

3K MONITORING AND ASSESSMENT

1. ISSUE

The quality of lakes and streams in Carver County can be impacted by land use activities, development patterns, and increased runoff. Steps taken to reduce these impacts will result in varying degrees of benefit on improving water quality in different locations in the county. Setting goals for quality of the water resource and assessing its status over the long term is essential for determining the effectiveness of mitigation efforts and, in some instances, required as part of Total Maximum Daily Loads (TMDLs). TMDLs' have become the driving force in dealing with impaired waters and how they are dealt with in the State of Minnesota. A majority of the monitoring and assessment that is done in Carver County is in response to the State's program and mandates therein. Each TMDL and corresponding Implementation Plan that is written is required to have sections devoted to monitoring and assessment and is seen as a crucial part for each of these binding documents.

2. BACKGROUND

Carver County's watershed jurisdiction covers approximately 194,018 acres of the county. There are 38 lakes greater than 10 acres and approximately 365 miles of streams within the CCWRMA. Carver County began its water quality monitoring program in the early 1990's as part of a grant from the Metropolitan Council and at that time the County board saw the need to continue this program in order to protect the water resources of the County. In the beginning the data was being collected so that we could build long term trends to more accurately assess each resource, but as the years passed and the program grew it has now become the backbone of the County's Water Management Plan and the development of TMDL studies.

Beginning in 1999 the County began compiling a yearly report that summarizes current and past water quality data for lakes and streams within the CCWRMA, and for groundwater on a county-wide basis. The annual water quality report is available at <http://www.co.carver.mn.us/departments/LWS/wqmp.asp>. The annual report contains all the data that has been collected on lakes and streams in Carver County and in cases where we have adequate data trends are established. In addition to the executive report, this site includes a new interactive map that makes accessing water quality data for County lakes and streams much easier than past reports. Figure 3K.1 shows the water monitoring stream and lake sites which have data.

The objectives of the annual monitoring report are to:

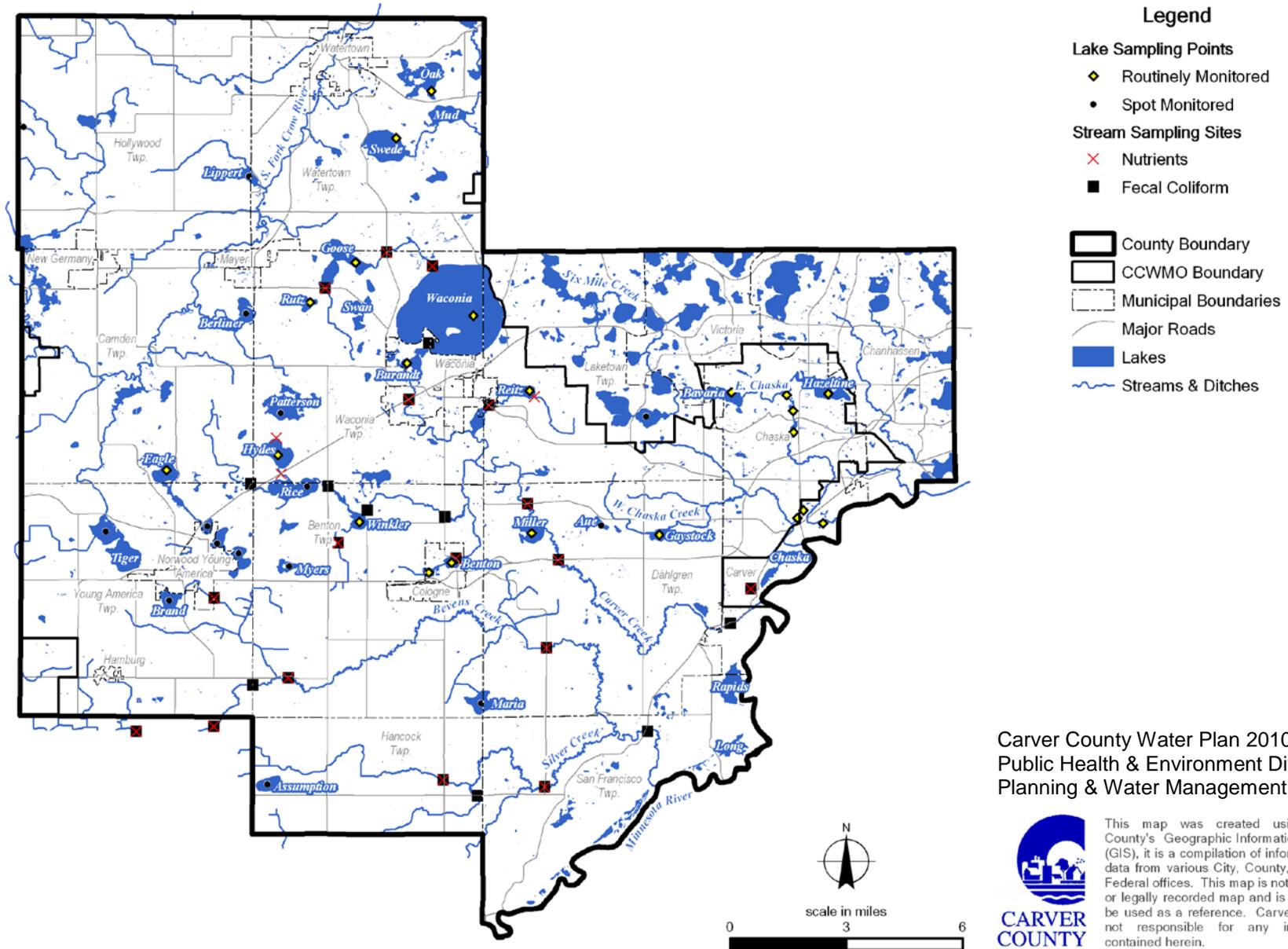
- Provide water quality data in a readily available and easily accessible format for staff, board members, citizens, and watershed managers.
- Analyze data and identify problem areas.
- Establish water quality baselines and set priorities for future monitoring sites.
- Set short and long-term goals for the watershed plan and TMDL's.
- Provide a framework which is updated annually.

