

An Example of a Comprehensive Urban Stormwater Pollution Control Ordinance for New Developments and Significant Redevelopments

This model was originally developed as an educational aid for
Minnesota Pollution Control Agency (MPCA) staff.

Introduction (Target: January 2003)

This example ordinance (sometimes referred to as a “model” ordinance) was originally developed as an educational aid for the Minnesota Pollution Control Agency’s (MPCA) staff. It is based on the best parts of existing Minnesota municipal ordinances, advice from agency staff, other organizations and information available on the Internet. It represents what we consider the “best of the best” ideas in storm water management. This example will allow communities, developing storm water ordinances, to avoid the problems that other growing communities have encountered. This example is a “work in progress.” It will be periodically updated, probably yearly, as significant information becomes available.

As storm water management becomes a more widely understood aspect of environmental protection, interest in best practices has grown. The MPCA staff realized that this example ordinance should be made available to the public. It is our hope that it will serve to inform the public and shape local storm water management practices.

The agency’s surface water monitoring programs indicates that when Minnesota surface water does not meet water quality standards, nonpoint sources of pollution are either the sole or a major contributing cause in 90-95% of the cases. The national figure is about 90%. The example urban storm water pollution control ordinance is one more tool in the nonpoint source toolbox intended to lessen this problem.

Our experience shows that such an ordinance should contain at least these essential points:

1. Adequate developer’s storm water controls financial security requirements (\$3,000/acre range). This covers both repairing “blown out” controls and remediation costs.
2. Adequately wide (100 foot rivers and streams, 40 foot wetlands) vegetated buffers with slope extensions.
3. The 2-year, 10-year and 100-year 24-hour storm event discharge rates from storm water retention structures should not exceed the predevelopment runoff discharge rates for the same storm events.
4. A development’s storm water pollution control plan’s protections should be included in the grading plan.
5. If either a trout stream or a state outstanding resource value water is involved, the volume released from storm water treatment units to that water should not exceed that expected from storm events up to the predevelopment 10-year 24-hour storm.

Why are these points important?

Statewide we deal with 1,200-1,500 construction site runoff permits a year for sites exposing over five acres to erosion. In the year 2003 the construction site permit requirement goes to projects exposing over one acre, the number of permits will expand to 4,000 to 7,000 per year. Working with such a large number of permits has given our storm water permit enforcement staff a lot of experience in dealing with instances where storm water controls have failed.

Having inadequate developer’s financial securities is a common problem with rural communities that are in the early stages of residential growth. They under estimate the amount of money needed to fix failed or inadequate storm water controls, when developers drag out fixing such

problems. Not fixing the problem promptly leads to the damage escalating with each new storm event. When controls fail the most expensive part of the fix is not repairing the failed controls, but repairing the resulting downstream damage (e.g. removing silt from wetlands, private property, etc.).

Based on a large field of experience the agency's storm water permit enforcement staff recommend a minimum developer's financial security in the \$3,000 per acre range. Based on their own rapid growth related environmental problems some Twin Cities area municipalities now require a developer's financial security in the same \$3,000 per acre range.

The general consensus is that the wider the vegetated buffer strip is the better it is. The wider the buffer strip the more pollutants are removed. Most researchers consider a minimum width of 100 feet combined with a slope modifier reasonable.

Storm water holding basins whose outlet structures are designed to only release its water at the 100-year discharge rate tend to cause channel scouring problems. They release water at too high a rate during the more frequent smaller rainfall events. This high release rate increases the frequency at which downstream scouring velocities and channel erosion occurs. Storm water discharge rates from storm water treatment basins should not increase over what the predevelopment 2-year, 10-year and 100-year peak 24-hour storm discharge rates were, based on the last 10 years of how that land was used.

This is a common-sense communications item that is too often neglected. A storm water pollution control plan is written, approved and then placed in a filing cabinet. The contractor receives a copy of the grading plan, but not a copy of the storm water pollution control plan. Mistakes such as destroying existing buffer strips result. The best control plan in the world is useless, unless it is communicated to the contractor. Incorporating the control plan's earthwork related elements in the grading plan is a common sense solution to this problem.

Trout waters and outstanding resource value waters are by nature high quality waters worthy of special protection. The clearest example of volume impacts is in trout streams. Trout waters are cool water streams. Storm water stored in storm water retention ponds heats up under the influence of the sun. Under Minnesota Rule 7050.0222, subpart 2 the temperature water quality standard for trout waters is, "no material increase." Large volumes of warm water entering trout streams from these ponds have a definite negative impact on the stream's aquatic ecosystem and violate Minnesota water quality standards. If the frequency of such events can be significantly reduced, the ecosystem will have time to recover to a healthy level and stay there for a few years before the next event occurs.

Not all parts of the example ordinance will apply to every cast. For example, if no trout stream or outstanding resource water is impacted, these parts should be omitted.

To all of those who have assisted us in this effort, we offer our sincere thanks.

For more information or your thoughts on this example ordinance, contact the MPCA Stormwater Program at 651-757-2119 or toll-free at 800-657-3804.

EXAMPLE OF A COMPREHENSIVE URBAN STORM WATER POLLUTION CONTROL ORDINANCE FOR NEW DEVELOPMENTS AND SIGNIFICANT REDEVELOPMENTS

Table of Contents:

Section 1.0 Purpose

Section 2.0 Scope

Section 3.0. Definitions

Section 4.0 Storm Water Pollution Control Plan

- 4.1 General Policy on Storm Water Runoff Rates
- 4.2 The Storm Water Pollution Control Plan and the Grading Plan
- 4.3 Inspections of the Storm Water Pollution Control Plan's Measures
- 4.4 Minimum Requirements of the Storm Water Pollution Control Plan
- 4.5 General Storm Water Pollution Control Plan Criteria
- 4.6 Minimum Storm Water Pollution Control Measures and Related Inspections
- 4.7 Permanent Storm Water Pollution Controls
- 4.8 Minimum Design Standards for Storm Water Wet Detention Facilities
- 4.9 Minimum Protection for Natural Wetlands
- 4.10 Vegetated Buffer Protection for Rivers and Streams
- 4.11 Models/Methodologies/Computations
- 4.12 Additional Special Trout Stream and Outstanding Resource Value Water Requirements

Section 5.0. Review

- 5.1 Permit Required
- 5.2 Permit Denial
- 5.3. Permit Suspension and Revocation

Section 6.0. Modification of Plan

- 6.1 Records Retention

Section 7.0 Financial Securities

- 7.1 Maintaining the Financial Security
- 7.2 Proportional Reduction of the Financial Security
- 7.3 Action Against the Financial Security
- 7.4 Emergency Action
- 7.5 Returning the Financial Security

Section 8.0 Notification of Failure of the Storm Water Pollution Control Plan

8.1 Notification by the City

8.2 Erosion Off-Site

8.3 Erosion into Streets, Wetlands or Water Bodies

8.4 Failure to Do Corrective Work

Section 9.0 Variance

9.1) Variance Request

9.2) Variance Public Notice

9.3) Variance Determination

9.4) Variance Response

9.5) Variance Expiration Date

9.6) Variance Revocation

Section 10.0. Enforcement.

10.1) Penalties

Section 11.0 Right of Entry and Inspection

11.1) Powers

Section 12.0 Abrogation and Greater Restrictions

Section 13.0 Severability.

Section 14.0. Effective Date

EXAMPLE OF AN URBAN STORM WATER POLLUTION CONTROL ORDINANCE FOR NEW DEVELOPMENTS

The City Council ordains:

Section 1.0 Purpose. The purpose of this ordinance is to control or eliminate storm water pollution along with soil erosion and sedimentation within the city. It establishes standards and specifications for conservation practices and planning activities, which minimize storm water pollution, soil erosion and sedimentation.

Section 2.0 Scope. Except where a variance is granted, any person, firm, sole proprietorship, partnership, corporation, state agency, or political subdivision proposing a land disturbance activity within the city shall apply to the city for the approval of the storm water pollution control plan. No land shall be disturbed until the plan is approved by the city and conforms to the standards set forth herein.

Section 3.0. Definitions. These definitions apply to this ordinance. Unless specifically defined below, the words or phrases used in this ordinance shall have the same meaning as they have in common usage. When not inconsistent with the context, words used in the present tense include the future tense, words in the plural number include the singular number, and words in the singular number include the plural number. The words “shall” and “must” are always mandatory and not merely directive.

3.010 Applicant Any person or group that applies for a building permit, subdivision approval, or a permit to allow land disturbing activities. Applicant also means that person's agents, employees, and others acting under this person's or group's direction. The term “applicant” also refers to the permit holder or holders and the permit holder's agents, employees, and others acting under this person's or group's direction.

3.011 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 the degradation of surface water, including 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. (Examples of BMP's can be found in the current versions of the Minnesota Pollution Control Agency's publications, “Protecting Water Quality in Urban Areas,” and, “Storm-Water and Wetlands: Planning and Evaluation Guidelines for Addressing Potential Impacts of Urban Storm-Water and Snow-Melt Runoff on Wetlands,” the Metropolitan Council's “Minnesota Urban Small Sites BMP Manual” (available as a compact disk or on the Internet world wide web under the address: www.metrocouncil.org/environment/environment.htm), the United States Environmental

Protection Agency's, "Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices," (as a reference for BMP's) and the Minnesota Department of Transportation's, "Erosion Control Design Manual.")

