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Memorandum

To: Northfield Technical Steering Committee
From: Barr Engineering Company
Subject: City of Northfield Regulation Development Project
Technical Assessment Report: Regulatory Environment
Date: April 14, 2010, Revised April 29, 2010
Project: 23661006.00 100 001

Executive Summary

This is one of four “technical assessment reports” intended to support the development of a new stormwater management ordinance and the Rice Creek policy document. This report provides information about the regulatory environment as it is relevant to the stormwater ordinance.

The following regulatory aspects are discussed in this report:

- a. Northfield Surface Water Management Plan (SWMP) Policies—although the policies are not technically regulations, the city’s zoning ordinance requires that development plans be consistent with the SWMP. The SWMP policies are the essential base for building the stormwater ordinance.
- b. National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit—the city’s NPDES permit contains a number of special provisions, in addition to the six minimum control measures, including provisions for “outstanding resource value waters” (Cannon River, Rice Creek/Spring Brook), and total maximum daily load (TMDL) requirements; future provisions will include a pond inventory requirement.
- c. NPDES Construction Stormwater Permit—this permit contains special provisions for scenic or recreational river segments (Cannon River), trout streams (Rice Creek/Spring Brook), and impaired waters (Cannon River, Heath Creek, Rice Creek/Spring Brook); most of the special provisions apply to post-construction stormwater management.
- d. NPDES Industrial Stormwater Permit
- e. Floodplain requirements/regulations
- f. Minnesota Department of Natural Resources permits, including public waters work permit, dam safety permit, and appropriation permit.
- g. Minnesota Department of Health requirements/guidelines and other groundwater considerations
- h. Minnesota Department of Natural Resources/city shoreland requirements—this is discussed only briefly, as a separate technical report covers this topic in more detail.

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i. Wetland Conservation Act

Based on the analysis of the regulatory environment, this report then makes recommendations for developing the stormwater ordinance, including recommending inclusion of pertinent SWMP policies into the stormwater ordinance. The report also offers for consideration additional requirements to 1) help the city meet its MS4 permit requirements regarding outstanding resource value waters, TMDLs, and pond inventory requirements, 2) include additional requirements from the NPDES construction stormwater permit, 3) include additional flood control requirements, 4) reference dam safety rules, and 5) take into account protection of groundwater recharge areas.

1. Report Objectives

The objective of this report is to provide information about the regulatory environment as it is (or could be) relevant to the stormwater ordinance. This report is broader in scope than the other technical reports, and it is intended to be a source of information for the upcoming technical reports, the stormwater ordinance and the Rice Creek policy document.

The goals of this report are to provide information to 1) implement the city's Surface Water Management Plan policies; 2) ensure the city's compliance with regulations, 3) document the amount of protection already provided by other regulations/units of government; and 4) avoid duplication of regulation.

2. Analysis of the Regulatory Environment

This section provides a summary of the regulations that are most applicable to, or have/could have the most impact on, the stormwater ordinance.

a. Northfield SWMP Policies

The City of Northfield's 2007 *Comprehensive Surface Water Management Plan (SWMP)* provides the basis for the stormwater management ordinance. The SWMP contains policies in a number of topic areas that need to be considered for incorporation into the stormwater management ordinance, including rate control, flood control, water quality treatment, infiltration/volume control, wetlands, groundwater, erosion and sediment control, greenway, shoreland, and land protection areas, trout stream management, and low impact development.

The city's zoning ordinance (Section 34-165) requires that development plans must be consistent with city council approved long range plans, including the SWMP. City staff use the SWMP policies in their review of development plans.

The policies sometimes differ depending on whether a project would be considered a "new development" or an "expansion/redevelopment," as defined below:

New Development: New Development projects are new residential, institutional, commercial/retail, office, or industrial projects that will subdivide land or disturb land as part of development in the existing non-urbanized areas of the City.

Expansion/Redevelopment: Expansion and Redevelopment projects include the expansion or redevelopment of existing commercial, industrial, or institutional uses within the existing urbanized areas of the City.

Attached is an excerpt from the SWMP document that contains the policies that are pertinent to the stormwater management ordinance (Strategy C: Regulation, and Strategy D: Internal Operations).

b. NPDES MS4 Permit

The City of Northfield is included in a group of communities with populations greater than 10,000 that are federally required to obtain a Municipal Separate Storm Sewer System (MS4) permit for managing non-point source stormwater. The permitting process requires cities such as Northfield to file a Phase II National Pollutant Discharge Elimination System (NPDES) permit with the Minnesota Pollution Control Agency (MPCA), which addresses how the city will regulate and improve stormwater discharges. The permit must include a Storm Water Pollution Prevention Program (SWPPP) addressing all of the requirements of the permit.

Northfield's SWPPP addresses the six Minimum Control Measures outlined in the permit requirements:

1. Public Outreach and Education
2. Public Participation/Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post Construction Runoff Control
6. Pollution Prevention/Good Housekeeping

The SWPPP is designed to address these issues thereby minimizing the discharge of pollutants into the city's stormwater system, protecting and enhancing water quality, and satisfying the appropriate requirements of the Clean Water Act.

Special provisions of the MS4 permit are discussed in the following paragraphs:

i. Outstanding Resource Value Waters

Cannon River

The state of Minnesota established ORVWs as very high quality waters requiring the highest level of protection from pollution (Minnesota Rules 7050.0180). ORVWs include all the waters in the Boundary Waters Canoe Area Wilderness and Voyageur's National Park, Lake Superior, natural lake trout lakes, and wild and scenic and recreational river segments such as the St. Croix, Rum, and portions of the upper Mississippi and Cannon Rivers. The Cannon River through Northfield is designated as a state scenic or recreational river, and is therefore an ORVW.

