

Secchi disk transparency is a measure of water clarity. Chlorophyll a is a photosynthetic pigment found in green plants. The concentration of chlorophyll a is a measure of algal abundance. Phosphorus is a chemical element that is essential for plant growth. Concentrations of total phosphorus indicate the maximum growth potential for algae in a lake and may be used to classify a lakes trophic status.

Temperature (TEMP), pH, specific conductance (COND) and dissolved oxygen (DO) profiles for Cook, Fish and Weaver Lakes are shown in figures.23-25. ,Diamond, Dubai and Mud Lakes are too shallow to obtain significant profiles.

A comparison of 1986 data and data from previous years is shown in Figures 26 and 27 for Fish and Weaver Lakes respectively. Data presented in Figures 26 and 27 were provided by the Hennepin Conservation District and Metropolitan Council as well as the Commission's lake monitoring program.

Fish Lake had the best overall water quality of the 6 lakes monitored in 1986. Diamond and Mud Lakes had the poorest overall water quality. Diamond and Mud Lakes are among the shallowest lakes in the Elm Creek watershed.

Fish Lake had the best average water clarity. The average and median Secchi disk transparencies were 8.8 and 9.4 feet respectively. Cook and Weaver Lakes had the next best clarity. The average and median transparencies for Cook Lake were 7.4 and 7.5 feet respectively. Weaver Lake had an average transparency of 7.8 feet and a median transparency of 6.2 feet. Diamond Lake had the poorest clarity with average and median transparencies of 1.5 and 1.3 feet respectively.

Cook Lake had the lowest average and median concentrations of chlorophyll a (avg. = 5; median = 5 mg m⁻³). Fish Lake had the second lowest average and median Concentrations of chlorophyll a . The average and median concentrations of chlorophyll a in Fish Lake were 8 and 6 mg m⁻³ respectively. Mud Lake had the highest concentrations of chlorophyll a (avg. = 181; median = 194 mg m⁻³).

Weaver Lake had the lowest average and median concentration of total phosphorus (24 and 25 mg m⁻³ respectively). Fish Lake had an average concentration of total phosphorus of 32 mg m⁻³ and a median concentration of 26 mg m⁻³. Diamond and Mud Lakes had the highest average and median concentrations of total phosphorus (avg. =193; median = 177; avg = 166; median = 168 mg m⁻³ respectively).

Water density varies with temperature. Temperature profiles therefore, are profiles of water density. Differences in density can impede mixing of surface and bottom waters such that the distribution of biologically important substances is affected. Specific conductance and pH profiles in Cook, Fish and Weaver Lakes were relatively constant throughout the summer. These two parameters demonstrated only minor changes in magnitude with depth or season. Profiles of temperature (density) and dissolved oxygen showed greater variability seasonally and with depth. All lakes demonstrated reduced concentrations of dissolved oxygen in deeper waters during summer thermal stratification. Low concentrations of dissolved oxygen in deep or bottom waters are typical of eutrophic lakes.

Fish Lake had significantly better water quality in 1986 than in 1985 (figure 27). Water clarity in the north arm of Fish Lake more than doubled. Average Secchi disk transparency was at an all time high. Concentrations of chlorophyll a and total phosphorus were

also lower in 1986 than in 1985. The average concentration of chlorophyll a in 1986 was the lowest on record. The average concentration of total phosphorus was the seconded lowest recorded. Only 1980 had a lower average concentration of total phosphorus than 1986.

Weaver Lake had a lower average concentration of total phosphorus in 1986 than in 1985 but average water clarity was reduced and the average concentration of chlorophyll a almost doubled. The average concentration of chlorophyll a in 1985 was a record low and the Secchi disk transparency was a record high. The 1986 average concentration of chlorophyll a is the second lowest recorded to date even though the average concentration nearly doubled the 1985 concentration. The 1986 average Secchi disk transparency although lower than 1985 was still the second best average transparency on record. The 1986 average concentration of total phosphorus is the lowest observed to date.