3.012 Buffer A protective vegetated zone located adjacent to a natural resource, such as a water of the state, that is subject to direct or indirect human alteration. Such a buffer strip is an integral part of protecting an aquatic ecosystem through trapping sheet erosion, filtering pollutants, reducing channel erosion and providing adjacent habitat.

The buffer strip begins at the "ordinary high water mark" for wetlands and the top of the bank of the channel for rivers and streams. This start point corresponds to the Minnesota Department of Natural Resources' definition of a "shoreline" in Minnesota Rules 6115.0030. Therefore a stream with a width of 30 feet between banks and 100 foot buffer strips has a total protected width of 230 feet.

Acceptable buffer vegetation includes preserving existing predevelopment vegetation and/or planting locally distributed native Minnesota trees, shrubs and grassy vegetation. Alteration of buffers is strictly limited. Buffer areas are designated with permanent markers. (*Commentary: These permanent markers can be in a form that compliments the natural landscape. An example is permanent signs, attached to large artificial or natural boulder, orientated so that the signs face toward the water body.*)

A guide of what plant species not to plan is found in the Minnesota Department of Natural Resources' Minnesota Rules chapter 6216's list of exotic prohibited, regulated, unlisted and unregulated plant species.)

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

3.014 Developer Any person, group, firm, corporation, sole proprietorship, partnership, state agency, or political subdivision thereof engaged in a land disturbance activity.

3.015 Development Any land disturbance activity that changes the site's runoff characteristics in conjunction with residential, commercial, industrial or institutional construction or alteration.

3.016 Discharge The release, conveyance, channeling, runoff, or drainage, of storm water, including snowmelt, from a construction site.

3.017 Energy Dissipation This refers to methods employed at pipe outlets to prevent erosion. Examples include, but are not limited to; aprons, riprap, splash pads, and gabions that are designed to prevent erosion.

3.018 Erosion Any process that wears away the surface of the land by the action of water, wind, ice, or gravity. Erosion can be accelerated by the activities of people and nature.

3.019 Erosion Control Refers to methods employed to prevent erosion. Examples include soil stabilization practices, horizontal slope grading, temporary or permanent cover, and construction phasing.

3.020 Erosion and Sediment Practice Specifications or Practice The management procedures, techniques, and methods to control soil erosion and sedimentation as officially adopted by either the state, county, city or local watershed group, whichever is more stringent.

3.021 Exposed Soil Areas All areas of the construction site where the vegetation (trees, shrubs, brush, grasses, etc.) or impervious surface has been removed, thus rendering the soil more prone to erosion. This includes topsoil stockpile areas, borrow areas and disposal areas within the construction site. It does not include temporary stockpiles or surcharge areas of clean sand, gravel, concrete or bituminous, which have less stringent protection. Once soil is exposed, it is considered “exposed soil,” until it meets the definition of “final stabilization.”

3.022 Filter Strips A vegetated section of land designed to treat runoff as overland sheet flow. They may be designed in any natural vegetated form from a grassy meadow to a small forest. Their dense vegetated cover facilitates pollutant removal and infiltration. *(Commentary: Storm water controls using infiltration need protection against silt plugging, such as settling basins and manhole silt sumps. Otherwise silt plugging can result in failure rates as high as 80-90% in only five years.)*

3.023 Final Stabilization Means that all soil disturbing activities at the site have been completed, and that a uniform (evenly distributed, e.g., without large bare areas) perennial vegetative cover with a density of seventy-five (75) percent of the cover for unpaved areas and areas not covered by permanent structures has been established, or equivalent permanent stabilization measures have been employed. Simply sowing grass seed is not considered final stabilization. Where agricultural land is involved, such as when pipelines are built on crop or range land, final stabilization constitutes returning the land to its preconstruction agricultural use. (Examples of vegetative cover practices can be found in the current version of the Minnesota Department of Transportation’s publication, “Supplemental Specifications to the (year of the latest update) Standard Specifications for Construction.”)

3.024 Hydric Soils Soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

3.025 Hydrophytic Vegetation Macrophytic (large enough to be observed by the naked eye) plant life growing in water, soil or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

3.026 Impervious Surface 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 existed prior to development. Examples include rooftops, sidewalks, patios, driveways, parking lots, storage areas, and concrete, asphalt, or gravel roads. *(Commentary: The movement of heavy equipment compacts soil and can significantly increase*

imperviousness. This problem is not corrected by covering the compacted soil with a lawn. Such compaction problems can cause an under estimate of a development's impervious nature.)

3.027 Land Disturbance Activity Any land change that may result in soil erosion from water or wind and the movement of sediments into or upon waters or lands within this government's jurisdiction, including construction, clearing & grubbing, grading, excavating, transporting and filling of land. Within the context of this rule, land disturbance activity does not mean:

- A.) Minor land disturbance activities such as home gardens and an individual's home landscaping, repairs, and maintenance work.
- B.) Additions or modifications to existing single family structures that which result in creating under five thousand (5,000) square feet of exposed soil or impervious surface and/or is part of a larger common development plan.
- C.) Construction, installation, and maintenance of fences, signs, posts, poles, and electric, telephone, cable television, utility lines or individual service connections to these utilities, which result in creating under five thousand (5,000) square feet of exposed soil or impervious surface.
- D.) Tilling, planting, or harvesting of agricultural, horticultural, or silvicultural (forestry) crops.
- E.) Emergency work to protect life, limb, or property and emergency repairs, unless the land disturbing activity would have otherwise required an approved erosion and sediment control plan, except for the emergency. If such a plan would have been required, then the disturbed land area shall be shaped and stabilized in accordance with the city's requirements as soon as possible.

3.028 Native Vegetation The presettlement (Already existing in Minnesota at the time of statehood in 1858) group of plant species native to the local region, that were not introduced as a result of European settlement or subsequent human introduction.

3.029 Ordinary High Water Mark This is generally the boundary elevation where the vegetation changes from predominately aquatic (Where "aquatic" broadly means that the vegetation can survive moist conditions.) to terrestrial. This elevation delineates the highest water level, which has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly that point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. Water often reaches this elevation in spring. For rivers and streams the ordinary high water mark is usually the top of the bank. It is less well defined for lakes and wetlands. The definition in Minnesota Statute 103G.005, subdivision 14 says that the "... "Ordinary high water level ... " means the boundary of waterbasins, watercourses, public waters, and public waters wetlands, and:

- (1) the ordinary high water level is an elevation delineating the highest water level that has been maintained for a sufficient period of time to leave evidence upon the landscape,

commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial;

(2) for watercourses, the ordinary high water level is the elevation of the top of the bank of the channel; and

(3) for reservoirs and flowages, the ordinary high water level is the operating elevation of the normal summer pool.

The term “ordinary high water mark” is further defined in Minnesota Rule 6120.2500, subpart 11. Ordinary high water marks are determined by the Minnesota Department of Natural Resources’ area hydrologist.

3.030 Outstanding Resource Value Waters (ORVW) Minnesota Rule 7050.0180, subpart defines ORVW’s as, “...waters within the Boundary Waters Canoe Area Wilderness, Voyageur’s National Park, and Department of Natural Resources designated scientific and natural areas, wild, scenic, and recreational river segments, Lake Superior, those portions of the Mississippi River from Lake Itasca to the southerly boundary of Morrison County that are included in the Mississippi Headwaters Board comprehensive plan dated February 12, 1981, and other waters of the state with high water quality, wilderness characteristics, unique scientific or ecological significance, exceptional recreational value, or other special qualities which warrant stringent protection from pollution.”

3.031 Paved Surface A constructed hard, smooth surface made of asphalt, concrete or other pavement material. Examples include, but are not limited to, roads, sidewalks, driveways and parking lots.

3.032 Permanent Cover Means “final stabilization.” Examples include grass, gravel, asphalt, and concrete. See also the definition of “final stabilization.”

3.033 Permit With in the context of this rule a “permit” is a written warrant or license granted for construction, subdivision approval, or to allow land disturbing activities

3.034 Phased Project or Development Clearing a parcel of land in distinct phases, with at least fifty percent (50%) of the project’s preceding phase meeting the definition of “final stabilization” and the remainder proceeding toward completion, before beginning the next phase of clearing.

3.035 Runoff Coefficient The fraction of total precipitation that is not infiltrated into or otherwise retained by the soil, concrete, asphalt or other surface upon which it falls, that will appear at the conveyance as runoff. This coefficient is usually estimated for an event or on an average annual basis.

3.036 Sediment The product of an erosion process; solid material both mineral and organic, that is in suspension, is being transported, or has been moved by water, wind, or ice, and has come to rest on the earth’s surface either above or below water level.

3.037 Sedimentation The process or action of depositing sediment.

3.038 Sediment Control The methods employed to prevent sediment from leaving the development site. Examples of sediment control practices are 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.

3.039 Significant Redevelopment Alterations of a property that changes the “footprint” of a site or building in such a way that results in the disturbance of over one (1) acre of land. This term is not intended to include activities, which would not be expected to cause adverse storm water quality impacts and offer no new opportunity for storm water controls, such as exterior remodeling.

3.040 Soil The unconsolidated mineral and organic material on the immediate surface of the earth. For the purposes of this document temporary stockpiles of clean sand, gravel, aggregate, concrete or bituminous materials (which have less stringent protection) are not considered “soil” stockpiles.

