EPA-
April 1974

A DESCRIPTION OF THE TROPHIC STATUS AND NUTRIENT LOADING FOR LAKE GEORGE, NEW YORK

- A PRELIMINARY REPORT -

By

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Purchase Order Number: 03J1PC1245

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U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20560

FWI Report 74-9

ABSTRACT

A description of Lake George, New York is given. Data are presented which define and characterize the geographic, morphometric and hydrologic, limnologic and nutrient status of this water body. Outlines and/or descriptions of numerous parameters are shown from 1969 through 1973. Of the various topical areas noted, some of the more pertinent data include time-series information regarding the various physical, chemical and biological systems of Lake George, N.Y. The objective of this study has been to unify the Lake George, N.Y. data into a single report for comparative and review purposes for the North American Project. These data originate from the efforts of numerous investigators' efforts (See Acknowledgements, page viii) and might offer a means for a common classification scheme for lakes in North America.

This report was submitted in fulfillment of Purchase Order Number 03J1PO1245 by Rensselaer Polytechnic Institute under the partial sponsorship of the Environmental Protection Agency. Work was completed as of March, 1974.

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ACKNOWLEDGEMENTS

This report was possible as a result of the cooperation of numerous investigators who permitted their data to be incorporated in this document, oftentimes prior to publication. These individuals and their respective areas of contribution are: Dr. Emilio M. Colon (Hydrology); Dr. D. B. Aulenbach and Mr. Shigeru Kobayashi (Chemical Limnology, Nutrient Budgets, and Wastewater Treatment); Drs. G. W. Fuhs (Chemical Limnology), G. M. Friedman, and Manfred Schoettle (Geology); Dr. Jon Scott (Vegetation); Mr. Raymond Calcagne (Lake George Park Commission, New York State Department of Environmental Conservation - Source of Information on Regulation for Lake George); Mr. William Davis (Lake Champlain-Lake George Regional Planning Commission - Source of Data Regarding Land Usage); Mr. Ronald Stewart and Dr. Samuel Katz (Meteorology and Climatology); Mr. Sherman L. Williams (Biological and Chemical Limnology); Drs. R. G. Stross and H. H. Howard (Phytoplankton); Dr. C. W. Boylen (Macrophytes); Dr. D. C. McNaught (Zooplankton); Dr. W. T. Perrotte (Benthos); Dr. C. George (Fish); Dr. L. S. Clesceri (Bacteria); Dr. Leo J. Hetling (Population); Mr. K. Jack Kooyoomjian (Eutrophication); and research staff members of the Fresh Water Institute.

Financial support for data arose from the following: The Office of Water Resources Research; The New York State Science and Technology Foundation; The International Biological Program; individuals; foundations; amongst others.

SECTION I

CONCLUSIONS

1. Lake George is an oligotrophic/mesotrophic mountain lake that receives anthropogenic influence the extent of which varies on a seasonal basis.
2. The biological populations (esp. the diatoms) are experiencing relatively rapid populations changes toward those characteristic of more eutrophied lakes.
3. The southern basin of Lake George with its smaller volume and denser population is currently experiencing greater changes in biological populations and receiving larger nutrient loads (nitrogen and phosphorus) than the lake's northern basin.
4. The differences in nutrient loadings between north and south Lake George are reflected in: a) the water clarity in each basin, b) the dissolved oxygen at certain times and locations in each basin, c) the maximum primary production (gC/m^2d) in each basin, and d) other biological parameters in each basin, as well.
5. Throughout most of Lake George, N.Y., glacial sediments are now concealed below a cover of modern organic-rich clays. These materials accumulate rapidly on the lake floor. The lake acts as a trap for the annual crop of organic matter that originates in the drainage basin as vegetation, etc. as well as in the lake itself. Anthropogenic influences aid in the accelerated accumulation of organic matter by enhancing productivity, especially in the southern basin.
6. The diatom populations of Lake George are the dominant group

of primary producers. The numbers and changes in the planktonic and periphytic diatom populations appear to be correlatable with various environmental parameters (e.g., phosphorus, nitrate, temperature, etc.) (Williams and Clesceri, 1972).

7. The levels of all nutrients in the lake are very low and would permit the lake to be classified as oligotrophic.

SECTION II

RECOMMENDATIONS

Feasible correlations:

N/P ratios or Loadings vs. Volume

N/P ratios or Loadings vs. Average depth

N/P ratios or Loadings vs. Drainage basin size (with and without lake)

N/P ratios or Loadings vs. Length of shoreline

Other nutrients, i.e., C, Si, S could be correlated.

SECTION III
INTRODUCTION

OECD GOAL

The Organization for Economic Cooperation and Development (OECD), in carrying out its task of promoting economic development in Member countries, is concerned both with the qualitative and quantitative aspects of economic growth. The Environment Committee of the OECD is responsible for:

(1) Investigating the problems of preserving or improving man's environment, with particular reference to their economic and trade implications;

(2) Reviewing and confronting actions taken or proposed in Member countries in the field of environment, together with their economic trade implications;

(3) Proposing solutions for environmental problems that would as far as possible take account of all relevant factors, including cost effectiveness;

(4) Ensuring that the results of environmental investigations can be effectively utilized in the wider framework of the Organization's work on economic policy and social development.

In the implementation of its mandate, the Committee is assisted by a number of delegate groups concerned with policy development in specific sectors of the overall environment problem. Such groups are established in respect of Air, Water, Chemicals, and Urban problems. Coordination and development of economic aspects are the responsibility of a Sub-Committee of Economic Experts.

STUDY OBJECTIVES

The North American Project is not strictly a measurement project. It is largely a mechanism for information exchange between existing activities in the North American zone and the European projects relative to eutrophication and Water Resources Management.

The development of the phenomenon of eutrophication in Member countries is of great concern and it has become necessary to understand better the quantification of the problem and its rate of evolution. Attempts to categorize freshwaters in terms of tolerance levels of nutrient loadings, biological productivity and nutrient budgets which affect the trophic levels of water bodies have been difficult because much of the information could not be interrelated. This limitation is imposed by the lack of the means of comparability. Clearly, there is a need to compare water bodies between themselves and to be able to apply the monitored results of one to predict change elsewhere. This facility is best obtained by establishing an agreed system of measurements, the methods and results of which are comparable.

Special attention has been devoted by the Water Management Sector Group of the OECD to the definition of a common system of measurement and monitoring of waters, within the framework of its program on evaluation and control of eutrophication. Such a system is expected to allow for the production of comparable and coherent data, leading to a broad and fruitful exchange of experience on the intensity, extent and rhythm of development of eutrophication, and on the efficiency of control measures applied.

WATER BODY STUDIED

Lake George, New York, USA.

SECTION IV
GEOGRAPHIC DESCRIPTION OF WATER BODY

LATITUDE

43° 25' and 53° 51' North.

LONGITUDE

73° 27' and 73° 43' West.

ALTITUDE ABOVE SEA LEVEL

97.25 m (319 ft.).

CATCHMENT AREA

606 sq. km. (234 sq. mi.).

ICE COVERAGE

January through April (22 to 50 cm).

AVERAGE MONTHLY AIR TEMPERATURE

These data are seen in Table 1a and 1b.

WIND PATTERNS

Data available for February through June, 1972 for wind direction and speed (See Appendix). Speed data only prior and subsequent to these dates are available (Stewart, 1971, 1972).

Table 1. AVERAGE MONTHLY AIR TEMPERATURE FOR LAKE GEORGE, N.Y.+

a.) Air Temperature (°F) - Lake George Village

Month	1969	1970	1971
January	-1.0*	-1.0*	11.0
February		22.4	21.9
March	32.3	30.7	26.8
April	-1.0*	45.2	39.7
May	-1.0	56.3	55.6
June	-1.0	64.9	-1.0*
July	-1.0	68.0	-1.0
August	-1.0	69.0	-1.0
September	-1.0	61.5	-1.0
October	-1.0*	52.4	-1.0
November	35.8	41.7	-1.0
December	-1.0*	18.4	-1.0

+ Missing data are shown as -1.0.

* Designate a complete set of values (i.e., daily) were not available and thus no real average could be given. This applies to all data shown throughout Table 1. (Colon, 1972).

Table 1. AVERAGE MONTHLY AIR TEMPERATURE FOR LAKE GEORGE, N.Y.

b.) Air Temperature (°F) - Burnt Point

Month	1969	1970	1971
January		-1.0*	15.7
February		22.9	23.8
March		30.6	28.2
April		-1.0*	-1.0*
May		-1.0*	55.2
June		-1.0*	-1.0
July		-1.0*	-1.0
August		68.5	-1.0
September		60.3	-1.0
October	-1.0*	51.7	
November	-1.0*	41.3	
December	24.8	21.6	

Hourly air temperature data for 1972 and 1973 are available and could be included, if appropriate (Colon, 1972).

EVAPORATION AND EVAPOTRANSPIRATION

For the 1971 water year these data are seen in Table 2.

GENERAL GEOLOGIC CHARACTERISTICS

Lake George occupies a graben in Precambrian bedrock. This bedrock consists of plutonic, metamorphic and igneous rock, for example, gneisses and schists, syenite, granite and gabbro. At a few places along the shore of the southern Lake George basin are exposures of Cambrian sandstones (Potsdam sandstone) and dolostones (Little Falls dolomite).

The linear straight shorelines and sheer slopes are the combined effect of erosion following prominent faults and a deepening of the fault-controlled valleys by the sweep of the Pleistocene glaciers which deepened the rock channels. Prior to glaciation, two rivers drained the Lake George basin. One stream originated in the narrow trench now occupied by Northwest Bay Brook and flowed into the southern Lake George Basin; the second river flowed from the Narrows northward. A preglacial divide existed where the Narrows are now located. When the glaciers plowed their way through the deep narrow Lake George Valley they deepened the Narrows by ice erosion. The waters of Lake George are now held in place by Pleistocene glacial sediments which block the river outlets at the north and south end of the lake. At the south end of the lake glacial sand and gravel deposits rise 500 feet above lake level. After the retreat of the glaciers Lake George was a glacial lake as evidenced by the presence of varved clay flooring the bottom of the lake in the Narrows; this varved clay also occurs above the present

Table 2. EVAPORATION AND EVAPOTRANSPIRATION (1971 WATER YEAR) FOR LAKE GEORGE, N.Y.*

Date	Lake Evaporation		Evapotranspiration	
Month	Inches/day	Inches/month	Inches/day	Inches/month
October	0.06	1.91	0.06	1.74
November	0.04	1.18	0.04	1.11
December	0.03	0.80	0.03	0.78
January	0.02	0.67	0.02	0.63
February	0.03	0.81	0.03	0.74
March	0.05	1.42	0.04	1.26
April	0.07	2.19	0.06	1.91
May	0.11	3.51	0.10	3.06

* (Colon, 1972)

lake level at elevations up to 750 to 800 feet.

Surficial sediments of the Champlain basin of which Lake George forms a part have been mapped. Sand and gravel are abundant in the delta and ice-contact gravels southwest of Lake George Village (Schoettle and Friedman, 1971).

DESCRIPTION OF TYPE OF LAKE

Lake George is a clear, soft-water oligotrophic lake.

VEGETATION

Hemlock (72% of stands), sugar maple (69%), white pine (64%), red maple and northern oak (57%) are the most frequently encountered of 35 tree species occurring in 75 randomly selected stands in the Lake George drainage basin. Hemlock leads in density in 32% stands, followed by white pine (13%), beech (12%), northern red oak (9%), and red/sugar maple (8%). Distribution patterns of hemlock and pine shows the former is most abundant in sloping stands at the lowest elevation (100 m) and generally prevail on the east side of the basin, while white pine is best represented in level stands about 200 m, but uncommon on the east side. Forest composition of our random sample for the drainage basin differs slightly from 1970 estimates by Northeast Forest Experiment Station in that pine - hemlock stands are more common (42% - 18%) and elm - ash - red maple and spruce - fir less common (3% - 17% and 0% - 7%) (Nicholson and Scott, 1972).

POPULATION

These data are shown in Tables 3 and 4.

Table 3. POPULATION DISTRIBUTION IN THE LAKE GEORGE, N.Y. BASIN*

Population Type	South Lake Basin		North Lake Basin	
	Number Sewered	Total Number	Number Sewered	Total Number
Permanent, Year-Round	2,930	4,445	0	1,130
Summer Camp	1,750	8,775	0	3,205
Resort Hotel and Motel	9,111	12,558	0	47
Total Avg. Summer	13,791	25,778	0	4,382

* Compiled from 1970 Census data.

LAND USAGE

Data for this purpose (from LUNR) are in the FWI data bank and can be summarized. Recently, land-use maps were obtained from the Lake Champlain-Lake George Regional Planning Board. However, time was not sufficient to permit their inclusion in this report.

USE OF WATER

The waters of Lake George are used primarily for the following purposes: drinking, aesthetics, sport (i.e., boating, fishing, SCUBA diving, swimming, etc.), all other recreational purposes, amongst others.

SEWAGE AND EFFLUENT DISCHARGES

The types of wastewater discharges in the Lake George drainage basin are: 1) secondary treated (trickling filter plant) from the Village of Lake George Sewage Treatment Plant onto natural sand beds, 2) primary treated (Imhoff tank) discharged onto natural sand beds from the Town of Bolton facility, 3) septic tank-leach field effluent, and 4) pit privy discharge. There is no industrial discharge. Population data relative to this are seen in Table 4.

Table 4. TOTAL POPULATIONS AND THOSE SERVICED BY SEWERS IN THE LAKE GEORGE DRAINAGE BASIN.[3]

	Permanent Year Round Population[1]		Summer Camp Population[2]		Motel & Hotel Resort Population		Total Average Summer Population	
	Total	Sewered	Total	Sewered	Total	Sewered	Total	Sewered
Warren County								
Lake George Town	2630	2130	2000	1500	10215	8661	14845	12291
Bolton "	1165	800	2400	250	2343	450	5908	1500
Hague "	640	0	1425	0	47	0	2112	0
Queensbury "	410	0	2375	0	0	0	2785	0
Lake Luzerne "	0	0	0	0	0	0	0	0
Warrensburg "	0	0	0	0	0	0	0	0
Horicon "	10	0	0	0	0	0	10	0
Washington County								
Fort Ann Town	230	0	2000	0	0	0	2230	0
Putnam "	150	0	700	0	0	0	850	0
Dresden "	190	0	1050	0	0	0	1240	0
Essex County								
Ticonderoga Town	150	0	30	0	0	0	180	0
Total	5575	2930	11980	1750	12605	9111	30160	13791

1. Data were adjusted to conform to drainage basin lines by the Env. Quality Research and Development Unit, New York State Dept. of Environmental Control.

2. A normal summer occupancy of 5 persons per camp was assumed.

3. Aulenbach & Clesceri 1972.

SECTION V

MORPHOMETRIC AND HYDROLOGIC DESCRIPTION OF WATER BODY
(at 97.25 m or 319 ft. amsl)

SURFACE AREA OF WATER

114 sq. km (44 sq. mil.).

Length

51 km (32 mi.)

Width

Maximum = 4.0 km (2.4 mi.).

Average = 2.3 km (1.4 mi.).

Shoreline Length

209.6 km (131 mi.).

VOLUME OF WATER

2.1 km^3 (0.5 $mi.^3$).

Regulation - Lake George Water Levels (as described in Section 38 of the New York State Navigation Law)

Any dam or other similar structure so located in the outlet of Lake George as to affect the water levels of the lake shall, with due allowance for fluctuations due to natural causes or to emergencies and for a reasonable use of water for power and for sanitary purposes, be operated in such a manner as to maintain the waters of the lake from the first day of June to the thirtieth day of September in each year as nearly as may be at an average level of three and five-tenths feet on the gage of the United States Geological Survey at Rogers Rock on Lake George, known as Rogers Rock gage, and

in such a manner as to maintain the waters of the lake from the first day of October to the first day of December at a level which shall not fall below two and five-tenths feet on said gage; and, consistent with the above mentioned fluctuations and reasonable use, the waste gates of any such dam or other structure shall be operated so that, to the extent possible, the waters of the lake will not be permitted to rise above a level of four feet on such gage at any time during the year or to fall below a level of two and five-tenths feet on said gage at any time after the first day of June and prior to the first day of December in any year. If at any time during the year the waters of the lake shall rise above such level of four feet any person owning or operating such dam or other structure shall immediately open the waste gates thereof and take such other appropriate action as in the judgment of the superintendent of public works may be necessary to lower the waters of the lake with the least practicable delay to a level not higher than four feet on said gage. If at any time after the first day of June and prior to the first day of December in any year the waters of the lake shall fall below such level of two and five-tenths feet such person shall immediately close the waste gates of such dam or other structure; and no person shall withdraw water from the lake for the purpose of generating power during any period of time between the first day of June and the first day of October in any year when the level of the waters of the lake is below two and five-tenths feet on said gage. The superintendent of public works or his duly authorized representative shall at all times have access to such dam or other structure and is hereby authorized and directed to operate the waste gates thereof whenever necessary for the purpose of carrying out

the provisions of this section. The superintendent of public works shall establish such rules and regulations as in his judgment may be necessary for the enforcement of the provisions of this section, and he is hereby authorized to enter into such agreement or agreements with any person or persons owning or operating any such dam or other structure as in his judgment may be necessary in order to carry into effect the provisions of this section and of such rules and regulations. In addition, the superintendent of public works shall, once in each year during the first week in July, cause to be published in at least three daily newspapers serving the area the reading on the Rogers Rock gage on the first day of July in that year. Any person violating any provision of this section or of any rule or regulation established or of any agreement entered into pursuant thereto shall for every such violation forfeit to the people of the state the sum of not to exceed two hundred and fifty dollars to be recovered in a civil action.

MAXIMUM AND AVERAGE DEPTHS

These data are shown in Table 5 (Colon, 1972; Langmuir, et al., 1966).

Table 5. MAXIMUM AND AVERAGE DEPTHS FOR LAKE GEORGE, N.Y.

Basin	Maximum Depth	Average Depth
North	53.3 m (175 ft.)	20.5 m (67.3 ft.)
South	58 m (191 ft.)	15.5 m (50.9 ft.)
Total Lake	58 m (191 ft.)	18 m (59 ft.)

LOCATION OF EXCEPTIONAL DEPTHS AND THE SURFACE AREA RATIO OF DEEP TO SHALLOW WATERS

These data are not available at this time.

RATIO OF EPILIMNION OVER HYPOLIMNION

These calculations are not available at this time.

DURATION OF STRATIFICATION

This phenomenon occurs in Lake George for approximately 150 to 180 days (i.e., from May 1 through October 31).

NATURE OF LAKE SEDIMENTS

Most of the sediments of Lake George consist of silty clay; pure sand lies mostly near the shore, yet most sand also contains silt and clay in nearly equal amounts. In the south basin sediments containing more than 50 percent clay occur near the east shore and underlie the large central expanse of the lake. Sediments with less than 25 percent clay (hence mostly sandy) are restricted to the west shore of the south basin, although in two places a tongue of sandy sediment is present in the central area of the south basin. Sediments underlying the eastern Narrows are rich in clay, whereas those beneath the western Narrows are generally rich in sand. The southern part of the north basin is underlain by clay-rich sediments. In the central part of this basin clay floors the middle of the lake and sand is found closer to shore. In the northernmost part of the north basin, near Ticonderoga, the sediment consists mostly of sand.

In the south basin most of the bottom sediments contain between 5 and 10 percent organic carbon. However, close to and in bays of the east shore the organic carbon content exceeds 10 percent. By contrast, near the west shore and in two tongues in the central part of the south basin the organic carbon content is < 5 percent. The sediments of the Narrows are mostly depleted in organic carbon, whereas the sediments of the north basin contain between 5 and 10 percent organic carbon in the center, but < 5 percent near the shore. Near Ticonderoga the sediments of the northernmost part of Lake George contain < 5 percent organic carbon. The muddy bottom sediments of Lake Champlain, contiguous to Lake George, contain 5 to 20 percent organic carbon; organic mud covers about three-quarters of its bottom.

Many values of organic carbon exceed 10 percent and most sediments contain between 5 and 10 percent organic carbon. These high values indicate that a large part of the clay-size fraction consists of organic matter. To compute organic matter from organic carbon a factor of 1.72 is used, so that in most sediments between 8.6 and 17.2 percent organic matter is present. Examination under the binocular microscope shows that the organic matter in the nearshore sediments consists largely of leaves, needles, tree bark, and spore capsules. In deeper water sediments, however, the fabric of organic matter usually cannot be identified because of advanced decomposition. In the clay-size fraction quartz and clay minerals are the other major constituents, the clay minerals including illite and chlorite with traces of kaolinite. In the cores studied the same clay-mineral suite occurs unchanged

throughout the cores. The clay is derived from the local metamorphic and igneous bedrock and the glacial sediments.

