

# RESIDENT ADVOCATE SURFACE WATER MANAGEMENT

Plan Adopted by City Council - December 2008



## 1. Background

The Surface Water Management Plan (SWMP) for the City of Carver provides a guide for surface water management in the City. Specific goals of the SWMP are to:

- Describe the physical characteristics of the City, specifically identifying:
  - drainage patterns
  - soil
  - land use
  - key water resources
- State the City's goals and policies regarding the management of stormwater and other related issues.
- Provide guidelines for managing surface water as development occurs within the City.

The SWMP was prepared to:

- Reduce to the greatest practical extent the public capital expenditures necessary to control excessive volumes and rates of runoff.
- Improve and preserve surface water quality.
- Prevent flooding and erosion from surface flows.
- Promote groundwater recharge.
- Protect and enhance fish and wildlife habitat and water recreational facilities.
- Preserve wetlands, lakes, and streams.
- Secure the other benefits associated with proper management of surface water.

The study area for this SWMP included the City of Carver city limits as well as future growth areas outside the City boundary.



**Former Union Pacific Railroad Bridge**

## 2. Land & Water Resources

The City of Carver is located within the bluffs of the Minnesota River Valley, creating a considerable amount of elevation change within the City. It is located entirely within the Minnesota River Watershed and is jurisdictionally divided between two watershed entities, Carver Creek (regulated by Carver County) and the Lower Minnesota River Watershed District.

Because of the significant elevation change that exists throughout the City, two well-defined stream systems drain the City fairly efficiently. Carver Creek drains the south and southwest portion of the City, while Spring Creek drains the north and northwest portions of the City. The remaining northeast corner of Carver drains from west to east toward the Minnesota River floodplain.



**Spring Creek in Carver**

The City of Carver contains a diverse mix of wetlands. A number of these wetlands have retained a diversity of native plant species and high quality habitat. Other impacted wetland sites are less susceptible to further degradation and can provide mitigation and banking opportunities. In 2002, the City completed a Wetland Inventory and Assessment detailing the wetland classification and management standards for wetlands within the majority of the city's growth areas. This 2002 report included present vs. past, a functions and values assessment for the wetlands within the study area, as well as stormwater pretreatment standards and buffer requirements for all wetlands.

### Conservation Design seeks to accomplish four goals:

- Reduce the amount of impervious cover
- Preserve and incorporate existing natural areas into the site design
- Utilize the appropriate BMPs for effective stormwater treatment
- Preserve or enhance the infiltrative capacity of the soil

## 3. Goals & Policies

The City's goals include the following:

- **Goal 1: Flood Control** - To provide flood protection for all residents and structures as well as protect the integrity of conveyance channels and stormwater detention areas.
- **Goal 2: Water Quality** - To promote the reduction of pollutants to waterbodies incorporating Conservation Design practices into new and re-development projects.
- **Goal 3: Hazardous Material Containment** - To prevent hazardous waste/material from entering the stormwater drainage system.
- **Goal 4: Stormwater Management Education** - To involve the general public and City staff in water quality management efforts.
- **Goal 5: Wetland Protection** - To identify and protect wetland resources in order to maintain or improve their function and value.

In addition to the goals identified above, the City recognizes the water quantity and quality benefits provided by incorporating Conservation Design approaches into development within the City. Some examples include vegetated filter strips, rain gardens and porous pavers, concrete, and asphalt.

## 4. Implementation

This SWMP provides a plan for expanding and managing the City's surface water system, and protecting key water resources in the City.

The real measure of success of the SWMP will be in its implementation. Implementation of the SWMP covers a number of aspects, including:

- Administering regulations and programs
- Managing surface water as redevelopment and new development occur
- Implementing a public education program regarding stormwater management
- Operating and maintaining the surface water system
- Constructing prioritized capital improvements
- Financing projects and programs
- Providing a process for future amendments to the SWMP



Spring Creek

## 5. Guidelines for Development

Stormwater facilities are an essential part of the development of any municipality. The primary functions of an urban stormwater system are to protect the quality of a community's water resources and to reduce economic loss and inconvenience due to the periodic flooding of streets, buildings, and low-lying areas. If a planned program of storm drainage construction is established and implemented in the early development stages of a drainage basin, the most economical stormwater system will be achieved.

Design guidelines have been established to help ensure that a proper surface water system is constructed as development occurs.



**Constructed Stormwater Pond in Carver**

## 6. Education

Education plays an important role in any effort to implement a stormwater management program like the one outlined in the SWMP. Target audiences for the education program are City staff, City residents, and the development community.

To address the needs of these target audiences, the City intends to coordinate water resource education efforts with outside agencies, particularly the Lower Minnesota River Watershed District and Carver County. This education coordination effort is consistent with goals as outlined in the City's Municipal Separate Storm Sewer System (MS4) Storm Water Pollution Prevention Program (SWPPP), and helps address the City's public education requirements by obtaining educational information and assistance from local agencies.