3.041 Stabilized The exposed ground surface after it has been covered by sod, erosion control blanket, riprap, pavement or other material that prevents erosion. Simply sowing grass seed is not considered stabilization.

3.042 Steep Slope Any slope steeper than fifteen (15) percent (Fifteen (15) feet of rise for every one hundred (100) feet horizontal run).

3.043 Storm Water Under Minnesota Rule 7077.0105, subpart 41b storm water, “means precipitation runoff, storm water runoff, snow melt runoff, and any other surface runoff and drainage.” (According to the Code of Federal Regulations (CFR) under 40 CFR 122.26 [b][13], “Storm water means storm water runoff, snow melt runoff and surface and drainage.”). Storm water does not include construction site dewatering.

3.044 Storm Water Pollution Control Plan A joint storm water and erosion and sediment control plan that is a document containing the requirements of Section 4, that when implemented will decrease soil erosion on a parcel of land and off-site nonpoint pollution. It involves both temporary and permanent controls.

3.045 Structure Anything manufactured, constructed or erected which is normally attached to or positioned on land, including portable structures, earthen structures, roads, parking lots, and paved storage areas.

3.046 Subdivision Any tract of land divided into building lots for private, public, commercial, industrial, etc. development. Minnesota Rule 6120.2500, subpart 17 defines subdivision as, “. . . land that is divided for the purpose of sale, rent, or lease, including planned unit development.”

3.047 Temporary Protection Short-term methods employed to prevent erosion. Examples of such protection are straw, mulch, erosion control blankets, wood chips, and erosion netting.

3.048 Urban Of, relating to, characteristic of, constituting a city.

3.049 Vegetated or Grassy Swale A vegetated earthen channel that conveys storm water, while treating the storm water by biofiltration. Such swales remove pollutants by both filtration and infiltration. *(Commentary: Storm water controls using infiltration need protection against silt plugging, such as settling basins and manhole silt sumps. Otherwise silt plugging can result in failure rates as high as 80-90% in only five years.)*

3.050 Very Steep Slope Any slope steeper than one foot of rise for each three feet of horizontal run (Thirty-three (33) percent slope). *(Commentary: This is about the steepest slope that it is safe to operate heavy equipment on.)*

3.051 Waters of the State As defined in Minnesota Statutes section 115.01, subdivision 22 the term “. . . ‘waters of the state’ 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.” *(Commentary: According to Minnesota Rules 7050.0130, subpart A, disposal systems or treatment works operated under either a Minnesota Pollution Control Agency permit or an agency certificate of compliance are not considered “waters of the state.” Under Minnesota Rules 7050.0130, subpart F, constructed wetlands designed for wastewater treatment are not “waters of the state.” Also see the definition of “wetlands.”)*

3.052 Wet Detention Facility A permanent man-made structure, containing a permanent pool of water, used for the temporary storage of runoff.

3.053 Wet Retention Facility The same as a wet detention facility.

3.054 Wetlands As defined in Minnesota Rules 7050.0130, subpart F, “. . . ‘wetlands’ are 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.”

(Commentary: Two quick references of what is an existing identified wetland are the National Wetlands Inventory maps distributed by the U.S. Department of the Interior's Fish and Wildlife Service and the Minnesota Department of Natural Resources' maps of protected and public waters and wetlands.)

Section 4.0 Storm Water Pollution Control Plan. Every applicant for a building permit, subdivision approval, or a permit to allow land disturbing activities must submit a storm water pollution control plan to the city engineer. No building permit, subdivision approval, or permit to allow land disturbing activities shall be issued until the city approves this plan. At a minimum these pollution abatement control practices must conform to those in the current version of the Minnesota Pollution Control Agency's publication, "Protecting Water Quality in Urban Areas."

4.1 General Policy on Storm Water Runoff Rates. Release rates from storm water treatment basins shall not increase over the predevelopment twenty-four (24) hour two (2) year, ten (10) year and one hundred (100) year peak storm discharge rates, based on the last ten (10) years of how that land was used. Also accelerated channel erosion must not occur as a result of the proposed activity.

For discharges to wetlands volume control is generally more important than discharge rate control.

4.2 The Storm Water Pollution Control Plan and the Grading Plan. The storm water pollution control plan's measures, the limit of disturbed surface and the location of buffer areas shall be marked on the approved grading plan, and identified with flags, stakes, signs etc. on the development site before work begins.

4.3 Inspections of the Storm Water Pollution Control Plan's Measures. At a minimum, such inspections shall be done weekly by either the city, developer or the developer's designated representative, and within twenty-four (24) hours after every storm or snow melt event large enough to result in runoff from the site (approximately 0.25 inches or more in twenty-four (24) hours). At a minimum, these inspections shall be done during active construction.

4.4 Minimum Requirements of the Storm Water Pollution Control Plan. The plan shall contain or consider:

- A.) The name and address of the applicant and the location of the activity.
- B.) Project description: the nature and purpose of the land disturbing activity and the amount of grading, utilities, and building construction involved.
- C.) Phasing of construction: time frames and schedules for the project's various aspects.
- D.) A map of the existing site conditions: existing topography, property information, steep and very slopes, existing drainage systems/patterns, type of soils, waterways, wetlands,

vegetative cover, one hundred (100) year flood plain boundaries, locations of existing and future buffer strips and labeling the portions of the site that are within trout stream or state outstanding resource value water watersheds.

E.) A site construction plan that includes the location of the proposed land disturbing activities, stockpile locations, erosion and sediment control plan, construction schedule, and the plan for the maintenance and inspections of the storm water pollution control measures.

F.) Adjacent areas: neighboring streams, lakes, residential areas, roads, etc., which might be affected by the land disturbing activity.

G.) Designate the site's areas that have the potential for serious erosion problems.

H.) Erosion and sediment control measures: the methods that will be used to control erosion and sedimentation on the site, both during and after the construction process.

I.) Permanent stabilization: how the site will be stabilized after construction is completed, including specifications, time frames or schedules.

J.) Calculations: any that were made for the design of such items as sediment basins, wet detention basins, diversions, waterways, infiltration zones and other applicable practices.

4.5 General Storm Water Pollution Control Plan Criteria. The plan shall address the following:

A.) Stabilizing all exposed soils and soil stockpiles and the related time frame or schedule.

B.) Establishing permanent vegetation and the related time frame or schedule.

C.) Preventing sediment damage to adjacent properties and other designated areas such as streams, wetlands, lakes and unique vegetation (Oak groves, rare and endangered species habitats, etc.)

D.) Scheduling for erosion and sediment control practices.

E.) Where permanent and temporary sedimentation basins will be located.

F.) Engineering the construction and stabilization of steep and very steep slopes.

G.) Measures for controlling the quality and quantity of storm water leaving a site.

H.) Stabilizing all waterways and outlets.

I.) Protecting storm sewers from the entrance of sediment.

J.) What precautions will be taken to contain sediment, when working in or crossing water

bodies.

- K.) Restabilizing utility construction areas as soon as possible.
- L.) Protecting paved roads from sediment and mud brought in from access routes.
- M.) The eventual disposing of temporary erosion and sediment control measures.
- N.) How the temporary and permanent erosion and sediment controls will be maintained.
- O.) The disposal of collected sediment and floating debris.

4.6 Minimum Storm Water Pollution Control Measures and Related Inspections. These minimum control measures are required where bare soil is exposed. Due to the diversity of individual construction sites, each site will be individually evaluated. Where additional control measures are needed, they will be specified at the discretion of the city engineer. The city will determine what action is necessary.

- A.) All grading plans and building site surveys must be reviewed by the city for the effectiveness of erosion control measures in the context of site topography and drainage.
- B.) Sediment control measures must be properly installed by the builder before construction activity begins. Such structures may be adjusted during dry weather to accommodate short term activities, such as those allowing the passage of very large vehicles. As soon as this activity is finished or before the next runoff event, the erosion and sediment control structures must be returned to the configuration specified by the city. A sediment control inspection must then be scheduled, and passed before a footing inspection will be done.
- C.) Diversion of channeled runoff around disturbed areas, if practical, or the protection of the channel.
- D.) Easements. If a storm water management plan involves directing some or all of the site's runoff, the applicant or his designated representative shall obtain from adjacent property owners any necessary easements or other property interests concerning the flowing of such water.
- E.) The scheduling of the site's activities to lessen their impact on erosion and sediment Creation, so as to minimize the amount of exposed soil.
- F.) Control runoff as follows (Either 1 and 2 or 1 and 3):
 - 1.) Unless precluded by moderate or heavy snow cover (Mulching can still occur if a light snow cover is present.), stabilize all exposed inactive disturbed soil areas within

any two hundred (200) feet of any water of the state, or with in two hundred (200) feet of conveyance (curb, gutter, storm sewer inlet, drainage ditch, etc.) with sod, seed or weed-free mulch. This must be done, if the applicant will not work the area for seven (7) days on slopes greater than three (3) feet horizontal to one (1) foot vertical (3:1), fourteen (14) days on slopes ranging from 3:1 to 10:1 and twenty-one (21) days for slopes flatter than 10:1.

2.) For disturbed areas greater than five (5) acres construct temporary or permanent sedimentation basins. Sedimentation basins must have a minimum surface area equal of at least 1% of the area draining to basin, and be constructed in accordance with accepted design specifications including access for operations and maintenance. Basin discharge rates must also be controlled to prevent erosion in the discharge channel.

