DEPARTMENT of ENVIRONMENTAL SERVICES
Water Division - Watershed Management Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake:	PAUGUS BAY, STN 1	Lake Area (ha):	493.72
Town:	LACONIA	Maximum depth (m):	24.4
County:	Belknap	Mean depth (m):	9.3
River Basin:	Merrimack	Volume (m^3):	45548000
Latitude:	43°34'26" N	Relative depth:	1.0
Longitude:	71°27'33" W	Shore configuration:	1.99
Elevation (ft):	504	Areal water load (m/yr):	84.61
Shore length (m):	15600	Flushing rate (yr^{-1}):	9.10
Watershed area (ha):	90263.5	P retention coeff.:	0.26
% watershed ponded:	23.3	Lake type:	natural w/dam

BIOLOGICAL:		31 January 2001	7 September 2000
DOM. PHYTOPLANKTON (% TOTAL)	#1	ASTERIONELLA 70%	ASTERIONELLA 30%
	#2	TABELLARIA 25%	CHRYSOSPHAERELLA 30%
	#3		CERATIUM 12%
PHYTOPLANKTON ABUNDANCE (units/mL)			
CHLOROPHYLL-A (μg/L)			1.28
DOM. ZOOPLANKTON (% TOTAL)	#1	NAUPLIUS LARVA 50 %	KERATELLA 40%
	#2	ACTINOPHRYS 15 %	NAUPLIUS LARVA 13%
	#3		VORTICELLA 11%
ROTIFERS/LITER			69
MICROCRUSTACEA/LITER			61
ZOOPLANKTON ABUNDANCE (#/L)			149
VASCULAR PLANT ABUNDANCE			Scat/Common
SECCHI DISK TRANSPARENCY (m)			
BOTTOM DISSOLVED OXYGEN (mg/L)		12.3	4.3
BACTERIA (E. coli, #/100 ml)	#1		< 1
	#2		
	#3		

SUMMER THERMAL STRATIFICATION:

stratified

Depth of thermocline (m): 10.0
Hypolimnion volume (m^3) : 6452000
Anoxic volume (m^3) : None

CHEMICAL:

Lake: PAUGUS BAY, STN 1
Town: LACONIA

	31 January 2001		7 September 2000		
DEPTH (m)	7.0	14.0	5.0	10.0	20.0
pH (units)	7.0	6.8	6.9	6.6	6.3
A.N.C. (Alkalinity)	8.0	7.3	7.5	7.2	5.6
NITRATE NITROGEN	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
TOTAL KJELDAHL NITROGEN			< 0.50	< 0.50	< 0.50
TOTAL PHOSPHORUS	0.010	0.007	<0.005	0.006	0.008
CONDUCTIVITY (µmhos/cm)	72.1	72.1	68.8	70.1	72.3
APPARENT COLOR (cpu)	5	5	12	15	15
MAGNESIUM			0.65		
CALCIUM			3.8		
SODIUM			7.5		
POTASSIUM			0.82	99.00	
CHLORIDE	12	13	12	12	13
SULFATE	5	5	< 5	< 5	< 5
TN : TP					
CALCITE SATURATION INDEX					

All results in mg/L unless indicated otherwise

TROPHIC CLASSIFICATION: 2000

D.O.	S.D.	PLANT	CHL	TOTAL	CLASS
0	0	2	0	2	Oligo.

COMMENTS:

1. Previously surveyed in 1979, 1986 and 1990.
2. A Secchi transparency reading was not taken. The transparency value at Stn 2 was used for determining trophic class.
3. The blue-green alga *Coelosphaerium* was common (10% of the net phytoplankton community) but was not one of the three most dominant genera.

DEPARTMENT of ENVIRONMENTAL SERVICES
Water Division - Watershed Management Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake:	PAUGUS BAY, STN 2	Lake Area (ha):	493.72
Town:	LACONIA	Maximum depth (m):	24.4
County:	Belknap	Mean depth (m):	9.3
River Basin:	Merrimack	Volume (m^3):	45548000
Latitude:	43°34'26" N	Relative depth:	1.0
Longitude:	71°27'33" W	Shore configuration:	1.99
Elevation (ft):	504	Areal water load (m/yr):	84.61
Shore length (m):	15600	Flushing rate (yr^{-1}):	9.10
Watershed area (ha):	90263.5	P retention coeff.:	0.26
% watershed ponded:	23.3	Lake type:	natural w/dam