There are two types of ORVWs with respect to the MS4 Permit—waters with “prohibited” discharges and waters with “restricted” discharges. The Cannon River in Northfield is a restricted discharge water ORVW. For MS4s that discharge to a restricted discharge water ORVW, the MS4 must find feasible and prudent alternatives to the

discharge, or if there are no feasible and prudent alternatives, the MPCA must either prohibit the discharge or require additional measures (BMPs) to protect the waters.

The City of Northfield's MS4 Permit SWPPP contains a BMP summary sheet entitled "Determination of No Prudent & Feasible Alternatives to New or Expanded Discharges to Restricted Waters." The City of Northfield must show that there has been no increase (nondegradation) in stormwater runoff volume, total phosphorus, and total suspended solids (TSS) above 1984 amounts (the year that the Cannon River was designated a state wild and scenic river). If they show there has been an increase, the city must show how they will achieve the 1984 amounts. The city must further show no increase in these constituents to 2020.

Rice Creek/Spring Brook

Rice Creek/Spring Brook is a designated trout stream; therefore, it is also an ORVW. Only a small portion of Rice Creek is currently within the city limits. When/if the area that contains a larger portion of Rice Creek is annexed into Northfield, the city will need to meet similar nondegradation requirements quality for the creek.

Hauberg Woods Fen

The Hauberg Woods fen, while located outside the current city limits, is owned by the city and is within the city's annexation area in Dakota County. This fen is not officially designated as a calcareous fen in Minnesota Rule 7050.0180, so it is not an ORVW. Fens are peatlands that receive water from precipitation and from groundwater, which has percolated through mineral soil. To protect the high quality of the Hauberg Woods fen, it will be important to understand the impact of proposed nearby land use changes on the fen (e.g., impact on groundwater flows to the fen).

ii. TMDL Requirements

Section 303(d) of the Clean Water Act requires each state to identify and establish priority rankings for waters that do not meet the water quality standards. The following water bodies in Northfield are on the MPCA's draft 2010 impaired waters list:

- Cannon River: Mercury, turbidity, Escherichia (E.) coli/fecal coliform
- Heath Creek: Turbidity, E. coli
- Spring Brook/Rice Creek: Turbidity, E. coli, nitrates

Other water bodies downstream of Northfield are impaired that could be affected by the city's stormwater discharges, including:

- Lake Byllesby: Mercury, nutrient/eutrophication biological indicators

- Mississippi River: Mercury, Polychlorinated Biphenyls (PCB), Perfluorooctane Sulfonate (PFOS), turbidity
- Lake Pepin: Nutrient/eutrophication biological indicators

For impaired waterbodies, a total maximum daily load (TMDL) must be developed. A TMDL is a threshold calculation of the amount of a pollutant that a waterbody can receive and still meet water quality standards. A TMDL establishes the pollutant loading capacity within a waterbody and develops an allocation scheme amongst the various contributors, which include point sources, non-point sources and natural background, as well as a margin of safety. As a part of the allocation scheme a waste load allocation (WLA) is developed to determine allowable pollutant loadings from individual point sources (including loads from storm sewer networks), and a load allocation (LA) establishes allowable pollutant loadings from non-point sources and natural background levels in a waterbody.

The Revised Regional Total Maximum Daily Load (TMDL) Evaluation of Fecal Coliform Bacteria Impairments in the Lower Mississippi River Basin in Minnesota was approved by the EPA on April 5, 2006. This TMDL study included 39 stream reaches, including the Cannon River, classified as “impaired” by fecal coliform. The TMDL called for a two-thirds reduction in major sources of fecal coliform — mainly livestock manure and nonconforming SSTS — to meet the federal standard of 200 organisms/100ml of water. *The Lower Mississippi River Basin Fecal Coliform Implementation Plan*, published in February and September 2007, set implementation tasks, such as initiatives for residential unsewered wastewater reduction, feedlot runoff reduction, rotational grazing, and riparian buffers in various locations in the basin.

The City of Northfield added several BMPs to the city’s SWPPP to address the requirements of the fecal coliform TMDL, including specific BMPs aimed at controlling pet waste and waterfowl waste. To address pet waste, the city is implementing education-based BMPs and is considering adding a requirement to its ordinances that pet owners pick up their pet wastes. To address waterfowl waste (especially geese), the city is implementing BMPs to increase the amount of naturalized vegetation around city water bodies.

The City of Northfield also added BMPs to the city’s SWPPP to address the requirements of TMDLs in general. Any implementation requirements stemming from future TMDLs applicable to the city will then need to be incorporated into the city’s NPDES Phase II MS4 permit. Future TMDLs may require the MS4s in the watershed (such as Northfield) to implement additional BMPs to reduce sediment loading, nutrient loading and/or other load reductions. These additional BMPs could have a significant impact on the city’s stormwater ordinance and/or the Rice Creek policy document.

iii. Pond Inventory Requirements

As part of a broader state law restricting the purchase of coal tar sealers and the impact of coal tar sealers on pond sediment (the presence of these sealants in sediments can result in high costs when the sediments are excavated from the pond), MS4s will be required to complete a stormwater pond inventory (Chapter 172, Sec.28, 2009 Session Laws). The inventory will be a multi-stage process. Stage 1 inventory requirements include identifying all of the stormwater conveyance system components (ponds, wetlands, rivers, creeks, ditches, etc.), the surface area of each of the waters, and the number of conveyance system discharge points to each of the waters. The Stage 1 inventory information will be due to the MPCA with the permit application for the revised MS4 permit, expected after June 1, 2011. Later stages of the inventory may include determining the amount of accumulated sediment in stormwater ponds and characterizing the sediment (i.e., testing for contaminants).

Related to this, the MPCA developed a guidance document for managing material dredged from water bodies (*Managing Dredged Materials in the State of Minnesota, June 2009*, MPCA). Only certain projects involving navigational dredging, remediation, and similar activities may require a permit. For all other projects (such as stormwater pond dredging), the MPCA recommends that the projects follow the guidance, requirements and BMPs contained in the guidance document.