3.) For disturbed areas less than five (5) acres sedimentation basins are encouraged, but not required, unless required by the city engineer. The applicant shall install erosion and sediment controls at locations directed by the city. Minimum requirements include silt fences, rock check dams, or other equivalent control measures along slopes. Silt fences are required along channel edges to reduce the amount of sediment reaching the channel. Silt fences, rock check dams, etc. must be regularly inspected and maintained. *(Commentary: From the year 2003 on the applicant is required to obtain a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) construction storm water permit from the Minnesota Pollution Control Agency for any project that disturbs one (1) acre or more of land. This one acre value also applies to a common plan of development or sale.)*

G.) Sediment basins related to impervious surface area. Where a project's ultimate development replaces surface vegetation with one (1) or more acres of cumulative impervious surface, and all runoff has not been accounted for in a local unit of government's existing storm water management plan or practice, the runoff must be discharged to a wet sedimentation basin prior to entering waters of the state.

1.) At a minimum the work shall conform with the current version of the Minnesota Pollution Control Agency's publication, "Protecting Water Quality in Urban Areas," and the current requirements found in the same agency's NPDES/SDS permits for storm water associated with construction activities.

H.) Generally, sufficient silt fence shall be required to hold all sheet flow runoff generated at an individual site, until it can either infiltrate or seep through silt fence's pores.

I.) Temporary stockpiling of fifty (50) or more cubic yards of excess soil on any lot or other vacant area shall not be allowed without issuance of a grading permit for the earth moving activity in question.

J.) For soil stockpiles greater than ten (10) cubic yards the toe of the pile must be more than twenty-five (25) feet from a road, drainage channel or storm water inlet. If such stockpiles will be left for more than seven (7) days, they must be stabilized with mulch, vegetation, tarps or other means. If left for less than seven (7) days, erosion from stockpiles must be controlled with silt fences or rock check dams.

1.) If for any reason a soil or non-soil stockpile of any size is located closer than twenty-five (25) feet from a road, drainage channel or storm water inlet, and will be left for more than seven (7) days, it must be covered with tarps or controlled in some other manner.

2.) All non-soil (clean sand, gravel, concrete or bituminous) must at a minimum have a silt fencing or other effective sediment control measures installed.

K.) All sand, gravel or other mining operations taking place on the development site shall apply for a Minnesota Pollution Control Agency National Pollutant Discharge Elimination System General Storm Water permit for industrial activities and all required Minnesota Department of Natural Resources permits.

L.) Temporary rock construction entrances, or equally effective means of preventing vehicles from tracking sediment from the site, may be required wherever vehicles enter and exit a site.

1.) Vehicle tracking of sediment from the 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.

M.) Parking is prohibited on all bare lots and all temporary construction entrances, except where street parking is not available. Gravel entrances are to be used for deliveries only as per the development contract.

N.) Streets must be cleaned and swept whenever tracking of sediments occurs and before the site is left idle for weekends and holidays. A regular sweeping schedule should be established.

O.) Water (impacted by the construction activity) removed from the site by pumping must be treated by temporary sedimentation basins, geotextile filters, grit chambers, sand filters, up-flow chambers, hydro-cyclones, swirl concentrators or other appropriate controls. Such water shall not be discharged in a manner that causes erosion or flooding of the site, receiving channels, adjacent property or a wetland.

P.) All storm drain inlets must be protected during construction until control measures are in place with either silt fence or an equivalent barrier that meets accepted design criteria, standards and specifications as contained in the latest version of the Minnesota

Pollution Control Agency's publication, "Protecting Water Quality in Urban Areas."

Q.) Catch basins. All newly installed and rehabilitated catch basins must be provided with a sump area for collecting coarse-grained material. Such basins must be cleaned when they are half filled with material.

R.) Roof drain leaders. All newly constructed and reconstructed buildings must route roof drain leaders to pervious areas (not natural wetlands) where the runoff can infiltrate. The discharge rate shall be controlled so that no erosion occurs in the pervious areas.

S.) Removal from the project's site of more than one (1) acre of topsoil shall not be done, unless written permission is given by the city engineer. Excessive removal of topsoil from the project's site can cause significant current and future soil erosion problems.

T.) Inspection and maintenance. All storm water pollution control management facilities must be designed to minimize the need of maintenance, to provide easy vehicle (typically eight (8) feet or wider) and personnel access for maintenance purposes and be structurally sound. These facilities must have a plan of operation and maintenance that ensures continued effective removal of the pollutants carried in storm water runoff. The city or its designated representative shall inspect all storm water management facilities during construction, during the first year of operation and at least once **every ____ () years** thereafter. The city will keep all inspection records on file for a period **of ____ () years**.

1.) Inspection and maintenance easements. It shall be the responsibility of the applicant to obtain any necessary easements or other property interests to allow access to the storm water management facilities for inspection and maintenance purpose.

U.) Follow-up inspections must be performed by the city on a regular basis to ensure that erosion and sediment control measures are properly installed and maintained. In all cases the inspectors will attempt to work with the applicant and/or builder to maintain proper erosion and sediment control at all sites.

1.) In cases where cooperation is withheld, construction stop orders may be issued by the city, until all erosion and sediment control measures meet specifications. A second erosion and sediment control/grading inspection must then be scheduled and passed before the final inspection will be done.

V.) All infiltration areas must be inspected to ensure that sediment from ongoing construction activities is not reaching infiltration areas, and that these areas are also being protected from soil compaction from the movement of construction equipment.

4.7 Permanent Storm Water Pollution Controls.

A.) The applicant shall install, construct, or pay the city fees for all permanent storm water management facilities necessary to manage increased runoff, so that the discharge rates from storm water treatment basins, such that the predevelopment twenty-four (24)

hour two (2) year, ten (10) year, and one hundred (100) year peak storm discharge rates are not increased. These predevelopment rates shall be based on the last ten (10) years of how that land was used. Accelerated channel erosion must not occur as a result of the proposed land disturbing or development activity. An applicant may also make an in-kind or a monetary contribution to the development and maintenance of community storm water management facilities designed to serve multiple land disturbing and development activities undertaken by one or more persons, including the applicant.

1.) All calculations and information used in determining these peak storm discharge rates shall be submitted along with the storm water pollution control plan.

B.) The applicant shall consider reducing the need for permanent storm water management facilities 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 treated (e.g., settled) water without compromising the integrity or quality of the wetland or pond. *(Commentary: The sensitivity of a wetland to degradation varies with the wetland's dominant vegetation. Sedge meadows, open bogs and swamps, coniferous bogs, calcareous fens, low prairies, lowland hardwood swamps, and seasonally flooded basins are highly sensitive to degradation. Flood plain forests, reed canary grass meadows, shallow (reed canary grass, cattail, giant reed or purple loosestrife) marshes are only slightly sensitive to degradation. See the current version of the Minnesota Pollution Control Agency's publication "Storm-Water and Wetlands: Planning and Evaluation Guidelines for Addressing Potential Impacts of Urban Storm-Water and Snow-Melt Runoff on Wetlands" for details.)*

D.) The following permanent storm water management practices must be investigated in developing the storm water management part of the storm water pollution control plan in the following descending order of preference:

- 1.) Protect and preserve as much natural or vegetated area on the site as possible, minimizing impervious surfaces. Direct runoff to vegetated areas rather than to adjoining streets, storm sewers and ditches.
- 2.) Flow attenuation of treated storm water by the use of open vegetated swales and natural depressions.
- 3.) Storm water wet detention facilities (including percolation facilities); and
- 4.) A combination of successive practices may be used to achieve the applicable minimum control requirements specified in subsection (D) above. The applicant shall provide justification for the method selected.

4.8 Minimum Design Standards for Storm Water Wet Detention Facilities. At a minimum these facilities must conform to the most current technology as reflected in the current version of the Minnesota Pollution Control Agency's publication, "Protecting Water Quality in Urban

Areas” and the current requirements found in the same agency’s NPDES permits for storm water associated with construction activities.

4.9 Minimum Protection for Natural Wetlands.

- A.) Runoff must not be discharged directly into wetlands without appropriate quality (e.i., treated) and quantity runoff control, depending on the individual wetland’s vegetation sensitivity. See the current version of the Minnesota Pollution Control Agency’s publication, “Storm-Water and Wetlands: Planning and Evaluation Guidelines for Addressing Potential Impacts of Urban Storm-Water and Snow-Melt Runoff on Wetlands” for guidance. *(Commentary: The sensitivity of a wetland to degradation varies with vegetation type. Sedge meadows, open bogs and swamps, coniferous bogs, calcareous fens, low prairies, lowland hardwood swamps, and seasonally flooded basins are highly sensitive to degradation, while flood plain forests, reed canary grass meadows, shallow (reed canary grass, cattail, giant reed or purple loosestrife) marshes are only slightly sensitive to degradation.)*
- B.) 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 of 1991 including any and all amendments to it.
- C.) Work in and around wetlands must be guided by the following principles in descending order of priority:
- 1.) Avoid both the direct and indirect impact of the activity that may destroy or diminish the wetland.
 - 2.) Minimize the impact by limiting the degree or magnitude of the wetland related activity.
 - 3.) Rectify the impact by repairing, rehabilitating, or restoring the affected wetland environment with one of at least equal public value.
 - 4.) Reduce or eliminate the adverse impact over time by preservation and maintenance operations during the life of the activity.