In the sand the light minerals are quartz and feldspars (plagioclase > orthoclase), some microcline, muscovite, and biotite. The heavy mineral fraction is dominated by garnet; less abundant heavy minerals include hornblende, sillimanite, epidote, hypersthene, augite, staurolite, kyanite, zoisite, zircon, tourmaline, rutile, titanite, and iron-rich biotite.

Except at the water-sediment interface all sediment color is black. There the color is either black or brown; the brown color of fine-grained sediment passing downward into black. Black color at the interface dominates near the east shore in the south basin, especially near the bays, whereas brown color is present near the west shore.

The sediments in the Narrows and contiguous areas consist of varved clay in which iron-manganese nodules occur (Schoettle and Friedman, 1973).

SEASONAL VARIATION OF MONTHLY PRECIPITATION TOGETHER WITH MAXIMUM AND MINIMUM CONDITIONS ON DRAINAGE BASIN

Some of these data are seen in Tables 6a and 6b (Colon, 1972).

INFLOW AND OUTFLOW OF WATER

For the period October, 1971 through May, 1972, total water input to the lake was 94.6 in., losses were 86.5 in. and a storage of

Table 6a. AVERAGE MONTHLY PRECIPITATION FOR THE SOUTH BASIN (STATION 1), LAKE GEORGE, N.Y.+

Precipitation (Inches)

Month	1969	1970	1971
January	0.083 (0.820)	0.021* (0.210)	0.052* (0.480)
February	0.041* (0.360)	0.082 (0.830)	0.158** (1.170)
March	0.050 (0.870)	0.078 (0.650)	0.127 (1.260)
April	0.136 (1.490)	0.058 (1.090)	0.087 (1.200)
May	0.137 (1.020)	0.074 (0.950)	0.070 (0.620)
June	0.104 (1.060)	0.065 (0.810)	0.053 (0.940)
July	0.112 (0.920)	0.095 (0.800)	-1.0
August	0.073 (0.380)	0.067 (0.930)	-1.0
September	0.052 (0.600)	0.138** (1.130)	-1.0
October	0.042 (0.490)	0.092 (0.800)	-1.0
November	0.175** (1.070)	0.106 (0.940)	-1.0
December	0.081 (0.890)	0.115 (0.840)	-1.0

+ The maximum precipitation value (inches) for each month is seen in parenthesis. Missing data are shown as -1.0. Annual minimum and maximum precipitation values are designated by an asterisk (*) and double asterisk (**) respectively.

Table 6b. AVERAGE MONTHLY PRECIPITATION FOR THE NORTH BASIN (STATION 6), LAKE GEORGE, N.Y.+

Precipitation (Inches)

Month	1969	1970	1971
January	-1.0	0.013* (0.120)	0.050* (0.500)
February	-1.0	0.089 (0.930)	0.161** (1.180)
March	-1.0	0.070 (0.600)	0.098 (0.710)
April	-1.0	0.117 (1.770)	0.055 (0.710)
May	-1.0	0.089 (1.090)	0.065 (0.560)
June	-1.0	0.069 (0.680)	-1.0
July	-1.0	0.089 (1.090)	-1.0
August	-1.0	0.074 (1.240)	-1.0
September	-1.0	0.128** (0.980)	-1.0
October	0.030* (0.400)	0.085 (0.650)	-1.0
November	0.145 (0.360)	0.039 (0.270)	-1.0
December	0.155** (0.860)	0.076 (0.710)	-1.0

+ The maximum precipitation value (inches) for each month is seen in parenthesis. Missing data are shown as -1.0. Annual minimum and maximum precipitation values are designated by an asterisk (*) and double asterisk (**) respectively.

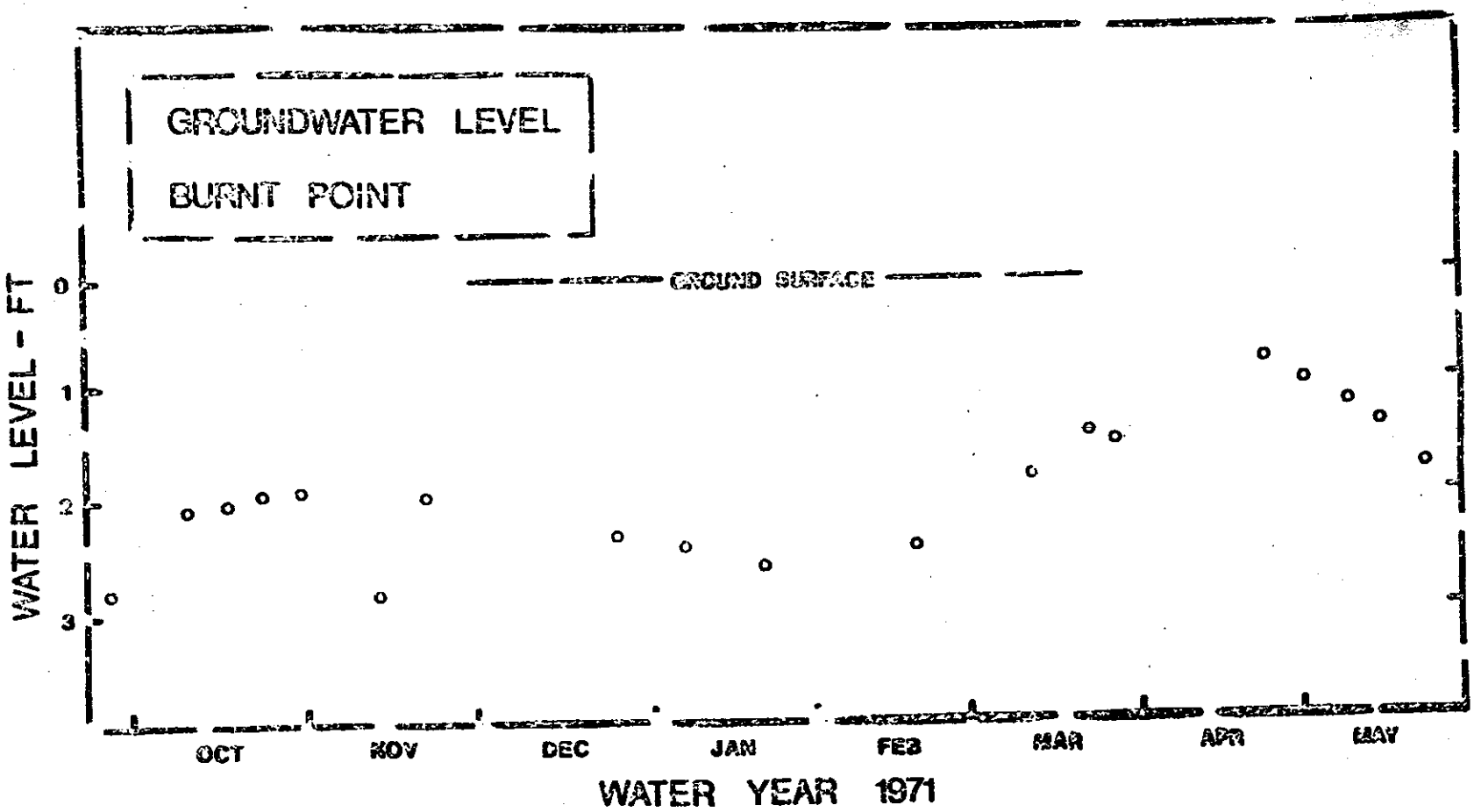
8.1 in. Groundwater for the 1971 water year is seen in Figure 1 (Colon, 1972). Average outflow from the lake at the north (Ticonderoga) is 8.34 m^3/sec., based on 22 years of record.

WATER CURRENTS

These data have not yet been determined.

WATER RENEWAL TIME

Based on the volume and average outflow from the lake, the water retention time in Lake George, N.Y. is 8.0 years.


GROUNDWATER LEVEL
BURNT POINT
GROUND SURFACE
WATER LEVEL - FT
0
1
2
3
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
WATER YEAR 1971

SECTION VI

LIMNOLOGICAL CHARACTERIZATION (PRELIMINARY)

PHYSICAL

Temperature

These data are seen in Figures 2, 3, and 4 (Colon, 1972; Stewart, 1971, 1972).

Conductivity

These data available at this time are from April through September, 1971 and ranged from 85-95 u mohs/cm.

Light Transmittance

Light intensity at the surface was 2,400 ft. candles during March, 1971 and 1972. During August, 1971 and 1972 the surface light intensity approached 6,000 ft. candles. Other data are shown in Tables 7 and 8 (Williams and Clesceri, 1972).

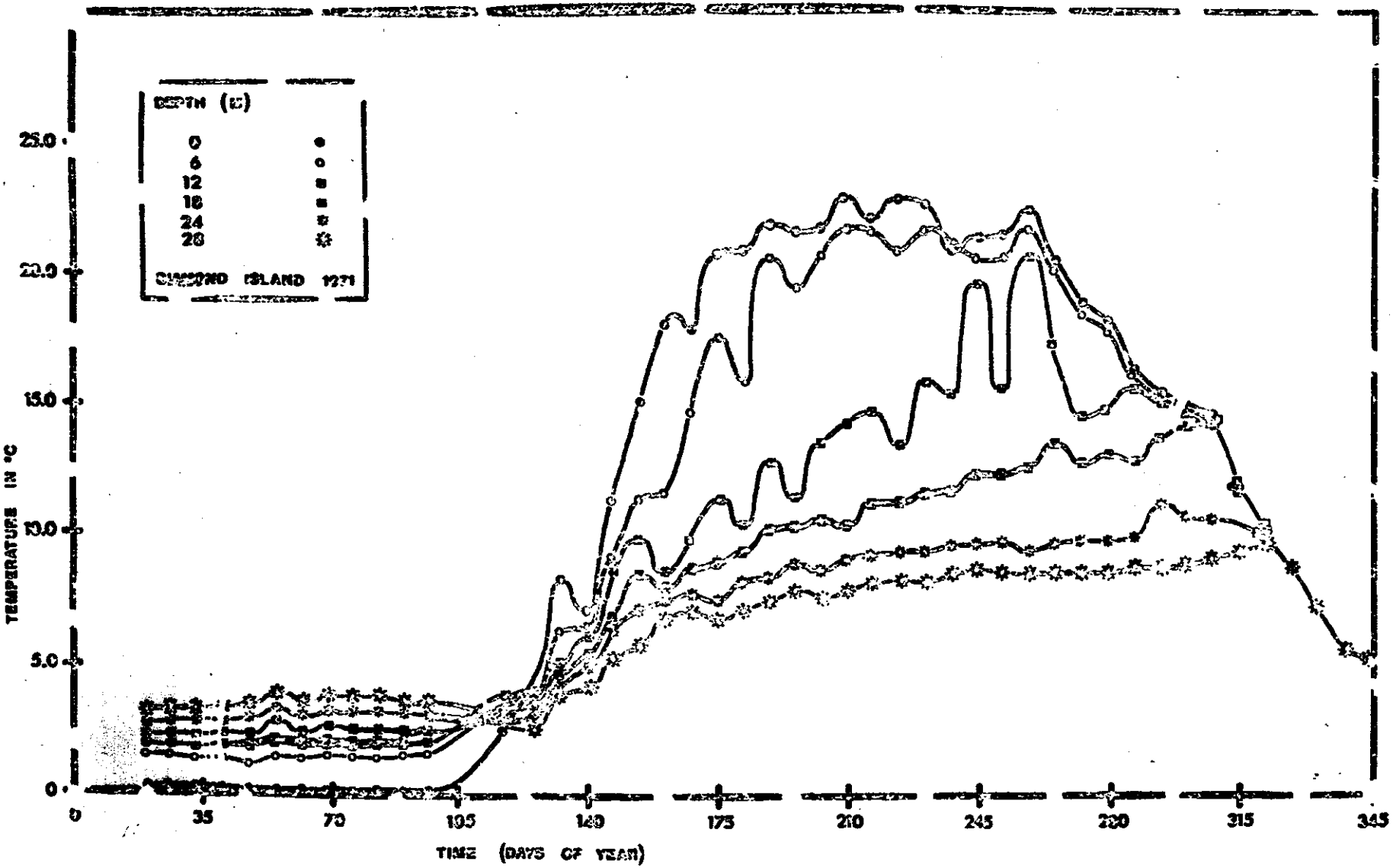
Table 7. SECCHI DISC MEASUREMENTS (METERS)

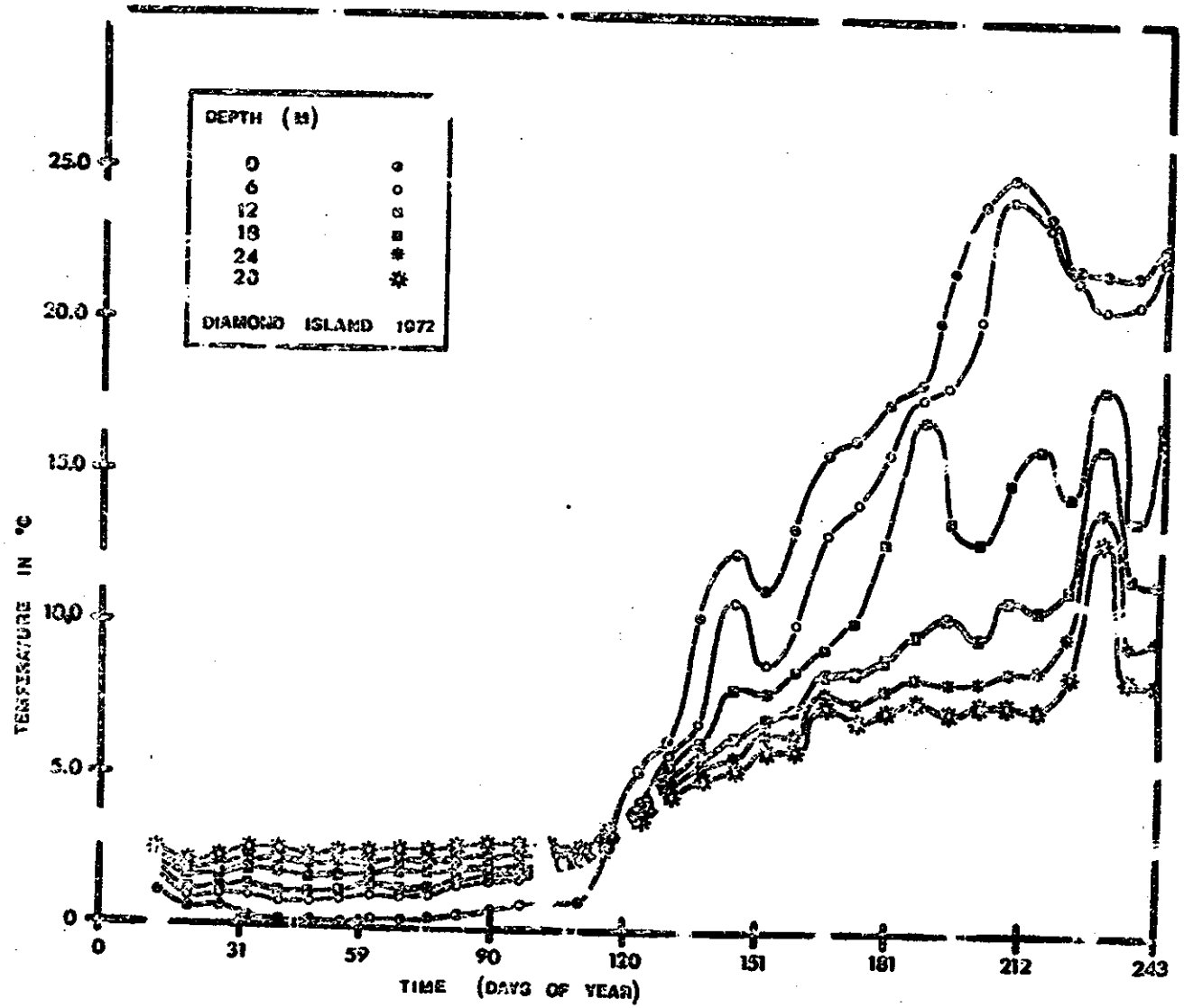
Date	Station 1	Station 6
3/26/70	7.0	8.5
6/26/70	8.5	10.0
7/17/70	7.0	13.5
8/16/70	7.0	9.0
9/28/70	7.0	9.5
10/05/70	7.0	10.0
10/11/70	6.0	9.0
11.08/70	6.5	10.0

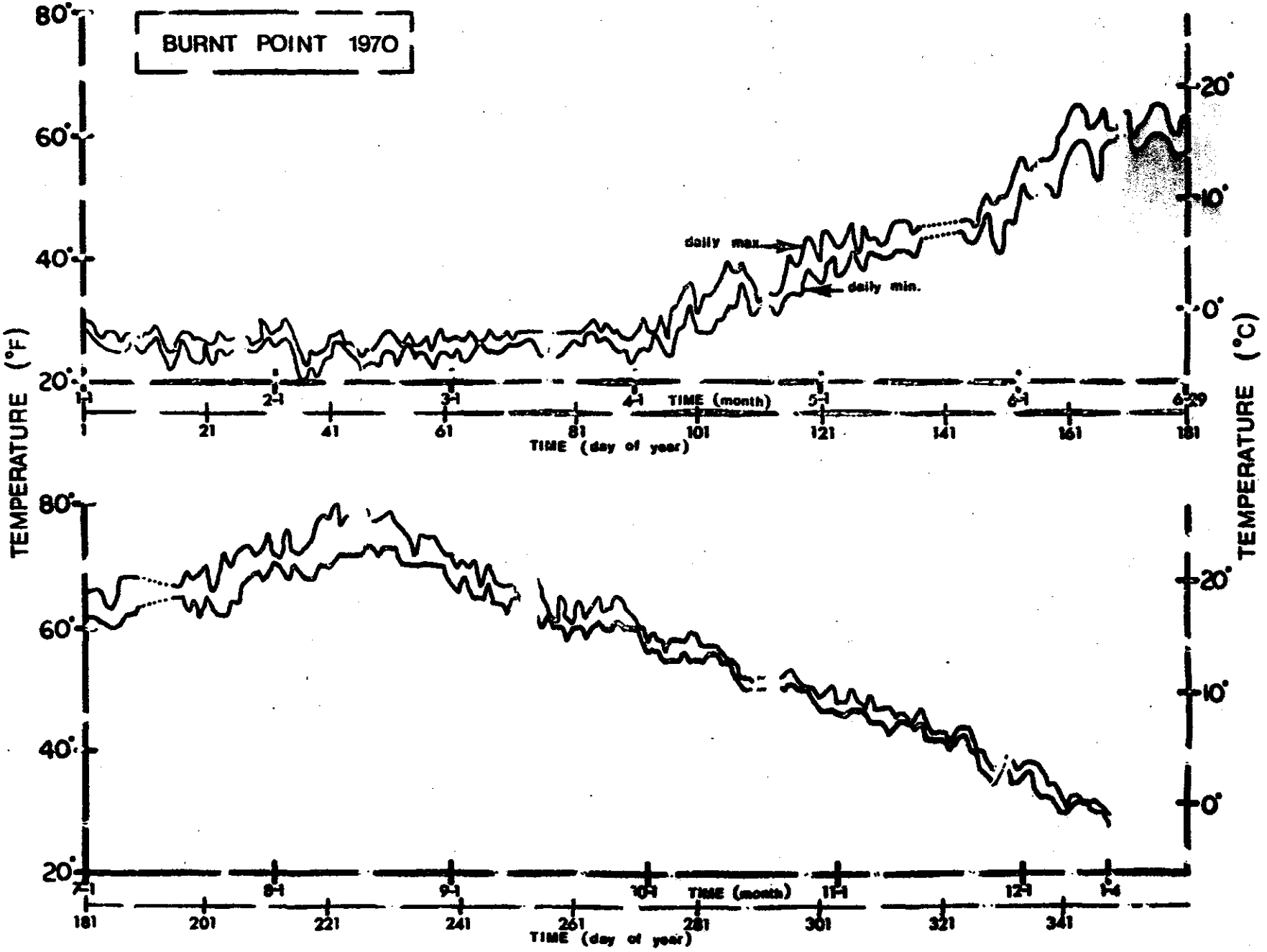
Table 8. RELATIVE UNDERWATER LIGHT INTENSITY WITH DEPTH

(percent)

Depth	9/09/69		8/17/70		9/13/70		3/06/71	
(meters)	Station 1	Station 6	Station 1	Station 6	Station 1	Station 6	Station 1	Station 6
1	85	87	54	75.7	75.7	85.8	28.8	16.7
3	60	60	33.7	50.0	46.0	65.5	7.8	3.1
6	32	32	20.2	27.5	26.3	36.3	2.0	1.3
9	18	19	10.2	18.0	13.8	21.6	0.62	0.67
12	9.2	13	4.0	12.0	7.5	15.4	0.28	0.36
15	4.0	6.6	1.5	4.8	2.8	8.6	0.12	0.18
18	1.8	3.0	0.42	2.4	1.2	5.4		
21	0.82	1.8	0.22	1.0	0.53	2.2		
24	0.42	0.85	0.10		0.27	1.0		


DEPTH (m)
0
6
12
18
24
28
DIAMOND ISLAND 1971
25.0
20.0
15.0
10.0
5.0
0
TEMPERATURE IN °C
0
35
70
105
140
175
210
245
280
315
345
TIME (DAYS OF YEAR)


DEPTH (m)
0
6
12
18
24
30
DIAMOND ISLAND 1972
25.0
20.0
15.0
10.0
5.0
0
TEMPERATURE IN °C
0
31
59
90
120
151
181
212
243
TIME (DAYS OF YEAR)


BURNT POINT 1970
80°
60°
40°
20°
TEMPERATURE (°F)
20°
10°
0°
TEMPERATURE (°C)
daily max.
daily min.
1-1
2-1
3-1
4-1
5-1
6-1
6-29
TIME (month)
1
21
41
61
81
101
121
141
161
181
TIME (day of year)
7-1
8-1
9-1
10-1
11-1
12-1
1-4
181
201
221
241
261
281
301
321
341
TIME (day of year)

Color

Measurements of color of lake water have not yet been determined for Lake George, N.Y. Color units of humic acid alcohol extract are given in Table 9 (Kobayashi, 1973).