If not disposed of in a landfill, the dredged material needs to be characterized according to the relevant soil reference values (SRV). Based on the results of completed sediment characterization—the type and level of pollutants in the material in comparison to established SRVs—dredged material is categorized into one or more Management Levels. The Management Level of a dredged material dictates the appropriate disposition of the material. The guidance document includes a modified approach for urban stormwater ponds. Stormwater pond sediments are categorized into the same three management levels as other dredge material; for stormwater ponds management level 3 is modified.

Level 1 Dredged Material is suitable for use or re-use on properties with a residential or recreational use category;

Level 2 Dredged Material is suitable for use or re-use on properties with an industrial use category;

Level 3 Dredged Material is characterized as having significant contamination and must be managed appropriately for the specific contaminants present. If PAHs are the only contaminants present at Level 3, they may be treated to reduce the contaminant levels by a proven treatment method if there is an operating permitted facility. Level

3 materials may also be reused or disposed of at a permitted landfill with an approved industrial waste management plan.

All of these requirements and considerations (inventory and dredging) make it very important for the city to obtain and maintain good records of the stormwater system, including as-built drawings of the system. This type of requirement could be included in the stormwater management ordinance.

iv. Future Permit Requirements

The NPDES MS4 permit expires/will be revised in 2011. The new permit will include the stormwater pond inventory requirement (see item iii above), and is likely to include non-degradation requirements for all MS4s (beyond the original 30), and may include additional requirements for MS4s to demonstrate compliance with nondegradation and construction requirements of the permit.

c. NPDES Construction Stormwater Permit

The NPDES construction stormwater permit requires permittees to implement additional BMPs, along with enhanced runoff controls for discharges to special waters and impaired waters. The additional requirements apply to those areas of the project that are within one mile of a special or impaired water and that flow to that water. The NPDES permit includes exceptions/allowances for different types of BMPs, when certain conditions preclude the use of the prescribed BMPs (i.e., proximity of bedrock, and work on linear projects).

i. Scenic or Recreational River Segments

The Cannon River in Northfield is a state scenic or recreational river; discharges to the Cannon River must meet incorporate the BMPs outlined in C.1, C.2, and C.3 of the Appendix (of the NPDES construction stormwater permit). The required BMPs include stabilizing exposed soil areas within seven days, providing temporary sediment basins for areas serving five or more acres of disturbed land, treating one inch of runoff from the new impervious surfaces (infiltrating ½ inch where site conditions allow), and providing an undisturbed buffer of at least 100 feet from the special water (Cannon River).

ii. Trout Stream Requirements

Spring Brook/Rice Creek is a listed trout stream (MN Rules 6264.0050, subp. 4). Discharges to trout streams must incorporate the BMPs outlined in C.1, C.2, C.3, and C.5 of the Appendix (of the NPDES construction stormwater permit). Only a small portion of Rice Creek is located within the city limits. When/if the area that contains a larger portion of Rice Creek is annexed into Northfield, these requirements will apply to that area. The required BMPs include those required under item i above, plus temperature controls—minimizing new impervious surfaces, minimizing discharge from connected impervious

surfaces, infiltration or evapotranspiration of runoff, and special stormwater pond design considerations.

iii. Impaired Waters

Discharges to waters identified as impaired for phosphorus (nutrient eutrophication biological indicators), turbidity, dissolved oxygen, or aquatic biota (fish bioassessment, aquatic plant bioassessment, and aquatic macroinvertebrate bioassessment) must incorporate the BMPs outlined in C.1 and C.2 of the Appendix (of the NPDES construction stormwater permit). The Cannon River, Heath Creek and Rice Creek (Spring Brook) are identified as impaired for multiple listings, including turbidity. Discharges to these waters will need to meet these additional requirements. The required BMPs include stabilizing exposed soil areas within seven days, providing temporary sediment basins for areas serving five or more acres of disturbed land, and treating one inch of runoff from the new impervious surfaces (infiltrating ½ inch where site conditions allow).

iv. Likely Future Permit Requirements

The construction stormwater permit was just updated in 2008, so it is unlikely there will be any changes before it is reissued in 2013.

d. NPDES Industrial Stormwater Permit

The revised Industrial Stormwater Multi-Sector General Permit was approved April 5, 2010. Facilities need to apply for permit coverage based on phased timeline. The goal of the MPCA's Industrial Stormwater Program is to reduce the amount of pollution that enters surface and ground water from industrial facilities in the form of stormwater runoff. This goal is accomplished through industrial facilities developing a Stormwater Pollution Prevention Plan (SWPPP) that contains BMPs to control stormwater. Regulated parties manage stormwater runoff by meeting the permit requirements or by certifying a condition of No Exposure.

As this permit was just revised, it is unlikely there will be any changes before it is reissued in 2015.

e. Floodplain Requirements/Regulations

Floodplain management is the management of development and other activities in or near the floodplain to prevent flood damages. The MDNR defines floodplain management as “the full range of public policy and action for ensuring wise use of the floodplains. It includes everything from collection and dissemination of flood control information to actual acquisition of floodplain lands, construction of flood control measures, and enactment and administration of codes, ordinances, and statutes regarding floodplain land use.”

Minnesota law defines the floodplain as the land adjoining lakes, water basins, rivers, and watercourses that have been or may be covered by the “100-year” or “regional” flood.

Floodplains of larger basins and creeks are mapped by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps, which are included in community Flood Insurance Studies. The City of Northfield manages activities in the FEMA-designated floodplain areas through the city's floodplain ordinance. Regulated activities include filling, excavation, and placement of structures.

The Flood Insurance Study, together with the city's floodplain ordinance, allows the City of Northfield maintain their eligibility to participate in the National Flood Insurance Program (NFIP).