4.10 Vegetated Buffer Protection for Rivers, Streams and Wetlands.

- A.) At the minimum a vegetated buffer strip on each bank the width of one hundred (100) feet (forty (40) feet for most wetlands) or rivers, streams and outstanding resource value wetlands, shall be provided. If possible, such a buffer strip shall consist of predevelopment native vegetation. Ideally for rivers or streams, a shade tree canopy in the part of the buffer zone closest to the stream channel should be established. Buffer width shall be increased at least two (2) feet (four (4) feet for all wetlands) for every one (1)

percent of slope of the surrounding land. Natural wetlands adjacent to rivers and streams are not counted as buffer strips. They are considered a natural resource worthy of protection in their own right. Therefore the widths of natural wetlands are not counted as part of the river or stream's buffer strip. Such wetlands rate their own forty-foot (40) plus vegetated buffer strip. *(Commentary: When new buffer vegetation is planted, "native" vegetation is preferred, since some non-native plant species can out compete native species and create an undesirable mono-culture of decreased environmental value. Useful references are the Minnesota Pollution Control Agency's publications "Buffer Zones" and "Soil Bioengineering.")*

1.) Detailed buffer design is usually site specific. Therefore the city engineer can require a larger buffer than the minimum.

2.) For newly constructed buffer sites the design criteria should follow common principles and the example of nearby natural areas. The site should be examined for existing buffer zones and mimic that slope structure and vegetation as much as possible. Buffer design and protection during construction should do any or all of the following: slow water runoff, trap sediment, enhance water infiltration, trap fertilizers, pesticides, pathogens, heavy metals, trap blowing snow and soil, and act as corridors for wildlife. How much stress is put on these functions will determine the buffer zone's final configuration. *(Commentary: Native Minnesota plant species have root systems and growth characteristics that are well suited to buffer functions. By way of comparison, deep-rooted native grasses have a root system that can be ten times greater than either soybeans or corn. Useful guides for species selection includes the Minnesota Department of Transportation's seeding manual, and their "Plant Selection Matrix" CD ROM. The local Minnesota Department of Natural Resources office is also a good source*

of guidance. Good plant species selection stresses diversity and allows plant succession and zoning of species from those with a wet soil preference to drier upland species.

The Minnesota Department of Natural Resources requires permits when vegetation is introduced downgrade of a water's "ordinary high water mark." The Minnesota Department of Natural Resources' area hydrologist defines the ordinary high water mark. Planting permits are obtained from the Minnesota Department of Natural Resources regional fisheries offices.)

3.) The applicant or a designated representative shall maintain the buffer strip for the first year. After that the city, or a party designated by the city, shall maintain the buffer strip. *(Commentary: Even after a buffer strip is established it will require periodic inspection and possibly maintenance to ensure that it is functioning properly. Otherwise siltation and channeling may short-circuit the strip's function. Good maintenance is essential)*

4.) If a drain tile will short-circuit the benefits of vegetated buffer strips the drain tile should be rendered inoperable.

5.) Buffer strips can be made into perpetual conservation easements.

6.) Buffer strips shall be marked as such with permanent markers. *(Commentary: These markers can be in a form that compliments the natural landscape. An example is permanent signs that face toward the water body that are attached to large artificial or natural bounders.)*

7.) The city engineer 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 resource's total buffer area remains the same. This means that some sections of the buffer will be wider than normal. Care should be taken in averaging so that the buffer's usefulness is not short-circuited.

B.) Water courses used solely for drainage, such as road side ditches, are exempt from this provision. Minnesota Pollution Control Agency Class 7 limited resource (Waters not protected for aquatic habitat or recreational use) value waters are also exempt from this provision, unless the Class 7 water is directly tributary to either a Minnesota Department of Natural Resources designated trout stream or a state designated Outstanding Resource Value Water.

C.) Minimal width public recreational and educational trails in vegetated buffer strips are exempt from this provision provided that the buffer strip's width is increased by the width of the trail (i.e. A 10 foot wide trail in a 100 foot buffer strip increases the true width of the strip plus the trail to 110 feet.)

4.11) Models/Methodologies/Computations. Hydrologic models and design methodologies used for the determining runoff characteristics and analyzing storm water management structures must be approved by the city engineer. Plans, specifications and computations for storm water management facilities submitted for review must be sealed and signed by a registered professional engineer. All computations must appear in the plans submitted for review, unless otherwise approved by the city engineer.

The information between the rows of asterisks is a special information item on vegetated buffers. Do not include the ditch law information item in an actual ordinance.

A 16.5-foot wide value shows up in several Minnesota statutes and rules. Because of the manner that it is used, it is usually inferred to be a water quality protection value. This is a common misconception. The 16.5-foot value originates from the state's ditch law. The relevant part of the state ditch law is presented below.

Minnesota Statute § 103E.021

103E.021 Ditches must be planted with permanent grass.

Subdivision 1. Spoil banks must be spread and grass planted. In any proceeding to establish, construct, improve, or do any work affecting a public drainage system under any law that appoints viewers to assess benefits and damages, the authority having jurisdiction over the proceeding shall order spoil banks to be spread consistent with the plan and function of the drainage system. The authority shall order that permanent grass, other than a noxious weed, be planted on the banks and on a strip 16-1/2 feet in width or to the crown of the leveled spoil bank, whichever is the greater, on each side of the top edge of the channel of the ditch. The acreage and additional property required for the planting must be acquired by the authority having jurisdiction.

The 16.5 foot vegetated buffer strip for ditches is intended to reduce the cost of ditch maintenance by keeping the ditch's banks from eroding. It does not protect the receiving water from sheet runoff pollution. It is unfortunate that this maintenance prevention value is so often misapplied as a water quality protection value.

4.12 Additional Special Trout Stream and State Outstanding Resource Value Water Requirements.

(Note to rewriters: Only include this part if either trout waters or state outstanding resource value waters are a factor.)

A.) Storm water discharges that are either directly to or directly upstream of either a Minnesota Department of Natural Resources designated trout stream or a state outstanding resource value water there shall be no increase in either the volume or rate of discharge from any design storm with a statistical recurrence interval of less than the twenty-four (24) hour ten (10) year event (i.e., for the two (2) year, five (5) year and ten (10) storm events), unless diversion is impractical and/or the soil is not suitable for storm water infiltration, even if aided by a groundwater interceptor drainage system and/or evaporation/transpiration

techniques. This rule includes tributaries directly to such waters. *(Commentary: The intent*

is to encourage either storm water infiltration or diversion, since urban trout streams are a unique resource, and therefore deserve special protection. Residential development increases the total volume of runoff resulting from a given storm. Since there is a larger volume of runoff to deal with, limiting the rate of storm runoff to predevelopment rates means that high flows (and therefore channel scouring storm runoff to predevelopment rates means that high flows (and therefore scouring velocities) will persist for longer periods of time than during predevelopment conditions. This increases channel erosion.

Infiltration or diversion deals with this increased scouting problem by lessening the volume of runoff and therefore the duration of the scouring velocities.

In the case of trout waters, increasing the inputs of warm storm water also increases the adverse impact of thermal shocks. Since trout are temperature sensitive, increasing thermal shocks adversely impacts trout habitat. Not dealing with the trout water's temperature problem would be a violation of Minnesota's trout stream water quality standard of, "no material increase," in Minn. R. 7050.0222, subp. 2.)

- 1.) The phrase, "tributaries directly to," refers to tributaries within at least one Minnesota Department of Natural Resources Division of Waters minor watershed of the designated water. At its discretion the city may extend this area of protection.
 - 2.) The phrase, "soil not suitable for storm water infiltration techniques," means soils with permeability values worst than Group B soils (less than two and a half (2.5) inches per hour) as defined by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) or a high water table is present. If permeability is worst than Group B soils and a high water table is not present, the volume restriction target becomes the twenty-four (24) hour two (2) year storm event.
 - a.) Where soil permeability is "not suitable for storm water infiltration techniques," additional design considerations to enhance the infiltration rate and/or other measures shall be employed as required by the city engineer. Such measures should include grassy swales or similar techniques, which use evaporation/transpiration or other approaches to achieve the same goal. Vigorous efforts shall be made reduce storm water runoff volumes as much as site conditions allow.
 - 3.) Storm water controls using infiltration need protection against silt plugging, such as settling basins and manhole silt sumps. Otherwise silt plugging can result in failure rates as high as 80-90% in only five years.
 - 4.) Since calcareous fens are fed by ground water an infiltration requirement could be harmful. In this case a hydro-geologist should evaluate the impact of storm water infiltration.
- B.) During construction temporary sedimentation basins are required for disturbed areas over one (1) acre.
- C.) Storm water treatment devices that remove oil and floatable material (e.g., basin outlets with submerged entrances) must be part of BMP systems.
- D.) Where feasible lightly used vehicle traffic areas such as overflow parking lots should use pervious surfaces.

E.) If the proposed project site includes a tributary that currently experiences erosion and/or sedimentation problems, the applicant shall work with the city to include channel modifications in the project that will also address the existing erosion and/or sedimentation problem.