Solar Radiation

These data are seen in Figure 5 (Colon, 1972).

CHEMICAL

pH

These data are seen in Tables 10 and 12 (Aulenbach and Clesceri, 1971, 1972, 1973).

Dissolved Oxygen

These data are seen in Table 11 (Aulenbach and Clesceri, 1971, 1972, 1973).

Total Phosphorus Including (Fraction) Forms

These data are seen in Tables 10 and 12 (Aulenbach and Clesceri, 1971, 1972, 1973).

Total Nitrogen Including (Fraction) Forms

These data are not available at this time.

Alkalinity

These data are shown in Table 13.

Ca, Mg, Na, K, SO_4, Cl, Fe

The data that are available at this time are seen in Table 14 (Williams and Clesceri, 1972).

Trace Metals

These data are seen in Table 15 (Williams, et al., 1974).

Table 9. COLOR UNITS OF HUMIC ACID ALCOHOL EXTRACT FOR LAKE GEORGE, N.Y. (Kobayashi, 1973)

Depth (meters)	Station 1 (South Basin)							Station 6 (North Basin)			
	March	April	May	June	July	August		June	July	August	
0.5	42.9			53.8	52.3	49.4	79.2	45.8		40.0	52.3
5.0	42.9	56.0		56.0	57.4	49.4	57.4	46.5	46.5	46.5	71.2
10.0	49.4	52.3		50.9	51.6	58.9	93.1	54.5		48.7	70.8
15.0	40.7	58.9		58.2	64.7	58.9	106	48.7		55.2	118
20.0	34.2	100.0		60.3	61.1	61.1	82.1	55.2		50.2	-
23.0		64.0		54.5		-	119			-	-
25.0						61.1	-	42.2		25.2	-

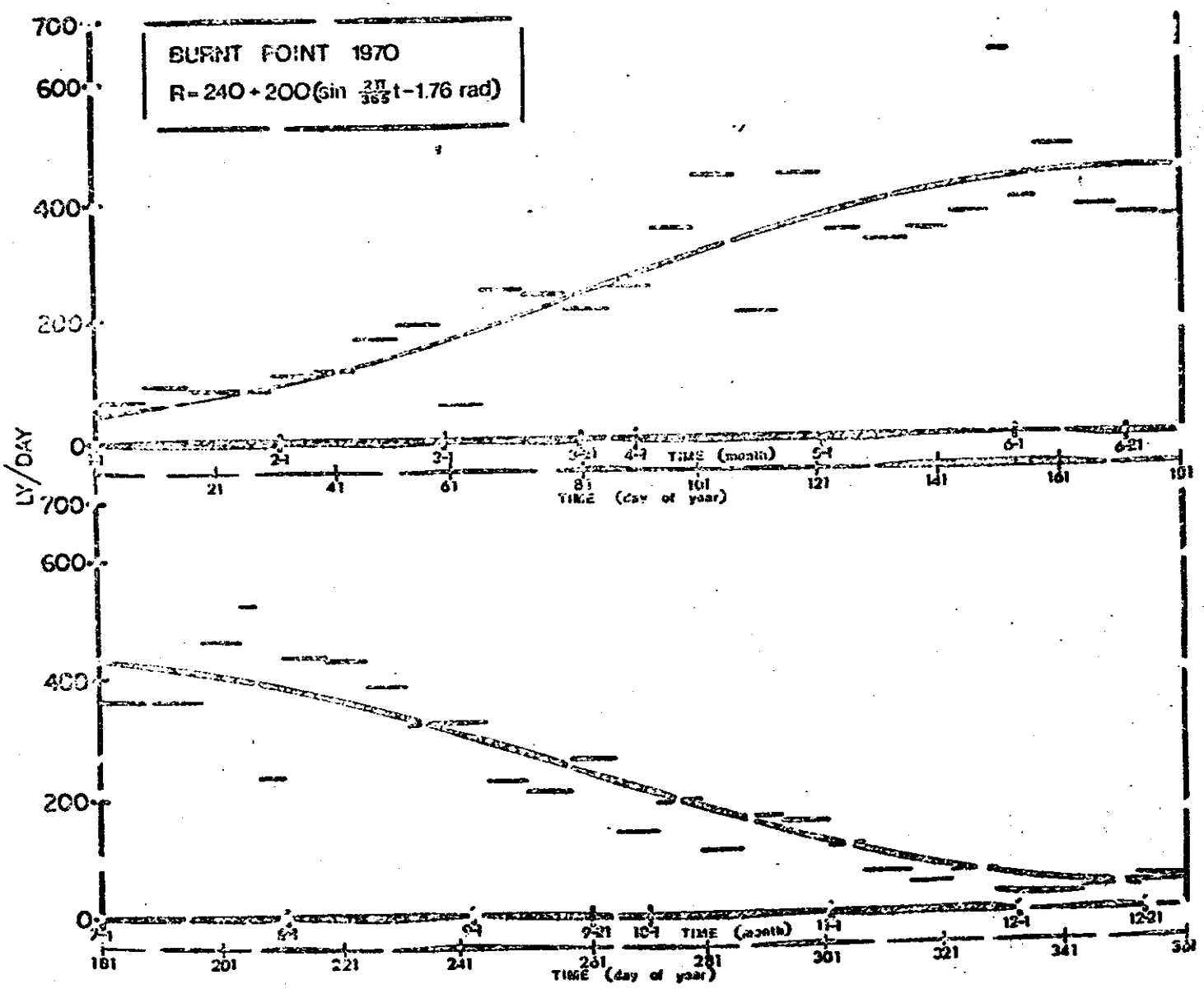

BURNT POINT 1970
R = 240 + 200(sin $\frac{2\pi}{365}$t − 1.76 rad)
700
600
400
200
0
LY/DAY
TIME (month)
TIME (day of year)
1-1
2-1
3-1
4-1
5-1
6-1
6-21
1
21
41
61
81
101
121
141
161
181
TIME (month)
TIME (day of year)
7-1
8-1
9-1
9-21
10-1
11-1
12-1
12-21
201
221
241
261
281
301
321
341

Table 10. pH, CRTHO AND TOTAL PHOSPHATE AT VARIOUS DEPTHS DURING 1972 FOR LAKE GEORGE, N.Y. (Aulenbach and Clesceri, 1972)

PH AND PHOSPHATES(1972-48 HOUR CRUISE) INVESTIGATOR:AULENBACH 00008100
UNITS:ALL PHOSPHATES IN MICROGRAMS PER LITER ;NULL DATA IS CODED AS 0.0 00008200
PHOSPHATES 00008300

DATE JULIAN	TIME (24HR)	DEPTH (M)	PH	ORTHO	00008400 00008500
STATION NO: 5.1					
72.200	20.30	0.5	7.70	1.2	
72.200	20.30	5.0	7.65	0.9	
72.200	20.30	10.0	8.00	1.4	
72.200	20.30	15.0	7.75	2.0	
72.201	0.0	0.5	7.65	1.0	
72.201	0.0	5.0	7.79	1.1	
72.201	0.0	10.0	8.15	1.3	
72.201	0.0	14.0	0.0	1.3	
72.201	0.0	15.0	7.64	0.0	
72.201	4.30	0.5	7.50	0.7	
72.201	4.30	5.0	7.86	0.5	
72.201	4.30	10.0	7.82	0.3	
72.201	4.30	15.0	7.57	0.4	
72.201	8.30	0.5	7.75	0.8	
72.201	8.30	5.0	7.80	0.6	
72.201	8.30	10.0	8.00	0.6	
72.201	8.30	15.0	7.70	0.2	
72.201	11.50	0.5	7.69	0.1	
72.201	11.50	5.0	7.72	0.1	
72.201	11.50	10.0	7.82	0.1	
72.201	11.50	14.0	7.70	0.3	
72.201	16.30	0.5	7.68	0.1	
72.201	16.30	5.0	7.80	0.1	
72.201	16.30	10.0	7.96	0.2	
72.201	16.30	15.0	7.69	0.3	
72.201	20.50	0.5	7.58	0.3	
72.201	20.50	5.0	7.70	0.3	
72.201	20.50	10.0	7.60	0.6	
72.201	20.50	15.0	7.58	0.6	
72.201	20.50	18.0	7.40	0.3	
72.202	0.15	0.5	7.52	1.0	
72.202	0.15	5.0	7.71	1.0	
72.202	0.15	10.0	7.75	0.6	
72.202	0.15	15.0	7.22	1.2	
72.202	8.20	0.5	7.50	1.7	
72.202	8.20	5.0	7.62	1.3	
72.202	8.20	10.0	7.74	1.6	
72.202	8.20	14.0	7.67	1.1	
72.202	11.55	0.5	7.56	1.4	
72.202	11.55	5.0	7.68	1.3	
72.202	11.55	10.0	7.70	1.7	
72.202	11.55	15.0	7.42	1.6	
72.202	15.45	0.5	7.81	1.5	
72.202	15.45	5.0	8.04	1.8	
72.202	15.45	10.0	7.92	2.0	
72.202	15.45	15.0	7.51	1.7	

PH AND PHOSPHATES(1972-48 HOUR CRUISE) INVESTIGATOR:AULENBACH 00008100
UNITS:ALL PHOSPHATES IN MICROGRAMS PER LITER ;NULL DATA IS CODED AS 0.0 00008200

DATE JULIAN	TIME (24HR)	DEPTH (M)	PH	PHOSPHATES ORTHO	
					00008300
					00008400
					00008500
STATION NO: 6.0					
72.200	21.50	0.5	7.75	1.3	
72.200	21.50	5.0	7.88	1.4	
72.200	21.50	10.0	7.62	1.2	
72.200	21.50	15.0	7.71	1.6	
72.200	21.50	20.0	7.64	1.7	
72.200	21.50	24.0	7.45	1.6	
72.201	2.15	0.5	7.54	0.7	
72.201	2.15	5.0	7.71	0.6	
72.201	2.15	10.0	7.89	0.6	
72.201	2.15	15.0	7.70	0.7	
72.201	2.15	20.0	7.64	1.3	
72.201	5.55	0.5	7.72	0.3	
72.201	5.55	5.0	7.89	0.1	
72.201	5.55	10.0	7.96	1.0	
72.201	5.55	15.0	7.72	1.0	
72.201	5.55	18.0	7.57	0.2	
72.201	9.15	0.5	7.61	0.3	
72.201	9.15	5.0	7.82	0.2	
72.201	9.15	10.0	8.05	0.3	
72.201	9.15	15.0	7.89	0.6	
72.201	9.15	17.0	7.72	0.4	
72.201	12.40	0.5	7.60	0.6	
72.201	12.40	5.0	7.76	0.5	
72.201	12.40	10.0	7.87	0.9	
72.201	17.25	0.5	7.55	0.1	
72.201	17.25	5.0	7.70	0.1	
72.201	17.25	10.0	7.66	0.1	
72.201	17.25	15.0	7.58	0.1	
72.201	17.25	20.0	7.58	1.0	
72.201	22.00	0.5	7.70	0.2	
72.201	22.00	5.0	7.80	0.6	
72.201	22.00	10.0	7.83	0.3	
72.201	22.00	15.0	7.52	0.6	
72.202	1.45	0.5	7.62	1.0	
72.202	1.45	5.0	7.60	1.2	
72.202	1.45	10.0	7.82	0.9	
72.202	1.45	15.0	7.50	3.2	
72.202	1.45	20.0	7.42	0.9	
72.202	4.35	0.5	7.60	0.9	
72.202	4.35	5.0	7.68	0.8	
72.202	4.35	10.0	7.88	1.0	
72.202	4.35	15.0	7.69	0.7	
72.202	4.35	20.0	7.50	1.1	
72.202	8.50	0.5	7.60	0.8	
72.202	8.50	5.0	7.68	0.7	
72.202	8.50	10.0	7.63	1.6	
72.202	8.50	15.0	7.63	1.7	
72.202	8.50	20.0	7.47	2.0	
72.202	12.55	0.5	7.62	1.5	

PH AND PHOSPHATES(1972-48 HOUR CRUISE) INVESTIGATOR:AULENBACH 00008100
UNITS:ALL PHOSPHATES IN MICROGRAMS PER LITER ;NULL DATA IS CODED AS 0.0 00008200

DATE JULIAN	TIME (24HR)	DEPTH (M)	PH	PHOSPHATES ORTHO	00008300 00008400 00008500
STATION NO: 6.0					
72.202	12.55	15.0	7.72	1.7	
72.202	12.55	20.0	7.60	1.5	
72.202	12.55	25.0	7.55	1.3	
72.202	16.45	0.5	7.74	1.6	
72.202	16.45	5.0	7.83	2.0	
72.202	16.45	10.0	7.79	1.9	
72.202	16.45	15.0	7.73	1.5	
72.202	16.45	20.0	7.80	1.1	
72.202	16.45	25.0	7.71	1.5	

PH AND PHOSPHATES(1972-72 HOUR CRUISE) INVESTIGATOR:AULENBACH 00008100
UNITS:ALL PHOSPHATES IN MICROGRAMS PER LITER ;NULL DATA IS CODED AS 0.0 00008200

DATE JULIAN	TIME (24HR)	DEPTH (M)	PH 00008300	PHOSPHATES ORTHO 00008400	00008500
STATION NO: 10.0					
72.235	23.55	5.0	8.10	1.2	
72.236	2.30	5.0	7.60	0.4	
72.236	8.10	0.5	7.82	0.0	
72.236	8.10	5.0	7.92	0.8	
72.236	8.10	10.0	7.55	0.0	
72.236	8.10	15.0	7.45	0.0	
72.236	16.30	5.0	7.95	0.5	
72.236	22.20	5.0	7.70	0.4	
72.237	1.50	5.0	7.85	0.2	
72.237	8.20	5.0	8.18	0.1	
72.237	14.10	5.0	8.23	0.1	
72.237	21.50	5.0	7.72	1.7	
72.238	2.10	5.0	7.80	0.2	
72.238	8.05	5.0	8.11	1.3	
72.238	14.00	5.0	8.45	1.0	

PH AND PHOSPHATES(1972-72 HOUR CRUISE) INVESTIGATOR:AULENBACH 00008100
UNITS:ALL PHOSPHATES IN MICROGRAMS PER LITER ;NULL DATA IS CODED AS 0.0 00008200
00008300
00008400
00008500

DATE JULIAN	TIME (24HR)	DEPTH (M)	PH	PHOSPHATES ORTHO
STATION NO: 60.0				
72.235	9.25	0.5	8.00	0.0
72.235	9.25	5.0	8.10	0.0
72.235	9.25	10.0	8.00	0.0
72.235	9.25	15.0	7.68	0.0
72.235	9.25	20.0	7.40	0.0
72.235	9.25	25.0	7.92	0.0
72.235	9.25	30.0	7.85	0.0
72.235	23.55	5.0	7.92	0.3
72.236	2.45	5.0	7.57	0.6
72.236	10.40	0.5	7.91	0.0
72.236	10.40	5.0	7.18	1.1
72.236	10.40	10.0	7.68	0.0
72.236	10.40	15.0	7.26	0.0
72.236	10.40	20.0	7.22	0.0
72.236	10.40	25.0	7.06	0.0
72.236	17.50	5.0	7.70	0.5
72.237	1.40	5.0	7.65	0.1
72.237	2.45	5.0	0.0	0.3
72.237	10.15	5.0	8.00	0.1
72.237	15.45	5.0	8.14	0.2
72.238	0.40	5.0	7.56	0.9
72.238	3.15	5.0	0.0	0.1
72.238	9.45	5.0	8.00	0.1
72.238	16.00	5.0	8.20	1.3

Table 11. DISSOLVED OXYGEN FOR LAKE GEORGE, N.Y.

