EXECUTIVE SUMMARY

The City of Chanhassen (City) has a surface area of roughly 15,400 acres, of which almost 3,975 acres, or more than 26 percent, is surface water features. These surface water resources include 12 lakes, approximately 400 wetlands, over 170 storm water ponds, and portions of four creeks that are located wholly or partially within the City. One of the most prominent water features is Bluff Creek, which runs nearly the entire length of the City and has numerous wooded bluffs and vegetative buffer areas along the creek. Chanhassen also has a number of widely used public open spaces located throughout the community, including the Minnesota Landscape Arboretum, Lake Minnewashta Regional Park, and Lake Ann Park.

This wealth of water resources is clearly worth protecting, and is a primary goal of this Plan. Investing in improvement efforts for some of the resources that are currently impaired by one or more pollutants is also needed. The City has completed this second generation Surface Water Management Plan (SWMP or Plan) to protect and enhance these treasured resources and establish a more effective and up-to-date guide for future surface water management activities. This Plan builds on the projects and activities called for in the City's 1994 SWMP and addresses several relatively new issues related to storm water management that the City is faced with addressing in the coming years.

This executive summary provides a brief description of the purpose and basis for this updated Plan, followed by a presentation of the goals that were used to guide development of this Plan. This executive summary also highlights some of the key issues the City intends to address as part of the ongoing implementation efforts of its overall surface water management program.

Purpose of the Plan

The purpose of this Plan is to establish the framework of a comprehensive program that does more than simply protect and improve the quality of existing water resources within the City. The Plan also recognizes that development must and will continue well into the future, and will serve as a guide for City staff to follow as they evaluate the potential impacts of a given project on these quality resources. The Plan will serve as a toolbox for the City that includes the best available water resource data at the time it was completed, up-to-date policies and design standards, and a process to adjust goals and policies as new data is collected and evaluated or as complimentary programs change.

Basis for the Plan

Minnesota Rule, Chapter 8410 comprises the State's Metropolitan Surface Water Management Program (MSWMP) that establishes the regulatory need to update the City's 1994 Surface Water Management Plan (Bonestroo Rosene Anderlik and Associates). These Statutes and Rules require the preparation of watershed plans by watershed management organizations (WMOs) and the preparation of local water management plans that are consistent with the respective WMO plans. This program requires that a local (i.e., City) Plan be approved by the WMOs that operate within the City. Chanhassen is located within four major watershed units, as shown in Figure 2A. These watersheds are the Minnehaha Creek Watershed District (MCWD), the Riley Purgatory Bluff Creek Watershed District (RPBCWD), the Lower Minnesota River Watershed District (LMRWD), and the Carver County Water Management Organization (CCWMO).

The intent of the MSWMP is that through establishing realistic goals and policies at the local level, and completing prioritized implementation activities, local goals for proper water resource management can be realized and water quality can be protected. Through proper planning and implementation, informed decisions can be made which allow for the protection and/or enhancement of water resources and reduction of local flooding.

A second regulatory program, very much related to the goals, policies and standards of this Plan, is the National Pollutant Discharge Elimination System (NPDES) Phase II Storm Water Permit Program. This program is administered in the State by the Minnesota Pollution Control Agency (MPCA). This program has many similarities to the MSWMP, and both programs were considered with the Plan update. The NPDES Phase II Storm Water Permit Program is a federal regulatory program that requires owners of Municipally Separate Storm Sewer Systems (MS4s) to prepare and implement a Storm Water Pollution Prevention Program (SWPPP) and apply for the permit with the administrative agency. The City submitted its initial permit application and SWPPP in March 2003 and has been operating under the program since that time. This Plan does not specifically incorporate the best management practices (BMPs) identified in the City's SWPPP. Instead, the Plan builds on these existing activities by specifying projects and management approaches to achieve the City's water resources goals.

Plan Overview

One of the first steps taken to develop this Plan was to gather and compile the best available information and data from a number of resources. Sources of these data include the City's *1994 Surface Water Management Plan*, the WMO plans, MPCA NPDES Program and other relevant sources. This data and information were then reviewed and evaluated as part of the updated process. An introductory section establishes the purpose and basis for the Plan and provides a general Plan overview. The subsequent sections provide a brief background and history and describe the existing physical environment (Section II); identify goals and policies (Section III); present specific information regarding key water bodies within the City (Section IV); present specific information regarding wetlands management within the City (Section V), and establish an implementation plan to guide future projects and management activities for the protection and future enhancement of the City's water and wetland resources (Section VI).