BIOLOGICAL:		31 January 2001	7 September 2000
DOM. PHYTOPLANKTON (% TOTAL)	#1	ASTERIONELLA 80%	CHRYSOSPHAERELLA 50%
	#2	TABELLARIA 20%	CERATIUM 20%
	#3		ASTERIONELLA 15%
PHYTOPLANKTON ABUNDANCE (units/mL)			
CHLOROPHYLL-A (μg/L)			1.80
DOM. ZOOPLANKTON (% TOTAL)	#1	NAUPLIUS LARVA 27%	KERATELLA 31%
	#2	CALANOID COPEPOD 17%	NAUPLIUS LARVA 18%
	#3	CYCLOPOID COPEPOD 12%	VORTICELLA 9%
ROTIFERS/LITER		20	52
MICROCRUSTACEA/LITER		41	58
ZOOPLANKTON ABUNDANCE (#/L)		66	134
VASCULAR PLANT ABUNDANCE			Scat/Common
SECCHI DISK TRANSPARENCY (m)			7.6
BOTTOM DISSOLVED OXYGEN (mg/L)		8.1	0.3
BACTERIA (E. coli, #/100 ml)	#1		
	#2		
	#3		

SUMMER THERMAL STRATIFICATION:

stratified

Depth of thermocline (m): 10.0
Hypolimnion volume (m^3) : 6452000
Anoxic volume (m^3) : None

CHEMICAL:

Lake: PAUGUS BAY, STN 2
Town: LACONIA

	31 January 2001		7 September 2000		
DEPTH (m)	4.0	8.0	5.0		11.0
pH (units)	6.7	6.4	6.8		6.6
A.N.C. (Alkalinity)	7.4	8.0	7.0		12.0
NITRATE NITROGEN	< 0.05	< 0.05	< 0.05		< 0.05
TOTAL KJELDAHL NITROGEN			< 0.50		< 0.50
TOTAL PHOSPHORUS	0.009	0.008	<0.005		0.021
CONDUCTIVITY (µmhos/cm)	69.5	77.4	69.0		82.0
APPARENT COLOR (cpu)	5	5	10		45
MAGNESIUM			0.64		
CALCIUM			3.7		
SODIUM			7.3		
POTASSIUM			0.56		
CHLORIDE	12	13	12		13
SULFATE	4	5	< 5		< 5
TN : TP					
CALCITE SATURATION INDEX					

All results in mg/L unless indicated otherwise

TROPHIC CLASSIFICATION: 2000

D.O.	S.D.	PLANT	CHL	TOTAL	CLASS
**	0	2	0	2	Oligo.

COMMENTS:

1. The lower (11 m) summer sample showed elevated phosphorus, conductivity and color values that were not present in the hypolimnion sample (20 m) at Stn 1. Stn 2 also had no dissolved oxygen (D.O.) at the bottom (below 11 m) while there was over 4 mg/l of D.O. at the bottom of Stn 1, which went to a 24 m depth. Apparently there is some organic load affecting the southern end of the Bay.

FIELD DATA SHEET

LAKE: PAUGUS BAY, STN 1 TOWN: LACONIA
DATE: 09/07/2000 WEATHER: Sunny & cool

	DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
	0.1	21.2	8.8	97 %
	1.0	21.2	8.9	98 %
	2.0	21.1	8.8	97 %
	3.0	21.0	8.9	98 %
	4.0	20.9	8.8	95 %
	5.0	20.9	8.8	95 %
	6.0	20.8	9.0	99 %
	7.0	20.8	8.9	96 %
	8.0	20.6	8.7	94 %
	9.0	19.2	8.3	89 %
	10.0	16.2	7.9	79 %
	11.0	12.8	7.5	69 %
	12.0	10.6	6.9	60 %
	13.0	9.2	6.1	53 %
	14.0	8.6	5.5	46 %
	15.0	8.3	5.2	44 %
	16.0	8.1	5.0	42 %
	18.0	7.9	4.6	37 %
	20.0	7.8	4.3	35 %
	22.0	7.8	4.2	34 %
	23.0	7.8	4.2	34 %
	24.0	7.8	4.3	35 %

COMMENTS:

BOTTOM DEPTH (m): 24.4
TIME: 1200

*Dissolved oxygen values are in mg/L

FIELD DATA SHEET

LAKE: PAUGUS BAY, STN 2 TOWN: LACONIA
DATE: 09/07/2000 WEATHER: Sunny cool

	DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
	0.1	21.1	8.4	94 %
	1.0	21.0	8.6	96 %
	2.0	21.0	8.4	94 %
	3.0	21.0	8.4	94 %
	4.0	21.0	8.3	93 %
	5.0	20.9	8.3	93 %
	6.0	20.9	8.4	94 %
	7.0	20.9	8.3	93 %
	8.0	20.9	8.2	92 %
	9.0	20.8	8.1	91 %
	10.0	18.1	1.5	16 %
	11.0	14.9	0.2	2 %
	11.5	13.3	0.3	3 %