(Aulenbach and Clesceri, 1972)

'DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:D.D. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 10.0			
72.235	23.55	1.0	9.3
72.235	23.55	2.0	9.2
72.235	23.55	3.0	9.4
72.235	23.55	4.0	9.6
72.235	23.55	5.0	9.4
72.235	23.55	6.0	9.3
72.235	23.55	7.0	9.3
72.235	23.55	8.0	9.4
72.235	23.55	9.0	9.5
72.235	23.55	10.0	9.4
72.235	23.55	11.0	8.8
72.235	23.55	12.0	8.2
72.235	23.55	13.0	8.2
72.235	23.55	14.0	8.0
72.235	23.55	15.0	7.9
72.235	24.55	16.0	7.9
72.236	2.30	0.5	9.5
72.236	2.30	1.0	9.4
72.236	2.30	2.0	9.4
72.236	2.30	3.0	9.6
72.236	2.30	4.0	9.6
72.236	2.30	5.0	9.5
72.236	2.30	6.0	9.4
72.236	2.30	7.0	9.3
72.236	2.30	8.0	9.3
72.236	2.30	9.0	9.2
72.236	2.30	10.0	9.2
72.236	2.30	11.0	8.8
72.236	2.30	12.0	8.8
72.236	2.30	13.0	8.2
72.236	2.30	14.0	8.0
72.236	2.30	15.0	8.0
72.236	2.30	16.0	8.0
72.236	2.30	17.0	8.0
72.236	2.30	18.0	8.0
72.236	2.30	19.0	8.0
72.236	2.30	20.0	8.0
72.236	2.30	21.0	7.9
72.236	2.30	22.0	7.6
72.236	3.00	23.0	7.6
72.236	8.10	0.5	9.7
72.236	8.10	1.0	9.7
72.236	8.10	2.0	9.7
72.236	8.10	3.0	9.7
72.236	8.10	4.0	9.7
72.236	8.10	5.0	9.8
72.236	8.10	6.0	9.8
72.236	8.10	7.0	10.0
72.236	8.10	8.0	9.5

DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:D.O. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 10.0			
72.236	8.10	10.0	9.7
72.236	8.10	11.0	9.6
72.236	8.10	12.0	9.4
72.236	8.10	13.0	9.1
72.236	8.10	14.0	9.0
72.236	8.10	15.0	8.5
72.236	8.10	16.0	8.8
72.236	8.10	17.0	8.8
72.236	8.10	18.0	8.8
72.236	8.10	19.0	8.8
72.236	8.10	20.0	8.4
72.236	8.10	21.0	8.4
72.236	8.10	22.0	8.3
72.236	8.10	23.0	8.5
72.236	8.10	24.0	8.8
72.236	9.20	25.0	8.9
72.236	16.30	0.5	9.9
72.236	16.30	1.0	9.4
72.236	16.30	2.0	9.2
72.236	16.30	3.0	9.2
72.236	16.30	4.0	9.2
72.236	16.30	5.0	9.2
72.236	16.30	6.0	9.2
72.236	16.30	7.0	9.2
72.236	16.30	8.0	9.3
72.236	16.30	9.0	9.0
72.236	16.30	10.0	8.6
72.236	16.30	11.0	8.2
72.236	16.30	12.0	7.8
72.236	16.30	13.0	7.7
72.236	16.30	14.0	7.4
72.236	16.30	15.0	7.4
72.236	16.30	16.0	7.3
72.236	16.30	17.0	7.5
72.236	16.30	18.0	7.0
72.236	16.30	19.0	7.0
72.236	16.30	20.0	7.0
72.236	16.30	21.0	7.2
72.236	16.30	22.0	7.4
72.236	16.55	23.0	7.6
72.236	22.20	0.5	9.8
72.236	22.20	1.0	9.7
72.236	22.20	2.0	9.8
72.236	22.20	3.0	9.6
72.236	22.20	4.0	9.7
72.236	22.20	5.0	9.7
72.236	22.20	6.0	9.7
72.236	22.20	7.0	9.6
72.236	22.20	8.0	9.7

DISSOLVED OXYGEN(1972—72HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:0.0 IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 10.0			
72.236	22.20	10.0	9.3
72.236	22.20	11.0	9.3
72.236	22.20	12.0	8.9
72.236	22.20	13.0	8.6
72.236	22.20	14.0	8.6
72.236	22.20	15.0	8.6
72.236	22.20	16.0	8.5
72.236	22.20	17.0	8.5
72.236	22.20	18.0	8.5
72.236	22.20	19.0	8.4
72.236	22.20	20.0	8.2
72.236	22.20	21.0	8.3
72.236	22.20	22.0	8.1
72.236	22.20	23.0	8.1
72.236	22.20	24.0	8.2
72.236	23.00	25.0	8.3
72.236	23.00	26.0	8.2
72.236	23.00	27.0	7.3
72.237	1.50	0.5	9.0
72.237	1.50	1.0	9.4
72.237	1.50	2.0	9.1
72.237	1.50	3.0	9.5
72.237	1.50	4.0	9.7
72.237	1.50	5.0	9.6
72.237	1.50	6.0	9.4
72.237	1.50	7.0	9.6
72.237	1.50	8.0	9.5
72.237	1.50	9.0	9.3
72.237	1.50	10.0	9.2
72.237	1.50	11.0	9.2
72.237	1.50	12.0	8.8
72.237	1.50	13.0	8.8
72.237	1.50	14.0	8.7
72.237	1.50	15.0	8.5
72.237	1.50	16.0	8.6
72.237	1.50	17.0	8.6
72.237	1.50	18.0	8.5
72.237	1.50	19.0	8.5
72.237	1.50	20.0	8.5
72.237	1.50	21.0	8.3
72.237	1.50	22.0	8.4
72.237	1.50	23.0	8.5
72.237	1.50	24.0	8.5
72.237	8.20	0.5	10.0
72.237	8.20	1.0	9.7
72.237	8.20	2.0	9.7
72.237	8.20	3.0	9.7
72.237	8.20	4.0	9.7
72.237	8.20	5.0	9.7
72.237	8.20	6.0	9.7

DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:C.C. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 10.0			
72.237	8.20	7.0	9.8
72.237	8.20	8.0	9.8
72.237	8.20	9.0	9.7
72.237	8.20	10.0	9.6
72.237	8.20	11.0	9.7
72.237	8.20	12.0	9.4
72.237	8.20	13.0	9.0
72.237	8.20	14.0	8.8
72.237	8.20	15.0	8.8
72.237	8.20	16.0	8.7
72.237	8.20	17.0	8.6
72.237	8.20	18.0	8.7
72.237	8.20	19.0	8.7
72.237	8.20	20.0	8.7
72.237	8.20	21.0	8.6
72.237	14.10	0.5	9.4
72.237	14.10	1.0	9.4
72.237	14.10	2.0	9.1
72.237	14.10	3.0	9.2
72.237	14.10	4.0	9.2
72.237	14.10	5.0	9.2
72.237	14.10	6.0	9.3
72.237	14.10	7.0	9.2
72.237	14.10	8.0	9.0
72.237	14.10	9.0	8.9
72.237	14.10	10.0	8.9
72.237	14.10	11.0	8.6
72.237	14.10	12.0	8.3
72.237	14.10	13.0	8.1
72.237	14.10	14.0	7.5
72.237	14.10	15.0	7.6
72.237	14.10	16.0	7.3
72.237	14.10	17.0	7.6
72.237	14.10	18.0	7.4
72.237	14.10	19.0	7.4
72.237	14.10	20.0	7.1
72.237	14.10	21.0	7.1
72.237	14.10	22.0	7.0
72.237	14.10	23.0	7.4
72.237	14.10	24.0	7.2
72.237	14.10	25.0	7.0
72.237	14.35	26.3	7.1
72.237	21.50	0.5	9.2
72.237	21.50	1.0	9.3
72.237	21.50	2.0	9.3
72.237	21.50	3.0	9.4
72.237	21.50	4.0	9.4
72.237	21.50	5.0	9.3
72.237	21.50	6.0	9.3
72.237	21.50	7.0	9.2

DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:D.O. IS IN MILLIGRAMS PER LITER;0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

STATION NO: 10.0	DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
	72.237	21.50	8.0	9.5
	72.237	21.50	9.2	9.4
	72.237	21.50	10.0	9.2
	72.237	21.50	11.0	9.2
	72.237	21.50	12.0	9.0
	72.237	21.50	13.0	9.0
	72.237	21.50	14.0	8.6
	72.237	21.50	15.0	8.4
	72.237	21.50	16.0	8.4
	72.237	21.50	17.0	8.3
	72.237	21.50	18.0	7.9
	72.237	21.50	19.0	8.1
	72.237	21.50	20.0	7.8
	72.237	21.50	21.0	8.0
	72.237	21.50	22.0	8.0
	72.237	21.50	23.0	8.3
	72.237	21.50	24.0	8.0
	72.237	21.50	25.0	7.8
	72.237	21.50	26.0	7.7
	72.237	22.50	27.0	7.5
	72.238	2.10	0.5	9.1
	72.238	2.10	1.0	9.2
	72.238	2.10	2.0	9.2
	72.238	2.10	3.0	9.2
	72.238	2.10	4.0	9.2
	72.238	2.10	5.0	9.2
	72.238	2.10	6.0	9.1
	72.238	2.10	7.0	9.2
	72.238	2.10	8.0	9.2
	72.238	2.10	9.0	9.0
	72.238	2.10	10.0	8.9
	72.238	2.10	11.0	8.5
	72.238	2.10	12.0	8.2
	72.238	2.10	13.0	8.0
	72.238	2.10	14.0	8.1
	72.238	2.10	15.0	7.9
	72.238	2.10	16.0	7.8
	72.238	2.10	17.0	7.7
	72.238	2.10	18.0	7.7
	72.238	2.10	19.0	7.5
	72.238	2.10	20.0	7.5
	72.238	2.10	21.0	7.5
	72.238	2.10	22.0	7.2
	72.238	2.10	23.0	7.6
	72.238	3.00	24.0	4.0
	72.238	8.05	0.5	9.0
	72.238	8.05	1.0	9.2
	72.238	8.05	2.0	9.1
	72.238	8.05	3.0	8.9

DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:C.O. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 10.0			
72.238	8.05	5.0	9.0
72.238	8.05	6.0	8.9
72.238	8.05	7.0	9.0
72.238	8.05	8.0	9.2
72.238	8.05	9.0	8.8
72.238	8.05	10.0	8.8
72.238	8.05	11.0	8.5
72.238	8.05	12.0	8.8
72.238	8.05	13.0	8.7
72.238	8.05	14.0	8.5
72.238	8.05	15.0	8.3
72.238	8.05	16.0	8.2
72.238	8.05	17.0	8.1
72.238	8.05	18.0	8.2
72.238	8.05	19.0	8.1
72.238	8.05	20.0	7.8
72.238	8.05	21.0	7.8
72.238	8.05	22.0	7.6
72.238	8.05	23.0	7.7
72.238	14.00	0.5	9.2
72.238	14.00	1.0	9.0
72.238	14.00	2.0	8.8
72.238	14.00	3.0	9.1
72.238	14.00	4.0	9.2
72.238	14.00	5.0	9.2
72.238	14.00	6.0	9.3
72.238	14.00	7.0	8.9
72.238	14.00	8.0	9.3
72.238	14.00	9.0	9.2
72.238	14.00	10.0	9.2
72.238	14.00	11.0	9.3
72.238	14.00	12.0	9.4
72.238	14.00	13.0	8.0
72.238	14.00	14.0	8.0
72.238	14.00	15.0	8.0
72.238	14.00	16.0	8.2
72.238	14.00	17.0	7.8
72.238	14.00	18.0	7.5
72.238	14.00	19.0	7.2
72.238	14.00	20.0	7.2
72.238	14.00	21.0	7.2
72.238	14.00	22.0	7.2
72.238	14.00	23.0	7.3
72.238	14.00	24.0	7.4
72.238	14.00	25.0	8.0
72.238	14.00	26.0	8.2
72.238	14.34	27.0	7.4

DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH 00003000
UNITS:0.0. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	0.0.
STATION NO: 00.0			
72.235	9.25	0.5	9.2
72.235	9.25	1.0	8.9
72.235	9.25	2.0	9.1
72.235	9.25	3.0	9.1
72.235	9.25	4.0	9.1
72.235	9.25	5.0	9.1
72.235	9.25	6.0	9.0
72.235	9.25	7.0	9.0
72.235	9.25	8.0	9.0
72.235	9.25	9.0	9.0
72.235	9.25	10.0	9.0
72.235	9.25	11.0	9.0
72.235	9.25	12.0	9.5
72.235	9.25	13.0	9.8
72.235	9.25	14.0	9.3
72.235	9.25	15.0	9.4
72.235	9.25	16.0	9.5
72.235	9.25	17.0	9.7
72.235	9.25	18.0	9.5
72.235	9.25	19.0	9.7
72.235	9.25	20.0	10.0
72.235	9.25	21.0	10.0
72.235	9.25	22.0	10.0
72.235	9.25	23.0	10.0
72.235	9.25	24.0	10.2
72.235	9.25	25.0	10.2
72.235	9.25	26.0	10.2
72.235	9.25	27.0	10.3
72.235	9.25	28.0	10.3
72.235	9.25	29.0	10.3
72.235	9.25	30.0	10.2
72.235	12.20	31.0	10.2
72.235	23.55	0.5	9.1
72.235	23.55	1.0	9.0
72.235	23.55	2.0	9.1
72.235	23.55	3.0	9.2
72.235	23.55	4.0	9.2
72.235	23.55	5.0	9.2
72.235	23.55	6.0	9.1
72.235	23.55	7.0	9.2
72.235	23.55	8.0	9.1
72.235	23.55	9.0	9.2
72.235	23.55	10.0	9.2
72.235	23.55	11.0	9.3
72.235	23.55	12.0	9.4
72.235	23.55	13.0	10.0
72.235	23.55	14.0	9.9
72.235	23.55	15.0	9.9
72.235	23.55	16.0	9.6
72.235	23.55	17.0	9.9
72.235	23.55	18.0	10.0

DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:0.0 IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 60.0			
72:235	23.55	19.0	10.0
72.235	23.55	20.0	10.3
72.235	23.55	21.0	10.1
72.235	23.55	22.0	10.1
72.235	23.55	23.0	10.4
72.235	23.55	24.0	10.4
72.235	23.55	25.0	9.2
72.235	23.55	26.0	9.1
72.235	23.55	27.0	8.4
72.235	23.55	28.0	8.2
72.235	23.55	29.0	7.7
72.235	23.55	30.0	7.6
72.235	23.55	31.0	7.7
72.235	23.55	32.0	9.5
72.235	24.48	33.0	8.6
72:236	2.45	0.5	9.4
72:236	2.45	1.0	9.4
72.236	2.45	2.0	9.4
72.236	2.45	3.0	9.3
72:236	2.45	4.0	9.2
72.236	2.45	5.0	9.4
72.236	2.45	6.0	9.4
72.236	2.45	7.0	9.4
72.236	2.45	8.0	9.4
72.236	2.45	9.0	9.5
72:236	2.45	10.0	9.5
72.236	2.45	11.0	9.5
72.236	2.45	12.0	9.4
72.236	2.45	13.0	9.5
72.236	2.45	14.0	10.4
72.236	2.45	15.0	10.6
72.236	2.45	16.0	10.7
72.236	2.45	17.0	10.0
72.236	2.45	18.0	10.2
72.236	2.45	19.0	10.2
72.236	2.45	20.0	10.2
72.236	2.45	21.0	10.2
72.236	2.45	22.0	10.6
72.236	2.45	23.0	10.6
72:236	2.45	24.0	10.8
72.236	2.45	25.0	10.8
72.236	2.45	26.0	11.0
72.236	2.45	27.0	11.0
72.236	2.45	28.0	10.8
72:236	3.15	29.0	10.8
72.236	10.48	0.5	9.5
72.236	10.48	1.0	9.5
72.236	10.48	2.0	9.6
72:236	10.48	3.0	9.6
72.236	10.48	4.0	9.6

DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH
UNITS:D.O. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA
NOTE: SEE ALSO THE 48 HOUR CRUISE.

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.	
STATION NO: 60.0				
72.236	10.40	5.0	9.6	00008000
72.236	10.40	6.0	9.6	00008100
72.236	10.40	7.0	9.6	00008200
72.236	10.40	8.0	9.6	00008300
72.236	10.40	9.0	9.6	00008400
72.236	10.40	10.0	9.6	
72.236	10.40	11.0	9.6	
72.236	10.40	12.0	9.6	
72.236	10.40	13.0	10.2	
72.236	10.40	14.0	10.3	
72.236	10.40	15.0	10.3	
72.236	10.40	16.0	10.4	
72.236	10.40	17.0	10.4	
72.236	10.40	18.0	10.4	
72.236	10.40	19.0	10.4	
72.236	10.40	20.0	10.6	
72.236	10.40	21.0	10.6	
72.236	10.40	22.0	10.8	
72.236	10.40	23.0	10.9	
72.236	10.40	24.0	11.1	
72.236	10.40	25.0	11.2	
72.236	10.40	26.0	11.2	
72.236	10.40	27.0	11.2	
72.236	10.40	28.0	11.1	
72.236	11.45	29.0	11.0	
72.236	17.50	0.5	9.3	
72.236	17.50	1.0	9.2	
72.236	17.50	2.0	9.1	
72.236	17.50	3.0	9.0	
72.236	17.50	4.0	9.0	
72.236	17.50	5.0	9.0	
72.236	17.50	6.0	9.1	
72.236	17.50	7.0	9.1	
72.236	17.50	8.0	9.1	
72.236	17.50	9.0	9.1	
72.236	17.50	10.0	9.1	
72.236	17.50	11.0	8.9	
72.236	17.50	12.0	8.9	
72.236	17.50	13.0	9.7	
72.236	17.50	14.0	9.2	
72.236	17.50	15.0	9.2	
72.236	17.50	16.0	9.0	
72.236	17.50	17.0	9.2	
72.236	17.50	18.0	9.3	
72.236	17.50	19.0	9.4	
72.236	17.50	20.0	9.4	
72.236	17.50	21.0	9.5	
72.236	17.50	22.0	9.5	
72.236	17.50	23.0	10.0	
72.236	17.50	24.0	10.0	

DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:D.O. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.	DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 60.0							
72.236	17.50	25.0	10.0	72.237	2.55	20.0	9.9
72.237	1.40	0.5	9.2	72.237	3.45	29.0	10.8
72.237	1.40	1.0	8.9	72.237	10.15	0.5	9.4
72.237	1.40	2.0	9.1	72.237	10.15	1.0	9.5
72.237	1.40	3.0	9.1	72.237	10.15	2.0	9.4
72.237	1.40	4.0	9.1	72.237	10.15	3.0	9.5
72.237	1.40	5.0	8.6	72.237	10.15	4.0	9.5
72.237	1.40	6.0	8.6	72.237	10.15	5.0	9.4
72.237	1.40	7.0	8.6	72.237	10.15	6.0	9.4
72.237	1.40	8.0	8.6	72.237	10.15	7.0	9.4
72.237	1.40	9.0	8.3	72.237	10.15	8.0	9.4
72.237	1.40	10.0	8.8	72.237	10.15	9.0	9.4
72.237	1.40	11.0	8.6	72.237	10.15	10.0	9.4
72.237	1.40	12.0	8.5	72.237	10.15	11.0	9.4
72.237	1.40	13.0	9.5	72.237	10.15	12.0	9.3
72.237	1.40	14.0	9.2	72.237	10.15	13.0	9.5
72.237	1.40	15.0	9.3	72.237	10.15	14.0	9.5
72.237	1.40	16.0	9.3	72.237	10.15	15.0	9.5
72.237	1.40	17.0	9.2	72.237	10.15	16.0	9.4
72.237	1.40	18.0	9.1	72.237	10.15	17.0	9.2
72.237	1.40	19.0	9.3	72.237	10.15	18.0	9.0
72.237	2.45	0.5	8.8	72.237	10.15	19.0	9.0
72.237	2.45	1.0	8.6	72.237	11.00	20.0	8.8
72.237	2.45	2.0	8.8	72.237	15.45	0.5	8.5
72.237	2.45	3.0	8.2	72.237	15.45	1.0	8.4
72.237	2.45	4.0	8.6	72.237	15.45	2.0	8.4
72.237	2.45	5.0	8.6	72.237	15.45	3.0	8.5
72.237	2.45	6.0	8.6	72.237	15.45	4.0	8.5
72.237	2.45	7.0	9.0	72.237	15.45	5.0	8.5
72.237	2.45	8.0	8.6	72.237	15.45	6.0	8.5
72.237	2.45	9.0	8.8	72.237	15.45	7.0	8.6
72.237	2.45	10.0	8.5	72.237	15.45	8.0	8.6
72.237	2.45	11.0	8.4	72.237	15.45	9.0	8.6
72.237	2.45	12.0	8.9	72.237	15.45	10.0	8.6
72.237	2.45	13.0	8.3	72.237	15.45	11.0	8.5
72.237	2.45	14.0	9.4	72.237	15.45	12.0	8.5
72.237	2.45	15.0	9.6	72.237	15.45	13.0	9.1
72.237	2.45	16.0	9.4	72.237	15.45	14.0	9.2
72.237	2.45	17.0	9.3	72.237	15.45	15.0	9.2
72.237	2.45	18.0	9.3	72.237	15.45	16.0	8.8
72.237	2.45	19.0	9.7	72.237	15.45	17.0	8.7
72.237	2.45	20.0	10.2	72.237	15.45	18.0	8.6
72.237	2.45	21.0	10.2	72.237	15.45	19.0	8.6
72.237	2.45	22.0	10.5	72.237	15.45	20.0	8.6
72.237	2.45	23.0	10.8	72.237	15.45	21.0	8.8
72.237	2.45	24.0	10.4	72.237	16.05	22.0	9.0
72.237	2.45	25.0	10.6	72.238	0.40	0.5	9.1
72.237	2.45	26.0	10.6	72.238	0.40	1.0	9.0
72.237	2.45	27.0	10.6	72.238	0.40	2.0	8.9
72.237	2.45	28.0	10.8	72.238	0.40	3.0	9.0

