

20  
14  
70

Wisconsin Lake Planning Grant Report

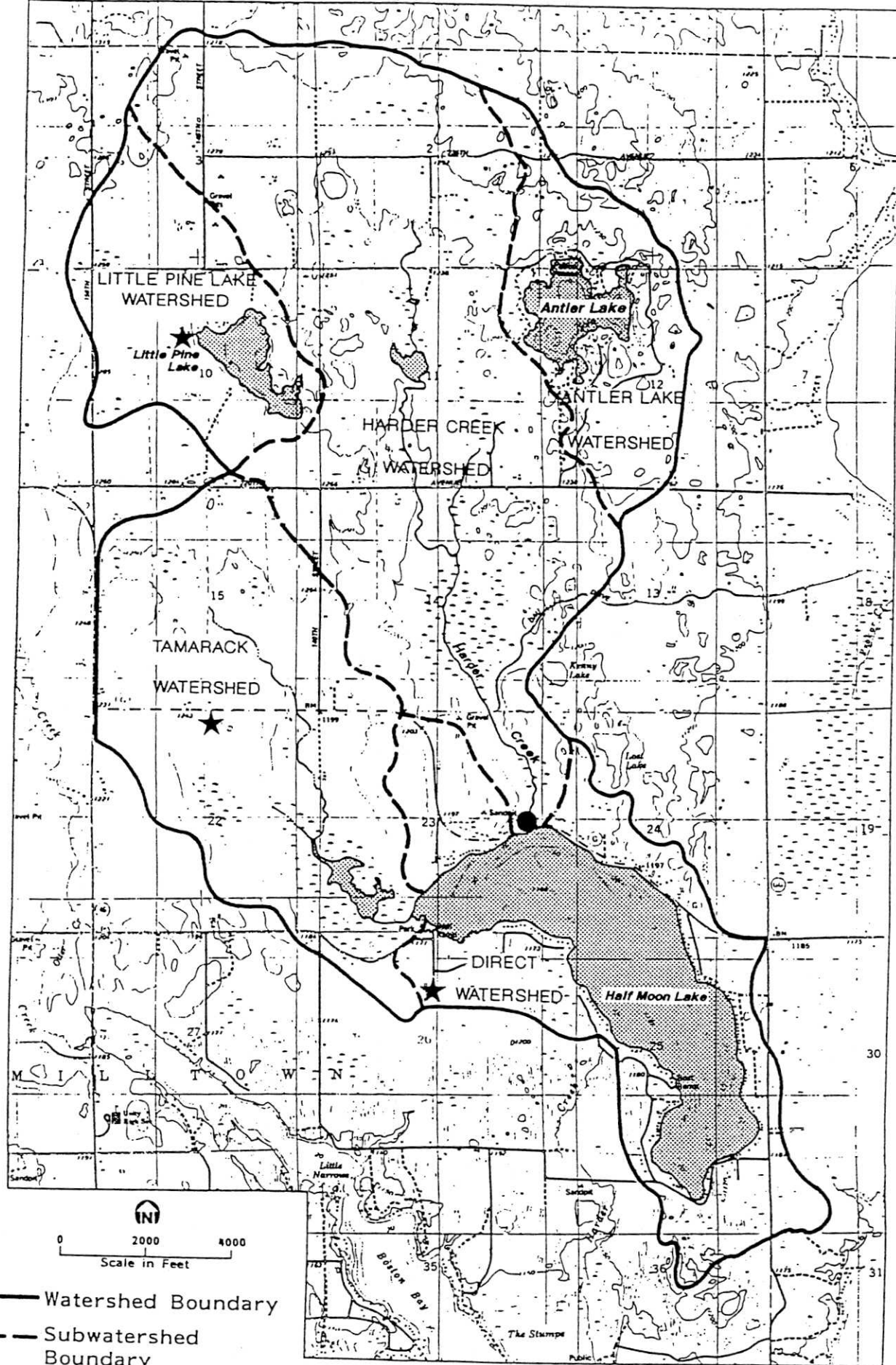
*Half Moon Lake*

*Polk County, Wisconsin*

Prepared for

Half Moon Lake Protection and Rehabilitation District

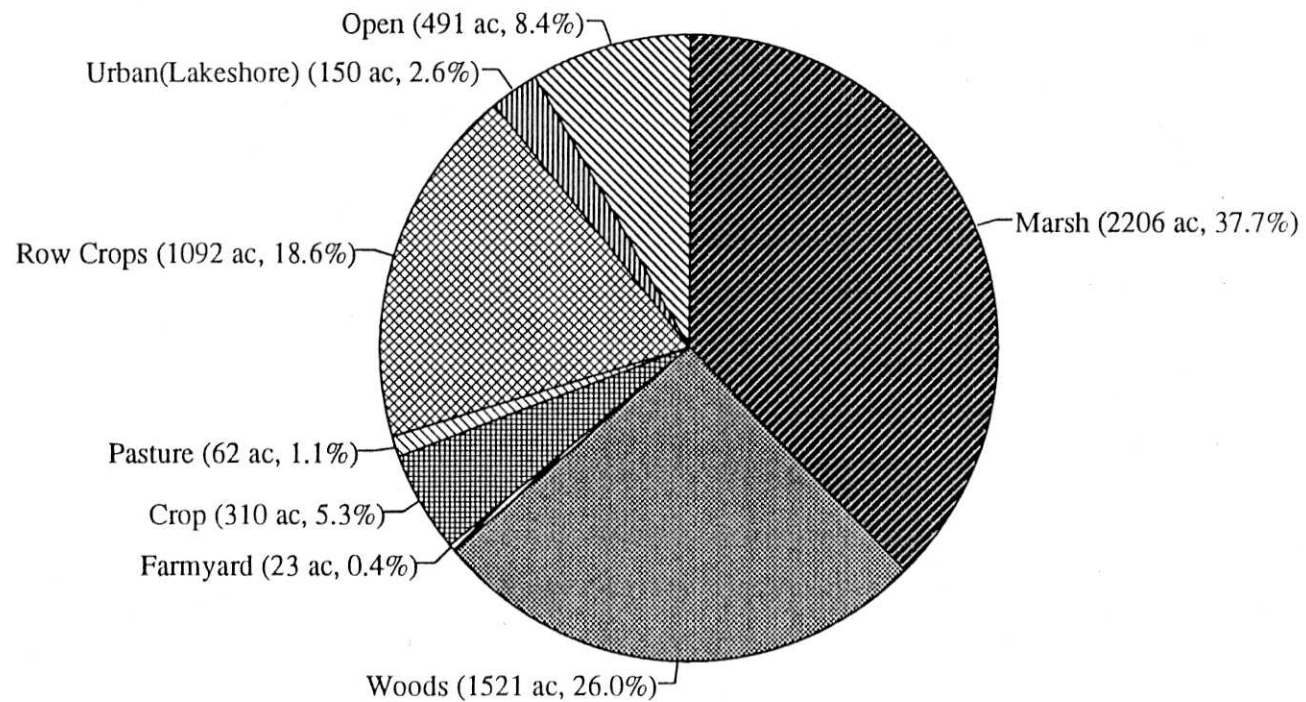