The types of pollutants which affect water quality in Carver County and are analyzed include but are not limited to sediment (turbidity), fecal coliform, total phosphorus, nitrogen, chlorophyll-a, pH, dissolved oxygen, temperature, pesticides, hazardous waste, heavy metals and exotic species. It is important to note that flow (quantity) is also routinely taken as part of or stream sampling regime, this allows us to develop loading estimates that are available in our water quality report. These pollutants are found as 1) non-point sources such as urban runoff, agriculture runoff and practices, construction erosion and sedimentation, and 2) point sources such as individual septic systems, feedlots, and wastewater treatment plants.

Water quality in Carver County can affect human health, the health and diversity of fish and wildlife, recreation, and aesthetics. Fish and wildlife are sensitive to changes in water quality. Human recreation such as swimming, boating, aesthetic enjoyment, and fishing are affected by water quality and are dependent upon the health of Carver County's water.

An ecoregion is defined as areas of relative similarity based on landform, climate, surficial geology, potential natural vegetation and land use. The ecoregion framework allows State and local resource managers a method of comparing the water quality in the respective ecoregion and the ability to set attainable water quality goals. Carver County is dissected by two ecoregions, the North Central Hardwoods Forest (NCHF) ecoregion and the Western Corn Belt Plains (WCBP) ecoregion. Because of the County's proximity to both ecoregion's it is hard to set a hard line as to which ecoregion best represents a water body merely by its geographic location in comparison to the State's ecoregion boundaries. For our purposes we prefer to look at each water body on a case by case scenario and see what ecoregion characteristics best fit each water body to set our goals.

Figure 3K.1. CCWMO Lake and Stream Monitoring Sites.



Carver County Water Plan 2010-2020
Public Health & Environment Division
Planning & Water Management Dept.



This map was created using Carver County's Geographic Information Systems (GIS), it is a compilation of information and data from various City, County, State, and Federal offices. This map is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

2.1 Tools, Methodology, and Monitoring Sources

Agencies involved in past and present monitoring lakes and streams in Carver County include the Metropolitan Council's Citizen-Assisted Monitoring Program (CAMP), Watershed Outlet Monitoring Program (WOMP), MPCA, Carver County Environmental Services, Carver SWCD, and the Minnesota Department of Agriculture (MDA). At this point, the vast majority of monitoring data collected in Carver County is collected by Carver County Land and Water Staff.

As stated above the primary driver in monitoring and assessment over the past ten years has shifted from a goal based regime to a standard based protocol with TMDL's providing the driving force as to the what is being collected and where. As stated earlier, each TMDL has monitoring and assessment requirements that provide a framework that allows Carver County to more accurately monitor and assess the waters' of the County with a goal to meet the state's water quality standards.