DISSOLVED OXYGEN(1972--72HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:0.0. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 48 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.	DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 60.0							
72.238	0.40	4.0	8.6	72.238	9.45	5.0	9.1
72.238	0.40	5.0	8.8	72.238	9.45	6.0	9.1
72.238	0.40	6.0	8.4	72.238	9.45	7.0	9.1
72.238	0.40	7.0	8.6	72.238	9.45	8.0	9.0
72.238	0.40	8.0	8.4	72.238	9.45	9.0	9.0
72.238	0.40	9.0	8.5	72.238	9.45	10.0	9.0
72.238	0.40	10.0	8.1	72.238	9.45	11.0	9.0
72.238	0.40	11.0	8.1	72.238	9.45	12.0	9.8
72.238	0.40	12.0	8.3	72.238	9.45	13.0	10.1
72.238	0.40	13.0	9.2	72.238	9.45	14.0	10.1
72.238	0.40	14.0	9.6	72.238	9.45	15.0	10.0
72.238	0.40	15.0	9.5	72.238	9.45	16.0	9.9
72.238	0.40	16.0	9.7	72.238	9.45	17.0	10.0
72.238	0.40	17.0	9.5	72.238	9.45	18.0	10.0
72.238	0.40	18.0	9.4	72.238	9.45	19.0	9.8
72.238	0.40	19.0	9.4	72.238	9.45	20.0	9.8
72.238	0.40	20.0	9.5	72.238	9.45	21.0	10.0
72.238	0.40	21.0	9.3	72.238	9.45	22.0	9.0
72.238	0.40	22.0	9.8	72.238	9.45	23.0	9.0
72.238	0.40	23.0	10.2	72.238	9.45	24.0	9.0
72.238	0.40	24.0	9.5	72.238	9.45	25.0	9.3
72.238	0.40	25.0	8.5	72.238	16.00	0.5	8.4
72.238	0.40	26.0	8.5	72.238	16.00	1.0	8.5
72.238	0.40	27.0	8.5	72.238	16.00	2.0	8.5
72.238	0.40	28.0	8.3	72.238	16.00	3.0	8.4
72.238	0.40	29.0	7.4	72.238	16.00	4.0	8.5
72.238	3.15	0.5	9.5	72.238	16.00	5.0	8.5
72.238	3.15	1.0	9.5	72.238	16.00	6.0	8.5
72.238	3.15	2.0	9.6	72.238	16.00	7.0	8.6
72.238	3.15	3.0	9.6	72.238	16.00	8.0	8.7
72.238	3.15	4.0	9.6	72.238	16.00	9.0	8.4
72.238	3.15	5.0	9.6	72.238	16.00	10.0	8.5
72.238	3.15	6.0	9.7	72.238	16.00	11.0	8.6
72.238	3.15	7.0	9.6	72.238	16.00	12.0	8.5
72.238	3.15	8.0	9.6	72.238	16.00	13.0	8.7
72.238	3.15	9.0	9.7	72.238	16.00	14.0	8.6
72.238	3.15	10.0	9.6	72.238	16.00	15.0	8.5
72.238	3.15	11.0	9.4	72.238	16.00	16.0	8.8
72.238	3.15	12.0	9.6	72.238	16.00	17.0	8.4
72.238	3.15	13.0	10.4	72.238	16.00	18.0	8.4
72.238	3.15	14.0	10.2	72.238	16.00	19.0	8.6
72.238	3.15	15.0	10.6	72.238	16.00	20.0	8.7
72.238	3.15	16.0	10.4	72.238	16.00	21.0	8.8
72.238	3.15	17.0	10.2				
72.238	3.15	18.0	9.0				
72.238	9.45	0.5	9.2				
72.238	9.45	1.0	8.9				
72.238	9.45	2.0	9.0				
72.238	9.45	3.0	8.9				
72.238	9.45	4.0	9.0				

DISSOLVED OXYGEN(1972--48HR CRUISE) INVESTIGATOR:ALLENBACH 00008000
UNITS:D.O. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 72 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.	DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 5.1							
72.200	20.30	0.5	9.3	72.201	8.30	2.0	9.2
72.200	20.30	1.0	9.3	72.201	8.30	3.0	9.1
72.200	20.30	2.0	9.3	72.201	8.30	4.0	9.2
72.200	20.30	3.0	9.3	72.201	8.30	5.0	9.3
72.200	20.30	4.0	9.3	72.201	8.30	6.0	9.3
72.200	20.30	5.0	9.6	72.201	8.30	7.0	9.6
72.200	20.30	6.0	9.7	72.201	8.30	8.0	9.6
72.200	20.30	7.0	9.6	72.201	8.30	9.0	9.8
72.200	20.30	8.0	9.8	72.201	8.30	10.0	9.9
72.200	20.30	9.0	9.9	72.201	8.30	11.0	10.5
72.200	20.30	10.0	10.2	72.201	8.30	12.0	10.5
72.200	20.30	11.0	10.8	72.201	8.30	13.0	10.6
72.200	20.30	12.0	10.8	72.201	8.30	14.0	10.8
72.200	20.30	13.0	10.7	72.201	8.30	15.0	11.0
72.200	20.30	14.0	10.8	72.201	11.50	0.5	9.1
72.200	20.30	15.0	10.5	72.201	11.50	1.0	9.1
72.201	0.0	0.5	9.0	72.201	11.50	2.0	9.2
72.201	0.0	1.0	9.0	72.201	11.50	3.0	9.4
72.201	0.0	2.0	9.2	72.201	11.50	4.0	9.1
72.201	0.0	3.0	8.9	72.201	11.50	5.0	9.3
72.201	0.0	4.0	9.1	72.201	11.50	6.0	9.6
72.201	0.0	5.0	9.2	72.201	11.50	7.0	9.6
72.201	0.0	6.0	9.3	72.201	11.50	8.0	9.6
72.201	0.0	7.0	9.4	72.201	11.50	9.0	9.7
72.201	0.0	8.0	9.2	72.201	11.50	10.0	9.8
72.201	0.0	9.0	9.6	72.201	11.50	11.0	10.2
72.201	0.0	10.0	9.7	72.201	11.50	12.0	10.2
72.201	0.0	11.0	10.0	72.201	11.50	13.0	10.3
72.201	0.0	12.0	10.1	72.201	11.50	14.0	10.3
72.201	0.0	13.0	10.1	72.201	11.50	15.0	10.4
72.201	0.0	14.0	10.1	72.201	16.30	0.5	9.1
72.201	4.30	0.5	9.1	72.201	16.30	1.0	9.1
72.201	4.30	1.0	8.9	72.201	16.30	2.0	9.4
72.201	4.30	2.0	8.6	72.201	16.30	3.0	9.4
72.201	4.30	3.0	8.9	72.201	16.30	4.0	9.5
72.201	4.30	4.0	9.1	72.201	16.30	5.0	9.5
72.201	4.30	5.0	9.3	72.201	16.30	6.0	9.7
72.201	4.30	6.0	8.9	72.201	16.30	7.0	9.8
72.201	4.30	7.0	9.1	72.201	16.30	8.0	9.9
72.201	4.30	8.0	9.4	72.201	16.30	9.0	10.0
72.201	4.30	9.0	9.4	72.201	16.30	10.0	10.2
72.201	4.30	10.0	10.1	72.201	16.30	11.0	10.4
72.201	4.30	11.0	10.5	72.201	16.30	12.0	10.6
72.201	4.30	12.0	11.0	72.201	16.30	13.0	10.6
72.201	4.30	13.0	10.9	72.201	16.30	14.0	10.4
72.201	4.30	14.0	10.9	72.201	16.30	15.0	10.4
72.201	4.30	15.0	10.5	72.201	16.30	16.0	10.1
72.201	4.30	16.0	10.0	72.201	20.50	0.5	9.1
72.201	4.30	17.0	10.0	72.201	20.50	1.0	8.9
72.201	8.30	0.5	9.1	72.201	20.50	2.0	8.9
72.201	8.30	1.0	9.2				

DISSOLVED OXYGEN(1972--48HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:D.O. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 72 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.	DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 5.1							
72.201	20.50	3.0	9.2	72.202	11.55	4.0	9.9
72.201	20.50	4.0	9.2	72.202	11.55	5.0	9.4
72.201	20.50	5.0	9.4	72.202	11.55	6.0	9.3
72.201	20.50	6.0	9.6	72.202	11.55	7.0	9.3
72.201	20.50	7.0	9.5	72.202	11.55	8.0	9.5
72.201	20.50	8.0	9.6	72.202	11.55	9.0	9.6
72.201	20.50	9.0	10.4	72.202	11.55	10.0	9.1
72.201	20.50	10.0	10.8	72.202	11.55	11.0	9.6
72.201	20.50	11.0	10.6	72.202	11.55	12.0	10.1
72.201	20.50	12.0	10.5	72.202	11.55	13.0	10.2
72.201	20.50	13.0	10.2	72.202	11.55	14.0	10.0
72.201	20.50	14.0	10.2	72.202	11.55	15.0	9.8
72.201	20.50	15.0	10.2	72.202	11.55	16.0	9.9
72.201	20.50	16.0	10.2	72.202	11.55	17.0	9.6
72.201	20.50	17.0	10.2	72.202	15.45	0.5	9.2
72.201	20.50	18.0	9.4	72.202	15.45	1.0	9.1
72.202	0.15	0.5	9.0	72.202	15.45	2.0	9.3
72.202	0.15	1.0	8.7	72.202	15.45	3.0	9.4
72.202	0.15	2.0	9.0	72.202	15.45	4.0	9.7
72.202	0.15	3.0	9.0	72.202	15.45	5.0	9.8
72.202	0.15	4.0	9.2	72.202	15.45	6.0	9.8
72.202	0.15	5.0	9.3	72.202	15.45	7.0	9.8
72.202	0.15	6.0	9.6	72.202	15.45	8.0	9.9
72.202	0.15	7.0	9.6	72.202	15.45	9.0	10.0
72.202	0.15	8.0	9.5	72.202	15.45	10.0	10.2
72.202	0.15	9.0	9.4	72.202	15.45	11.0	10.4
72.202	0.15	10.0	10.1	72.202	15.45	12.0	10.1
72.202	0.15	11.0	10.1	72.202	15.45	13.0	10.1
72.202	0.15	12.0	10.2	72.202	15.45	14.0	9.8
72.202	0.15	13.0	10.2	72.202	15.45	15.0	9.7
72.202	0.15	14.0	10.2	72.202	15.45	16.0	9.6
72.202	0.15	15.0	10.2	72.202	15.45	17.0	9.7
72.202	8.20	0.5	9.1				
72.202	8.20	1.0	8.9				
72.202	8.20	2.0	8.9				
72.202	8.20	3.0	9.0				
72.202	8.20	4.0	9.2				
72.202	8.20	5.0	9.2				
72.202	8.20	6.0	9.2				
72.202	8.20	7.0	9.3				
72.202	8.20	8.0	9.3				
72.202	8.20	9.0	9.4				
72.202	8.20	10.0	9.6				
72.202	8.20	11.0	10.3				
72.202	8.20	12.0	10.3				
72.202	8.20	13.0	10.4				
72.202	11.55	0.5	9.0				
72.202	11.55	1.0	9.1				
72.202	11.55	2.0	9.1				
72.202	11.55	3.0	9.3				

DISSOLVED OXYGEN(1972--48HR CRUISE) INVESTIGATOR:AULENBACH
UNITS:D.O. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA
NOTE: SEE ALSO THE 72 HOUR CRUISE.

00000000
00008100
00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.	DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 6.0							
72.200	21.50	0.5	9.3	72.201	5.55	2.0	9.2
72.200	21.50	1.0	9.2	72.201	5.55	3.0	9.1
72.200	21.50	2.0	9.3	72.201	5.55	4.0	9.1
72.200	21.50	3.0	9.3	72.201	5.55	5.0	9.1
72.200	21.50	4.0	9.4	72.201	5.55	6.0	9.3
72.200	21.50	5.0	9.3	72.201	5.55	7.0	9.3
72.200	21.50	6.0	9.4	72.201	5.55	8.0	9.3
72.200	21.50	7.0	9.2	72.201	5.55	9.0	9.4
72.200	21.50	8.0	9.2	72.201	5.55	10.0	10.1
72.200	21.50	9.0	9.3	72.201	5.55	11.0	10.1
72.200	21.50	10.0	9.4	72.201	5.55	12.0	11.0
72.200	21.50	11.0	9.9	72.201	5.55	13.0	11.5
72.200	21.50	12.0	10.5	72.201	5.55	14.0	11.0
72.200	21.50	13.0	10.7	72.201	5.55	15.0	10.5
72.200	21.50	14.0	10.8	72.201	5.55	16.0	10.5
72.200	21.50	15.0	10.8	72.201	5.55	17.0	10.5
72.200	21.50	16.0	10.8	72.201	5.55	18.0	10.5
72.200	21.50	17.0	10.8	72.201	9.15	0.5	9.3
72.200	21.50	18.0	10.8	72.201	9.15	1.0	9.2
72.200	21.50	19.0	10.8	72.201	9.15	2.0	9.3
72.200	21.50	20.0	10.9	72.201	9.15	3.0	9.3
72.200	21.50	21.0	10.8	72.201	9.15	4.0	9.2
72.200	21.50	22.0	11.1	72.201	9.15	5.0	9.4
72.200	21.50	23.0	11.4	72.201	9.15	6.0	9.5
72.200	21.50	24.0	11.5	72.201	9.15	7.0	9.5
72.200	21.50	25.0	11.0	72.201	9.15	8.0	9.5
72.201	2.15	0.5	9.0	72.201	9.15	9.0	9.5
72.201	2.15	1.0	8.9	72.201	9.15	10.0	9.5
72.201	2.15	2.0	9.0	72.201	9.15	11.0	9.8
72.201	2.15	3.0	9.1	72.201	9.15	12.0	10.2
72.201	2.15	4.0	9.2	72.201	9.15	13.0	10.5
72.201	2.15	5.0	9.3	72.201	9.15	14.0	10.7
72.201	2.15	6.0	9.3	72.201	9.15	15.0	10.8
72.201	2.15	7.0	9.4	72.201	9.15	16.0	10.8
72.201	2.15	8.0	9.4	72.201	9.15	17.0	10.5
72.201	2.15	9.0	9.0	72.201	9.15	18.0	10.6
72.201	2.15	10.0	9.5	72.201	12.40	0.5	9.2
72.201	2.15	11.0	10.2	72.201	12.40	1.0	9.4
72.201	2.15	12.0	10.2	72.201	12.40	2.0	9.6
72.201	2.15	13.0	10.2	72.201	12.40	3.0	9.5
72.201	2.15	14.0	10.2	72.201	12.40	4.0	9.6
72.201	2.15	15.0	10.2	72.201	12.40	5.0	9.6
72.201	2.15	16.0	10.4	72.201	12.40	6.0	9.8
72.201	2.15	17.0	10.4	72.201	12.40	7.0	10.0
72.201	2.15	18.0	10.4	72.201	12.40	8.0	9.9
72.201	2.15	19.0	10.4	72.201	12.40	9.0	10.0
72.201	2.15	20.0	10.4	72.201	12.40	10.0	10.0
72.201	2.15	21.0	10.4	72.201	12.40	11.0	10.8
72.201	2.15	22.0	9.9	72.201	12.40	12.0	10.8
72.201	5.55	0.5	9.2	72.201	12.40	13.0	11.0
72.201	5.55	1.0	9.0				

DISSOLVED OXYGEN(1972--48HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:0.0. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 72 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.	DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 6.0							
72.201	12.40	14.0	11.2	72.201	22.00	14.0	10.6
72.201	12.40	15.0	11.2	72.201	22.00	15.0	10.8
72.201	12.40	16.0	11.2	72.201	22.00	16.0	11.2
72.201	12.40	17.0	11.0	72.201	22.00	17.0	11.0
72.201	12.40	18.0	11.0	72.201	22.00	18.0	10.5
72.201	12.40	19.0	11.0	72.201	22.00	19.0	10.6
72.201	12.40	20.0	11.0	72.201	22.00	20.0	10.9
72.201	12.40	21.0	11.2	72.201	22.00	21.0	10.8
72.201	12.40	22.0	11.2	72.201	22.00	22.0	11.2
72.201	12.40	23.0	11.0	72.201	22.00	23.0	11.0
72.201	12.40	24.0	9.2	72.201	22.00	24.0	11.0
72.201	17.25	0.5	9.4	72.202	1.45	0.5	9.0
72.201	17.25	1.0	9.7	72.202	1.45	1.0	8.8
72.201	17.25	2.0	9.2	72.202	1.45	2.0	8.8
72.201	17.25	3.0	9.2	72.202	1.45	3.0	9.0
72.201	17.25	4.0	9.2	72.202	1.45	4.0	8.8
72.201	17.25	5.0	9.3	72.202	1.45	5.0	9.0
72.201	17.25	6.0	9.3	72.202	1.45	6.0	8.9
72.201	17.25	7.0	9.4	72.202	1.45	7.0	9.0
72.201	17.25	8.0	9.5	72.202	1.45	8.0	9.3
72.201	17.25	9.0	9.6	72.202	1.45	9.0	9.3
72.201	17.25	10.0	9.9	72.202	1.45	10.0	9.1
72.201	17.25	11.0	10.8	72.202	1.45	11.0	9.5
72.201	17.25	12.0	11.1	72.202	1.45	12.0	10.3
72.201	17.25	13.0	11.2	72.202	1.45	13.0	10.5
72.201	17.25	14.0	11.0	72.202	1.45	14.0	10.9
72.201	17.25	15.0	11.0	72.202	1.45	15.0	10.6
72.201	17.25	16.0	10.8	72.202	1.45	16.0	10.5
72.201	17.25	17.0	10.9	72.202	1.45	17.0	10.8
72.201	17.25	18.0	10.9	72.202	1.45	18.0	10.8
72.201	17.25	19.0	11.0	72.202	1.45	19.0	10.6
72.201	17.25	20.0	11.0	72.202	1.45	20.0	10.6
72.201	17.25	21.0	11.1	72.202	1.45	21.0	11.0
72.201	17.25	22.0	11.2	72.202	1.45	22.0	10.8
72.201	17.25	23.0	11.4	72.202	1.45	23.0	10.7
72.201	17.25	24.0	11.3	72.202	1.45	24.0	11.0
72.201	22.00	0.5	9.0	72.202	1.45	25.0	10.5
72.201	22.00	1.0	9.1	72.202	4.35	0.5	8.9
72.201	22.00	2.0	9.1	72.202	4.35	1.0	8.9
72.201	22.00	3.0	9.2	72.202	4.35	2.0	8.6
72.201	22.00	4.0	9.2	72.202	4.35	3.0	8.6
72.201	22.00	5.0	9.2	72.202	4.35	4.0	8.6
72.201	22.00	6.0	9.2	72.202	4.35	5.0	8.8
72.201	22.00	7.0	9.3	72.202	4.35	6.0	8.8
72.201	22.00	8.0	9.4	72.202	4.35	7.0	8.8
72.201	22.00	9.0	9.4	72.202	4.35	8.0	9.0
72.201	22.00	10.0	9.4	72.202	4.35	9.0	9.1
72.201	22.00	11.0	10.0	72.202	4.35	10.0	9.5
72.201	22.00	12.0	10.2	72.202	4.35	11.0	10.2
72.201	22.00	13.0	11.0	72.202	4.35	12.0	10.4

DISSOLVED OXYGEN(1972--48HR CRUISE) INVESTIGATOR:AULENBACH 00008000
UNITS:0.0. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA 00008100
NOTE: SEE ALSO THE 72 HOUR CRUISE. 00008200
00008300
00008400

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.
STATION NO: 6.0			
72.202	4.35	13.0	10.5
72.202	4.35	14.0	10.5
72.202	4.35	15.0	10.0
72.202	4.35	16.0	10.2
72.202	4.35	17.0	10.2
72.202	4.35	18.0	10.4
72.202	4.35	19.0	10.4
72.202	4.35	20.0	10.4
72.202	4.35	21.0	10.2
72.202	4.35	22.0	10.1
72.202	4.35	23.0	8.4
72.202	8.50	0.5	9.2
72.202	8.50	1.0	9.1
72.202	8.50	2.0	9.1
72.202	8.50	3.0	9.2
72.202	8.50	4.0	9.2
72.202	8.50	5.0	9.3
72.202	8.50	6.0	9.4
72.202	8.50	7.0	9.4
72.202	8.50	8.0	9.4
72.202	8.50	9.0	9.5
72.202	8.50	10.0	9.5
72.202	8.50	11.0	10.0
72.202	8.50	12.0	10.2
72.202	8.50	13.0	10.6
72.202	8.50	14.0	10.4
72.202	8.50	15.0	10.5
72.202	8.50	16.0	10.4
72.202	8.50	17.0	10.3
72.202	8.50	18.0	10.2
72.202	8.50	19.0	10.4
72.202	8.50	20.0	10.4
72.202	12.55	0.5	9.4
72.202	12.55	1.0	9.4
72.202	12.55	2.0	9.8
72.202	12.55	3.0	9.4
72.202	12.55	4.0	9.4
72.202	12.55	5.0	9.4
72.202	12.55	6.0	9.5
72.202	12.55	7.0	9.4
72.202	12.55	8.0	9.6
72.202	12.55	9.0	9.6
72.202	12.55	10.0	9.8
72.202	12.55	11.0	10.4
72.202	12.55	12.0	10.4
72.202	12.55	13.0	10.5
72.202	12.55	14.0	10.6
72.202	12.55	15.0	10.5
72.202	12.55	16.0	10.3
72.202	12.55	17.0	10.2

DISSOLVED OXYGEN(1972--48HR CRUISE) INVESTIGATOR:AULENBACH
UNITS:D.O. IS IN MILLIGRAMS PER LITER:0.0 IS NULL DATA
NOTE: SEE ALSO THE 72 HOUR CRUISE.

