

Lake Status

Overall Strategy: Impaired Watershed Management

Water Quality Rating: F: Secchi – 1.0 ft.; TP – 169 µg/L

Impairment: *Aquatic recreation* due to excess nutrients in the lake.

Water Quality Trend: Secchi & TP – Declining

Shoreland Classification: Natural Environment

Subwatershed Land Cover: 17% developed, 15% forests and woodlands, 10% grassland/shrubland/sparse vegetation, 9% lakes and open water wetlands, 40% planted or cultivated, 10% wetlands.



Resource Goals

Short Term Goals – Year 2015

- Achieve a water quality rating of at least D.
- Achieve a five-year mean summer phosphorus concentration at or below 80 µg/L ± 4%.
- Achieve a mean summer secchi depth no less than 2 ft.
- Encourage an active Lake Association for teaming with on lake management and education.
- Revise goals based on the CMSCWD Lake TMDL Study.

Long Range Goals - Year 2020

- Achieve a water quality rating of at least D.
- Achieve a five-year mean summer phosphorus concentration at or below 80 µg/L ± 4%.
- Achieve a mean summer secchi depth no less than 2 ft.
- Revise goals based on the CMSCWD Lake TMDL study.
- Consider area’s importance to the Blanding’s turtle.

DNR Fisheries Lake Management Plan (1993)

- Long Range Goal: Provide bluegill-bass population to support 75 fishing hours per acre.
- Operational Plan: Use as walleye rearing pond in years following severe winter kills.
- Mid Range Objective: Produce 1,500 lbs of walleye fingerlings once every 10 years for stocking lakes.
- Potential Plan:
 - Develop a public access for 5 boat/trailer units.
 - Install an aeration system.
 - Any effort to improve water quality should be supported.

BASIC FACTS

DNR ID	82001500
Section	5
Township	30
Range	20
Lake Area	64 acres
Subwatershed Area	773 acres
Outlet Elevation	903.94
Low Water Level	903.54 (’97)
High Water Level	906.67 (’02)
Ordinary High Water	905.00
100-Yr. Flood Elev	907.4 (District)
Greatest Depth	16 ft.

Control Structures:

Culvert

Fish Species:

Black Bullhead, Green Sunfish, Walleye (1984)

Aquatic Nuisance Species:

Reed Canary Grass, Purple Loosestrife

CMSCWD References:

- WCD Water Monitoring Report (’08)
- DNR Lake Water Level Report
- DNR Lake Information Report
- CMWD Silver Creek Corridor Management Plan (’04)
- CMSCWD TMDL Phase I Report (’08)

Implementation

Operational Priorities

Impaired Watershed Management per TMDL Study Recommendations

Education

Impaired Watershed Education Program per TMDL Study Recommendations

Regulatory

Activities impacting Loon Lake will be regulated by the watershed district through its *Rules of the District*. Regulatory efforts will be coordinated with Stillwater Township, Washington County and the Minnesota DNR, where applicable.

Projects

Current:

- CMSCWD Lake TMDL Study
- Best Management Practices (BMP) Program per TMDL Study Recommendations
- Water Quality Monitoring Program per TMDL Study Recommendations
- Ongoing Monitoring of BMPs
- Permitting Program

Future/Potential:

- TMDL Implementation Plan Projects



* See 2010 Watershed Management Plan Section V, Lake Management Plans for additional information on District lake management activities.

Overall Assessment: Loon Lake

Loon Lake is a shallow, well-developed lake that typically ranks as the poorest water quality lake in the District. Loon along with S. Twin, N. Twin, Silver and Carol lakes form the headwaters of the Silver Creek Flowage and a part of the Silver Creek Protective Corridor. In-lake phosphorus concentrations are significantly worse than the MPCA shallow lake standard of (60µg/L), and the lake is therefore listed as impaired. In 2007 the lake also did not meet the MPCA shallow lake standard of 1 m for sechi depth transparency. In the past residents of the lake were primarily concerned with lake levels, impacts from agricultural runoff, agricultural spraying of chemicals and the impact/enjoyment of recreational boating on the lake.

Based on an Aerial Lakeshore Analysis study (1998), the most common influence on the lake was runoff non-point source pollution. The most common problem is the lack of a vegetative buffer and insufficient lake setback. The recommendations from that study are to investigate and correct all sources of pollution to the lake, to create a forested buffer adjacent to the shoreline to reduce impacts of runoff from adjacent fields and homes, keep the forested areas intact and to implement minor erosion control in particularly identified areas.

Based on measured lake characteristics and land use in the lake's minor subwatershed, water quality modeling indicated that a substantial amount of phosphorus will need to be removed from the lake's system in order to achieve any significant water quality improvement.

In 2001, the Carnelian Marine Watershed District completed a paleolimnological investigation of trophic changes in four lakes in the watershed: Big Carnelian Lake, Big Marine Lake, East Boot Lake, and Loon Lake. The purpose of the investigation was to establish the baseline trophic conditions existing in the lake prior to European settlement in the mid-1800s. Sediment coring in this lake only captured a record back to 1915 due to high rates of sediment loading. Since the lake is hypereutrophic (total phosphorus (TP) often above 100 µg/L), the diatom-TP inference model was unreliable. However, the core showed major changes in diatom assemblages that implied increasingly eutrophic conditions over the last few decades.

Loon Lake is one of 10 lakes in the CMSCWD on the EPA's 303(d) list of impaired waters impaired for nutrients. Phase I of the Lake Total Maximum Daily Load (TMDL) Study is complete. The target completion date for the Loon Lake TMDL is 2015. Loon Lake has not achieved any of the 2010 goals of a water quality rating of 'D,' a five-year mean summer phosphorus concentration at or below 50 µg/L ± 4% or a mean summer secchi depth no less than 2 ft based on the 2007 WCD Water Monitoring Report. These goals have been transferred to 2015 goals and Loon Lake is undergoing impaired watershed management as a result of its impaired status.