June 1994



- Watershed Boundary
- - - Subwatershed Boundary
- ★ Active Farms
- 1993 Monitoring Station

HALF MOON LAKE SUBWATERSHEDS

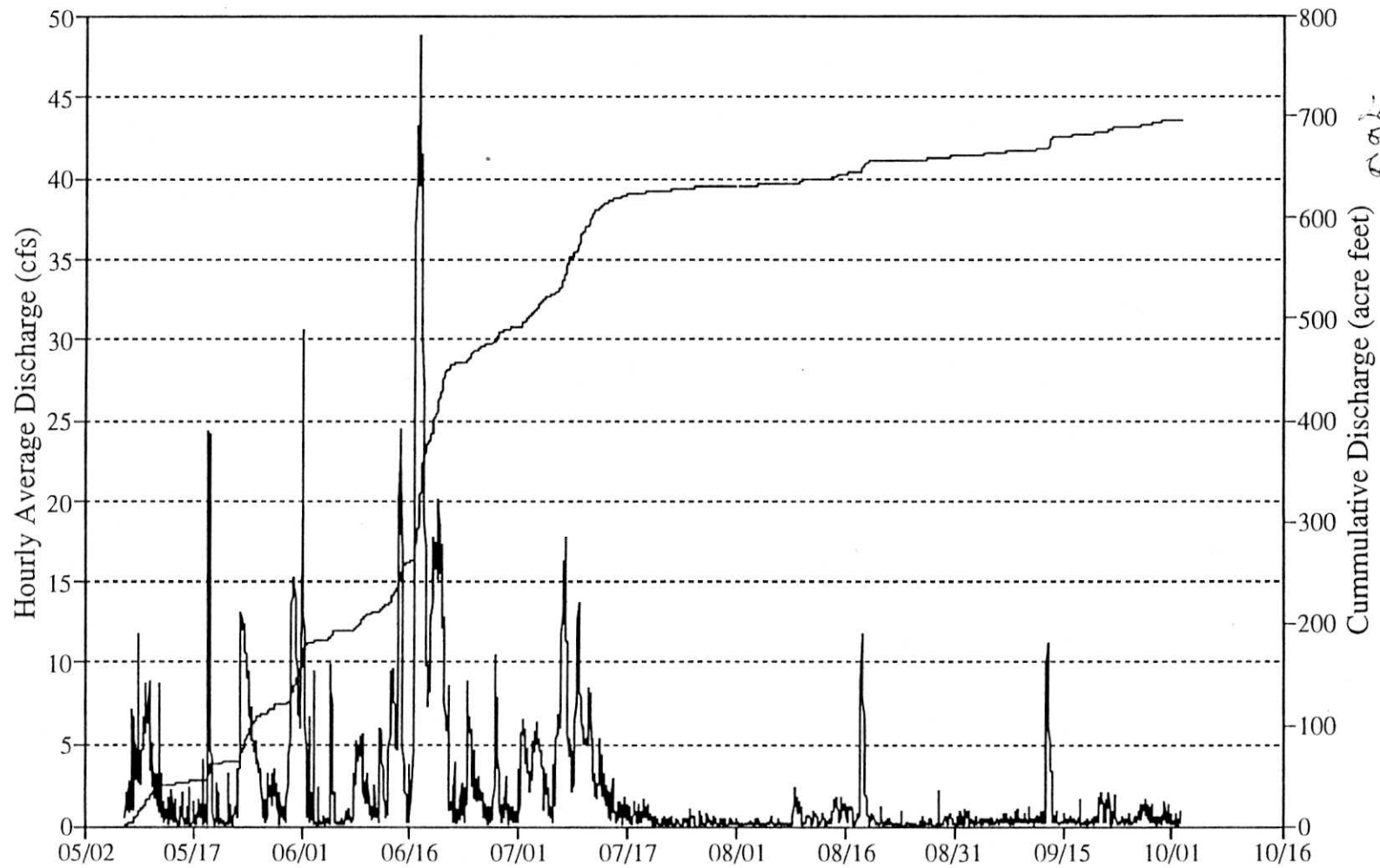
# Half Moon Lake - Polk Co. Wisconsin 1993 Landuse Breakdown