DATE JULIAN	TIME (24HR)	DEPTH (M)	D.O.	
STATION NO: 6.0				
72.202	12.55	18.0	10.2	00008000
72.202	12.55	19.0	10.4	00008100
72.202	12.55	20.0	10.6	00008200
72.202	12.55	21.0	10.8	00008300
72.202	12.55	22.0	10.8	00008400
72.202	12.55	23.0	10.7	
72.202	12.55	24.0	10.8	
72.202	12.55	25.0	11.2	
72.202	12.55	26.0	11.2	
72.202	12.55	27.0	11.2	
72.202	12.55	28.0	11.0	
72.202	12.55	29.0	11.0	
72.202	12.55	30.0	11.0	
72.202	16.45	0.5	9.5	
72.202	16.45	1.0	9.4	
72.202	16.45	2.0	9.4	
72.202	16.45	3.0	9.5	
72.202	16.45	4.0	9.6	
72.202	16.45	5.0	9.7	
72.202	16.45	6.0	9.6	
72.202	16.45	7.0	9.7	
72.202	16.45	8.0	9.8	
72.202	16.45	9.0	9.9	
72.202	16.45	10.0	10.0	
72.202	16.45	11.0	10.2	
72.202	16.45	12.0	10.3	
72.202	16.45	13.0	10.4	
72.202	16.45	14.0	10.3	
72.202	16.45	15.0	10.2	
72.202	16.45	16.0	10.7	
72.202	16.45	18.0	10.4	
72.202	16.45	19.0	10.6	
72.202	16.45	20.0	10.8	
72.202	16.45	21.0	10.6	
72.202	16.45	22.0	10.6	
72.202	16.45	23.0	10.8	
72.202	16.45	24.0	10.7	
72.202	16.45	25.0	10.8	
72.202	16.45	26.0	11.2	
72.232	16.45	17.0	10.3	

Table 12. pH, ORTHO, TOTAL AND SOLUBLE PHOSPHATE AT VARIOUS DEPTHS DURING 1973 FOR LAKE GEORGE, N. Y. (Aulenbach and Clescerl, 1973)

PHOSPHATES AND PH (1972-1973) PRINCIPAL INVESTIGATOR: DR. AULENBACH
UNITS: ALL PHOSPHATES IN MICROGRAMS PER LITER

STATION NO: 1	DATE MMDDYY	TIME (24HR)	DEPTH (M)	PH	PHOSPHATES ORTHO	PHOSPHATES TOTAL	PHOSPHATES SOLUBLE
	41773	0	5.00	0.0	0.0	13.5	4.2
	41773	0	10.00	0.0	0.0	0.9	0.8
	41773	0	15.00	0.0	0.0	7.5	3.6
	41773	0	20.00	0.0	0.0	8.6	2.7
	41773	0	25.00	0.0	0.0	7.6	3.2
	41773	840	0.50	0.0	0.0	8.4	3.1
	62073	0	0.50	0.0	0.0	12.6	10.5
	62073	0	5.00	0.0	0.0	5.9	3.1
	62073	0	10.00	0.0	0.0	6.7	3.6
	62073	0	15.00	0.0	0.0	8.4	2.1
	62073	0	20.00	0.0	0.0	8.4	4.3
	62073	0	25.00	0.0	0.0	8.1	2.6
	62673	2030	5.00	7.76	2.2	16.0	6.5
	62673	2030	15.00	7.82	1.1	11.1	5.9
	62773	220	5.00	7.85	1.5	8.1	15.6
	62773	220	15.00	7.73	1.1	10.2	5.3
	62773	830	5.00	7.72	0.9	14.9	10.0
	62773	830	15.00	7.71	1.6	15.1	7.0
	62773	1410	5.00	7.59	1.2	8.2	11.5
	62773	1410	15.00	7.34	0.8	12.3	7.6
	62773	2030	5.00	7.84	1.3	0.0	14.5
	62773	2030	15.00	7.71	1.1	10.2	5.1
	62873	210	5.00	7.69	1.3	14.4	3.8
	62873	210	15.00	7.60	0.8	2.4	9.9
	62873	850	5.00	7.59	1.0	23.4	4.8
	62873	850	15.00	7.44	1.3	15.6	30.5
	62873	1410	5.00	7.83	1.0	12.9	6.7
	62873	1410	15.00	7.57	1.6	0.0	0.0
	62873	2020	5.00	7.73	1.3	12.0	3.9
	62873	2020	15.00	7.58	0.5	10.6	7.3
	62973	210	0.50	0.0	0.0	0.0	10.9
	62973	210	5.00	7.69	0.6	13.2	3.1
	62973	210	15.00	7.65	1.1	9.7	5.1
	62973	855	5.00	7.49	3.6	11.9	6.0
	62973	855	15.00	7.26	5.3	0.0	7.3
	70573	900	0.50	7.62	0.8	3.9	13.2
	70573	900	5.00	7.60	2.4	6.6	14.0
	70573	900	10.00	7.65	1.2	9.6	14.5
	70573	900	15.00	7.38	1.1	9.9	15.8
	70573	900	20.00	7.19	2.0	11.4	10.3
	71873	900	0.50	7.76	1.0	5.4	5.3
	71873	900	5.00	7.71	0.7	9.0	3.0
	71873	900	10.00	7.84	1.3	62.2	12.6
	71873	900	15.00	7.38	2.3	24.3	4.8
	71873	900	20.00	7.15	2.1	15.6	43.5
	73173	2050	5.00	7.60	1.3	8.3	0.0
	73173	2050	15.00	7.48	1.5	7.7	0.0
	80173	232	5.00	7.70	6.1	5.7	1.5
	80173	232	15.00	7.60	15.4	9.0	5.1
	80173	1435	5.00	7.80	0.3	6.2	0.9

PHOSPHATES AND PH (1972-1973) PRINCIPAL INVESTIGATOR:DR.AULENBACH
UNITS: ALL PHOSPHATES IN MICROGRAMS PER LITER

DATE MMDDYY	TIME (24HR)	DEPTH (M)	PH	PHOSPHATES ORTHO	PHOSPHATES TOTAL	PHOSPHATES SOLUBLE
80173	1435	15.00	7.41	4.5	9.9	6.5
80173	2020	5.00	7.82	2.3	7.7	0.9
80173	2020	15.00	7.40	10.9	8.5	2.1
80273	300	5.00	8.00	5.6	5.4	5.7
80273	300	15.00	7.50	3.0	5.1	1.5
80273	800	5.00	8.10	5.6	5.1	3.0
80273	800	15.00	7.89	1.1	5.7	2.0
80273	800	22.00	22.10	0.0	0.0	0.0
80273	1400	5.00	8.19	1.4	4.8	2.7
80273	1400	15.00	7.95	2.5	4.7	3.3
80273	2035	5.00	7.94	3.4	5.1	2.1
80273	2035	15.00	7.56	1.6	5.1	4.8
80373	210	5.00	8.01	2.7	0.0	5.1
80373	210	15.00	7.51	4.8	9.2	2.7
80373	900	5.00	8.10	0.4	7.2	3.0
80373	900	15.00	7.90	0.5	11.0	4.2
80373	900	22.00	21.90	0.0	0.0	0.0
80373	1400	5.00	8.08	5.4	6.4	3.0
80373	1400	15.00	7.64	12.7	10.8	8.1
80773	830	0.50	7.72	1.1	4.4	5.6
80773	830	5.00	7.61	2.0	6.1	0.0
80773	830	10.00	8.09	1.2	8.1	20.0
80773	830	15.00	7.58	0.2	6.0	1.8
80773	830	20.00	7.55	0.4	5.3	7.8
81573	1000	0.50	7.92	0.0	1.5	4.5
81573	1000	5.00	7.84	0.0	1.2	1.8
81573	1000	10.00	0.0	0.0	0.6	2.7
81573	1000	11.00	8.15	0.0	0.0	0.0
81573	1000	15.00	7.30	0.0	5.4	3.0
81573	1000	20.00	7.18	0.0	2.6	3.9
81573	1000	23.00	7.17	0.0	3.9	3.9
82973	1000	0.50	7.77	12.3	7.2	4.2
82973	1000	5.00	7.75	12.1	7.5	4.8
82973	1000	10.00	7.70	11.9	6.0	4.8
82973	1000	15.00	7.37	5.8	4.0	3.0
82973	1000	19.00	0.0	8.8	0.0	0.0
82973	1000	20.00	7.22	0.0	7.2	3.9
91273	925	0.50	7.50	2.7	4.2	30.3
91273	925	5.00	6.99	2.0	5.7	25.8
91273	925	10.00	7.00	2.4	7.2	13.2
91273	925	15.00	6.95	2.1	7.2	8.7
91273	925	20.00	6.82	2.3	7.2	15.0
91372	0	0.50	0.0	0.0	10.2	4.2
91372	0	5.00	0.0	0.0	6.0	3.0
91372	0	10.00	0.0	0.0	10.2	3.6
91372	0	15.00	0.0	0.0	14.7	2.4
91372	0	20.00	0.0	0.0	11.1	3.9
92673	930	0.50	6.71	0.3	7.5	4.4
92673	930	5.00	6.80	0.2	7.2	6.9
92673	930	10.00	6.79	0.3	7.2	5.4

PHOSPHATES AND PH (1972-1973) PRINCIPAL INVESTIGATOR:DR.AULENBACH
UNITS: ALL PHOSPHATES IN MICROGRAMS PER LITER

DATE MOUYYR	TIME (24HR)	DEPTH (M)	PH	PHOSPHATES ORTHO	PHOSPHATES TOTAL	PHOSPHATES SOLUBLE
92673	930	15.00	6.66	0.0	5.6	5.1
92673	930	20.00	6.53	0.5	8.9	3.8
STATION NO: 3						
91372	0	0.50	0.0	0.0	8.1	4.5
91372	0	5.00	0.0	0.0	9.9	6.3
91372	0	10.00	0.0	0.0	8.7	3.9
91372	0	15.00	0.0	0.0	9.5	6.3
STATION NO: 4						
91372	0	0.50	0.0	0.0	9.3	4.2
91372	0	5.00	0.0	0.0	7.9	3.9
91372	0	10.00	0.0	0.0	8.4	4.2
91372	0	15.00	0.0	0.0	9.0	3.9
91372	0	20.00	0.0	0.0	9.3	5.1
STATION NO: 6						
62073	1045	0.50	7.81	0.8	4.5	1.7
62073	1045	5.00	7.82	0.5	5.0	1.7
62073	1045	10.00	7.69	0.5	5.1	1.7
62073	1045	15.00	7.79	0.9	7.0	2.6
62073	1045	20.00	7.55	0.9	7.4	2.3
62073	1045	25.00	7.29	1.1	7.5	3.7
62673	1905	5.00	7.60	1.2	5.4	3.1
62673	1905	10.00	7.65	0.0	0.0	0.0
62673	1905	15.00	7.58	1.4	9.9	5.3
62673	1905	20.00	7.19	0.0	0.0	0.0
62773	150	5.00	7.14	3.6	16.9	8.6
62773	150	15.00	7.18	3.1	11.4	3.9
62773	1100	5.00	7.39	1.2	12.9	11.1
62773	1100	15.00	7.43	1.7	12.2	5.0
62773	1540	5.00	7.60	1.1	18.5	14.3
62773	1540	15.00	7.47	1.2	18.5	13.2
62773	1910	5.00	7.66	1.3	6.0	4.8
62773	1910	15.00	7.82	1.3	6.0	5.7
62873	10	5.00	7.59	0.6	9.6	13.2
62873	10	15.00	7.76	0.4	5.7	15.3
62873	1010	5.00	7.66	2.1	9.9	5.4
62873	1010	15.00	7.57	0.8	9.9	5.7
62873	1600	5.00	7.53	0.0	11.4	4.1
62873	1600	15.00	7.51	1.4	0.0	5.4
62873	1845	5.00	7.64	0.8	13.8	7.5
62873	1845	15.00	7.75	0.7	12.9	8.4
62973	130	5.00	0.0	1.6	21.0	8.1
62973	130	15.00	0.0	1.0	9.4	7.1
62973	1000	5.00	7.96	1.0	8.0	10.1
62973	1000	15.00	7.67	1.1	0.0	3.8
62973	1330	5.00	7.61	0.5	5.1	1.5
62973	1330	15.00	7.62	0.8	9.9	2.1
70573	1100	0.50	7.67	0.7	4.8	12.1
70573	1100	5.00	7.62	0.1	5.1	11.1
70573	1100	10.00	7.64	0.4	5.1	13.2
70573	1100	15.00	7.45	1.2	12.3	11.0
70573	1100	20.00	7.48	0.7	6.6	14.7
71873	1105	0.50	7.78	0.5	3.6	4.8
71873	1105	5.00	7.76	7.2	12.6	9.7

PHOSPHATES AND PH (1972-1973) PRINCIPAL INVESTIGATOR:DR.AULENBACH
UNITS: ALL PHOSPHATES IN MICROGRAMS PER LITER

DATE MOUYYR	TIME (24HR)	DEPTH (M)	PH	PHOSPHATES ORTHO	PHOSPHATES TOTAL	PHOSPHATES SOLUBLE
71873	1105	10.00	7.45	9.9	9.3	10.5
71873	1105	15.00	7.48	5.7	10.5	7.8
71873	1105	20.00	7.32	0.6	12.0	3.9
73173	1900	5.00	7.70	4.0	5.5	0.0
73173	1900	15.00	7.62	4.1	5.6	0.0
80173	210	5.00	7.23	5.6	5.7	0.0
80173	210	15.00	6.86	6.5	5.4	2.7
80173	1015	0.50	7.77	1.0	3.2	1.5
80173	1015	5.00	7.88	1.9	5.3	4.8
80173	1015	10.00	8.00	1.6	4.8	1.8
80173	1015	15.00	7.81	1.2	7.2	2.4
80173	1015	20.00	7.89	2.1	0.0	1.5
80173	1630	5.00	7.55	1.5	5.7	5.1
80173	1630	15.00	7.69	3.9	6.5	1.5
80173	1850	5.00	7.85	2.7	2.3	0.0
80173	1850	15.00	7.80	2.3	6.5	1.2
80272	1550	5.00	8.21	0.6	5.6	3.2
80272	1550	15.00	8.21	1.2	3.9	3.3
80273	220	5.00	7.43	4.2	4.4	0.0
80273	220	15.00	7.05	2.9	8.6	0.3
80273	930	5.00	8.04	2.5	9.0	2.7
80273	930	15.00	8.00	3.2	8.0	3.3
80273	1900	5.00	7.85	2.0	4.1	2.4
80273	1900	15.00	7.75	3.1	6.9	2.1
80373	230	5.00	7.22	0.3	3.9	2.7
80373	230	15.00	7.39	0.4	5.1	2.7
80373	1100	5.00	7.90	2.7	4.2	0.0
80373	1100	15.00	8.00	2.5	4.9	3.0
80373	1530	5.00	8.05	4.7	5.7	3.2
80373	1530	15.00	7.60	5.7	5.9	2.1
81573	1235	0.50	7.89	0.0	0.0	3.3
81573	1235	5.00	7.88	0.0	0.0	2.1
81573	1235	10.00	7.83	0.0	0.0	0.0
81573	1235	12.00	8.41	0.0	2.4	3.3
81573	1235	15.00	7.52	0.0	0.0	0.0
81573	1235	17.00	7.50	0.0	0.0	3.9
82973	1210	0.50	7.82	6.3	5.5	11.4
82973	1210	5.00	7.78	0.7	4.4	11.7
82973	1210	10.00	7.70	7.4	4.8	5.7
82973	1210	15.00	7.34	3.9	7.8	11.7
82973	1210	20.00	7.44	5.5	9.3	4.8
82973	1210	25.00	0.0	0.0	6.0	5.7
82973	1210	26.00	7.41	6.6	0.0	0.0
91273	1130	0.50	7.65	1.0	4.2	3.3
91273	1130	5.00	7.48	2.9	4.2	4.2
91273	1130	10.00	7.50	1.1	4.5	5.4
91273	1130	15.00	7.44	1.9	5.1	5.7
92673	1135	0.50	7.70	0.6	5.1	4.5
92673	1135	5.00	7.70	0.7	6.3	4.1
92673	1135	10.00	7.70	0.7	6.0	0.0

PHOSPHATES AND PH (1972-1973) PRINCIPAL INVESTIGATOR:DR.AULENBACH
UNITS: ALL PHOSPHATES IN MICROGRAMS PER LITER

DATE MODYYR	TIME (24HR)	DEPTH (M)	PH	PHOSPHATES ORTHO	PHOSPHATES TOTAL	PHOSPHATES SOLUBLE
92673	1135	15.00	7.25	0.6	2.6	2.3
92673	1135	20.00	7.35	0.6	3.9	0.3
92673	1135	25.00	7.38	0.2	4.2	3.0
92673	1135	30.00	7.07	0.5	8.1	3.6
92673	1135	35.00	7.14	0.3	7.1	1.5
STATION NO: 7						
91372	0	0.50	0.0	0.0	5.1	2.7
91372	0	5.00	0.0	0.0	8.7	2.1
91372	0	10.00	0.0	0.0	10.5	4.5
91372	0	15.00	0.0	0.0	8.1	6.3
91372	0	20.00	0.0	0.0	7.5	6.0
91372	0	25.00	0.0	0.0	5.7	4.5
STATION NO: 51						
91372	0	0.50	0.0	0.0	7.2	4.2
91372	0	5.00	0.0	0.0	6.0	5.1
91372	0	10.00	0.0	0.0	10.2	4.2
91372	0	15.00	0.0	0.0	6.3	4.5
91372	0	20.00	0.0	0.0	8.7	8.1

```
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
123  KUMAR          ******  END  JOB 259  *****  FERO   *****  7.48.21 PM 12 MAR 74  ******  KUMAR   123
```

Table 15. ALKALINITY (mg $CaCO_3$/l) FOR LAKE GEORGE, N.Y.

Date	Average Alkalinity (mg $CaCO_3$/l) North Basin	South Basin
July, 1972	23.0	22.4
August, 1972	16.95	16.7
September, 1972	17.5	16.5
October, 1972	22.6	22.1
November, 1972	23.4	23.6
March, 1973		22.8
April, 1973		22.6
May, 1973		
June, 1973	22.0	23.2
July, 1973	22.5	22.6
August, 1973	21.7	21.9
September, 1973	21.5	21.4
October, 1973	21.6	
November, 1973	20.8	21.3
December, 1973		
January, 1974	24.1	

Table 14. CONCENTRATIONS OF VARIOUS ELEMENTS IN LAKE GEORGE, N.Y.

	Concentration (ug/l)*					
	3 Meters		9 Meters		15 Meters	
Trace Metals	North	South	North	South	North	South
Si	215	352	213	258	200	339
Fe	38	28	40	37	40	30

* These are average data for 15 or more samples. Also, the approximate average value for sulfate-sulfur in Lake George is 15 mg/l SO_4 and for calcium, the value is 10 mg/l Ca.

Table 15. MEAN SEASONAL CONCENTRATIONS OF FE, MN, CU AND ZN IN THE NORTH AND SOUTH BASINS OF LAKE GEORGE, N.Y.

		South Basin (ug/l)				North Basin (ug/l)			
Season	Depth(m)	Fe	Mn	Cu	Zn	Fe	Mn	Cu	Zn
Winter (Jan. 1-Mar.31)	3	27.2	2.0	5.2	43.4	35.2	1.9	2.7	51.1
	9	42.1	2.1	3.5	49.3	34.8	1.3	2.0	79.6
	15	30.6	1.6	3.7	44.4	50.7	2.3	2.2	76.6
Spring (Apr.1-June 21)	3	25.1	3.2	3.9	32.7	41.5	2.9	2.6	33.5
	9	17.3	2.5	4.2	28.0	26.2	2.5	3.5	53.2
	15	16.9	4.0	3.8	30.4	35.4	3.2	3.2	38.6
Summer (June 21-Sept.21)	3	29.0	2.6	3.4	46.4	29.8	2.0	3.0	74.9
	9	23.5	2.2	3.1	31.8	23.8	3.3	3.2	40.4
	15	28.8	4.1	2.9	34.2	23.6	1.9	2.9	23.9
Fall (Sept.21-Dec. 7)	3	46.1	1.8	3.1	25.1	13.8	1.4	1.6	71.1
	9	39.9	1.7	2.5	23.3	20.5	1.2	1.7	88.3
	15	30.3	2.5	2.6	43.5	14.5	1.1	2.0	74.5

BIOLOGICAL

Phytoplankton

Chlorophyll - These data have not yet been determined.