Several tools are used to provide a method of comparison, a means to identify long-term trends, and a way of quantifying the effects of pollution on recreation and aesthetics. To prepare a TMDL all of these tools are used and taken into account in order to write a comprehensive TMDL.

2.2 Status of Non-sampled Lakes & Wetlands

There are currently several lakes in the CCWMO area that have not been sampled, primarily because of lack of public access to the lake. Many of these lakes may eventually be reclassified as wetlands. The CCWMO currently has no plan to sample additional lakes. However, the lakes may eventually be monitored as part of the MPCA's proposed statewide watershed-based assessment program. Wetland monitoring may occur when state guidelines have been developed for the type of data that should be collected and state standards for wetland quality have been developed and approved.

3. GOAL

Goal MON-1 To maintain a comprehensive, accurate assessment of surface and ground water quality trends over the long term and comply with all current and future TMDL's monitoring and assessment protocols. This data will used to compile trend analysis, assess BMP effectiveness, and complete TMDL studies.

4. POLICIES

Policy MON-1 The CCWMO should continue to monitor lakes, streams, wetland areas, and groundwater to assess water quality trends over the long term.

Policy MON-2 The CCWMO should continue to monitor lakes, streams, wetland areas, and groundwater to comply with TMDL studies and Implementation Plans.

Policy MON-3 The CCWMO should set goals for water quality in lakes, streams and wetland areas as more data becomes available and

as reasonable expectations can be developed. These goals are developed as part of the TMDL process.

Policy MON-4 The CCWMO should establish monitoring networks as required in TMDL Implementation Plans and when needed to complete TMDL studies.

Policy MON-5 The CCWMO should partner with municipalities and adjacent watershed districts to monitor additional water resources.

5. IMPLEMENTATION

Establishing a baseline for water quality and quantity using sound science and a network of sampling sites is an on-going goal. Figure 3K.1 (see above) shows the location of stream monitoring sites. This data will be used to set specific water quality goals as established in individual TMDL's, monitor pre and post construction runoff, measure the effectiveness of agriculture and residential best management practices (BMP's) as well as gauge our educational and enforcement efforts throughout the county. Following are the individual watershed goals:

Surface Water

Imp Strategy MON-1 Bevens Creek Watershed

- a. Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans.
- b. Establish and/or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- c. Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.
- d. Maintain all automated stream sampling sites (Tacoma, BE 9, BE 21, SI 2, Sibley) within the watershed, and ensure the Met Council sites are not abandoned.
- e. Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.

Imp Strategy MON-2 Carver Creek Watershed

- a. Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans.
- b. Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- c. Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.
- d. Maintain all automated stream sampling sites (CA 8_7, CA 10_4, Bent Cr) within the watershed, and ensure not to abandon the Met Council site.
- e. Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.

Imp Strategy MON-3 Crow River Watershed

- a. Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans.
- b. Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- c. Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.
- d. Continue to partner with the Met Council to operate the automated WOMP station on the Crow River and ensure it is not abandoned.
- e. Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.

Imp Strategy MON-4 Chaska Creek - West Watershed

- a. Maintain baseline water quality data for the lakes in the watershed, with priority give to those on the impaired waters list or that have completed TMDL Implementation Plans.
- b. Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- c. Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.
- d. Maintain all automated stream sampling sites (CH 1_0) within the watershed.
- e. Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.

Imp Strategy MON-5 Chaska Creek - East Watershed

- a. Maintain baseline water quality data for the lakes in the watershed, with priority give to those on the impaired waters list or that have completed TMDL Implementation Plans.
- b. Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- c. Maintain all automated stream sampling sites (EC 1, EC 2, EC 3) within the watershed, and ensure the Met Council site is not abandoned.
- d. Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.
- e. Establish bio-monitoring data at sampling sites as volunteers and funding dictate.

Groundwater

Imp Strategy MON-6 Carver County will continue to sample and test groundwater as funding allows.

Imp Strategy MON-7 Groundwater samples will be tested for nitrate, nitrite, ammonia, chloride, sulfate, soluble phosphorus, silica, fluoride, and specific conductivity, arsenic and tritium. To determine if a representative sample from the aquifer has been collected, pH, temperature, dissolved oxygen, conductivity and oxidation-reduction potential will also be measured.

Imp Strategy MON-8 State Testing. Additional testing may occur through the MDA, the MDH, or the MPCA. Data from these tests will be included with future County results.

Stormwater Best Management Practices

Imp Strategy MON-9 Carver County will continue to monitor stormwater best management practices as funding allows.

Annual Water Quality Report

Imp Strategy MON-10 Prepare an annual monitoring water quality monitoring report.