or satisfy any review requirements for Historic Places or Archeological Sites, from new or **expanded discharges** which adversely affect properties listed or eligible for listing in the National Register of Historic Places or affecting known or discovered Archeological Sites. The **owner** must be in compliance with National Historic Preservation Act and conduct all required review and coordination related to historic preservation, including significant anthropological sites and any burial sites, with the Minnesota Historic Preservation Officer.

## APPENDIX B. DEFINITIONS

1. "**Best Management Practices (BMPs)**" means 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 this 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 MPCA's **BMPs**. (Other sources include manufacturers specifications, **Storm Water 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).

2. "**Commissioner**" means the **Commissioner** of the Minnesota Pollution Control Agency or the **Commissioner's** designee.
3. "**Common Plan of Development or Sale**" means 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.
4. "**Construction Activity**" For this permit, **construction activity** includes **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 **storm water** 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.
5. "**Dewatering**" means the removal of water for **construction activity**. It can be a discharge of appropriated surface or groundwater to dry and/or solidify a construction site. It may require Minnesota Department of Natural Resources permits to be appropriated and if contaminated may require other MPCA permits to be discharged.
6. "**Energy Dissipation**" means methods employed at pipe outlets to prevent erosion. Examples include, but are not limited to: concrete aprons, riprap, splash pads, and gabions that are designed to prevent erosion.
7. "**Erosion Prevention**" means measures employed to prevent erosion including but not limited to: soil stabilization practices, limited grading, mulch, temporary or **permanent cover**, and construction phasing.



8. "**Final Stabilization**" means that either:
  - a. All soil disturbing activities at the site have been completed and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed;
  - b. For individual lots in residential construction by either: (a) The homebuilder completing **final stabilization** as specified above, or (b) the homebuilder establishing temporary stabilization including perimeter controls for an individual lot prior to occupation of the home by the homeowner and informing the homeowner of the need for, and benefits of, **final stabilization**. (Homeowners typically have an incentive to put in the landscaping functionally equivalent to **final stabilization** as quick as possible to keep mud out of their homes and off sidewalks and driveways.); or
  - c. 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. Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to **surface waters** and drainage systems, and areas which are not being returned to their preconstruction agricultural use must meet the **final stabilization** criteria in (a) or (b) above.
9. "**General Contractor**" means the party who signs the construction contract with the **owner** to construct the project described in the final plans and specifications. Where the construction project involves more than one contractor, the **general contractor** will be the party responsible for managing the project on behalf of the **owner**. In some cases, the **owner** may be the **general contractor**. In these cases, the **owner** may contract an individual as the **operator** who would become the Co-Permittee.
10. "**Homeowner Factsheet**" means a fact sheet developed by the MPCA to be given to homeowners at the time of sale by a builder to inform the homeowner of the need for, and benefits of, **final stabilization**.
11. "**Impervious Surface**" 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.
12. "**National Pollutant Discharge Elimination System (NPDES)**" means the program for issuing, modifying, revoking, reissuing, terminating, monitoring, and enforcing permits under the Clean Water Act (Sections 301, 318, 402, and 405) and United States Code of Federal Regulations Title 33, Sections 1317, 1328, 1342, and 1345..
13. "**Normal Wetted Perimeter**" means the area of a conveyance, such as a ditch, channel, or pipe that is in contact with water during flow events that are expected to occur once every year.
14. "**Notice of Termination**" means notice to terminate coverage under this permit after construction is complete, the site has undergone **final stabilization**, and maintenance agreements for all permanent facilities have been established, in accordance with all

applicable conditions of this permit. **Notice of Termination** forms are available from the MPCA.

15. **“Operator”** means 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.) and must perform those responsibilities in a workmanlike manner.
16. **"Owner"** means 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 holder, the party or individual identified as the lease holder; or the contracting government agency responsible for the **construction activity**.
17. **"Permanent Cover"** means **final stabilization**. Examples include grass, gravel, asphalt, and concrete.
18. **"Permittee"** means a person or persons, firm, or governmental agency or other institution that signs the application submitted to the MPCA and is responsible for compliance with the terms and conditions of this permit.
19. **“Saturated Soil”** means the highest seasonal elevation in the soil that is in a reduced chemical state because of soil voids being filled with water. **Saturated soil** is evidenced by the presence of redoximorphic features or other information.
20. **"Sediment Control"** means 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.
21. **“Small Construction Activity”** means small construction activity as defined in 40 C.F.R. part 122.26(b)(15) . Small construction activities include clearing, grading and excavating that result in land disturbance of equal to or greater than one acre and less than five acres. **Small construction activity** includes the disturbance of less than one (1) acre of total land area that is part of a larger **common plan of development or sale** if the larger common plan will ultimately disturb equal to or greater than one and less than five (5) acres.
22. **"Stabilized"** means the exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, wood fiber blanket, or other material that prevents erosion from occurring. Grass seeding is not stabilization.
23. **"Standard Plates"** means general drawings having or showing similar characteristics or qualities that are representative of a construction practice or activity.
24. **"Storm water"** is defined under Minn. R. 7077.0105, subp. 41(b), and includes precipitation runoff, **storm water** runoff, snow melt runoff, and any other surface runoff and drainage.
25. **“Storm Water Pollution Prevention Plan”** means a plan for **storm water** discharge that includes **erosion prevention** measures and **sediment controls** that, when implemented, will decrease soil erosion on a parcel of land and decrease off-site nonpoint pollution.