*Barr Engineering Company*

# Half Moon Lake - Polk County, Wisconsin

## Harder Creek Inflow: May-September 1993



LOWER THAN  
EXPECTED. WOULD  
GUESS ALMOST 2X

TABLE 4  
HARDER CREEK WATER QUALITY ANALYSIS

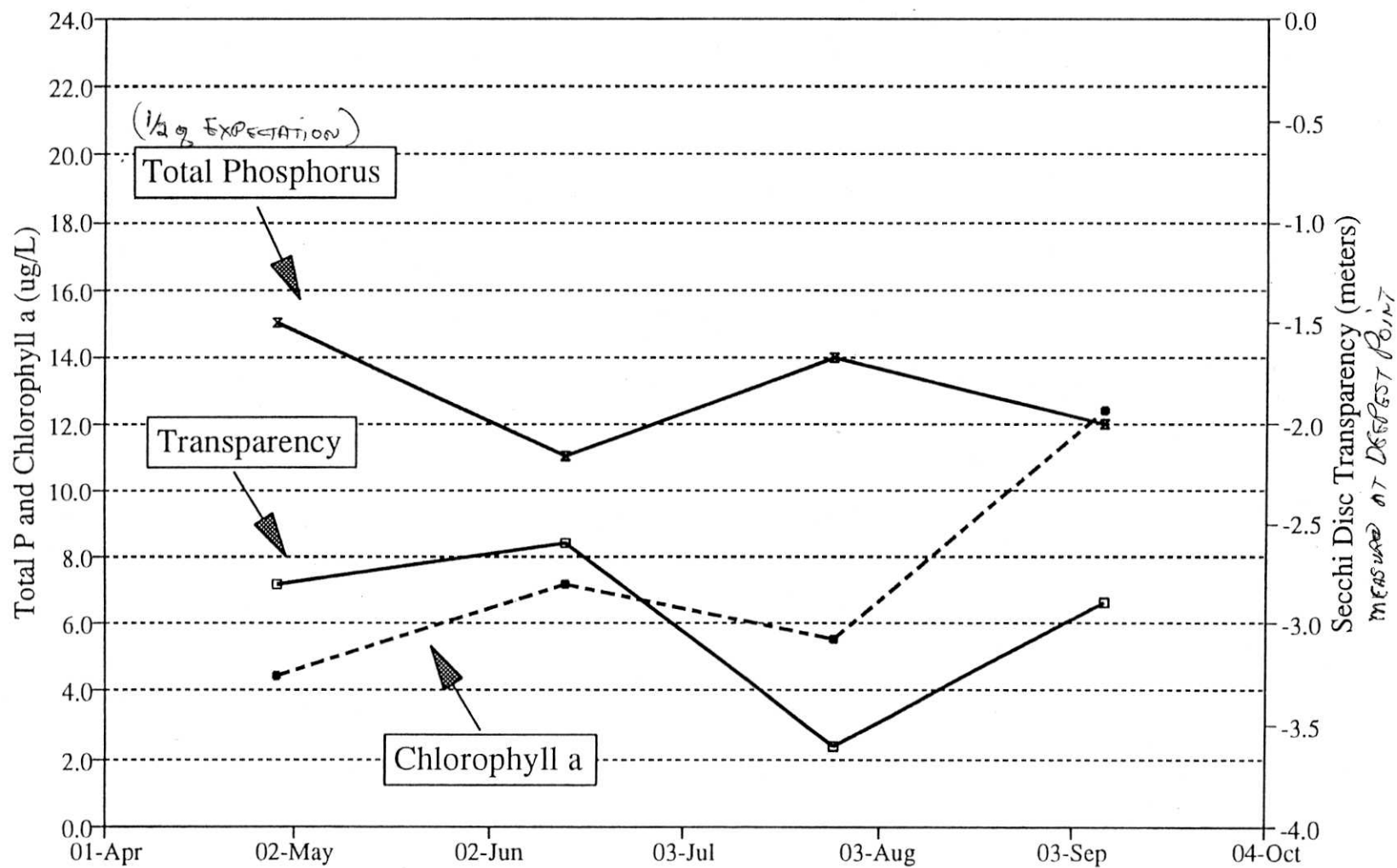
DATE	AMMONIA (mg/L as N)	NITRATE + NITRITE (mg/L as N)	TOTAL KJELDAHL NITROGEN (mg/L as N)	TOTAL PHOSPHORUS (mg/L)	TOTAL SOLIDS (mg/L)	TOTAL SUSPENDED SOLIDS (mg/L)
06/15/93	0.050	<0.007	1.1	0.186	156	9
06/30/93	0.052	0.033	1.2	0.095	148	<2
09/13/93	0.176	0.117	1.0	0.122	166	4
04/18/94	0.068	0.076	0.6	0.055	100	2
04/25/94	0.099	0.073	0.8	0.088	118	6
05/02/94	0.083	0.160	0.6	0.037	90	<2
AVERAGE	0.088	0.078	0.9	0.097	130	4