H.) Permanent buildings erected on sites that border directly on and all tributaries to a Minnesota Department of Natural Resources designated trout stream and/or a Minnesota Pollution Control Agency designated Outstanding Resource Value Water must not be occupied until the permanent vegetative cover has been established. Such cover must meet this definition of “final stabilization.”

I.) The applicant shall consider methods for reducing the amount of impervious surface on the site. *(Commentary: A useful publication is “Better Site Design: A Handbook for Changing Development Rules in Your Community” available from the Center for Watershed Protection in Ellicott City, Maryland.)* Suggestions include:

- 1.) Disking in compost or in some other manner that increases the porosity of the soil that will be come covered by lawns. *(Commentary: The movement of heavy vehicles associated with construction activities compacts the soil, and thus decreases its ability to absorb water. This is true even for some types of sandy soils. The common grasses chosen for lawns do not have a deep enough root system to overcome construction vehicle related soil compaction problems.)*
 - 2.) Reduced road widths.
 - 3.) Eliminating paving in the center of cul de sacs.
 - 4.) Reducing sidewalk widths.
 - 5.) Allowing and providing for shared parking.
 - 6.) Installing semipermeable/permeable or porous paving.
 - 7.) Vegetated swales instead of curb and gutter. (Sometimes in this situation roads need reinforced edges to prevent the edges of the pavement from crumbling.)
 - 8.) Filter strips
 - 9.) “Green” (vegetated) roofs.
 - 10.) Storm water gardens, where road salt is not a limiting factor. *(Commentary: Storm water controls using infiltration need protection against silt plugging, such as settling basins and manhole silt sumps. Otherwise silt plugging can result in failure rates as high as 80-90% in only five years. Good maintenance is essential.)*
- J.) Water courses used solely for drainage, such as road side ditches, are exempt from this

provision.

The information between the rows of asterisks is a special information item involving the agency's trout stream temperature rule. Do not include this information item in an actual ordinance.

Minnesota Rule 7050.0222, subpart 2 sets the Minnesota's trout stream temperature water quality standard at, "no material increase." This is interpreted to mean that as much all reasonable methods, such as those mentioned above, must be used to avoid increasing the temperature of a trout stream.

Section 5.0. Review. The city engineer shall review the storm water pollution control plan. This review must be completed **within _____ () days** of receiving the plan from the applicant.

5.1 Permit Required. If the city determines that the storm water pollution control plan meets the requirements of this ordinance, the city shall issue a permit valid for a specified period of time, that authorizes the land disturbance activity contingent on the implementation and completion of the storm water pollution control plan.

5.2 Permit Denial. If the city determines that the storm water pollution control plan does not meet the requirements of this ordinance, the city shall not issue a permit for the land disturbance activity.

A.) All land use and building permits for the site in question must be suspended until the applicant has an approved storm water pollution control plan.

5.3 Permit Suspension and Revocation If the storm water pollution control plan is not being implemented the city can suspend or revoke the permit authorizing the land disturbance activity.

Section 6.0. Modification of Plan. An approved storm water pollution control plan may be modified on submission of a written application for modification to the city, and after written approval by the city engineer. In reviewing such an application, the city engineer may require additional reports and data.

6.1 Records Retention. The city shall retain the written records of such modifications for at least **three (3) years.**

Section 7.0 Financial Securities. The applicant shall provide a financial security for the performance of the work described and delineated on the approved grading plan involving the storm water pollution control plan and any storm water and pollution control plan related remedial work in at a rate of three thousand dollars (\$3,000) per acre for the maximum acreage of soil that will be simultaneously exposed to erosion during the project's construction. (See the definitions of "exposed soil area" and "final stabilization" for clarification.) This security must be available prior to commencing the project. The form of the security must be:

7.011 By cash security deposited to the city for _____ percent (___%) of the total financial security in Section 7.0, when less than five (5) acres of soil will be simultaneously exposed. When over five (5) acres of soil will be simultaneously exposed to erosion, then the cash security increases to the first _____ thousand dollars (\$_,000) or _____ percent (___%) of the total financial security in Section 7.0, whichever is greater.

7.012 The remainder of the financial security shall be placed either with the city, a responsible escrow agent, or trust company, at the option of the city, money, an irrevocable letter of credit, negotiable bonds of the kind approved for securing deposits of public money or other instruments of credit from one or more financial institutions, subject to regulation by the state and federal government wherein said financial institution pledges that the funds are on deposit and guaranteed for payment. This security shall save the city free and harmless from all suits or claims for damages resulting from the negligent grading, removal, placement or storage of rock, sand, gravel, soil or other like material within the city. The type of security must be of a type acceptable to the city.

7.013 The city may request a greater financial security, if the city considers that the development site is especially prone to erosion, or the resource to be protected is especially valuable.

7.014 If more soil is simultaneously exposed to erosion than originally planned, the amount of the security shall increase in relation to this additional exposure.

*Alternate part 7.0 to 7.013 when a development contract is used.
Part 7.2 would then not be needed if the total financial security of
the development contract is being used.*

Section 7.0 Financial Securities. The total security amount in the project's development contract with the city (sanitary sewer, water main, storm sewer, street construction, monuments, street lighting, street signs, monuments, etc.) shall also provide security for the performance of work approved by the city in the storm water pollution control plan and any storm water and pollution control plan related remedial work, if the development contract's security totals at least three thousand dollars (\$3,000) per acre for the maximum acreage of soil that will be simultaneously exposed during the project's construction. (See the definitions of "exposed soil

area” and “final stabilization” for clarification.). If this security is less than the three thousand dollars (\$3,000) per acre value, then it shall be increased to that at least amount.

7.011 The city may request a greater financial security, if the city considers that the development site is especially prone to erosion, or the resource to be protected is especially valuable.

7.012 The fact that the total security in the project’s development contract can be drawn from to pay for the performance of the work approved by the city in the storm water pollution control plan and any storm water pollution control plan related remedial work shall be clearly stated in the developer’s contract with the city.

7.013 If more soil is simultaneously exposed to erosion than originally planned, the amount of the security shall increase in relation to this additional exposure.

7.1 Maintaining the Financial Security. If at anytime during the course of the work this amount falls below 50% of the required deposit, the applicant shall make another deposit in the amount necessary to restore the deposit to the required amount **within _____ () days.** Otherwise the city may:

- A.) Withhold the scheduling of inspections and/or the issuance of a Certificate of Occupancy.
- B.) Revoke any permit issued by the city to the applicant for the site in question and any other of the applicant’s sites within the city’s jurisdiction.

7.2 Proportional Reduction of the Financial Security. When more than one-third of the applicant’s maximum exposed soil area achieves final stabilization, the city can reduce the total required amount of the financial security by one-third, if recommended in writing by the city engineer. When more than two-thirds of the applicant’s maximum exposed soil area achieves final stabilization, the city can reduce the total required amount of the financial security to two-thirds of the initial amount, if recommended in writing by the city engineer.

7.3 Action Against the Financial Security. The city may act against the financial security, if any of the conditions listed below exist. The city shall use funds from this security to finance any corrective or remedial work undertaken by the city or a contractor under contract to the city and to reimburse the city for all direct cost incurred in the process of remedial work including, but not limited to, staff time and attorney's fees.

- A.) The applicant ceases land disturbing activities and/or filling and abandons the work site prior to completion of the city approved grading plan.
- B.) The applicant fails to conform to any city approved grading plan and/or the storm water

pollution control plan as approved by the city, or related supplementary instructions.

C.) The techniques utilized under the storm water pollution control plan fail within one (1) year of installation.

D.) The applicant fails to reimburse the city for corrective action taken under Section 8.

E.) Emergency action under either part 7.4 or any part of Section 8.

7.4 Emergency Action. If circumstances exist such that noncompliance with this ordinance poses an immediate danger to the public health, safety and welfare, as determined by the city engineer, the city may take emergency preventative action. The city shall also take every reasonable action possible to contact and direct the applicant to take any necessary action. Any cost to the city may be recovered from the applicant's financial security.

7.4 Returning the Financial Security. Any unspent amount of the financial security deposited with the city for faithful performance of the storm water pollution control plan and any storm water and pollution control plan related remedial work must be released not more than one (1) full year after the completion of the installation of all such measures and the establishment of final stabilization.

Section 8.0 Notification of Failure of the Storm Water Pollution Control Plan The city shall notify the applicant, when the city is going to act on the financial securities part of this ordinance. *(The numbers in light gray shading are suggested values.)*

8.1 Notification by the City. The initial contact will be to the party or parties listed on the application and/or the storm water pollution control plan as contacts. Except during an emergency action under Section 7.4, *forty-eight (48)* hours after notification by the city or *seventy-two (72)* hours after the failure of erosion control measures, whichever is less, the city at its discretion, may begin corrective work. Such notification should be in writing, but if it is verbal, a written notification should follow as quickly as practical. If after making a good faith effort to notify the responsible party or parties, the city has been unable to establish contact, the city may proceed with the corrective work.

A.) There are conditions when time is of the essence in controlling erosion. During such a condition the city may take immediate action, and then notify the applicant as soon as possible.

8.2 Erosion Off-Site. If erosion breaches the perimeter of the site, the applicant shall immediately develop a cleanup and restoration plan, obtain the right-of-entry from the adjoining property owner, and implement the cleanup and restoration plan within *forty-eight (48)* hours of obtaining the adjoining property owner's permission. In no case, unless written approval is received from the city, shall more than *seven (7)* calendar days go by without corrective action

being taken. If in the discretion of the city, the applicant does not repair the damage caused by the erosion, the city may do the remedial work required and charge the cost to the applicant.