Primary production - These data are seen in Figure 6. In addition, data regarding annual production of Nitella flexilis (macroalga) and other macrophytes are given in Table 16 (Stross, 1972).

Algal assays - These data are not available at this time.

Identification and count - These data are seen in Table 17 (Howard, 1973).

Zooplankton (McNaught, et al., 1972)

Identification and count -

Species	Number/m^3/day
Diaptomus sicilis	961
Diaptomus minutus	2554
Cyclops bicuspidetus	3737
Daphnia galeata	714
Daphnia longiremus	212
Bosmina spp.	358

Bottom Fauna

These data are seen in Table 18 (Perrotte, 1974).

Fish

The data shown in Table 19 are from 1973 surveys of the littoral region (15 sites) of Lake George. There are no census figures, etc. for the fish populations of the entire lake. Of major importance to this trophic level and yet not included herein due to a lack of reliable figures at this time are the Cisco and Lake Trout

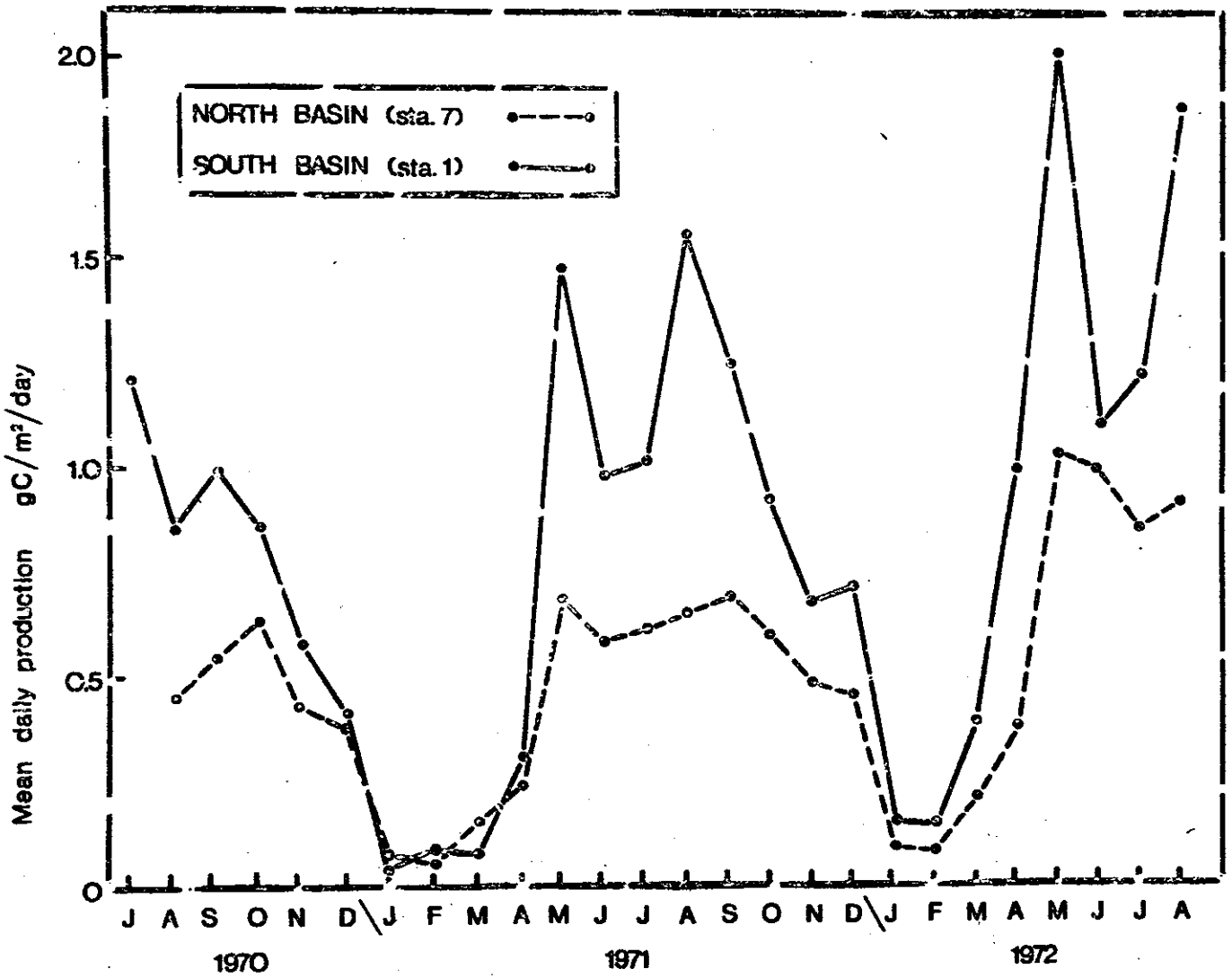

NORTH BASIN (sta. 7)
SOUTH BASIN (sta. 1)
Mean daily production gC/m²/day
2.0
1.5
1.0
0.5
0
J A S O N D J F M A M J J A S O N D J F M A M J J A
1970
1971
1972

Table 16. ANNUAL PRODUCTION OF *Nitella flexilis* AND OTHER MACROPHYTES IN THE SOUTH BASIN OF LAKE GEORGE, N.Y. FOR THE YEAR 1972. ALL MEASUREMENTS ARE IN GRAMS (dry wt.)/m^2 ± STANDARD ERROR (Stross, 1972).

Depth (meters)	Nitella flexilis June	Nitella flexilis Sept.	Other Sepcies Sept.	Annual Production
3.0			97.65 ± 28.0	97.65 ± 28.0
4.0			95.10 ± 31.8	95.10 ± 3.18
5.0			39.38 ± 31.6	39.38 ± 31.6
6.0		43.79 ± 10.1	42.42 ± 15.9	130.00 ± 26.0
7.0	16.41 ± 2.3	53.68 ± 19.8	32.95 ± 18.1	103.04 ± 40.2
8.0	30.42 ± 7.9	73.48 ± 31.5	3.67 ± 3.5	107.57 ± 42.9
9.0	44.06 ± 5.1	76.93 ± 16.55		120.99 ± 21.6
10.0	57.69 ± 5.0	133.00 ± 39.3		190.69 ± 43.3
11.0	57.83 ± 5.1	53.39 ± 34.4		111.22 ± 39.5
12.0	57.91 ± 5.2	105.96 ± 36.9		163.93 ± 43.1

Table 17. SPECIES FOUND IN LAKE GEORGE PHYTOPLANKTON

Ne: net plankton (maximum dimension greater than 50 u)

Na: nannoplankton (maximum dimension 50 u or less)

1. Eudorina elegans Ehrenberg. (Na)
2. Sphaerocystis Schroeteri (Wolle) W. & G. S. West. (Na)
3. Gloeocystis gigas (Kuetzing) Lagerheim. (Na)
4. Elakatothrix gelatinosa Wille. (Na)
5. Planktosphaeria gelatinosa G. M. Smith. (Na)
6. Oocystis crassa Wittrock. (Na)
7. Oocystis pusilla Hansgirg. (Na)
8. Oocystis submarina Lagerheim. (Na)
9. Oocystis sp. (Na)
10. Botryococcus braunii Kuetzing. (Na)
11. Dimorphococcus lunatus A. Braun. (Na)
12. Ankistrodesmus falcatus (Corda) Ralfs var. acicularis (A. Braun) G. S. West. (Na)
13. Selenastrum minutum (Naeg.) Collins. (Na)
14. Quadrigula closterioides (Bohlin) Printz. (Na)
15. Tetraedron minimum (A. Braun) Hansgirg. (Na)
16. Scenedesmus bijuga (Turp.) Lagerheim. (Na)
17. Crucigenia rectangularis (A. Braun) Gay. (Na)
18. Crucigenia tetrapaedia (Kirch.) W. & G. S. West. (Na)
19. Cosmarium sp. (Na)
20. Cosmarium sp. (Na)
21. Staurastrum furcigerum De Brebisson.

Table 17 (Continued). SPECIES FOUND IN LAKE GEORGE PHYTOPLANKTON

22. Spondylosium planum (Wolle) W. & G. S. West. (Ne)
23. Tribonema sp. (Ne)
24. Ochromonas sp. (Na)
25. Bitrichia chodati (Reverdin) Chodat. (Na)
26. Dinobryon bavaracum Imhof. (Na)
27. Dinobryon cylindricum Imhof. (Na)
28. Dinobryon divergens Imhof. (Na)
29. Epipyxis sp. (Na)
30. Mallomonas sp. (Na)
31. Mallomonas sp. (Na)
32. Melosira sp. (Ne)
33. Cyclotella comta (Ehren.) Kuetzing. (Na)
34. Cyclotella stelligera Clet & Grunow. (Na)
35. Stephanodiscus astrea (Ehren.) Grunow. (Na)
36. Tabellaria fenestrata (Lyngb.) Kuetzing. (Na)
37. Meridion circulare (Grev.) Agardh. (Na)
38. Fragilaria crotonensis Kitton. (Ne)
39. Asterionella formosa Rassall. (Ne)
40. Synedra sp. (Ne)
41. Gymnodinium sp. (Ne)
42. Glenodinium pulvisculus (Ehren.) Stein. (Na)
43. Peridinium cinctum (Muell.) Ehrenberg. (Ne)
44. Cryptomonas sp. (Na)
45. Chroococcus dispersus (Keissl.) Lemmermann. (Na)
46. Chroococcus limneticus Lemmermann. (Na)

Table 17 (Continued). SPECIES FOUND IN LAKE GEORGE PHYTOPLANKTON

47. Gloeocapsa punctata Naegeli. (Na)
48. Aphanocapsa elachista West and West. (Na)
49. Microcystis incerta Lemmermann. (Na)
50. Gloethece linearis Naegeli var. composita G. M. Smith. (Na)
51. Aphanothece clathrata G. S. West. (Na)
52. Aphanothece nidulans P. Richter. (Na)
53. Coelosphaerium Naegelianum Unger. (Na)
54. Gomphosphaeria aponina Kuetzing. (Na)
55. Lyngbya limnetica Lemmermann. (Na)
56. Anabaena sp. (Na)
57. - 64. Unknown coccoid cells and flagellates. All (Na)

Table 18. THE DENSITY, LENGTHS, DRY WEIGHTS AND WEIGHTS/mm OF LENGTH FOR THE DOMINANT BENTHIC MACROINVERTEBRATES AT TEA ISLAND AND SMITH BAY, LAKE GEORGE, NEW YORK

TEA ISLAND

Dates: July 19, 1973, (October 27, 1973)
Depth: 7M

Taxa	Number/ft.^{2}	Total Length (mm)	Dry Wt. (g)	wt/mm of length x 10^{-5}
Chironomus spp.	25 (139)*	144.48 (1056.5)	0.0054 (.0229)	3.73 (2.11)
Gammarus fasciatus	21 (33)	72.7 (74.5)	0.0170 (.0173)	
Hyalella azteca	39 (3)	125.6 (6.0)	0.0160 (.0007)	23.3
Snails (Viviparus sp.)**	7 (3)		0.6602 (0.2899)	12.7
Snail Shells	7 (3)	118.4 (52.0)	2.6819 (1.1778)	226.5
Asellus communis	10	39.1	0.0105	26.8
Others			0.8678 (.5160)	
Total Biomass/ft.^{2}			4.2588 (1.7347)	

SMITH BAY

Date: July 24, 1973
Depth: 7M

Taxa	Number/ft.^{2}	Total Length (mm)	Dry Wt. (g)	Wt/mm of length x 10^{-5}
Chironomus spp.	67 (124)	353.9 (1011.6)	0.0050 (.0234)	1.41 (2.3)
Gammarus fasciatus	20 (15)	80.0 (32.0)	0.0226 (.0090)	28.2
Hyalella azteca	39 (4)	72.5 (7.0)	0.0084 (.0008)	11.6
Snails (Viviparus sp.)	66 (9)	181.86 (39.0)	0.0316 (.1460)	17.4 (37.4)
Asellus communis	3 (5)	15.2 (26.3)	0.0044 (.006)	28.9 (22.8)
Others			0.0463 (.0406)	
Total Biomass/ft.^{2}			0.1183 (.2168)	

*Number in brackets are from October 27, 1973 samples.
**With shells

Table 19. FISH POPULATIONS IN THE LITTORAL REGION OF LAKE GEORGE, N. Y.

Species	Total Number (N) 15 Sites	Approx. Total (entire shoreline*)	Approx. Biomass (kg)	% Total
Red Breast (Lepomis auritus)	1,149	48,600	2,576	34.9
Rock Bass (Ambloplites rupestris)	905	38,300	2,480	27.5
Pumpkinseed (Lepomis gibbosus)	707	29,900	1,582	21.5
Smallmouth Bass (Micropterus dolomieui)	400	16,900	1,815	12.1
Yellow Perch (Perca flavescens)	85	3,600	313	2.6
Largemouth Bass (Micropterus salmoides)	30	1,300		0.9
Northern Pike (Esox lucius)	11	500		0.3
Other	7	300		0.2
Total Fish	3,294	147,400		
Total Length of Runs (m)	4,952 m			
Total Area (m^2)	47,004 m^2			
N/1,000 m	9,897			
N/10,000 m^2 (ha)	10,389			

* Using 209.6 km as shoreline length and knowing number of fish species/km.

populations for this body of water (George, et al., 1974).

Bacteria

The organisms listed are the most abundant bacteria observed in Lake George, N. Y.:

Achromobacter spp.
Aeromonas liquefaciens
Aeromonas spp.
Arthrobacter spp.
Brevibacterium haelis
Brevibacterium sp.
Cellulomonas sp.
Kurthia sp.
Proteus sp.
Pseudomonas cobaerans
Pseudomonas spp.

Bottom Flora

These data have not yet been determined.

Macrophytes

These data are seen in Table 20 (Boylen and Sheldon, 1973).

Table 20. MOST COMMON MACROPHYTE SPECIES FOUND IN THE LITTORAL ZONE OF LAKE GEORGE, N.Y.*

Species	Average Dry Weight of mature plant+	Average Maximum Height of mature plant	Depth of maximum abundance
Bidens beckii	.483 g	56.3 cm	2-7 m
Chara globularis	.075 g	12 cm	1 m
Elatine minima			1 m
Elodea canadensis	.540 g	60 cm	1-9 m
Eriocaulon septangulare	.237 g	2.8 cm	1 m
Heteranthera dubia	.947 g	84 cm	1-3 m
Isoetes echinospora			1-3 m
Isoetes macrospora			3-8 m
Juncus sp.			1 m
Lobelia dortmanna			1 m
Myriophyllum alterniflorum	.268 g	51.3 cm	1-3 m
Myriophyllum tenellum			1 m
Najas flexilis	.080 g	24 cm	1-7 m
Nitella flexilis			9 m
Potamogeton amplifolius	2.677 g	75.7 cm	3 m
Potamogeton gramineus	.307 g	84 cm	1-5 m
Potamogeton perfoliatus	.284 g	74.5 cm	1-5 m
Potamogeton praelongus	.836 g	73.3 cm	5 m
Potamogeton pusillus	.081 g	29.3 cm	2-5 m
Potamogeton robbinsii	.873 g	69.7 cm	7 m
Ranunculus longirostris	.154 g	46 cm	1-3 m
Sagittaria sp.	.394 g	11 cm	1 m

Table 20 (Continued). MOST COMMON MACROPHYTE SPECIES FOUND IN THE LITTORAL ZONE OF LAKE GEORGE, N.Y.*

Species	Average Dry Weight of mature plant+	Average Maximum Height of mature plant	Depth of maximum abundance
Utricularia resupinata			1 m
Vallisneria americana	.536 g	77.7 cm	1-5 m
Subularia sp.	.014 g	6.2 cm	1 m

* All species collected from 1 m depth or greater. All were submergent.

+ Plants were collected on 8/30/73. Visual observation suggests that plants collected were smaller than mature plants found earlier in the summer.

SECTION VII

NUTRIENT BUDGETS (PRELIMINARY)

PHOSPHORUS (Aulenbach and Clesceri, 1972, 1973)*

Source	South Lake kg/yr.	North Lake kg/yr.
Waste discharges (potential)	12,353	2,717
Land runoff	3,660	399
Precipitation (wet and dry fall)		
Directly on water	560	450
On tributary land	3,050	1,420
Entire basin	3,610	1,870
Ground Water	NA	NA
TOTAL	20,023	4,986

NITROGEN (Aulenbach and Clesceri, 1972, 1973)*

Source	South Lake kg/yr.	North Lake kg/yr.
Waste discharges (potential)	17,798	3,520
Land runoff	12,200	3,420
Precipitation (wet and dry fall)		
Directly on water	75,600	60,750
On tributary land	411,750	191,700
Entire basin	487,350	252,450
Ground water	NA	NA
TOTAL	517,348	259,390

* Separated into values for each basin, North and South.

OTHER NUTRIENT BUDGETS

These data are not available at this time.

SECTION VIII
DISCUSSION

Most researchers deal with trophic state classifications within the purview of nutrient relationships (Bartsch 1968, Martin and Weinberger 1966, Naumann 1919, Thieneman 1931, Vollenweider 1968). The classification of trophic state can be handled well from this perspective, excepting for the case of dystrophic lake systems. Dystrophic lakes are difficult to classify from the nutrient standpoint, because of a dystrophic lake's nutrient deficiency and poor production. Yoshimura (1934) reasoned that a dystrophic lake's poor production is not due to deficiencies in nitrogen and phosphorus, but may be related to toxic concentrations of ferric iron and humic substances. Stewart and Rohlich (1967) have documented the various attempts of researchers to classify lakes on the basis of trophic types and they cited Welch (1941) who considered the classification of lakes to be "mere gropings in the dark," since so little was actually known and since limnology was such a young subject at that time. Many approaches towards classification have been proposed since 1941, and the reader is referred to Stewart and Rohlich (1967) for a more complete treatment of the subject.

One apparently reliable indicator of trophic state is nutrient loading and mean depth of a given water body. For instance, Rawson (1955) examined lakes, which by depth measurements appeared to be oligotrophic at 20 meters or greater and eutrophic at 10 meters or less. Vollenweider (1968) has further examined the methodology of Rawson (1939, 1960) and that of Edmondson (1961). Edmondson

used a similar method to Rawson, but used it for analysis of a lake system receiving wastewaters. According to Vollenweider (1968), neither of these authors had arrived at conclusions which were sufficiently definitive, or which at least could provide for an indication of the productivity of a lake system. Vollenweider proposed a trophic classification scheme for lakes based on mean depth and annual loadings of nitrogen and phosphorus. This classification scheme is represented as a graphical rating scale for lakes, which can be positioned relative to lines of separation between oligotrophy, mesotrophy, and eutrophy. Vollenweider's diagrams are shown as Figures 7 and 8. The figures indicate the trophic state classification based on annual loading of nitrogen (Figure 7) and total phosphorus (Figure 8) versus mean depth. This classification method allows for visual examination of lakes relative to one-another. Vollenweider (1968) admits that this approach leaves much to be desired as follows:

> "This procedure is in many ways open to criticism and it must be admitted that the boundaries proposed are subject to many uncertainties. However, considering the kind of data at our disposal, it is also obvious that the transition zones defined are probably the best we can do at the present time, and that we can only reject them in their entirety or accept them as preliminary guidelines."