Using the seven goals summarized in Table ES-1, the Plan is intended to guide surface water resource management activities through about the year 2020. Though long-term in focus, the Plan has numerous future decision points relating to recommended capital improvements and ongoing inspection, maintenance and monitoring activities. Where applicable, staff and financial resources of the City, WMOs, and adjacent communities are called on to maximize the effectiveness of the results. The Plan was developed recognizing the need to prioritize management actions and decisions based on the management class and current water quality status or trend for each key water resource.

Table ES-1. Chanhassen Surface Water Management Plan Goals

Goal Number	Goal	Goal Statement
1	Water Quantity	Provide 100-year (1% chance) flood protection for all structures.
2	Water Quality	Achieve water quality standards in lakes, streams, and wetlands consistent with their designated uses and established classifications.
3	Wetlands	Protect and rehabilitate wetlands to maintain or improve their function and value.
4	Erosion and Sediment Control	Minimize soil erosion and sedimentation.
5	Financing	Establish and maintain funding sources to finance activities of this Plan.
6	Regulatory Responsibility	Maintain primary responsibility for managing water resources at the local level but continue coordination and cooperation with other agencies and organizations.
7	Public Education and Information	Provide information and educational resources to improve knowledge and promote an active public role in management of water resources.

One of the larger tasks undertaken was to update the City-wide hydrologic model. The 1994 HydroCAD Model was updated from the previous DOS-based version to Version 7.0, which is a more rigorous and versatile program that will provide City staff a better tool for evaluating proposed projects. One of the goals of this modeling effort was to improve the City's ability to predict and understand the urban hydrology within the City such that potential future flooding issues resulting from development or redevelopment can be evaluated and avoided or reduced.

A City-wide wetland inventory was completed using the MnRAM 3.0 method as the basis for an updated wetland classification system. Of the 356 wetlands within the city, 315 were field reviewed and evaluated using the MnRAM assessment. The 41 basins that were not field reviewed were mapped using high resolution aerial photographs, but were on private property, and were not accessible for the required field assessment. Those basins that were accessible were mapped, visited in the field and assessed to determine their condition and relative value, and assigned to a classification category. Boundaries for each basin were mapped using GPS units in the field, followed by a review and refinement of the boundaries in the office for many of the basins based on the available aerial photography. The overall result of this significant effort is establishment of the tools to more efficiently manage wetlands within the City and recommendations for revised ordinance language to support protection and improvement of these valued resources.

This updated SWMP addresses each of the required elements in Minnesota Statutes and Rules and is consistent with the Metropolitan Council's guidelines for Water Management Plans. The Plan is also consistent with the CCWMO, LMRWD, MCWD and RPBCWD Plans. As a minimum, the criteria set forth in this Plan establish the degree of performance necessary to maintain the existing high-quality resources and to achieve improvement in water quality and water quantity management where needed. These criteria are not intended to dictate or preempt the design process, but rather provide guidelines to proper development and redevelopment.

Water Bodies

The current condition of the majority of Chanhassen's water bodies is good, with trends generally showing improvements in water quality. There are a few exceptions, and the need to improve these waters and protect the quality of all City waters is the primary basis of this Plan. Each water body has been assigned a management classification based on the use, function and current water quality characteristics. This management classification system shown in Table ES-2 is intended to help City staff manage the overall surface water program.