## 7. Operation & Maintenance

General maintenance and management of the City's facilities help ensure proper performance and reduces the need for major repairs. Periodic inspections are performed to identify possible problems in and around the facilities. Maintenance and management cover the following:

- Stormwater basins
- Infiltration/Filtration/Bioretention areas
- Sump manholes and sump catch basins
- Storm sewer pipe systems and inlet structures
- Open channels
- De-icing practices
- Street sweeping

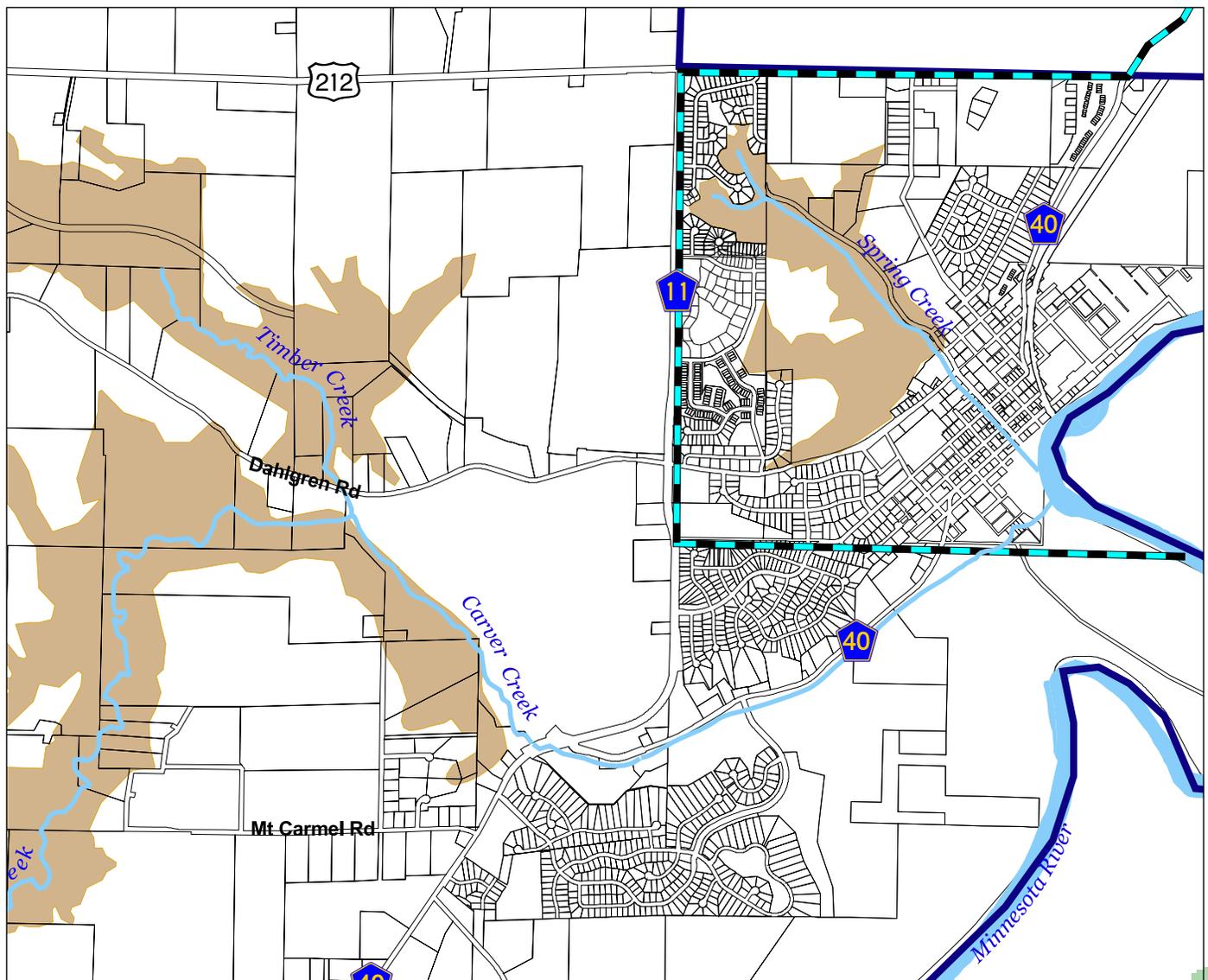


**Street Sweeper**

## 8. Financing

The City uses several methods of financing for proposed projects and programs in their SWMP including:

- **Area Charges:** These are fees charged to developments on an area (cost per acre) basis. These charges are frequently used in developing communities to ensure that new development pays for facilities required to serve it.
- **Special Assessments:** Assessments against benefiting or responsible properties can be used to finance surface water improvements.
- **Stormwater Utility:** This is a fee charged to existing properties based on an estimate of runoff generated and discharged to the City's system. The revenues collected are dedicated to the surface water system. They are frequently used to pay for operation and maintenance of the system.
- **Grants:** Though subject to budgetary constraints, a number of state and locally sponsored grant programs are available for surface water management.



Carver Water Resources Map