8.3 Erosion into Streets, Wetlands or Water Bodies. If eroded soils (including tracked soils from construction activities) enter or appear likely to enter streets, wetlands, or other water bodies, prevention strategies, cleanup and repair must be immediate. The applicant shall provide all traffic control and flagging required to protect the traveling public during the cleanup operations.

8.4 Failure to Do Corrective Work. When an applicant fails to conform to any provision of this Sections 7 or 8 within the time stipulated, the city may take the following actions:

- A.) Withhold the scheduling of inspections and/or the issuance of a Certificate of Occupancy.
- B.) Suspend or revoke any permit issued by the city to the applicant for the site in question or any other of the applicant's sites within the city's jurisdiction.
- C.) Direct the correction of the deficiency by city forces or by a separate contract. The issuance of a permit for land disturbance activity constitutes a right-of-entry for the city or its contractor to enter upon the construction site for the purpose of correcting erosion control deficiencies.
- D.) All costs incurred by the city in correcting storm water pollution control deficiencies must be reimbursed by the applicant. If payment is not made within **thirty (30)** days after costs are incurred by the city, payment will be made from the applicant's financial securities as described in Section 7.
- E.) If there is an insufficient financial amount in the applicant's financial securities as described in Section 7, to cover the costs incurred by the city, then the city may assess the remaining amount against the property. As a condition of the permit for land disturbance activities, the owner shall waive notice of any assessment hearing to be conducted by the city, concur that the benefit to the property exceeds the amount of the proposed assessment, and waive all rights by virtue of Minnesota Statute 429.081 to challenge the amount or validity of the assessment.

Section 9.0 Variance. In any case where, upon application of the responsible person or persons, the city finds that by reason of exceptional circumstances, strict conformity with this ordinance would be unreasonable, impractical, or not feasible under the circumstances; the city in its discretion may grant a variance therefrom upon such conditions as it may prescribe for prevention, control, or abatement of pollution in harmony with the general purposes of this ordinance. The public shall be given the opportunity for comment.

9.1) Variance Request. The variance request must be in writing in a form acceptable to the city.

9.2) Variance Public Notice. The variance request shall be public noticed in the normal manner used for city council meeting items, to allow the public an opportunity for comment.

9.3) Variance Determination. After the public has been given the right to comment, the variance shall either be approved or disapproved by a vote of the city council.

9.4) Variance Response. The variance response must be in writing, and include the justification for either granting or denying the requested variance. A favorable response shall also include any special conditions imposed by the city.

9.5) Time Limit. The variance shall become void not more than one (1) year after being granted, unless used.

9.6) Revocation. If any of the variance's conditions are violated, the city may revoke the variance.

Section 10.0. Enforcement. The city shall be responsible enforcing this ordinance.

10.1 Penalties. Any person, firm, or corporation failing to comply with or violating any of these regulations, shall be deemed guilty of a misdemeanor and be subject to a fine or imprisonment or both. All land use and building permits shall be suspended until the applicant has corrected the violation. Each day that a separate violation exists shall constitute a separate offense.

Section 11.0 Right of Entry and Inspection.

11.1) Powers. The applicant shall promptly allow the city and their authorized representatives, upon presentation of credentials to:

A.) Enter upon the permitted site for the purpose of obtaining information, examination of records, conducting investigations, inspections or surveys.

B.) Bring such equipment upon the permitted site as is necessary to conduct such surveys and investigations.

C.) Examine and copy any books, papers, records, or memoranda pertaining to activities or records required to be kept under the terms and conditions of this permitted site.

D.) Inspect the storm water pollution control measures.

E.) Sample and monitor any items or activities pertaining to storm water pollution control

measures.

F.) Any temporary or permanent obstruction to the safe and easy access of such an inspection shall be promptly removed upon the inspector's request. The cost of providing such access shall be born by the applicant.

Section 12.0 Abrogation and Greater Restrictions. It is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance imposes greater restrictions, the provisions of this ordinance shall prevail. All other ordinances inconsistent with this ordinance are hereby repealed to the extent of the inconsistency only.

Section 13.0 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.

Section 14.0. Effective Date. This ordinance will take effect and be in force after its passage and official publication.

Extra Information

Minnesota Statute § 429.081

429.081 Appeal to district court.

Within 30 days after the adoption of the assessment, any person aggrieved, who is not precluded by failure to object prior to or at the assessment hearing, or whose failure to so object is due to a reasonable cause, may appeal to the district court by serving a notice upon the mayor or clerk of the municipality. The notice shall be filed with the court administrator of the district court within ten days after its service. The municipal clerk shall furnish appellant a certified copy of objections filed in the assessment proceedings, the assessment roll or part complained of, and all papers necessary to present the appeal. The appeal shall be placed upon the calendar of the next general term commencing more than five days after the date of serving the notice and shall be tried as other appeals in such cases. The court shall either affirm the assessment or set it aside and order a reassessment as provided in section 429.071, subdivision 2. If appellant does not prevail upon the appeal, the costs incurred shall be taxed by the court and judgment entered therefor. All objections to the assessment shall be deemed waived unless presented on such appeal. This section provides the exclusive method of appeal from a special assessment levied pursuant to this chapter.

HIST: 1953 c 398 s 8; 1961 c 525 s 9; 1978 c 749 s 2; 1980 c 607 art 11 s 3; 1Sp1986 c 3 art 1 s 82

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(The following items are for the rewriter's information.)
Minnesota Department of Natural Resources Area Hydrologist Offices

Bemidji (Region 1)

Bemidji Area Counties: Beltrami and Lake of the Woods

Detroit Lakes Area Counties: Becker, Clay, Mahnomen and Norman

Douglas-Pope Area Counties (Office in Fergus Falls): Douglas and Pope

Fergus Falls Area Counties: Grant, Otter Tail, Stevens, Traverse and Wilkin

Hubbard Area Counties (Office in Bemidji): Cass (Western part), Clearwater, and Hubbard

Thief River Falls Area Counties: Kittson, Marshall, Pennington, Polk, Red Lake and Roseau

Grand Rapids (Region 2)

Eveleth Area County: Saint Louis (Except the southern part)

Grand Rapids Area Counties: Cass (Eastern part), Itasca and Koochiching

Two Harbors Area Counties: Carlton, Cook, Lake and Saint Louis (Cities of Duluth, Hermantown, Proctor and Midway Township)

Brainerd (Region 3)

Brainerd Area Counties: Cass (Eastern part) and Crow Wing

Cambridge Area Counties: Chisago, Isanti and Pine

Little Falls Area Counties: Morrison, Todd, Wadena

Mille Lacs Area Counties (Office in Brainerd): Aikin, Kanabec and Mille Lacs

Sauk Rapids Area Counties: Stearns and Benton

Sherburne-Wright Area Counties (Office in Saint Cloud): Sherburne, Wright

Minnesota Department of Natural Resources Area Hydrologist Offices (Continued)

New Ulm (Region 4)

Hutchinson Area Counties: Brown, McLeod, Meeker, Nicollet and Sibley

Mankato Area Counties: Blue Earth, Faribault, Le Sueur, Martin and Waseca

Marshall Area Counties: Lac qui Parle, Lincoln, Lyon, Pipestone, Redwood and Yellow Medicine

Spicer Area Counties: Big Stone, Chippewa, Kandiyohi, Renville and Swift

Windom Area Counties: Cottonwood, Jackson, Murray, Nobles, Rock and Watonwan

Rochester (Region 5)

Rochester Area Counties: Dodge, Fillmore, Freeborn, Mower, Olmsted, Rice and Steele

Lake City Area Counties: Goodhue, Houston, Wabasha, Winona

Saint Paul (Region 6)

Counties; Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington.

Minnesota Department of Natural Resources Regional Fisheries Offices

Bemidji Regional Fisheries Office (Region 1)

Counties: Becker, Beltrami, Cass (Northwestern part), Clay, Clearwater, Douglas, Grant, Hubbard, Kittson, Lake of the Woods, Mahnommen, Marshall, Norman, Otter Tail, Pennington, Polk, Pope, Red Lake, Roseau, Stevens, Wadena (Northern half), and Wilkin

Grand Rapids Regional Fisheries Office (Region 2)

Counties: Carlton, Cass (Northeastern part), Cook, Itasca, Koochiching, Lake, Saint Louis,

Brainerd Regional Fisheries Office (Region 3)

Counties: Aitkin, Benton, Cass (Southern part), Chisago, Crow Wing, Isanti, Kanabec, Mille Lacs, Morrison, Pine, Sherburne, Todd, Stearns, Wadena (Southern half) and Wright

New Ulm Regional Fisheries Office (Region 4)

Counties: Big Stone, Blue Earth, Brown, Chippewa, Cottonwood, Faribault, Jackson, Kandiyohi, Lac qui Parle, Le Sueur, Lincoln, Lyon, Martin, McLeod, Meeker, Murray, Nicollet, Nobles, Pipestone, Redwood, Renville, Rice, Rock, Sibley, Swift, Traverse, Watonwan, Waseca and Yellow Medicine,

Rochester Regional Fisheries Office (Region 5)

Counties: Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Steele, Wabasha and Winona

Saint Paul Regional Fisheries Office (Region 6)

Counties: Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington

(The following items are for the rewriter's information.)
OUTSTANDING RESOURCE VALUE WATERS APPENDIX

Outstanding Resource Value Waters are waters within the Boundary Waters Canoe Area Wilderness, Voyageur's National Park, and Department of Natural Resources designated scientific and natural areas, wild, scenic, and recreational river segments, Lake Superior, those portions of the Mississippi River from Lake Itasca to the southerly boundary of Morrison County that are included in the Mississippi Headwaters Board comprehensive plan dated February 12, 1981, and other waters of the state with high water quality, wilderness characteristics, unique scientific or ecological significance, exceptional recreational value, or other special qualities which warrant stringent protection from pollution.