TABLE 7  
HALF MOON LAKE PHOSPHORUS BUDGET

SOURCE CONTRIBUTION	BARR ENGINEERING COMPANY 1993				WDNR (1980) (kg/yr)	WDNR (1993) (kg/yr)		
	BASED ON FIELD DATA (kg/yr)		BASED ON EXPORT COEFF. (kg/yr)					
Watershed Loading								
Harder Creek	192	(35.2%)	370	(38.6%)	--	--		
Tamarack Creek	95	(17.4%)	278	(29.0%)	--	--		
Direct Watershed	60	(11.0%)	111	(11.6%)	--	--		
Total	347 <sup>1</sup>	(63.6%)	759 <sup>2</sup>	(79.2%)	460	(78.4%)	430 <sup>3</sup>	(78.9%)
Atmospheric Loading <sup>RAIN/DUST</sup> <del>RAINFALL</del>	131 <sup>4</sup>	(24.0%)	131 <sup>4</sup>	(13.7%)	72	(12.3%)	82	(15.0%)
Groundwater <sup>5</sup>	27	(4.9%)	27	(2.8%)	27	(4.6%)	27	(5.0%)
Septic Systems	41 <sup>6</sup>	(7.5%)	41 <sup>6</sup>	(4.3%)	28	(4.8%)	6	(1.1%)
<b>TOTAL</b>	<b>546</b>		<b>958</b>		<b>587</b>		<b>545</b>	

- 1 Calculated from surface water runoff volume and mean 1993 in-stream phosphorus concentration.
- 2 Calculated from land use and export coefficients.
- 3 Includes upstream phosphorus retention of 157.4 kg.
- 4 Calculated from loading rate of 0.56 kg/ha/yr (Tetra Tech, 1982).
- 5 Determined by WDNR, 1980.
- 6 Calculated according to Reckhow et. al., 1980.