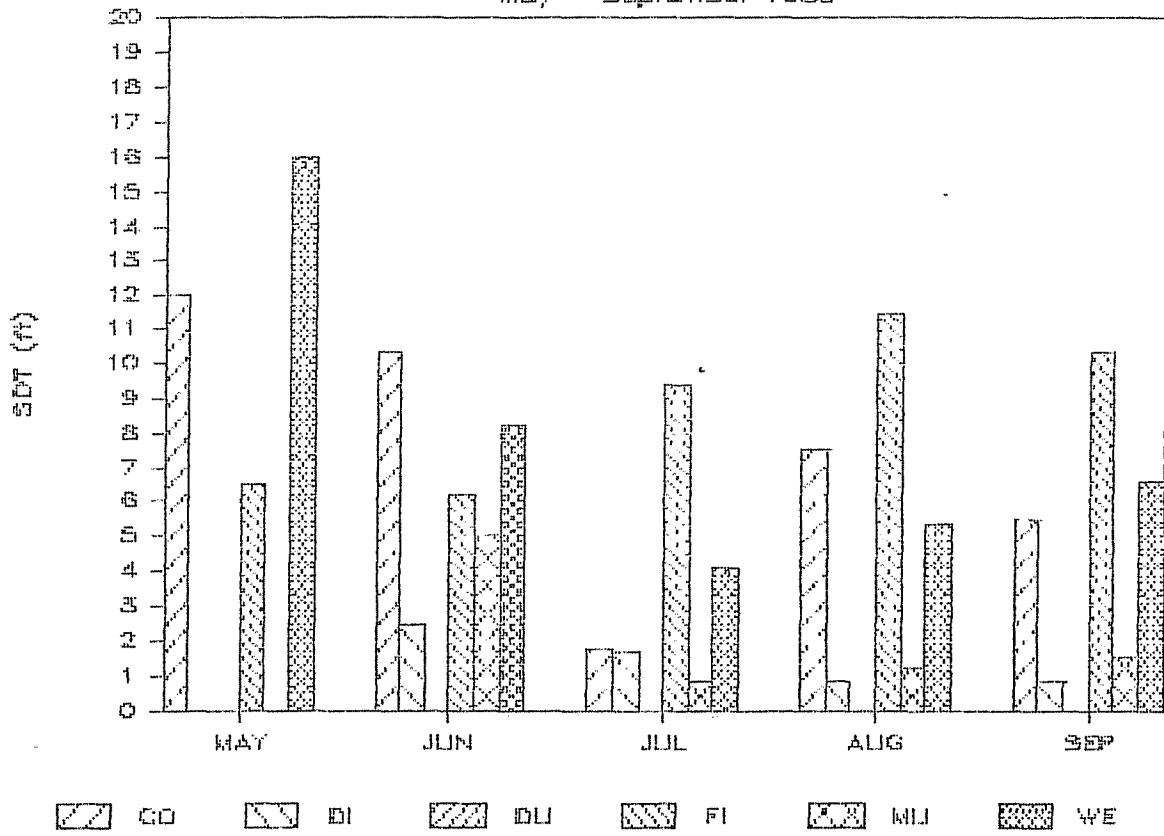
LAKE: DIAMOND

PARAMETERS		SDT	CHL	TP	NO3	NO2
		ft	mg/M3	mg/M3	mg/M3	mg/M3
MEAN (June - Sept)	Epilimnetic	1.5	79	193	230	13
STANDARD DEVIATION		0.7	27	59	*	*
MEAN (June - Sept)	Hypolimnetic	*	*	171	250	33
STANDARD DEVIATION		*	*	63	*	*