Minnesota Department of Natural Resources designated scientific and natural areas include but are not limited to:

- A. Boot Lake, Anoka County;
- B. Kettle River in sections 15, 22, 23, T 41 N, R 20, Pine County;
- C. Pennington Bog, Beltrami County;
- D. Purvis Lake-Ober Foundation, Saint Louis County;
- E. Waters within the borders of Itasca Wilderness Sanctuary, Clearwater County;
- F. Iron Springs Bog, Clearwater County;
- G. Wolsfeld Woods, Hennepin County;
- H. Green Water Lake, Becker County;
- I. Blackdog Preserve, Dakota County;
- J. Prairie Bush Clover, Jackson County;
- K. Black Lake Bog, Pine County;
- L. Pembina Trail Preserve, Polk County; and
- M. Falls Creek, Washington County.

State designated wild river segments include but are not limited to:

- A. Kettle River from the site of the former dam at Sandstone to its confluence with the Saint Croix River;
- B. Rum River from Ogechie Lake spillway to the northernmost confluence with Lake Onamia.

Waters which warrant stringent protection from pollution are:

- A. Lake Superior
- B. those portions of the Mississippi River from Lake Itasca to the southerly boundary of Morrison County that are included in the Mississippi Headwaters Board comprehensive plan dated February 12, 1981;
- C. trout lakes, both existing and potential, as determined by the agency in conjunction with the Minnesota Department of Natural Resources, outside the boundaries of the Boundary Waters Canoe Area Wilderness and Voyageurs National Park and identified in parts 7050.0460 to 7050.0470;

Subp. 6a. Federal or state designated scenic or recreational river segments. Waters with a federal or state scenic or recreational designation include but are not limited to:

- A. Saint Croix River, entire length;
- B. Cannon River from northern city limits of Faribault to its confluence with the Mississippi River;
- C. North Fork of the Crow River from Lake Koronis outlet to the Meeker-Wright county line;
- D. Kettle River from north Pine County line to the site of the former dam at Sandstone;
- E. Minnesota River from Lac qui Parle dam to Redwood County state aid highway 11;
- F. Mississippi River from county state aid highway 7 bridge in Saint Cloud to northwestern city limits of Anoka; and
- G. Rum River from state highway 27 bridge in Onamia to Madison and Rice Streets in Anoka.

H. Calcareous fens. The following calcareous fens are designated outstanding resource value waters:

1. Becker County: Spring Creek WMA NHR fen, 34 (T.142, R.42, S.13);

2. Carver County: Seminary fen, 75 (T.116, R.23, S.35);

3. Clay County:

(a) Barnesville Moraine fen, 44 (T.137, R.44, S.18);

(b) Barnesville WMA fen, 10 (T.137, R.45, S.1);

(c) Barnesville WMA fen, 43 (T.137, R.44, S.18);

(d) Felton Prairie fen, 28 (T.142, R.46, S.36);

(e) Felton Prairie fen, 36 (T.141, R.46, S.13);

(f) Felton Prairie fen, 48 (T.142, R.45, S.31);

(g) Felton Prairie fen, 53 (T.141, R.46, S.24);

(h) Haugtvedt WPA North Unit fen, 54 (T.137, R.44, S.28, 29);

(i) Spring Prairie fen, 37 (T.140, R.46, S.11);

4. Clearwater County: Clearbrook fen, 61 (T.149, R.37, S.17);

5. Dakota County:

(a) Black Dog Preserve fen, 63 (T.27, R.24, S.34);

(b) Fort Snelling State Park fen, 25 (T.27, R.23, S.4);

(c) Nicols Meadow fen, 24 (T.27, R.23, S.18);

6. Goodhue County:

- (a) Holden 1 West fen, 3 (T.110, R.18, S.1);
- (b) Perched Valley Wetlands fen, 2 (T.112, R.13, S.8);
- (c) Red Wing fen, 72 (T.113, R.15, S.21);

7. Houston County: Houston fen, 62 (T.104, R.6, S.26);

8. Jackson County:

- (a) Heron Lake fen, 45 (T.103, R.36, S.29);
- (b) Thompson Prairie fen, 20 (T.103, R.35, S.7);

9. Le Sueur County:

- (a) Ottawa Bluff fen, 56 (T.110, R.26, S.3);
- (b) Ottawa WMA fen, 7 (T.110, R.26, S.11); and
- (c) Ottawa WMA fen, 60 (T.110, R.26, S.14);

10. Lincoln County: Hole-in-the-Mountain Prairie fen, 6; Pipestone (T.108, R.46, S.1; T.109, R.45, S.31);

11. Mahnomen County: Waubun WMA fen, 11 (T.143, R.42, S.25);

12. Marshall County:

- (a) Tamarac River fen, 71 (T.157, R.46, S.2);
- (b) Viking fen, 68 (T.155, R.45, S.18);
- (c) Viking fen, 70 (T.155, R.45, S.20);
- (d) Viking Strip fen, 69 (T.154, R.45, S.4);

13. Martin County: Perch Creek WMA fen, 33 (T.104, R.30, S.7);

14. Murray County: Lost Timber Prairie fen, 13 (T.105, R.43, S.2);

15. Nicollet County:

(a) Fort Ridgely fen, 21 (T.111, R.32, S.6); and

(b) Le Sueur fen, 32 (T.111, R.26, S.16);

16. Nobles County: Westside fen, 59 (T.102, R.43, S.11);

17. Norman County:

(a) Agassiz-Olson WMA fen, 17 (T.146, R.45, S.22);

(b) Faith Prairie fen, 15 (T.144, R.43, S.26);

(c) Faith Prairie fen, 16 (T.144, R.43, S.35);

(d) Faith Prairie fen, 27 (T.144, R.43, S.25);

(e) Green Meadow fen, 14 (T.145, R.45, S.35, 36);

18. Olmsted County:

(a) High Forest fen, 12 (T.105, R.14, S.14, 15);

(b) Nelson WMA fen, 5 (T.105, R.15, S.16);

19. Pennington County:

(a) Sanders East fen, 65 (T.153, R.44, S.7);

(b) Sanders East fen, 74 (T.153, R.44, S.7); and

(c) Sanders fen, 64 (T.153, R.44, S.18, 19);

20. Pipestone County:

- (a) Burke WMA fen, 57 (T.106, R.44, S.28); and
- (b) Hole-in-the-Mountain Prairie fen, 6 (also see Lincoln County);

21. Polk County:

- (a) Chicog Prairie fen, 39 (T.148, R.45, S.28);
- (b) Chicog Prairie fen, 40 (T.148, R.45, S.33);
- (c) Chicog Prairie fen, 41 (T.148, R.45, S.20, 29);
- (d) Chicog Prairie fen, 42 (T.148, R.45, S.33);
- (e) Kittleson Creek Mire fen, 55 (T.147, R.44, S.6, 7);
- (f) Tympanuchus Prairie fen, 26 (T.149, R.45, S.17);
- (g) Tympanuchus Prairie fen, 38 (T.149, R.45, S.16);

22. Pope County:

- (a) Blue Mounds fen, 1 (T.124, R.39, S.14, 15);
- (b) Lake Johanna fen, 4 (T.123, R.36, S.29); and
- (c) Ordway Prairie fen, 35 (T.123, R.36, S.30);

23. Redwood County:

- (a) Swedes Forest fen, 8 (T.114, R.37, S.19, 20);
- (b) Swedes Forest fen, 9 (T.114, R.37, S.22, 27);

24. Rice County:

(a) Cannon River Wilderness Area fen, 18 (T.111, R.20, S.34);

(b) Cannon River Wilderness Area fen, 73 (T.111, R.20, S.22);

25. Scott County:

(a) Savage fen, 22 (T.115, R.21, S.17);

(b) Savage fen, 66 (T.115, R.21, S.16);

(c) Savage fen, 67 (T.115, R.21, S.17);

26. Wilkin County:

(a) Anna Gronseth Prairie fen, 47 (T.134, R.45, S.15);

(b) Anna Gronseth Prairie fen, 49 (T.134, R.45, S.10);

(c) Anna Gronseth Prairie fen, 52 (T.134, R.45, S.4);

(d) Rothsay Prairie fen, 46 (T.136, R.45, S.33);

(e) Rothsay Prairie fen, 50 (T.135, R.45, S.15, 16);

(f) Rothsay Prairie fen, 51 (T.135, R.45, S.9);

27. Winona County: (a) Wiscoy fen, 58 (T.105, R.7, S.15);

28. Yellow Medicine County:

(a) Sioux Nation WMA NHR fen, 29 (T.114, R.46, S.17);

(b) Yellow Medicine fen, 30 (T.115, R.46, S.18).