# Half Moon Lake 1993 Water Quality Data

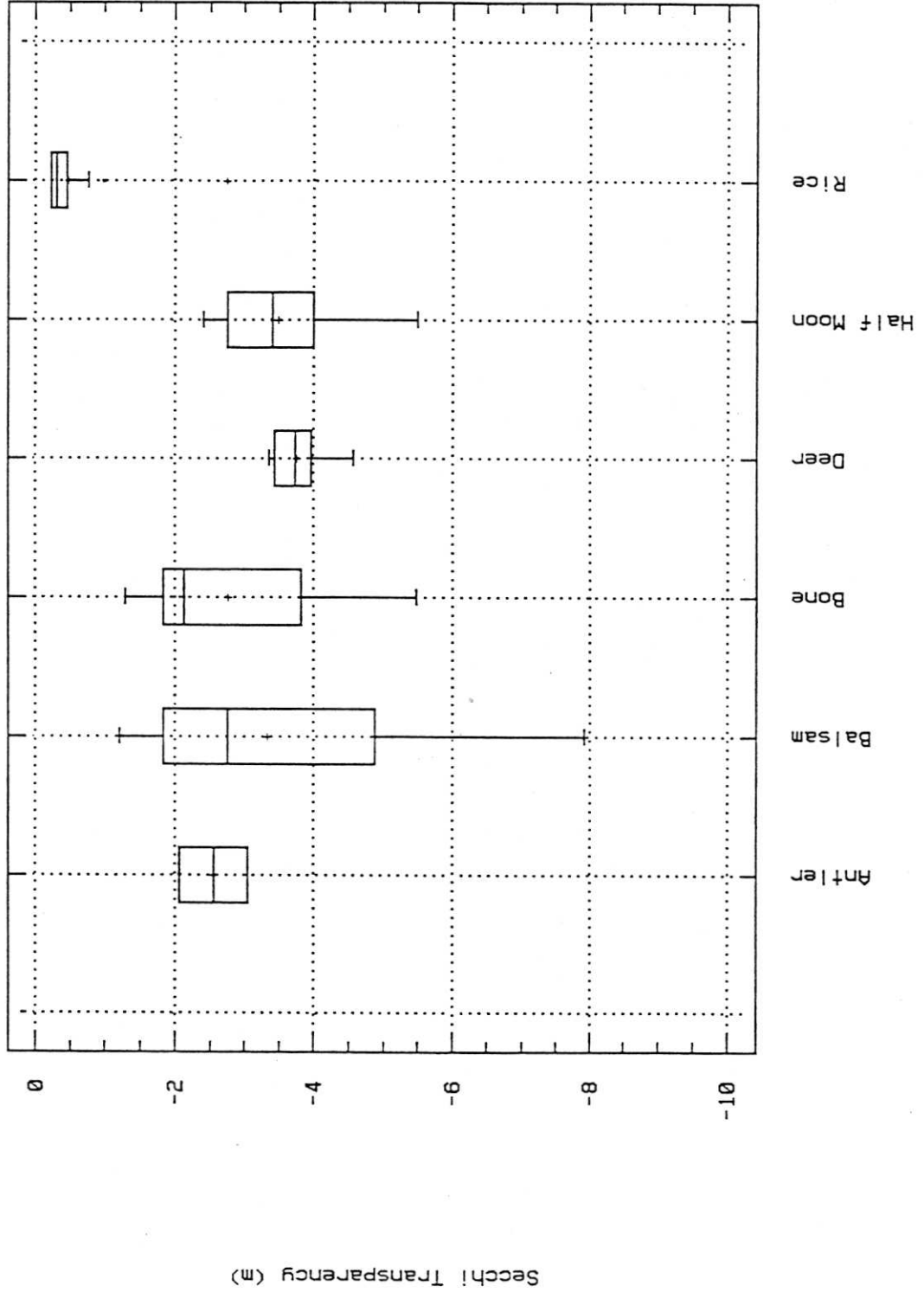


Similarity averages indicate  
 Region is basically Natural State.  
 Hard to improve significantly.