The city has determined 100-year flood levels for many water bodies in the city that have not been mapped on FEMA Flood Insurance Rate Maps. Currently, the city manages activities within the floodplains of these (non-FEMA) water bodies through its permit/approval processes and the policies in the city's SWMP. The upcoming stormwater ordinance will include provisions pertaining to managing these activities.

f. Minnesota Department of Natural Resources (MDNR) Permits

This section discusses the MDNR permits relevant to the stormwater ordinance—public waters work permits, dam safety permits, and appropriation permits. Awareness of these permits will help the city (and others) understand the amount of protection already provided by other units of government.

i. Public Waters Work Permit

The MDNR's public waters work permit program (Minnesota Statutes 103G) requires a MDNR public waters permit for work below the Ordinary High Water level (OHWL) that will alter or diminish the course, current, or cross-section of any public waters or public waters wetlands, including lakes, wetlands and streams. For lakes and wetlands, the MDNR's jurisdiction extends to designated U.S. Fish and Wildlife Service Circular #39 Types 3, 4, and 5 wetlands which are 10 acres or more in size in unincorporated areas, or 2.5 acres or more in size in incorporated areas. The program prohibits most filling of public waters and public waters wetlands for the purpose of creating upland areas. Under certain conditions, work can be performed below the OHWL without a public waters work permit. Examples include docks, watercraft lifts, beach sand blankets, ice ridge removal/grading, riprap, and shoreline restoration. The MDNR public waters in the city of Northfield are shown on Figure III-6 in the SWMP.

ii. Dam Safety Permit

The MDNR administers the state's dam safety program (MN Rules 6115.0300 – 6115.0520), which applies to all impoundments that pose a potential threat to public safety or property. Dams six feet or lower in height and dams that impound 15 acre-feet or less of water are exempt from the rules. Dams less than 25 feet high that impound less

than 50 acre-feet of water are also exempt, unless there is a potential for loss of life. The dam safety rules require that the downstream impacts of a dam failure be analyzed under high-flow conditions (i.e. greater than a 100-year flood).

Proposed stormwater ponding areas (if large enough) could potentially come under the jurisdiction of the dam safety rules. If so, it is likely that the City would encourage modified pond designs or multiple ponds so that the ponding project would not come under the jurisdiction of the dam safety rules.

iii. Appropriation Permit

The MDNR regulates groundwater usage rate and volume as part of its charge to conserve and use the waters of the state. For example, suppliers of domestic water to more than 25 people or applicants proposing a use that exceeds 10,000 gallons per day or 1,000,000 gallons per year must obtain a water appropriation permit from the MDNR. Appropriation permits from the MDNR are not required for domestic uses serving less than 25 persons for general residential purposes. The MDNR is also responsible for mapping sensitive groundwater areas, conducting groundwater investigations, addressing well interference problems, and maintaining the observation well network.

g. Minnesota Department of Health Requirements/Guidelines and Other Groundwater Considerations

The City of Northfield relies on groundwater for its municipal water supply; its municipal well field consists of four active wells. The city is responsible for compliance with regulatory programs, including the Minnesota Department of Health's (MDH) Wellhead Protection Program. In accordance with MDH rules, the City of Northfield prepared (and now implements) a Wellhead Protection Plan (WHPP). Although the city and others promote infiltration as a means of reducing stormwater runoff rates and volumes, it is important that groundwater recharge areas be protected from contamination.

The City's SWMP (and MS4 SWPPP) call for the city to use the Minnesota Department of Health's document "*Evaluating Proposed Storm Water Infiltration Projects in Vulnerable Wellhead Protection Areas*" as a guidance manual in evaluating all proposed infiltration projects within or adjacent to the vulnerable drinking water supply management areas (DWSMA).

The City's SWMP also requires geotechnical investigations for all proposed storm water facilities located within shallow bedrock areas. Shallower depths or other stormwater best management practices, such as constructed wetlands and bio-retention area will be considered in these areas.

h. MDNR/City Shoreland Requirements

The City of Northfield has adopted shoreland regulations to follow state statutes. Over the Cannon River, the city's shoreland overlay district is merged with the Wild & Scenic overlay

district. While the other public waters in Northfield (Rice Creek, Heath Creek, Spring Creek, and the Sibley Marsh) are listed by name within the shoreland regulations, the explicit extent of application of shoreland regulations is missing for these water bodies. Enforcement of the shoreland regulations around these other public waters has not been consistent. The city intends to develop an ordinance after the state adopts final shoreland rules. For more information about the shoreland requirements in the MDNR model shoreland ordinance and its impact on the upcoming stormwater ordinance, the reader is directed to the shoreland model ordinance technical report.

i. Wetland Conservation Act

Minnesota's Wetland Conservation Act (WCA) regulates wetland draining and filling activities on all wetlands not covered by the MDNR's Public Waters Work Permit Program. Although the Minnesota Board of Water and Soil Resources administers the WCA on a statewide basis, local governments implement the WCA locally. Rice County Soil and Water Conservation District is the local government unit (LGU) responsible for implementing the WCA in the city of Northfield.

The WCA requires the establishment or preservation of vegetated upland buffer areas adjacent to replacement wetlands. For replacement wetlands less than two acres in size, the buffer must be a minimum average width of 25 feet. For all other replacement wetlands, the buffer must be a minimum width of 25 feet and an average width of 50 feet.

The city has a wetland preservation ordinance with additional requirements for discharges to wetlands and building constraints adjacent to wetlands.