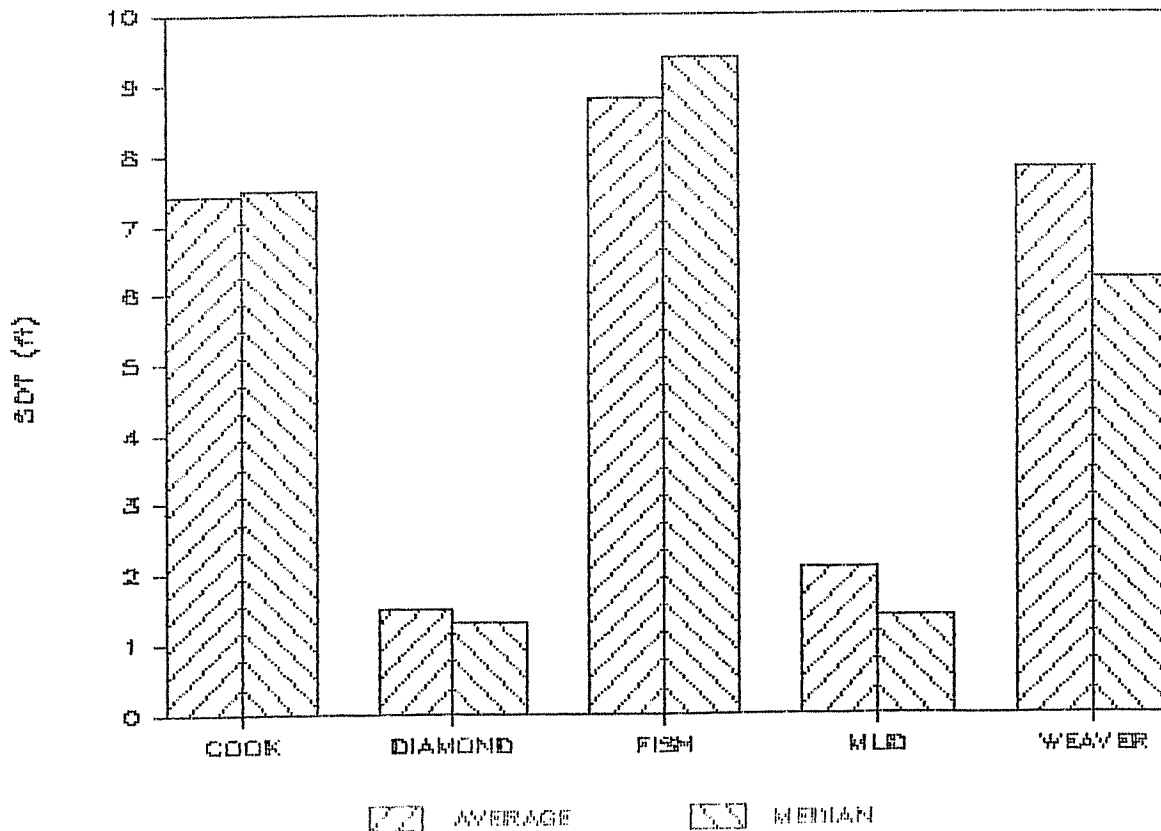
PARAMETERS		NH3	TKN	TN	ALK	CL
		mg/M3	mg/M3	mg/M3	g/M3	g/M3
MEAN (June - Sept)	Epilimnetic	2800	2800	3043	147	12
STANDARD DEVIATION		*	*	*	*	*
MEAN (June - Sept)	Hypolimnetic	2800	3080	3363	145	14
STANDARD DEVIATION		*	*	*	*	*