FIGURE 9

Half Moon Lake

Secchi Transparency Comparison

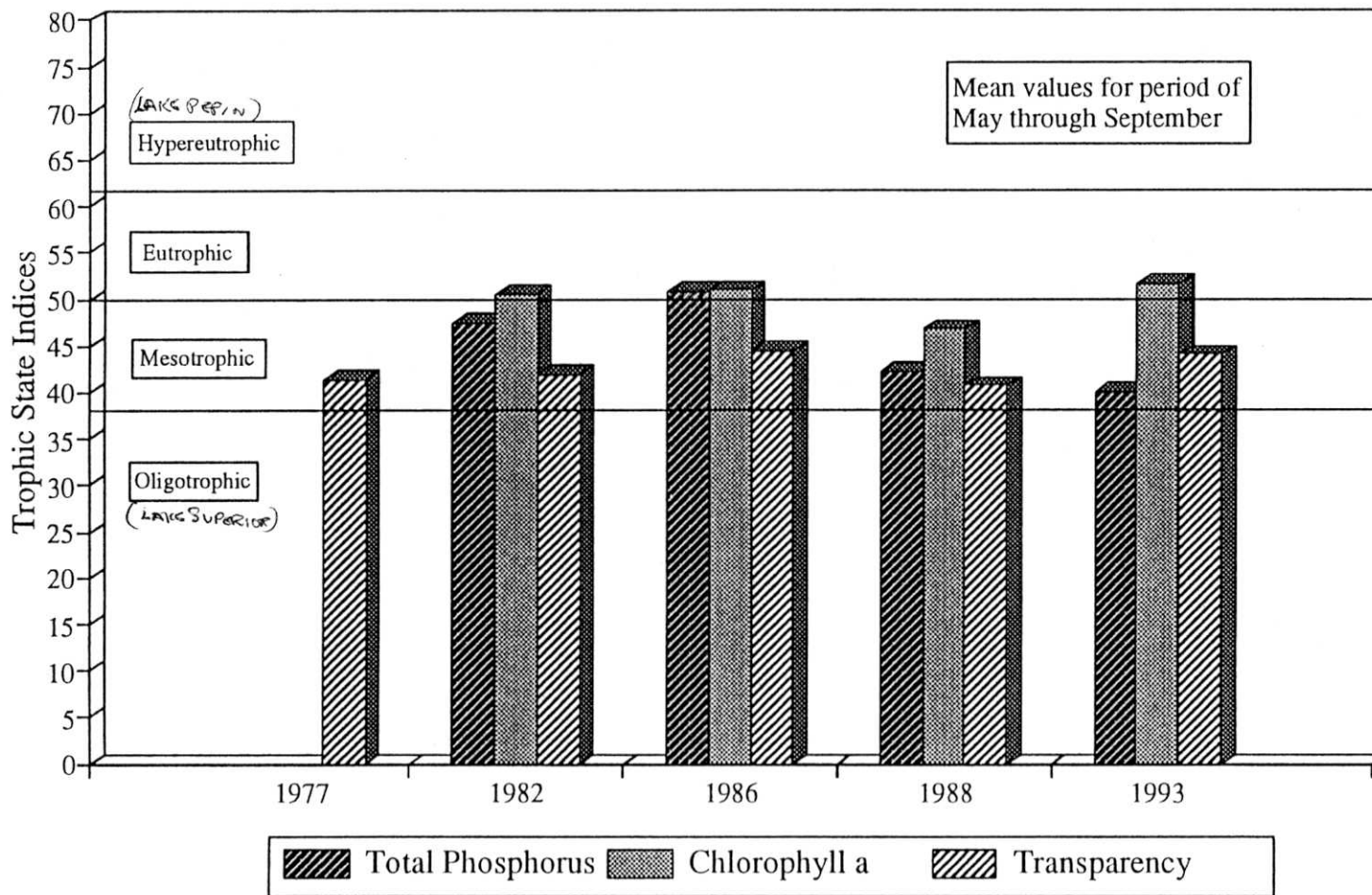


"X" in Box = AVG.