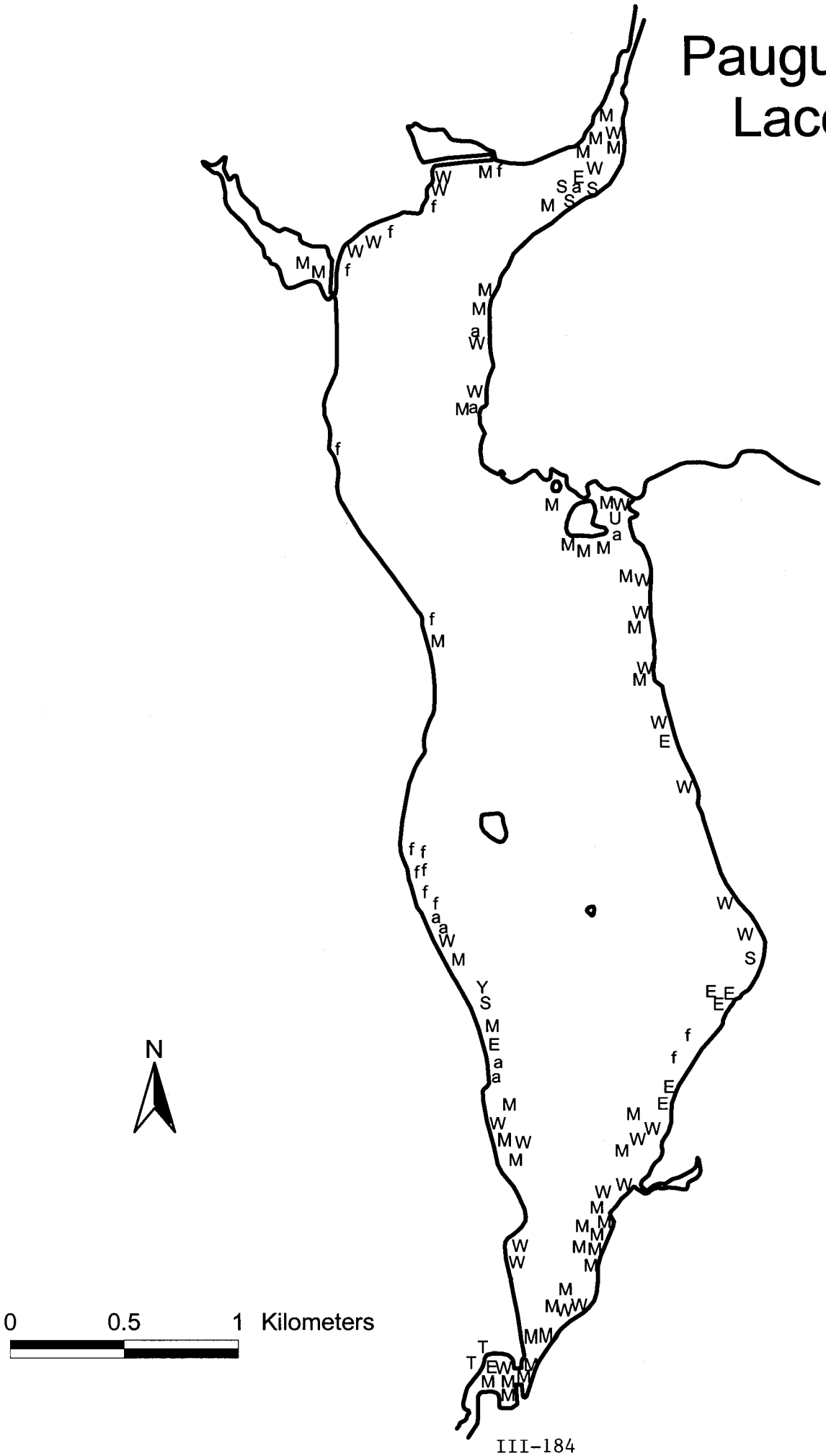
SECCHI DISK (m): 7.6
BOTTOM DEPTH (m): 12.1
TIME: 1117

*Dissolved oxygen values are in mg/L

COMMENTS:

Interestingly, a dissolved oxygen deficit was observed at Station 2 (below 10 meters), which had no hypolimnion, but no deficit was observed at Station 1, which is 24 m deep and had a well-established hypolimnion below 13m. Station 1 (deep spot) data was used to calculate the anoxic volume for the bay (i.e., there was no anoxic volume).