SECCHI DISK TRANSPARENCY

May - September 1953

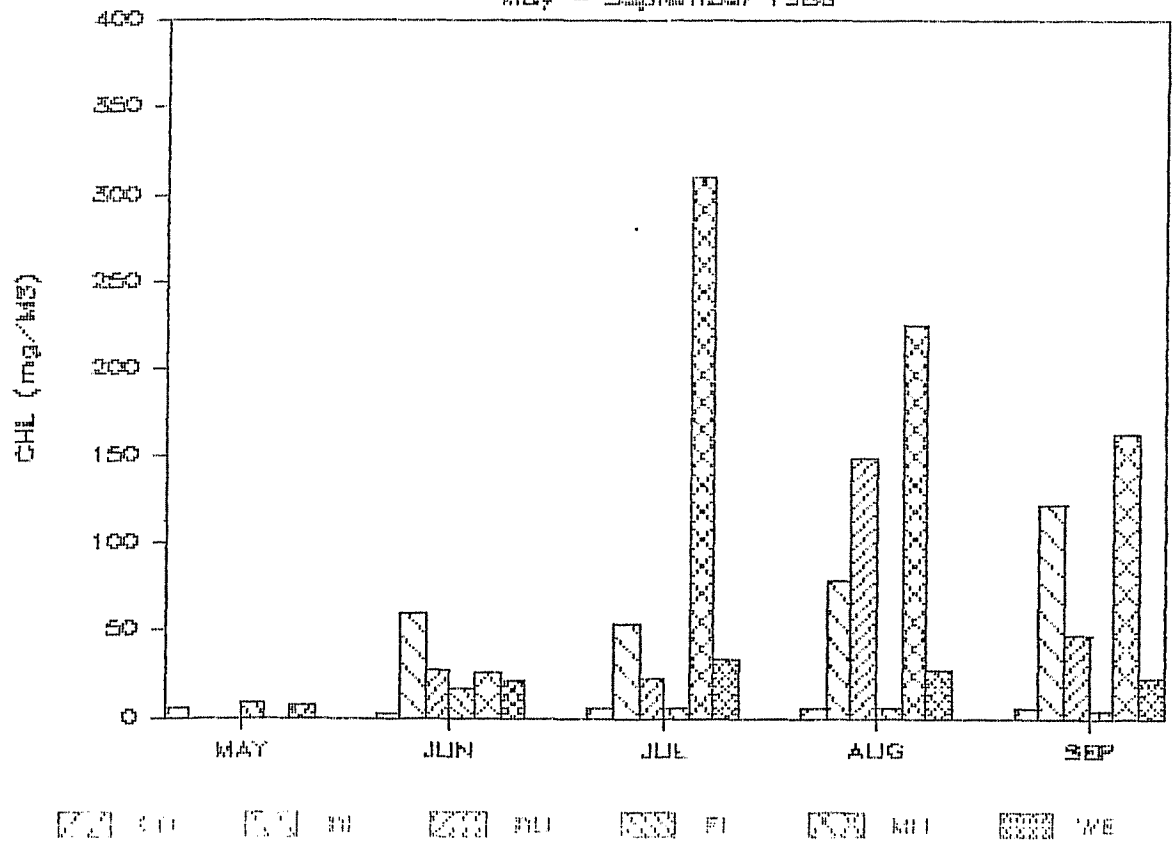


AVERAGE AND MEDIAN VALUES OF SDT

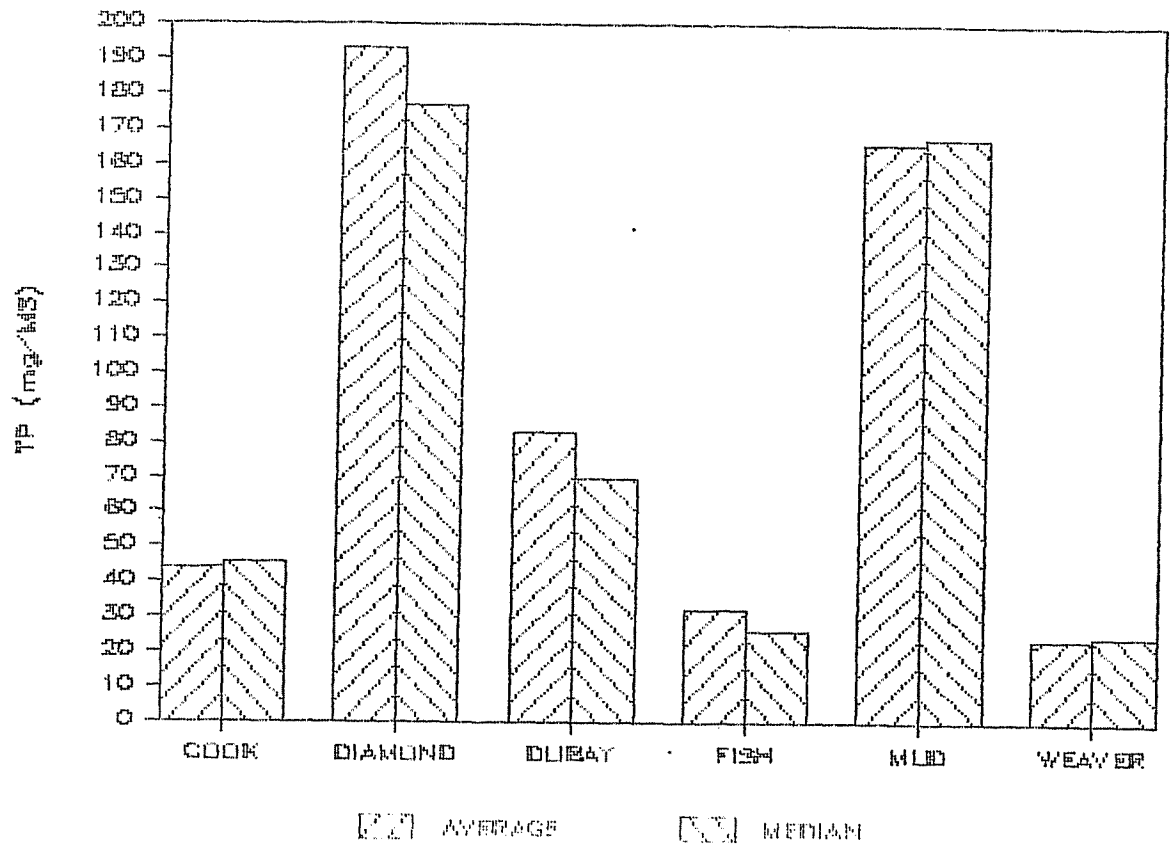


EPILIMNETIC CHLOROPHYLL a