3. Recommendations for Stormwater Ordinance Development

a. Northfield SWMP Policies

The SWMP policies will provide the basis for the stormwater management ordinance. Attached is an excerpt from the SWMP document that contains the policies that are pertinent to the stormwater management ordinance (Strategy C: Regulation, and Strategy D: Internal Operations). The policies under Strategy C: Regulation cover a number of topic areas (beyond infiltration, low impact development and trout stream issues) that need to be incorporated into the stormwater ordinance. Nearly all of these policies could be incorporated into the stormwater ordinance, while some of the policies would be appropriate for including in the Rice Creek policy document. Additional SWMP policies under Strategy D: Internal Operations pertaining to easements, outlets, maintenance, and required as-built drawings should also be considered for the stormwater ordinance.

b. Other Requirements for Consideration

To help the city meet its MS4 permit nondegradation requirements pertaining to ORVWs, the stormwater ordinance could include the following types of requirements:

- 1) For new development projects—if the project will result in a new or expanded discharge, the project must either accomplish the needed level of treatment on-site, or a fee must be paid that allows the project to discharge to a regional stormwater facility.
- 2) For expansion/redevelopment projects—if the project will not increase the impervious coverage on the site, no additional treatment is needed; if the project will result in an increase in the impervious coverage, then the required treatment must be provided on-site or regionally (see #1).

The ordinance could also include “goals” encouraging impervious coverage reduction and additional stormwater treatment.

The Rice Creek policy document should include similar ORVW considerations.

To help the city meet its MS4 permit requirements for the current TMDLs, the stormwater ordinance could require vegetative buffers around stormwater ponds and other water bodies. Incorporating the policies in the SWMP will help the city meet future TMDL requirements, such as sediment and nutrient loading reductions. However, the city will need to consider if additional requirements will be needed in the stormwater ordinance:

The Rice Creek policy document should include similar TMDL considerations.

To help the city meet its MS4 stormwater pond inventory requirements and to follow the MPCA’s stormwater pond dredging guidance, the stormwater ordinance could require as-built construction drawings of stormwater ponds and other stormwater system components (similar to SWMP policy), and easements to allow for easy access to stormwater ponds.

The NPDES construction stormwater permit’s additional requirements for discharges to special and impaired waters should be compared to the city’s current erosion and sediment control ordinance and the SWMP policies, and then considered for inclusion in the stormwater ordinance. A number of the additional requirements pertain to post-construction stormwater controls, such as water quality treatment, buffers (Cannon River only), and temperature controls (trout streams only).

The Rice Creek policy document should include the construction stormwater permit considerations for trout streams and impaired waters.

The stormwater ordinance should require minimum building elevations per SWMP policies, which would apply throughout the city and not be limited to the FEMA-designated floodplains. The stormwater ordinance could also include compensatory floodplain mitigation and other requirements that are currently in the city’s floodplain ordinance, but do not apply city-wide.

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The stormwater ordinance could reference the MDNR's dam safety rules and require that proposed stormwater ponding areas not come under the jurisdiction of the rules.

It may be appropriate to consider the impacts of existing MDNR appropriation permits (if any) in the Rice Creek policy document.

The stormwater ordinance should include requirements that take into account protection of groundwater recharge areas from contamination, per the City's SWMP and MS4 SWPPP (e.g., depth to bedrock).

Policy Excerpt from City of Northfield Surface Water Management Plan

SECTION V

STRATEGY: EDUCATION		
Policy No.	Policy	Target Audience
5	The City will continue to implement the existing Organic Pest Management Policy, which includes organic weed treatment and fertilizer use in parks and public property.	Residents, Business Owners, Elected Officials, and Staff
6	The City will develop and distribute through water utility bills or direct mailings an annual newsletter aimed at fostering responsible water quality management practices. Topics may include, but not be limited to: <ul style="list-style-type: none"> ● Groundwater quality and protection ● Wellhead protection plan and related standards ● Controlling invasive species ● Water conservation and the water cycle ● Proper hazardous waste disposal ● Yard waste management ● Pet waste disposal ● Pollution prevention 	Residents, Business Owners, Developers
7	The City will investigate the possibility of working collaboratively with the Rice County Soil & Water Conservation District, Dakota Soil & Water Conservation District, and Cannon River Watershed Partnership in distributing educational materials and promoting/supporting outreach programs. Local partners offer a number of education opportunities, including the following: <ul style="list-style-type: none"> ● Citizen Stream Monitoring ● River Clean-Up ● Storm Drain Stenciling ● Educational Field Day ● General conservation practice information These organizations provide many other educational opportunities. The City will continue to promote and support the educational efforts of these organizations.	Business Owners, Developers, City Staff and Elected Officials, Rice and Dakota Soil & Water Conservation Districts, Cannon River Watershed Partnership
8	The City will investigate implementing a cost-share program for City residents to implement alternative storm water management techniques on their land, such as rain garden, pervious pavement, etc.	Residents, Business Owners, City Staff, Elected Officials, Agencies

C. REGULATION

The policies developed performance standards for new in this strategy outline specific storm water management elements that are required to be implemented through the development and/or permitting process. The regulation strategy is targeted at the public, developers, City Staff, and City Elected Officials.

SECTION V

A summary of the rate control, water quality treatment and infiltration requirements identify in this section are provided below. Different policies for different types of activities have been developed. To provide clarification for when these policies affect different activities, the following definitions have been developed:

New Development: New Development projects are new residential, institutional, commercial/retail, office, or industrial projects that will subdivide land or disturb land as part of development in the existing non-urbanized areas of the City.

Expansion/Redevelopment: Expansion and Redevelopment projects include the expansion or redevelopment of existing commercial, industrial, or institutional uses within the existing urbanized areas of the City.