Paugus Bay
Laconia



AQUATIC PLANT SURVEY

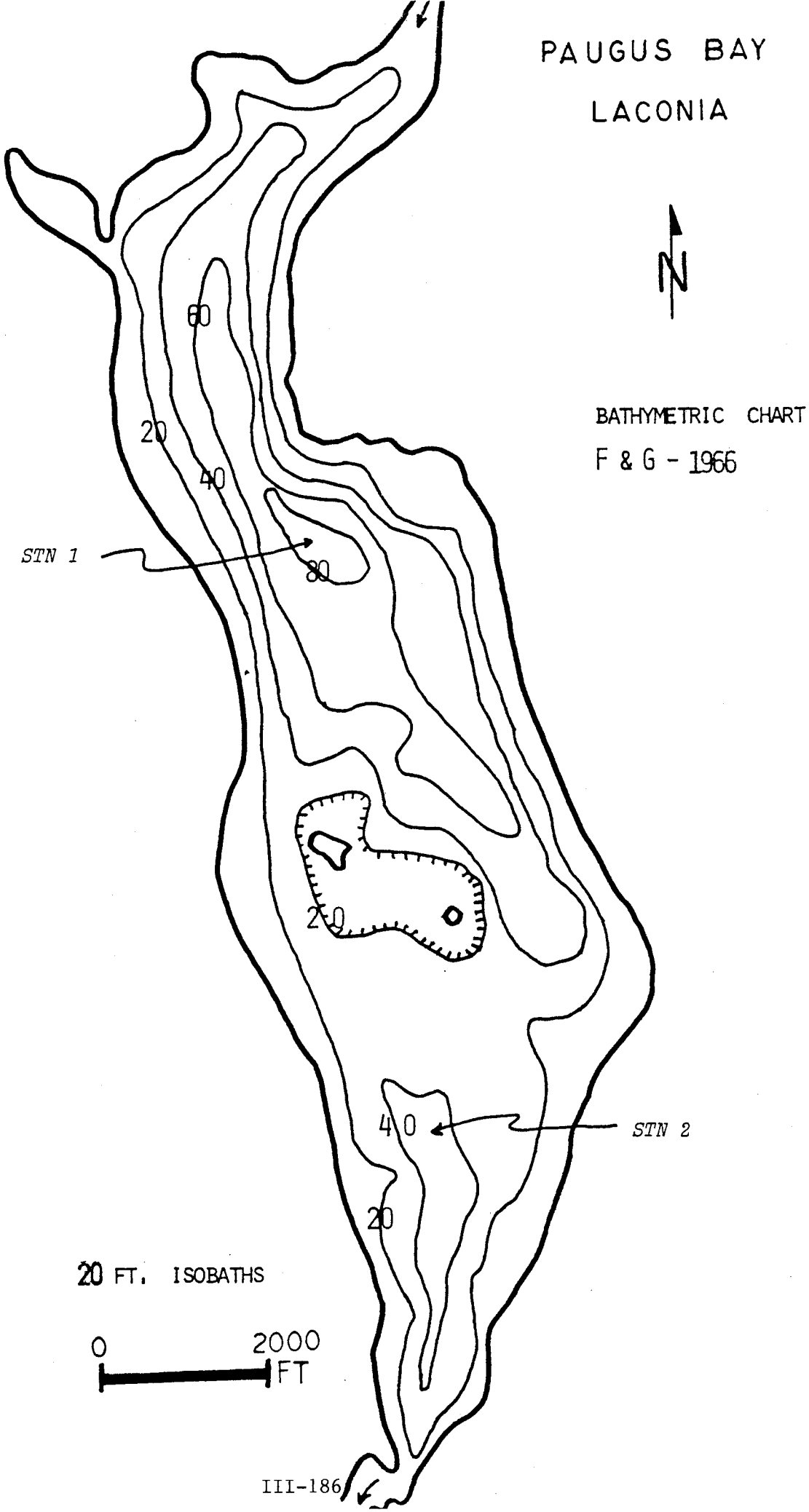
LAKE: PAUGUS BAY TOWN: LACONIA DATE: 09/07/2000

Key	PLANT NAME		ABUNDANCE
	GENERIC	COMMON	
T	Typha	Cattail	Sparse
f		Filamentous algae	Scattered
E	Eriocaulon septangulare	Pipewort	Scattered
M	Myriophyllum heterophyllum	Water milfoil	Common
W	Potamogeton	Pondweed	Scattered
S	Sparganium americanum	Bur reed	Sparse
a	Potamogeton amplifolius	Bass weed	Scattered
U	Utricularia	Bladderwort	Sparse
J	Najas	Bushy pondweed	Sparse
e	Elodea nuttallii	Waterweed	Sparse
Y	Nuphar	Yellow water lily	Sparse

OVERALL ABUNDANCE: Scat/Common

GENERAL OBSERVATIONS:

1. Exotic milfoil was common overall but very abundant in marinas, coves, and the inlet and outlet areas.
2. Water near the outlet was turbid with algal cells.


PAUGUS BAY
LACONIA
N
BATHYMETRIC CHART
F & G - 1966
60
20
40
STN 1
80
20
40
STN 2
20
20 FT. ISOBATHS
0
2000
FT