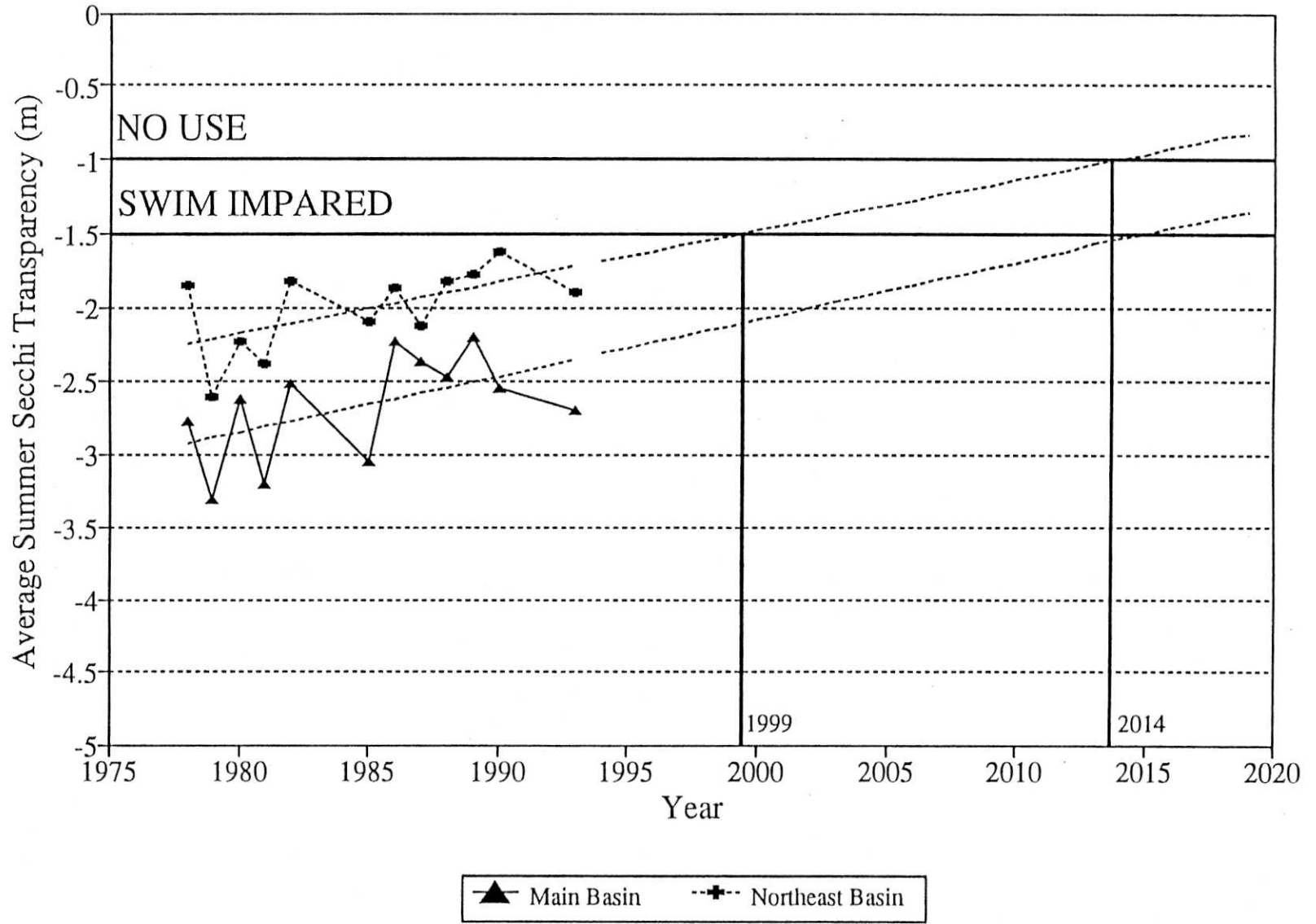


# Half Moon Lake

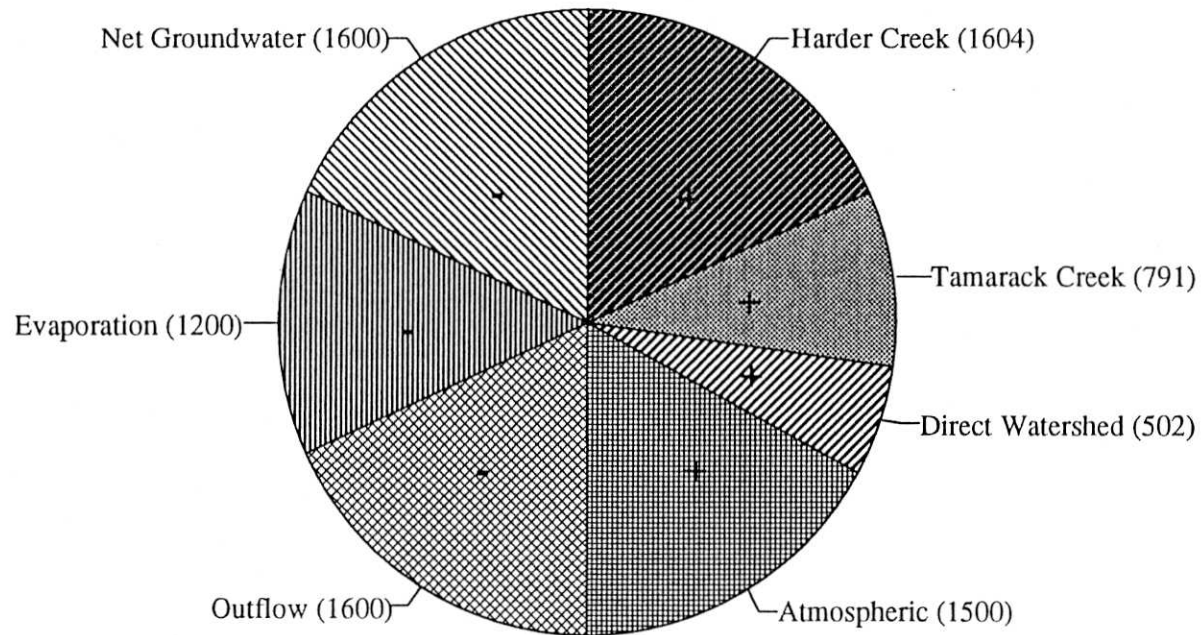
## Historical Trophic State Indices



# Big Birch Lake

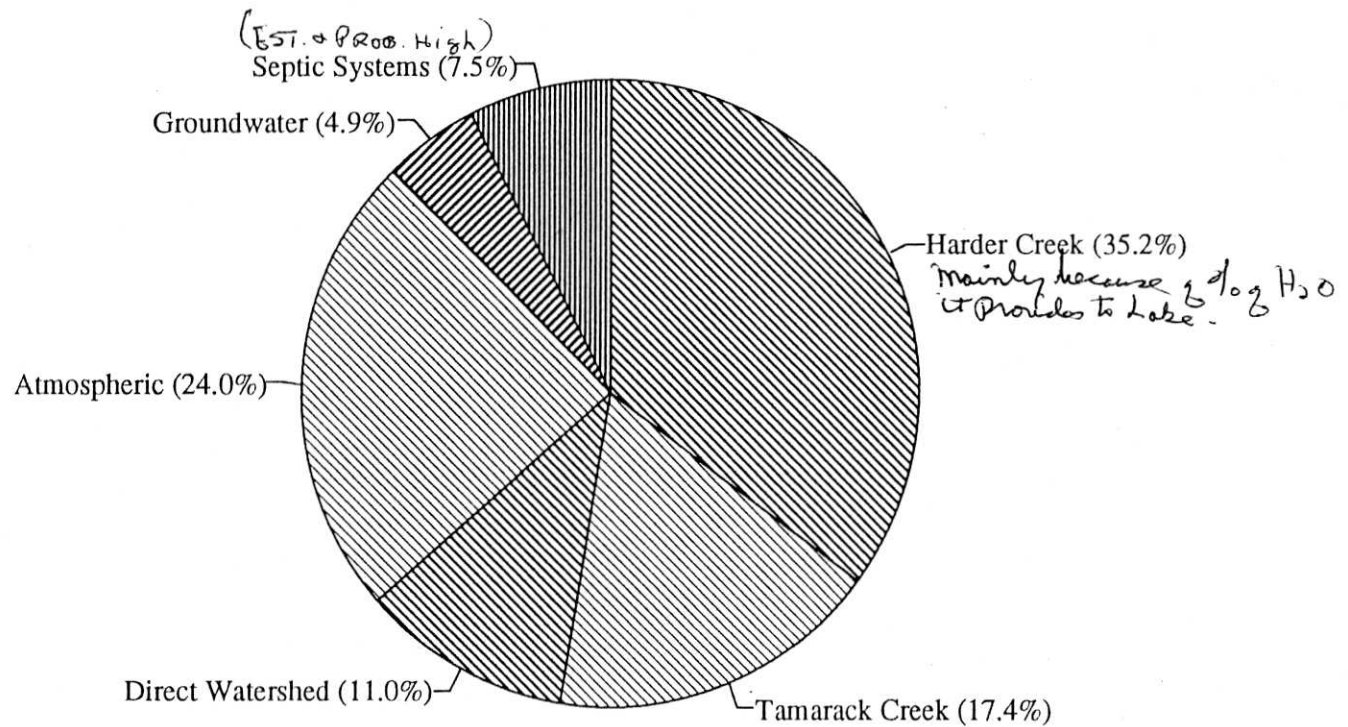


# Half Moon Lake - Polk Co. Wisconsin 1993 Hydrologic Budget



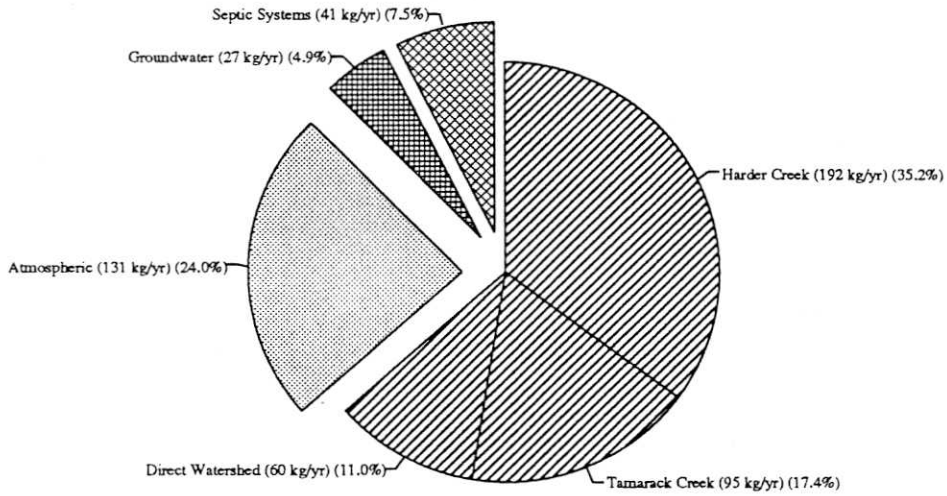
*Barr Engineering Company*

# Half Moon Lake - Polk Co. Wisconsin 1993 Phosphorus Budget



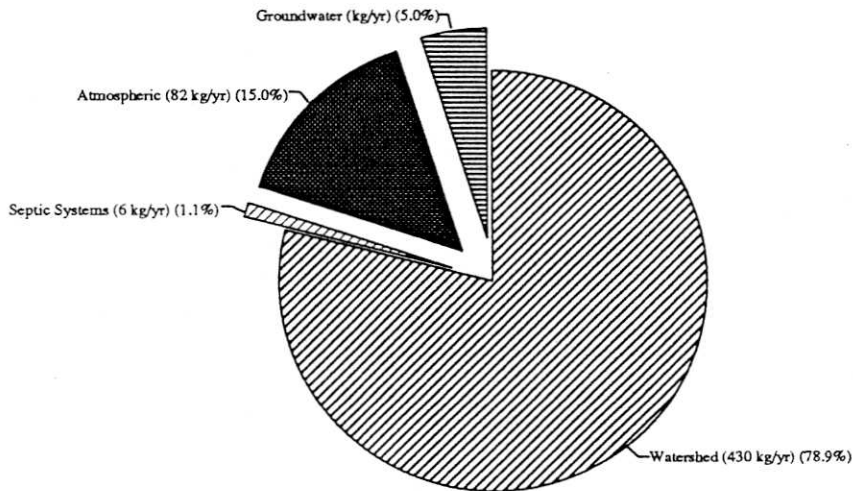
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### Half Moon Lake - Polk Co. Wisconsin 1993 Phosphorus Budget



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### Half Moon Lake - Polk Co. Wisconsin 1993 WDNR Phosphorus Budget



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# Half Moon Lake - Polk Co. Wisconsin Mass Balance Modeling