STRATEGY: REGULATION		
No.	Policy	Target Audience
Rate Control		
1	<p>For Expansion/Redevelopment, rate control must be provided to limit runoff from the project to existing conditions.</p> <p>As part of the evaluation of the expansion/redevelopment plans, the site will be evaluated based on the opportunity to meet these standards by the City Engineer, Planning Commission and City Elected Officials. This evaluation will take into consideration that a downstream system may have been constructed to accommodate newly or redeveloping areas and therefore eliminate the need for expanded on-site improvements.</p>	Developers, City Staff, Elected Officials
2	<p>For New Development, rate control must be provided to limit runoff to pre-settlement conditions for the 2- and 100-year critical events. Pre-settlement conditions shall be defined as the estimated land cover in the area before European settlement. This can be determined by use of historic topographic and photographic data.</p>	Developers, City Staff, Elected Officials
3	<p>For New Development or Expansion/Redevelopment with the Rice Creek subwatershed, rate control must be provided to limit runoff from the project to a maximum of 0.1 cfs per acre for the 100-year critical storm event. The 100-year critical storm event is either the 100-year, 24-hour or the 10-day snowmelt, whichever is greater.</p>	Developers, City Commissioners, Elected Officials
4	<p>The City may work with neighboring townships and municipalities to develop an agreement that provides rate control to existing conditions for runoff generated from any new development that discharges to Northfield.</p>	Staff, Elected Officials, Developers, Neighboring Communities

SECTION V

STRATEGY: REGULATION		
No.	Policy	Target Audience
5	When property is annexed into the City, existing developed properties should comply with polices in this Plan to the maximum extent practical.	Staff, Elected Officials, and Developers
6	<p>The design of the storm drainage system shall be sized to accommodate the following rainfall events:</p> <ul style="list-style-type: none"> ● Local storm sewer - 20% chance event (5 year event) ● Trunk storm sewer - 10% chance event (10-year event) ● Storm ponds and open channels - 1% chance event (100-year) <p>Capacity requirements may be varied if regional ponding system is located downstream.</p>	Developers
7	For storm water collection systems not designed to meet rate control standards (i.e., catch basins), a clogging factor of 50% will be used to size intake structures.	Developers
8	No orifice having a diameter less than 8" is allowed in the design of rate control structures within the City. If a structure having an opening less than 8" is required to meet rate control requirements, the required rate control for a site will be increased to allow a rate consistent with an opening of this size.	Developers
9	An emergency spillway (emergency outlet) from ponding areas shall be installed at a minimum of 1 foot below the lowest building opening and shall be designed to have a capacity to overflow water at an elevation below the lowest building opening at a rate not less than 3 times the 100-year peak discharge rate from the basin or the anticipated 100-year peak inflow rate to the basin, whichever is higher.	Developers
Flood Control		
10	The lowest floor elevation for all projects within the City will be 2 feet above the elevation of the highest known historic high groundwater elevations for the area and 2 feet above the 100-year high surface water elevation in the area. Information on historic high groundwater elevations can be derived from any reasonable sources including piezometer data, soil boring data, percolation testing logs, etc.	Developers

SECTION V

STRATEGY: REGULATION		
No.	Policy	Target Audience
11	Any project within the City will maintain a minimum building opening elevation 2 feet above the projected 100-year high water elevation for the area. The applicant may apply for a freeboard requirement of less than 2 feet for secondary structures if calculations identify the structure can be protected, consent is provided from affected landowners, and there is no risk to water contamination from the items to be stored in the structure.	Developers
12	Final grading plans submitted to the City shall identify all required overland overflow routes and these routes shall be contained within a drainage and utility easement. Each individual lot included on the final grading plan shall contain proposed spot elevations within the overflow route to document required specific lot grades.	Developers
13	The City will comply with FEMA requirements. The City prohibits activities within the 100-year floodplain unless compensatory floodplain mitigation is provided at a 1:1 ratio by volume. Activities in the 100-year floodplain shall not cause an increase in the stage of the 100-year or regional flood or cause an increase in the flood damages in the reach affected. In addition, no filling within the designated floodway of a drainage channel shall be allowed. Suitable calculations must be submitted and approved demonstrating that filling the flood fringe will not impact the 100-year flood profile. Additional detail is provided in the City's floodplain ordinance on the City's web-site at: www.ci.northfield.mn.us .	Residents and Developers
15	Projects that alter floodplain boundaries, such as bridge crossings and regional ponds that increase upstream high water levels are allowed provided that they were accounted for in the detailed study or provided that the applicant submits easements or other documentation in a form acceptable to the City demonstrating and recording the consent of the owner of any land affected by the increased high water levels; the action is consistent with Local, State and Federal Regulations; and the upstream impacts, riparian impacts and habitat impacts of the proposed action are analyzed and no detrimental impacts result, or adverse impacts are mitigated.	Residents and Developers
16	The City will continue to work with Rice County (the Ditch Authority) to assist where necessary in management of public ditches discharging into the City pursuant to Minnesota Ditch Law MS Chapter 103E and relevant management standards and laws.	Residents, Staff, County staff and Elected Officials

SECTION V

STRATEGY: REGULATION		
No.	Policy	Target Audience
Water Quality Treatment		
17	<p>Developments must incorporate effective non-point source pollution reduction Best Management Practices to achieve 90% total suspended solids removal and 60% phosphorous removal from the runoff generated by a 2.5 inch rainfall. The runoff volume reduction requirement may be considered and included in the calculations showing compliance with achieving these removal requirements. Water quality calculations, documentation and/or water quality modeling shall be submitted to verify compliance with the standard.</p> <p>OR</p> <p>For New Development and Expansion/Redevelopment projects, treatment of storm water to National Urban Runoff Protection (NURP) guidelines is required prior to storm water discharge to a lake, stream, or wetland and prior to discharge from the site as part of development. The NURP guidelines for the design of storm water treatment basins are as follows:</p> <ol style="list-style-type: none"> a. A permanent pool (“dead storage”) volume below the principal spillway (normal outlet) which shall be greater than or equal to the runoff from a 2.5-inch storm over the entire contributing drainage area assuming full development. b. A permanent pool average depth (basin volume/basin area) which shall be ≥ 4 feet, with a maximum depth of ≤ 10 feet. c. Basin side slopes above the normal water level should be no steeper than 3:1, and preferably flatter. A basin shelf with a minimum width of 10 feet and 1 foot deep below the normal water level is recommended to enhance wildlife habitat, reduce potential safety hazards, and improve access for long-term maintenance. d. The pond should be wedge shaped with the inlet at the narrowest end and the outlet at the widest end. A length to width ratio of 3:1 or greater shall be used whenever possible. Distance between outfalls and outlets should be maximized. 	Developers
18	Two-foot sump catch basin inlets are required for all new or redevelopment within a street. A 3-foot sump catch basin or manhole is required within the street just prior to discharge to a wetland, lake, or stream.	Developers

