

**Appendix J – Water Quality Monitoring Program (to be provided by HCD)**

## **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. Elm Creek and its tributaries have been monitored since 1975. 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 streams are located within the watershed:

Elm Creek  
Rush Creek

North Fork Rush Creek  
Diamond Creek

#### **Elm Creek**

The Commission cooperates with the United States Geological Survey (USGS) to provide quantity and quality sampling of Elm Creek within the Elm Creek Park Reserve in Dayton. The Commission cost-shares with USGS to operate the monitoring station and analyze the samples. The Elm Creek monitoring station has been operated since 1988.

#### **Site Equipment:**

Flow meter for continuous flow monitoring

Data Logger

Refrigerated Automatic Sampler

Tipping Bucket Rain Gauge (not located at the monitoring station, but located within the Elm Creek Park Reserve)

#### **Water Quantity**

USGS staff maintain the gaging station year-round. Winter discharge is estimated if frozen conditions occur in the Creek. The station is equipped with a flow meter and data logger. Monthly stream gage measurements are taken to calibrate the gage. Daily and instantaneous discharge data is accessible via the USGS web site at <http://mn.water.usgs.gov/wrd/stream.html>

The Commission also operates a recording flow gage at the dam on the Champlin Mill Pond. This gage is in place during open water conditions.

The Commission may install gages at additional areas, such as Diamond Creek, in the future.

The Commission operates seven precipitation gages located at the following sites: Elm Creek Park Reserve in Maple Grove (year round gage); City of Dayton Public Works Building; Hassan Township Office; Section 9 in Maple Grove (west of the old City Hall); Corcoran City Hall; Medina City Hall; and a Hamel residence.

### **Water Quality**

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

Specific Conductance

pH

Temperature

Dissolved Oxygen

Chemical Oxygen Demand

Residue, Total Suspended

Residue, Volatile Suspended

Nitrate

Nitrite

Ammonia

Total Kjeldahl Nitrogen

Total Phosphorus

Dissolved Phosphorus

Chloride

### **Biological Monitoring**

The Commission will continue to sponsor volunteer monitors to conduct macroinvertebrate monitoring at multiple 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 monitor 3 – 4 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 Elm Creek Watershed:

Cook	Goose	Mud (Maple Grove)
Cowley	Hayden	Mud (Plymouth)
Diamond	Henry	Powers
Dubay	Jubert	Rice
Edward	Laura	Sylvan
Fish	Medina	Weaver
French	Mill Pond	Whiteford

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.

# Elm Creek Watershed Lake Sampling History

## Lakes

	Cook	Diamond	Dubay	Fish	Henry	Jubert	Mill Pond	Mud	Sylvan	Weaver	Rice <sup>1</sup>	French
1980		*		*								
1981				*						*		
1982				*								
1983										*		
1984												
1985				*		*	*			*		
1986	*	*	*	*				*		*		
1987				*		*				*		
1988	*			*			*					
1989		*	*	*		*				*		
1990	*			*						*		
1991				*		*	*			*	*	
1992	*	*		*						*	*	
1993				*						*	*	
1994		#		*						*	*	
1995				*	#					*		
1996				*					*	*		
1997				*					*	*		
1998		*		*						*		
1999				*			*			*		
2000				*		#				*		
2001	*			*						*		#
2002				*			*			*		#

<sup>1</sup> sampled by the City of Maple Grove

# sampled through the Met Council's CAMP program