Table ES-2. Water Management Classification System

Management Class	Management Strategy	Storm Water Treatment (3)	Water Resource	Use Designation (1)
Preserve	Preserve and improve, **impose highest standards**.	NURP Plus Enhanced Treatment	Seminary Fen	Calcareous Fen
			Assumption Creek	Trout Stream
Improve - 1	Goal to improve trends, **impose higher standards.** These waters are "impaired" see Table 21 for details. (2)	NURP Plus Enhanced Treatment	Lotus Lake	Recreational Development
			Lake Riley	Recreational Development
			Bluff Creek	Natural Stream
			Riley Creek	Natural Stream
Improve - 2	Goal to maintain or improve. Look for **opportunities to apply higher standards**.	NURP Enhanced Treatment if Opportunities Present	Lake Ann	Recreational Development
			Christmas Lake	Recreational Development
			Lake Minnewashta	Recreational Development
			Lake Susan	Recreational Development
Improve - 3	Goal to maintain water quality and keep long-term trends stable to improving	NURP	Harrison Lake	Natural Environment
			Lake Lucy	Recreational Development
			Rice Marsh Lake	Natural Environment
			Silver Lake	Natural Environment
			Lake St. Joe	Natural Environment
Constructed	NA	NA	Storm Water Ponds	Treatment System

(1) Use designation taken from the City's Comprehensive Plan.
(2) TMDL list of impaired waters for nutrients (Riley and Lotus Lakes), Turbidity (Bluff and Riley Creeks), Fish IBI (Bluff Creek).
(3) Standards provided in Appendix D. NURP level is removal of 90% TSS, 60% TP. Enhanced treatment for one or more of the following: higher level of TSS/TP removal, additional discharge rate controls and/or temperature controls.

This approach includes establishing treatment requirements for future development projects and looking for opportunities to retrofit the City's existing storm water treatment system. In addition to the major lakes, special features within Chanhassen, such as the Seminary Fen, Assumption, Bluff and Riley Creeks, are classified. One of the key considerations related to several of the City's waters, as noted in Table ES-2, is the listing on the 2004 Final Total Maximum Daily Load (TMDL) List of Impaired Waters. The City understands that the TMDL List (as required under Section 303(d) of the Clean Water Act) is revised every two years by USEPA, and that additional waters may be listed in the future.

To date, approximately 8 percent of Minnesota's river miles and 14 percent of Minnesota's lakes have been tested for pollution problems. Approximately 40 percent of those tested are polluted with human and animal waste, algae from phosphorus, fertilizers and mercury. As more of the States' surface waters are tested for pollution problems, it is reasonable to assume that the State will continue to add surface waters to the list of impaired waters. As such it is possible (in reality likely), that additional surface waters within the City of Chanhassen will be added to this list in the future.

When studies are completed for an impaired water body, the TMDL work plan will be used by the MPCA and local entities to further prioritize management actions and establish additional regulatory controls. The City will consider the current and any future listings in management decisions and actively manage the activities in the contributing watersheds to limit delivery of these pollutants to these waters. The City's approach to addressing potential pollutant loadings to these waters will be to evaluate the opportunities for a level of storm water "treatment" higher than the basic standards established in this Plan on a case-by-case basis, prior to completion of the TMDL study and associated implementation plan.

Implementation Plan

The Implementation Plan is intended to provide guidance in carrying out the Plan goals and objectives. The implementation section summarizes capital improvement projects, studies and ongoing maintenance, inspection, monitoring and other management activities. This Plan is intended to serve the City for at least the next ten years and out to the year 2020. In order to focus the implementation efforts towards achieving the stated goals, each of the individual goal sections of this Plan include an implementation plan summary. A similar summary is provided in the Water Bodies section of this Plan. These implementation activities and projects are combined in a summary table in the implementation section of the Plan, along with planning-level cost estimates.

While the City has an extensive list of projects to implement and activities to conduct on an ongoing basis, there are several efforts that are considered the highest priority to complete. Table ES-3 below lists these priority projects and activities in the order they appear in this Plan, without assigning a direct priority ranking to each one. Planning level costs and a more complete description for each project are provided in within the plan.