SECTION V

STRATEGY: REGULATION		
No.	Policy	Target Audience
19	The City may work with neighboring townships and municipalities to develop an agreement that provides a 60% phosphorus and 90% total suspended solids reduction prior to the discharge of storm water into the City	Staff, Elected Officials, Neighboring Communities
20	The City will continue to explore multi-purpose regional treatment pond areas that provide an opportunity to enhance habitat and aesthetic features of the pond. These ponds will be designed to treat stormwater levels consistent with the use classifications of the downstream receiving water while also providing upland buffers and habitat improvements around the ponds.	Staff, Elected Officials and Developers
21	The City requires skimmers or other devices in the construction of new pond outlets and the addition of skimmers to existing systems whenever feasible and practical. The designs shall provide for skimmers that extend a minimum of 4 inches below the water surface and minimize the velocities of water passing under the skimmer to less than 0.5 feet per second for rainfall events having a 99% frequency.	Developers
22	The City encourages the design of storm water management features provide an opportunity to enhance the habitat and aesthetics of the area. This includes providing upland buffers around ponds, seeding the area with native vegetation, and designing the slopes flatter than 3:1	Developers
23	City has a process to establish waterbody Eutrophication standards as defined in Appendix G . In coordination with local partners, the City may explore water quality monitoring programs conducted by trained professional staff to evaluate water quality and assign use classification consistent with MPCA requirements for critical waterbodies in City. Based on the evaluation of this data, additional classification categories may be added to the City's requirements.	Staff and Elected Officials
Infiltration/Volume Control		
24	New Development and Expansion/Redevelopment projects are required to infiltrate storm water runoff except where it is demonstrated the risk to groundwater quality is significant, the land use is incompatible, or soils are not conducive to infiltration. Other Best Management Practices may be recommended by City Staff if the site is not conducive for infiltration. For projects that use infiltration, the following policies apply:	Developers, City Staff, Elected Officials

SECTION V

STRATEGY: REGULATION												
No.	Policy	Target Audience										
	<ul style="list-style-type: none"> ● Pretreatment of storm water to water quality treatment standards outlined in this Plan will be required prior to discharge to an infiltration basin. ● The infiltration system will be sized to infiltrate the runoff from the impervious surface area from a 0.34 inch rainfall event (median annual storm) in 72 hours. Expansion/Redevelopment projects will be required to meet these standards to the maximum extent practical. ● Within the Spring Brook watershed, the infiltration system will be sized to infiltrate the runoff from the impervious surface area from a 1-inch rainfall event in 72 hours. ● Infiltration rates of the soil shall be calculated using the following guidelines based on the soil's hydrologic group: <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">Hydrologic Soil Group</th> <th style="padding: 5px;">Infiltration Rate</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">A</td> <td style="padding: 5px;">0.50 in/hr</td> </tr> <tr> <td style="padding: 5px;">B</td> <td style="padding: 5px;">0.25 in/hr</td> </tr> <tr> <td style="padding: 5px;">C*</td> <td style="padding: 5px;">0.10 in/hr</td> </tr> <tr> <td style="padding: 5px;">D*</td> <td style="padding: 5px;">0.03 in/hr</td> </tr> </tbody> </table> <p style="margin-left: 20px;">Actual infiltration data for the soils on the site obtained from percolation tests conducted by a qualified engineer or soils scientist may be used instead of the rates outlined here, if available.</p> ● Any infiltration practices shall provide for 3 feet of separation between the bottom of the system and highest observed groundwater or bedrock elevation. These systems would not be required in high bedrock areas. <p style="margin-left: 20px;">*Areas where infiltration features are not required.</p>	Hydrologic Soil Group	Infiltration Rate	A	0.50 in/hr	B	0.25 in/hr	C*	0.10 in/hr	D*	0.03 in/hr	
Hydrologic Soil Group	Infiltration Rate											
A	0.50 in/hr											
B	0.25 in/hr											
C*	0.10 in/hr											
D*	0.03 in/hr											
Wetlands												
25	The City promotes and encourages the establishment of wetland buffers within the City where feasible.	Developers, Residents										
26	The Rice County Soil and Waters Conservation District will continue to implement the Local Government Unit responsibilities pursuant to the Wetland Conservation Act within the City.	Rice Soil & Water Conservation District, Developers, Residents										

SECTION V

STRATEGY: REGULATION		
No.	Policy	Target Audience
27	The City will require assessment of property to determine if restoration of drained wetlands in agricultural areas is feasible.	Developers, Residents
Groundwater		
28	The City will use the Minnesota Department of Health's document "Evaluating Proposed Storm Water Infiltration Projects in Vulnerable Wellhead Protection Areas" as a guidance manual in evaluating all proposed infiltration projects within or adjacent to the vulnerable Drinking Water Supply Management Areas (DWSMA) consistent with the SWPPP.	Staff
29	The City has developed a spill prevention, control, and counter measure plan that is consistent with state and federal regulations.	City Staff and Elected Officials
30	The City will continue to implement its Wellhead Protection Plan.	Staff
31	The City requires that the design, installation and inspection of individual sewage treatment systems shall be in conformance with State standards. The City will work with Rice County to continue to identify necessary County review of applications and appropriately inspect these systems.	Staff, residents
32	For areas within shallow bedrock areas, geotechnical investigation is required for all proposed storm water facilities. Shallower depths or other storm water Best Management Practices such as constructed wetlands and bio-retention area will be considered in these areas.	Developers and staff
Erosion and Sediment Control		
33	The City requires submission and implementation of erosion and sediment control plans for land disturbance activities of one acre or more in size. These plans shall conform to the criteria outlined in the Minnesota Pollution Control Agency NPDES Permit, Surface Water Management Ordinance, and the NPDES Construction Site permit. The City will inspect sites that require an NPDES permit for erosion and sedimentation control.	Developers
Greenway, Shoreland and Land Protection Areas		
34	Storm water runoff from proposed New Development and Expansion/Redevelopment must be treated as outlined in this Plan prior to discharge into a designated greenway corridor area.	Developers, Staff, and Elected Officials