26. **“Surface Water or Waters”** means all streams, lakes, ponds, marshes, **wetlands**, reservoirs, springs, rivers, drainage systems, waterways, watercourses, and irrigation systems whether natural or artificial, public or private.
27. **“Temporary Erosion Protection”** means methods employed to prevent erosion. Examples of temporary cover include; straw, wood fiber blanket, wood chips, and erosion netting.
28. **“Underground Waters”** means water contained below the surface of the earth in the saturated zone including, without limitation, all waters whether under confined, unconfined, or perched conditions, in near surface unconsolidated sediment or regolith, or in rock formations deeper underground. The term ground water shall be synonymous with underground water.
29. **“Waters of the State”** (as defined in Minn. Stat. § 115.01, subd. 22) means 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.
30. **“Water Quality Volume”** means ½ inch of runoff from the new **impervious surfaces** created by this project and is the volume of water to be treated in the permanent **storm water** management system, as required by this permit except as provided in Appendix A.C.2.
31. **“Wetland” or “Wetlands”** is defined in Minn. R. 7050.0130, subp. F and includes those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in **saturated soil** conditions. **Wetlands** generally include swamps, marshes, bogs, and similar areas. Constructed **wetlands** designed for wastewater treatment are not **waters of the state**. **Wetlands** must have the following attributes:
- a. A predominance of hydric soils;
  - b. Inundated or saturated by **surface water** or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in a **saturated soil** condition; and
  - c. Under normal circumstances support a prevalence of such vegetation.

## APPENDIX C. MODEL DESIGN MANUALS

- *Low Impact Design Center, <http://www.lowimpactdevelopment.org/>*
- *Low Impact Development Design Manual, 1997, Prince George's County, Maryland, Department of Environmental Resources*
- *Stormwater BMP Design Supplement for Cold Climates, 1997, Center for Watershed Protection, Ellicott City, MD., <http://www.cwp.org/>*
- *Design of Stormwater Filtering Systems, 1996, Center for Watershed Protection, Ellicott City, MD., <http://www.cwp.org/>*
- *Wet Extended Detention Pond Design, 1995, Center for Watershed Protection, Ellicott City, MD.*
- *Impervious Surface Reduction Study, 1995, Olympia, WA and Washington State Department of Ecology, <http://www.cwp.org/>*
- *Better Site Design: A Handbook for Changing Development Rules in Your City, 1998, Center for Watershed Protection, Ellicott City, MD., <http://www.cwp.org/>*
- *Consensus Agreement on Model Development Principles to Protect Our Streams, Lakes, and Wetlands, 1998, Center for Watershed Protection, Ellicott City, MD., <http://www.cwp.org/>*
- *Maryland Stormwater Design Manual, Volumes I and II, October 2000, Maryland Department of the Environment. Baltimore, MD <http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/>*
- *Protection Water Quality in Urban Areas, March 2000, Minnesota Pollution Control Agency, [www.pca.state.mn.us](http://www.pca.state.mn.us).*
- *Site Planning for Urban Stream Protection, 1995, Center for Watershed Protection, Ellicott City, MD, <http://www.cwp.org/>*
- *State of Minnesota Storm Water Advisory Group. June 1997. Storm-Water and Wetlands: Planning and Evaluation Guidelines for Addressing Potential Impacts of Urban Storm Water and Snow-Melt Runoff on Wetlands. Minnesota Pollution Control Agency, [www.pca.state.mn.us](http://www.pca.state.mn.us)*
- *State of Minnesota Storm Water Advisory Group. September 1997. Buffer Zones. Minnesota Pollution Control Agency, [www.pca.state.mn.us](http://www.pca.state.mn.us)*
- *Design Calculations for Wet Detention Ponds (Walker, 1987a).*
- *Criteria for planning and design considerations are given in Chapter 4 of Protecting Water Quality in Urban Areas by the MPCA (1989). Stormwater BMP Design Supplement for Cold Climates, Center for Watershed Protection (December 1997), <http://www.cwp.org/>*

(Source: Ord. 654)