

Water Quality Monitoring Plan

The Commission conducts a lake and stream monitoring program to track water quality and quantity conditions. The Commission began monitoring in 1985. The stream monitoring stations were installed in 1996. The Commission conducts chemical, physical and biological monitoring of the streams and physical and chemical monitoring of lakes. Monitoring station locations are shown in Figure II-7. The Commission may periodically participate in special studies if a need is identified or participate in larger projects, such as a diagnostic-feasibility study of a lake, as funding allows.

Stream Monitoring

The following major streams are located within the watershed:

Pioneer Creek
Sarah Creek

Deer Creek
Timber Creek

The watershed also borders and drains to the Crow River.

Pioneer and Sarah Creeks

The Commission will contract for operation of two stream monitoring stations at Pioneer and Sarah Creeks to provide quantity and quality sampling. Both stations have been in use since 1996.

Current Station Locations:

Pioneer Creek: West side of Copeland Road in Section 30, Independence

Sarah Creek: West side of County Road 92 in Section 33, Greenfield

Site Equipment:

Flow meter with data logger for continuous flow monitoring

Automatic Sampler

Tipping Bucket Rain Gauge

Staff gauge

Water Quantity

Both stations are equipped with a flow meter and data logger. The sensors are installed within culverts. Continuous velocity and stage measurements are converted to flow.

The Commission operates precipitation gages located at the following sites:

Pioneer Creek, Sarah Creek. Additional gauges are located at Greenfield City Hall, and Minnetrista City Hall.

Water Quality

Rain event composite and base flow samples will be collected and analyzed for the following parameters (additional parameters may be analyzed as deemed appropriate):

Total Phosphorus
Soluble Reactive Phosphorus
Total Nitrogen
Nitrate

Biological Monitoring

The Commission will continue to sponsor volunteer monitors to conduct macroinvertebrate monitoring at stream sites in the watershed. The monitoring is conducted in cooperation with the Hennepin Conservation District and area schools as part of the River Watch program. Monitoring will occur once or twice per year in the spring and fall. The students also conduct habitat assessments. Several metrics are calculated and reported. The data will be maintained by Hennepin Conservation District in an Access database and reported in a River Watch annual report and in the Commission's annual report.

Lake Monitoring

The Commission will contract for the monitoring of 2 – 3 lakes per year. Frequency of monitoring will depend upon the lake classification. In some case, the member community will conduct the monitoring. Each Lake will be classified according to the classification system below based on monitoring data, physical characteristics, realistic goals, and input from the member community and lakeshore property owners.

The following lakes are located within the Pioneer-Sarah Creek Watershed:

| | | |
|--------------|---------|--------------|
| Ardmore | Ox Yoke | Schendel |
| Haften | Peter | Schwappauff |
| Halfmoon | Rattail | Spurzem |
| Haughey | Rebecca | Whaletail |
| Independence | Robina | Winterhalter |
| Little Long | Sarah | |

The attached table shows a historical summary of the lakes that had been sampled.

Lake Classification

| <u>Class</u> | | <u>Monitoring Frequency</u> |
|--------------|---|-----------------------------|
| I | Direct Contact Recreation | every 1 - 3 years |
| II | Direct Contact Recreation, partial support | every 2 - 4 years |
| III | Indirect Contact recreation | every 4 - 6 years |
| IV | Wildlife/Aesthetic | every 6 - 10 years* |
| V | Reservoir | every 2 - 4 years |

*some lakes may never be sampled due to access problems, size or depth

Parameters monitored (additional parameters may be added as deemed appropriate):

| | |
|--------------------------|--------------------------|
| Total Phosphorus | Conductivity Profile |
| Total Nitrogen | Dissolved Oxygen Profile |
| Secchi Disk Transparency | Temperature Profile |
| Alkalinity | Chlorophyll <i>a</i> |
| pH | Secchi disk transparency |

Lake monitoring will be conducted a minimum of 5 times/yr but normally twice a month from April to October. The Commission will contract with a private consultant or Hennepin Parks to complete the monitoring and lab analysis of samples. The Commission may also participate in the Metropolitan Council's Citizen Assisted Monitoring Program (CAMP) to monitor lakes. The Commission will promote the MPCA's Citizen Lake Monitoring Program as a good means to collect transparency data for area lakes.

The Commission's Technical Advisor, HCD, will maintain monitoring data. The results of the monitoring will be summarized in the Commission's annual reports.

**PIONEER-SARAH CREEK WATERSHED
LAKE MONITORING HISTORY**

| <u>LAKE</u> | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ardmore | | | | * | | | | | | | | | | | |
| Hafften | | | | | | | | | * | | * | | | | |
| Half Moon | | | | HP | | | | | | | | | | | |
| Haughey | | | | | | | | * | | | | | | | # |
| Independence | * | | # | HP | | # | # | HP | HP | HP | HP | | HP | HP | |
| Little Long | | * | | * | | * | | * | | * | | * | | | * |
| Peter | * | | * | | * | | * | | * | * | | * | | | |
| Rebecca | | | | | | | | | | | | | | HP | |
| Robina | | | | | | | | | | | * | | | | |
| Sarah | * | * | * | * | * | | * | HP | | * | HP | | * | | * |
| Schandell | | | | | | | | | | | | * | | | |
| Spurzem | | | | | | | | | | | HP | | | | |
| Whaletail | | | * | | | * | | | * | | | | * | | |
| Winterhalter | * | | | | | | | | | | | | | | |

* Pioneer-Sarah Creek Watershed Management Commission

HP Hennepin Parks

Sampled through Met Council Citizen Assisted Monitoring Program or by Met Council