SECTION V

STRATEGY: REGULATION		
No.	Policy	Target Audience
35	The City will work with DNR staff to update the shoreland ordinances. The City will manage the Cannon River in conformance with the requirements of the Wild and Scenic River program. The City will incorporate required local standards in conformance with Minnesota Statute 103F for consistency with the intent of the Wild and Scenic State requirements for the Cannon River.	Developers, Staff, and Elected Officials
36	As part of the update of the City's Comprehensive Plan, the City will identify necessary updates to the land use standards to facilitate implementation and protection of the greenway corridor system.	Staff and Elected Officials
Trout Stream Management		
37	The City will work with Rice County and other local partners to seek grant funding to develop a Trout Stream Management Plan for the Rice Creek watershed.	Staff, Developers, Other Agencies
Low Impact Development		
38	New Development and Expansion/Redevelopment projects will be encouraged to reduce the amount of impervious surface and use Low Impact Development (LID) techniques to the greatest extent reasonable taking into consideration land use, zoning, topography, previous site uses, and site constraints.	Staff, Developers, and Elected Officials
39	The City will explore the need to update ordinances to provide incentives, where appropriate, for the use of low impact development practices on projects in the City.	Staff, Developers, and Elected Officials
40	City will draft a Low Impact Development policy document for Elected Officials for review and possible incorporation into a pilot project as part of an upcoming street reconstruction /downtown redevelopment project.	Staff, Developers, and Elected Officials
41	The City will develop a Developer's Guide for alternative Best Management Practices, infiltration techniques, and Low Impact Development.	Staff, Developers, and Elected Officials

SECTION V

D. INTERNAL OPERATIONS

The City's internal operations can have a significant impact on storm water management. This strategy is targeted primarily at the City with some areas targeted at the public and/or another agency. These policies are aimed at operation and maintenance activities associated with water resource management within the City.

STRATEGY: INTERNAL OPERATIONS		
No.	Policy	Target Audience
1	The City will sweep the streets at least once annually. Areas that need more frequent sweeping will be swept as needed.	City Staff
2	The City will develop a storm sewer system map of all City-owned storm sewer pipes (24" or larger) and conveyances. This will also identify all outfalls and discharge points leaving the City. The City will annually review and update the storm sewer map.	City Staff
3	The City will review any Total Maximum Daily Load (TMDL) studies for impaired waters and coordinate this review with the MPCA and other relevant agencies.	Staff, Elected Officials Agencies
4	The City will continue to implement and review the community snow management program for snow removal and disposal approaches.	City Staff
5	The City will develop and implement a City ordinance related to illicit and non-stormwater discharges consistent with City SWPPP.	Staff, Elected Officials
6	The City will inspect post-construction BMPs then evaluate inspection records for determining the corrective maintenance actions (if necessary) for the long-term operation of all storm water management facilities.	City Staff
7	The City will inspect storm water treatment basins at least every 5 years and sump catch basins/manholes every year. Maintenance will be conducted as necessary.	City Staff
8	New storm water management ponds that are constructed as part of private development shall be covered by an outlet and deeded to the City for areas up to the elevation of the critical 100-year critical storm event (100-year, 24 hour or 10-day snowmelt) and should incorporate adequate access for future maintenance on at least one side of a pond.	Staff, Developers

SECTION V

STRATEGY: INTERNAL OPERATIONS		
No.	Policy	Target Audience
9	Overland emergency spillways and designated drainage conveyances shall be covered by a drainage and utility easement that are dedicated to the City. The areas within the drainage and utility easement shall be maintained as outlined in these policies.	Developers, Staff
10	<p>The City requires individual homeowners and/or the homeowners association (HOA) to assume all responsibility for “routine” maintenance within drainage and utility easements. “Routine” maintenance is defined as litter removal, mowing, and maintenance of the property. In the case of drainage swales, routine maintenance includes the removal of obstructions from the swale, as necessary, to maintain proper drainage in addition to the aforementioned items.</p> <p>The City shall be responsible for “non-routine” maintenance within the easements any maintenance of the storm water inlet(s) and outlet(s) pipes, and erosion control at outlet and inlet locations. Such maintenance shall be completed as deemed necessary by the City.</p>	Developers, Staff
11	For on-site volume reduction systems installed as part of New Development and Expansion/Redevelopment projects , the maintenance responsibilities must be assumed by the applicant and the applicant must record this maintenance agreement acceptable to the City unless otherwise noted in the required drainage and utility easements (dedicated to the City). This recordable executed agreement details the methods, schedule, acceptable uses and responsible parties for maintenance of stormwater management facilities and shall be submitted to the City prior to construction.	Staff, Developers
12	The City will develop a storm water pond maintenance program to identify and record each pond within the City and to develop a pond priority maintenance schedule based on a subwatershed priority ranking system.	Staff, Developers
13	Landlocked depressions that presently do not have a defined outlet and do not typically overflow may be allowed a positive outlet to protect adjacent properties. This outlet must be in conformance with current wetland regulations and demonstrate that downstream properties are not adversely affected by the flows.	Developers and Staff
14	The City requires as-builts of all ponding areas and designated emergency overflows.	Staff and Developers