Table ES-3. Implementation Program Priority Projects and Activities

ID	Project Name	Description	Plan Section Reference	Year
1	Evaluate High Water Levels on Lotus Lake	Review previous efforts and evaluate opportunities to reduce risks.	Table 7 - 5	2007
2	Update Storm Water Ordinance	Update to reflect standards in App. D.	Table 9 - 7	2006
3	Update Wetland Ordinance	Update to reflect Plan recommendations.	Table 11 - 3	2007
4	Identify stream bank protection needs at storm outlets	Identify improvement locations during NPDES outfall inspections process.	Table 13 - 3	2006 -07
5	Select/create storm system inspections/reporting database	Identify long-term system for record keeping, planning and reporting.	Table 17 - 3	2006 -07
6	Pond LL-P7.5 (Lotus Lake watershed)	Proposed pond installation in current lake association property.	Table 25, Appendix I	2007
7	Pond LL-P10.17 (Lotus Lake watershed)	Add treatment adjacent to channel / wetland in backyards.	Table 25, Appendix I	2008
8	Pond LL-P2.2 (Lotus Lake watershed)	Add treatment area adjacent to wetland on lake association property.	Table 25, Appendix I	2008
9	Pond LM-P8.8 (Minnewashta watershed)	Add pond in Fir Tree street recon project area. MCWD P-reduction project.	Table 27, Appendix G, I	TBD
10	Pond LM-P1.5 (Minnewashta watershed)	Pond in City park, Orchard Lane street recon area. MCWD P-reduction project.	Table 27, Appendix G, I	TBD
11	Pond LR-P2.3 (Lake Riley watershed)	Potential pond in Bandimere Park	Table 29, Appendix I	TBD
12	Pond LR-P2.6 (Lake Riley)	Proposed pond installation in current lake association property.	Table 29, Appendix I	TBD

The City currently has a storm water utility (Surface Water Management Utility Fee) in place. The 1994 Surface Water Management Plan recommended the establishment of a trunk fee system for new development. This funding served to supplement the existing surface water utility fee. The surface water connection charge is a one-time charge payable upon subdivision of a property. The connection charge includes a water quality and a water quantity fee for each net developable acre. For the purpose of fee calculations, the net developable area generally includes total site area after subtracting the land that will not be developed, including right-of-way for some roads, wetlands, ponds and parks.

The surface water management utility fee is a quarterly fee charged to each property within the City. Single family residential, rural residential, agricultural and undeveloped properties are charged a fixed quarterly fee. All other land uses are charged based on a base rate multiplied by the utility factor for the land use, multiplied by the acreage of the parcel, exempting public right-of-way and lakes.

These revenue sources will be continued in order to fund surface water management activities within Chanhassen. The charges and fees will be reviewed and adjusted annually to ensure adequate funding for the activities set forth in this plan and those required by law. In order to establish a baseline estimate of the overall program costs for the next 20 to 30 years of the Plan, individual activity and project cost estimates were developed. The costs represented below do not account for the parts of the overall program implementation budget that include costs such as staff salaries, street sweeping equipment, water quality monitoring equipment or sampling costs,

and sweeping disposal costs. The costs also do not include land acquisition costs (capital or legal) which may be necessary to implement the pond or water quality treatment BMPs recommended in the Plan.

Table ES-3 summarizes the estimated implementation costs on an annual basis for the projects and activities presented in Table 30. These estimated costs are intended here as an order of magnitude estimate of the funding needed for the projects and activities identified in this Plan.

Table ES-4. Implementation Plan Summary/Overview

Category	Description (examples)	Estimated Annual Costs (2006 Dollars)
Planning Costs Studies Ordinance Updates Public Education Efforts	• Feasibility Study - Lotus Lake High Water Levels • Review of Pond Easements • Update Ordinances • Public Education Materials and Event Participation	$50,000
Capital Construction Costs Construction of Ponds, Outlet Structures and/or Structural BMPs Pond/BMP Cleanout	• Sediment Removal from Pond and structural BMPs • Storm Pond and BMP Construction Costs	$350,000
Operation and Maintenance Program Management New Technologies for Program Management System and Site Inspections	• Updates to GIS Databases for easements, pond projects, BMP Tracking • Inspections Coordination with County Staff • NPDES Program Tracking Tools	$35,000
Land/Easement Acquisition	• Property for water quality ponds	Varies
Estimated Total Annual Cost		**$435,000**

Amendments to the Plan

For the SWMP to remain current and dynamic, an avenue must be available to incorporate new information, ideas, methods, standards, management practices, and any other changes which may affect the intent and/or results of the Plan. Amendment proposals can be requested any time by any person or persons either residing in or having business within the City. Proposed amendments are reviewed by staff, and if determined to be a reasonable and necessary amendments the amendment may be implemented with or without Council action. If the amendment is considered major, the need for a public hearing will be considered at a regular or special Council meeting with the public having an opportunity to provide input. Council and the WMOs have an opportunity to determine whether or not to approve of the proposed amendments.

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