May - September 1988

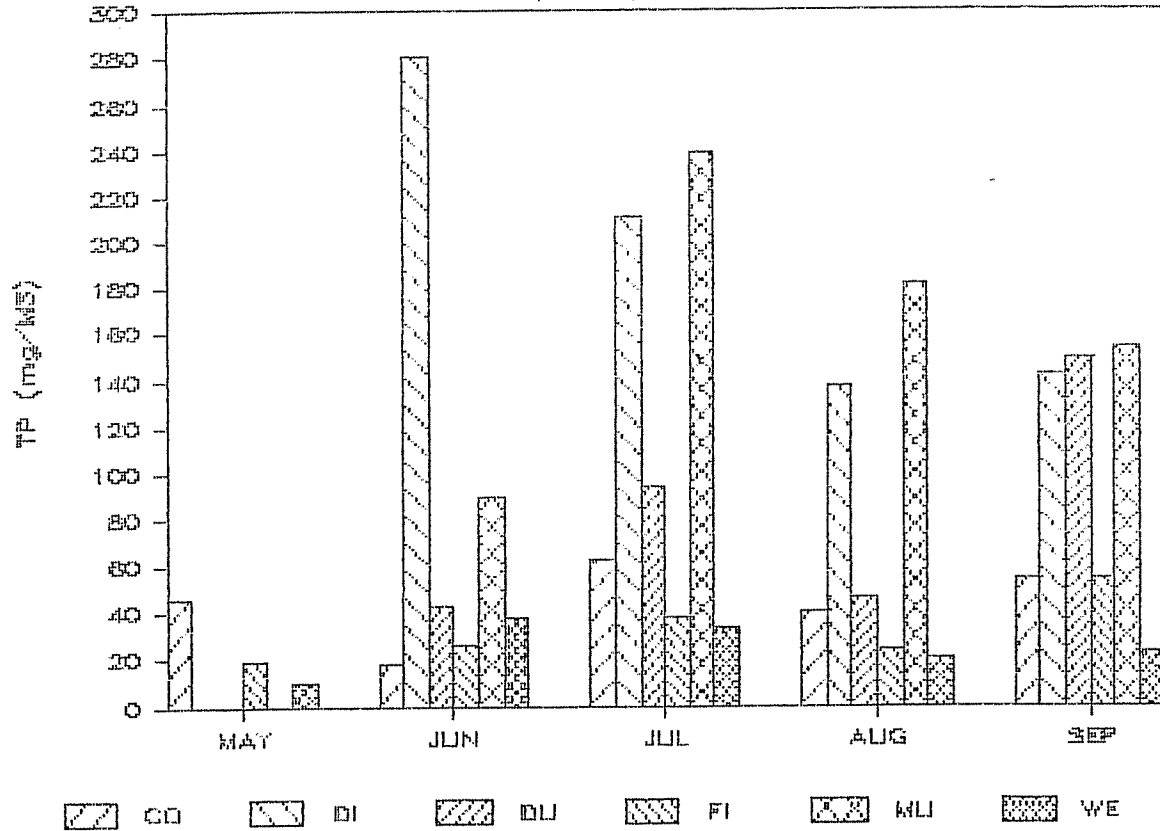


AVERAGE AND MEDIAN VALUES OF TP



EPILIMNETIC TOTAL PHOSPHORUS

May - September 1988



AVERAGE AND MEDIAN VALUES OF CHL