In using this approach, Vollenweider (1968) has proposed the following mean depth and loading table (Table 21), and indicates that these are only provisional figures which should be confirmed or adjusted in the light of subsequent work. Vollenweider's opinion is

Legend for Figures 7 and 8

A - Aegerisse, Switzerland
An - Lake Annecy, France
B - Baldeggersee, Switzerland
Bo - Bodensee, Switzerland, Germany, Austria
F - Lake Fures, Denmark
G - Greifensee, Switzerland
H - Hallwilersee, Switzerland
L - Luzernersee, Switzerland
M - Lake Mendota, U.S.
Ma - Lake Malaren, Sweden
Mo - Moses Lake, U.S.
No - Lake Norrviken, Sweden
P - Pfaffikersee, Switzerland
S - Lake Sebasticook, U.S.
T - Turlersee, Switzerland
V - Lake Vaneren, Sweden
W - Lake Washington, U.S.
Z - Zurichsee, Switzerland

Fig. 7. ANNUAL N LOADING VERSUS M

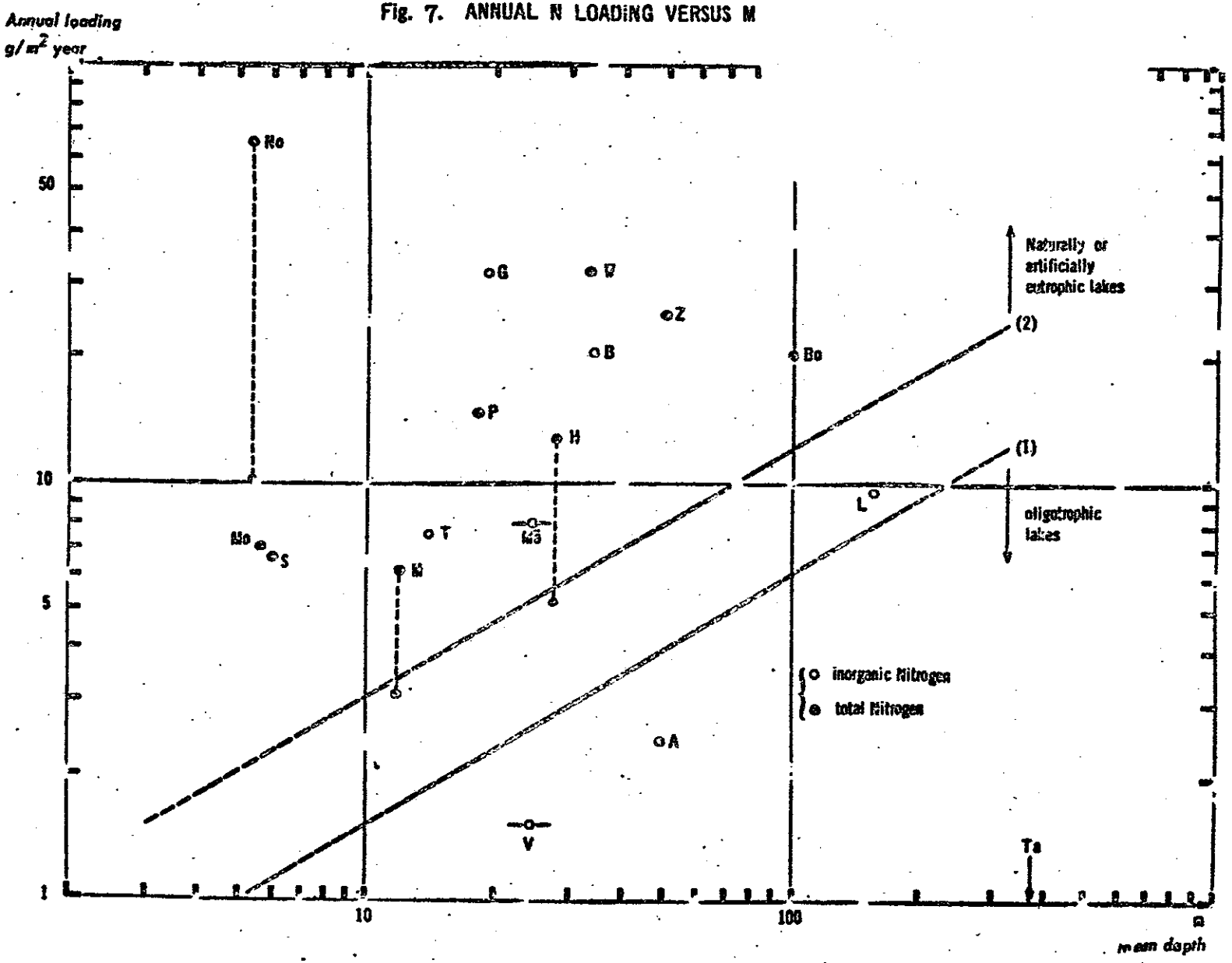


Fig. 8. ANNUAL P_{tot} LOADING VERSUS MEAN DEPTH

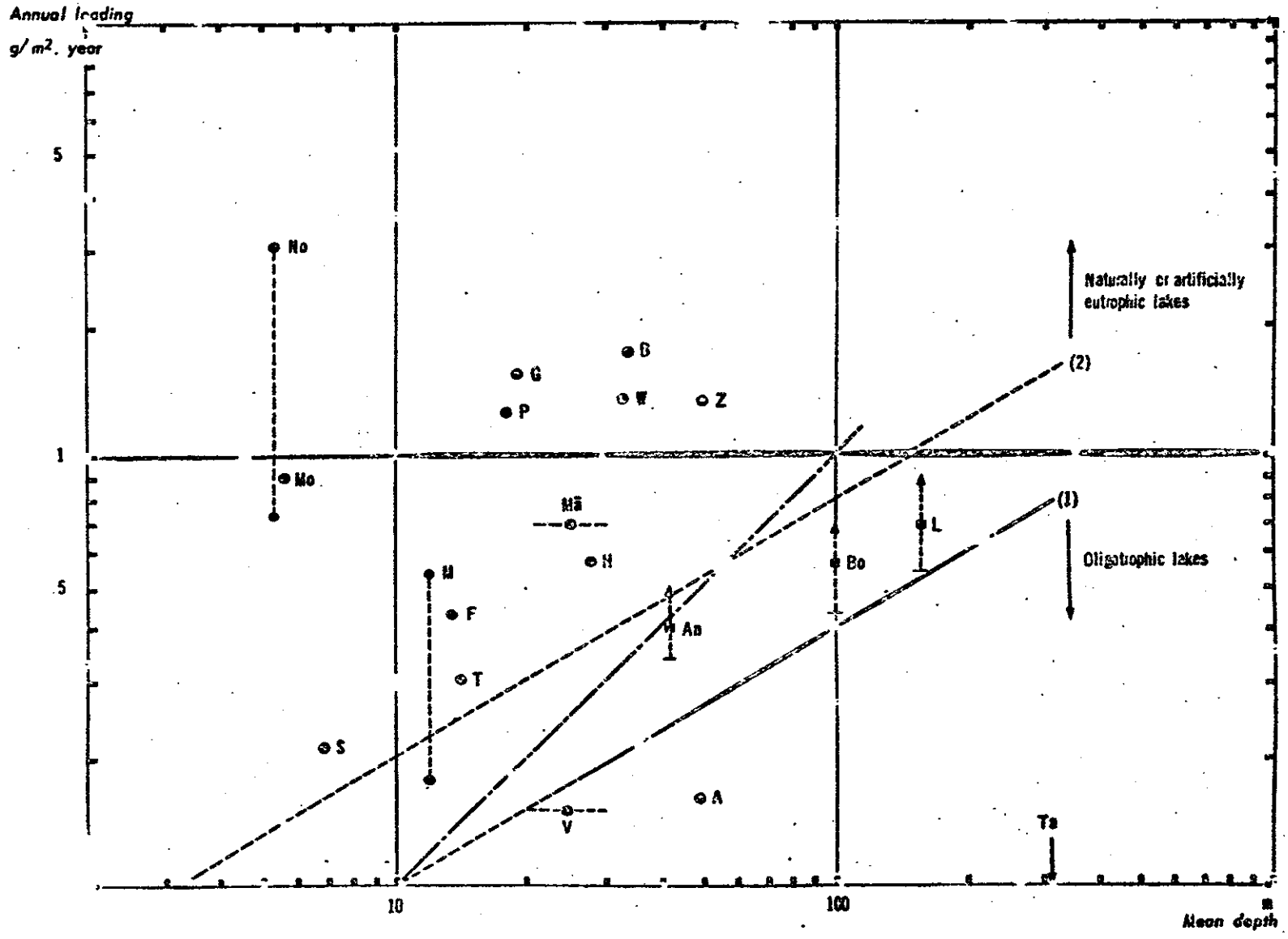


Table 21. PERMISSIBLE AND EXCESSIVE LOADING LEVELS (g/m^2 year for Total Nitrogen and Total Phosphorus) (Vollenweider 1968)

Mean Depth Up to (meters)	Permissible Loading Up to		Dangerous Loading In excess of	
	N	P	N	P
5 m	1.0	0.07	2.0	0.13
10 m	1.5	0.10	3.0	0.20
50 m	4.0	0.25	8.0	0.50
100 m	6.0	0.40	12.0	0.80
150 m	7.5	0.50	15.0	1.00
200 m	9.0	0.60	18.0	1.20

that many lakes are now in a hypertrophic state, and given the multiple sources of nutrients, it seems unfeasible to eliminate up to 80% of the nutrient inputs. The best that can be hoped for is partial recovery in many cases. Vollenweider's approach has been used in other studies with reasonable success (see for instance, Schindler and Nighswander 1970).

Other morphological factors which appear to be important to trophic state classification are hydrology and internal loading. As cited by Vollenweider (1968), it would appear that the larger the surface area, the more likely it is that nutrients will be dispersed towards the center of a lake along a line perpendicular to the shore (Hayes and Anthony 1964). Regarding nutrient loading, concentrations of phosphorous and nitrogen retention vary considerably from one lake to another. Vollenweider (1968) cites that nitrogen was retained from 15% in the Upper Lake Constance to 89% in Lake Tahoe, whereas phosphorus was retained from 25% in Lake Zurich to 93% in Lake Tahoe. This can be attributed to factors other than hydrology of the lake systems. Usually phosphorus compounds retained in a lake are completely taken up by the sediments, if the phosphorus does not remain in solution. Gradually, the phosphorus concentration in the sediments will thus increase. Nitrogen is not steadily built up because most of it is eliminated by the dentrification process. The internal loading of nutrients varies from one water body to another (Vollenweider 1968). It would appear that internal loading is a more serious threat to small than to big lakes, whereas external loading plays a more important role in bigger lakes (Vollenweider 1968).

There are many factors then, which influence trophic state. Biological production, for instance, can be stimulated by four main interdependent categories of physical factors, namely, radiant energy input, nutrient input and loss, oxygen supply, and interactions of lake morphometry and motion (Mortimer 1969). Among the four categories of physical factors, nutrients and oxygen are considered controllable to some extent.

The most plausible approach towards minimizing the effects of eutrophication is to control nutrients. Nutrients may be classified as point sources or as diffuse sources. Point sources are generally considered to be culturally-derived sources such as sewerage systems, roads, and industrial effluents; while diffuse sources are generally considered to be of natural origin, such as from the soil, from the groundwater and runoff, and from the atmosphere. At present only point sources can be estimated with any degree of accuracy. Vollenweider (1968) indicates that from the perspective of eutrophication control, study and control of diffuse sources may provide only marginal success. Clearly point sources must be given more attention in a eutrophication control program. Vollenweider (1968) cites that generally diffuse sources within a watershed are very likely to account for, on the average, more than 50% of the total nitrogen loading, whereas most of the phosphorus loading is likely to come from point sources.

The annual loadings of nitrogen and phosphorus to Lake George (i.e., the total lake) are 1.52 g N/m^2 year and 0.177 g P/m^2 year. If these data are correlated to those guidelines established by Vollenweider (1968) seen in Figures 7 and 8 and Table 21, it becomes apparent that Lake George (mean depth, 18m) is characteristically oligotrophic

relative to nitrogen loading yet approaches mesotrophy regarding phosphorus loading.

If one examines the annual loadings of nitrogen and phosphorus to the south and north basin of Lake George separately, dissimilarities in the trophic status between each basin as well as between each basin and the total lake are observed. The annual nitrogen and phosphorus loadings to South Lake George (mean depth, 15.5m) are 1.83 g N/m^2 year and 0.29 g P/m^2 year. For the north basin (mean depth, 20.5m) these loadings are 1.20 g N/m^2 year and 0.06 g P/m^2 year. The nitrogen loading for South Lake George is at the "permissible" level (Table 21) and is within the oligotrophic confines illustrated in Figure 7. However, phosphorus loading (0.29 g P/m^2 year) to this basin has exceeded the limit (0.25 g P/m^2 year) suggested to be "permissible" and apparently places the south basin of Lake George in the mildly eutrophic range (Figure 8). For the north basin, the annual nitrogen loading is "permissible" (1.20 g N/m^2 year) and can be characterized as oligotrophic. The phosphorus loading (0.06 g P/m^2 year) is surely "permissible" and seemingly classifies North Lake George as ultra-oligotrophic.

PHYSICAL, CHEMICAL AND BIOLOGICAL CHARACTERISTICS OF LAKES OF DIFFERENT TROPHIC STATE

Within the framework of physical, chemical and biological characteristics of lakes of different trophic state, the following tables are presented (Tables 22 to 24). These tables represent a compilation of information from several sources, and they are not complete, but represent a fairly comprehensive overview of differences to be found at lakes of different trophic states. The full range of trophic state, excluding a completely filled-in system, is considered.

Table 22

Physical Characteristics of Lakes of Different Trophic States
(References cited are 1-Prescott 1939, 2-Welch 1952, 3-Ruttner 1963, 4-Hardman 1941, 5-Vollenweider 1968, 6-Sakamoto 1966, and 7-Thomas 1953)

TROPHIC STATE CLASSIFICATION	Oligotrophic	Mesotrophic	Eutrophic	Dystrophic	Bog Lakes
Depth[1]	Very deep (30 meters or more)	Moderate depth (between 10 to 30 meters)	Shallow depth (10 meters or less)	Shallow depth (much less than 10 meters)	Shallow to deep. Varies greatly with age.
Geological Formation[1]	Ancient rock which is mostly hard and igneous, with low mineral residue	Ancient rock which may be moderately hard, and possessing moderate mineral residue. Varied geology	Calcareous soft rock which is silica rich and has a high mineral residue	Recent formations with heavily silted bottoms. Generally old lake beds	Glacial drift and kettle holes
Thermocline and Hypolimnion	Thermocline is high, and hypolimnion volume is large	Thermocline is moderate to low. Hypolimnion volume is moderate	Thermocline is low or absent. Hypolimnion volume low or absent	Thermocline and hypolimnion not observed	Thermocline and hypolimnion not observed
Shape, Slope and Character of Lake Shore[1]	Abrupt and accidental shoreline. Mostly steep with many cliff areas, and few shallow sloping or sandy beaches. Shoal areas and marshland minimal.	Somewhat abrupt and accidental shoreline. Moderately steep with some shallow sloping and sandy areas with moderate marshland areas.	Smooth, generally uninterrupted, and shallow sloping shoreline. Shoal areas and marshland present on some of shoreline and tributaries	Smooth, generally uninterrupted and extremely shallow sloping shoreline. Many flats, and much of area is of a marshland character	Smooth, generally uninterrupted shoreline. Marginal flats which are narrow in young lakes and widen with age. Mostly of a marshland or bog character
Water Volume Versus Bottom[1] Surface Area, and Bottom Contour	V-shaped bottom, and low percent of water volume in contact with bottom	Moderately V-shaped to U-shaped bottom. Moderate percent of water volume in contact with bottom	U-shaped bottom, and larger percent of water volume in contact with bottom	Saucer-shaped bottom with very large percent of water volume in contact with bottom	Mostly composed of saucer-shaped flats. Highest percent of water volume in contact with bottom

TROPHIC STATE CLASSIFICATION	Oligotrophic	Mesotrophic	Eutrophic	Dystrophic	Bog Lakes
Temperature[1,2]	Average temperature is cold. Hypolminion water is deep and cold	Average temperature is moderate. Hypolimnion water is cold, but not very deep	Average temperature is warm. Epilimnion is deep and warm	Average temperature is high. No temperature stratification observed	Wide variation in temperature. Great or little stratification observed
Transparency and Characteristic Color[3]	Transparency is high. The absence of appreciable amounts of humic materials and of colored materials in suspension render the water color as characteristically blue	Moderate transparency. The presence of some humic materials and moderate amounts of colored materials in suspension, such as phytoplankton, render the water color as characteristically blue-green	Low transparency. The presence of appreciable amounts of humic materials and suspended materials such as phytoplankton, render the water color as characteristically green-yellow	Low transparency. The presence of abundant organic materials in suspension and in benthos, and anaerobic conditions render the water color as characteristically a murky brown	Low transparency. False bottoms, abundant organics in suspension and in benthos, and anaerobic conditions render the water color as characteristically a murky brown
Marshland and Shoal Areas	Very small percentage of lake shoreline is marshland. Shoal areas minimal or absent	Small percentage of shoreline is marshland. Shoal areas moderate or minimal	Moderate to large percentage of shoreline is marshland. Shoal areas are evident in many areas	Large percentage of shoreline is marshland. Shoal areas are abundant with some areas replaced by flats	Very large percentage of shoreline is bog or marshland character. Shoal areas replaced by many flats and false bottoms
Surface Tension[4] (in dynes per cm)	Surface tension equal or close to that of pure water (0-2)	Reduced surface tension due to presence of organics	High to low surface tension (0-20)	Moderately high to low (5-20), near Lemna with lilies	Colored bog lakes manifest reduced surface tension
Wind-Generated Mixing	Affects epilimnion only	Affects epilimnion only	Can affect entire water column	Affects entire water column	Affects entire water column

Table 23

Chemical Characteristics of Lakes of Different Trophic States
(References cited are 1-Prescott 1939, 2-Welch 1952, 3-Ruttner 1963, 4-Hardman 1941, 5-Vollenweider 1968, 6-Sakamoto 1966, and 7-Thomas 1953)

TROPHIC STATE CLASSIFICATION	Oligotrophic	Mesotrophic	Eutrophic	Dystrophic	Bog Lakes
pH[1,5]	Acidic. Ranges from 4.5 to 7.0	Slightly basic. Ranges from 7.0 to 7.5 or more	Basic. Ranges from 6.8 to 9.8	Basic	Basic or acidic. Ranges from 5.4 to 7.8 or more
Dissolved Oxygen	High at all depths and throughout the year	Moderate to high at all depths. Some depletion of oxygen may occur in hypolimnion for short intervals, but it is always present to some extent	Minimal or absent in the hypolimnion of deeper lakes	Almost entirely absent or absent in deeper water. Some dystrophic lakes are known to have low oxygen consumption (probably many Scotch lochs[2])	Characteristically anaerobic throughout the year in bottom waters
Fixed CO_2[1]	CO_2 content and reserve is low, at approximately 2.0 mg per liter	CO_2 content and reserve is moderate, and ranges between 2 and 20 mg per liter usually	CO_2 content and reserve is high, at approximately 20-25 mg per liter or more	CO_2 content is high and variable	CO_2 content is variable, from 0.0 to 4.0 mg per liter
Conductance and Electrolytes[1,2]	Low. Perhaps from 5-11 reciprocal megohms. Electrolytes low	Moderate. Perhaps from 11-100 reciprocal megohms. Electrolytes often moderate to low	High. Perhaps 100-124 reciprocal megohms. Electrolytes are variable and often are high	Generally high, but variable. Electrolytes are generally low	Variable. Perhaps as high as 175-190 reciprocal megohms in alkaline bog lakes. Electrolytes are generally low
Nutrients[5,6,7], Total P, and total bound N. Units are mg/m^3	Total P 2-20 (Ultra-oligotrophic) <5 Total bound N 20-200 (Ultra-oligotrophic) <200	Total P 10-30 (Oligo-mesotrophic) 5-10 Total bound N 100-700 (Oligo-mesotrophic) 200-400	Total P 10-90 (Meso-eutrophic) 10-30 Total bound N 500-1300 (Meso-eutrophic) 300-650	---	---

TROPHIC STATE CLASSIFICATION	Oligotrophic	Mesotrophic	Eutrophic	Dystrophic	Bog Lakes
Nutrients[2,5] (Phosphates, Nitrites plus Nitrates, Silica, and free CO_2). Units are mg/l and represent concentrations in water	Phosphates range from 0.1-1.0 Nitrites plus Nitrates range from 0.0-1.5 Silica ranges from 0-5. Free CO_2 ranges from 0-5.	Phosphates range from 1.0-3.0 Nitrites plus Nitrates range from 1.5 to 10.0. Silica ranges from 5-25. Free CO_2 ranges from 5-10	Phosphates range from 3.0-15. Nitrites plus Nitrates range from 10.0-65.0. Silica ranges from 25-50. Free CO_2 ranges from 10-50	Calcium, phosphorus and nitrogen are very scarce	Calcium, phosphorus and nitrogen are variable. Scarce to moderate
Dissolved and Suspended Solids	Dissolved solids, are very low (generally less than 40 mg/l for soft water lakes). Suspended solids absent or very low	Dissolved solids are low to moderate (40-75 mg/l) for soft water lakes. Suspended solids low or moderate	Dissolved solids are moderate to high (75 mg/l or more for soft water lakes). Suspended solids, moderate to high	Dissolved solids are generally abundant (75-150 mg/l or greater, depending on age). Suspended solids are high	Dissolved solids are abundant (150 mg/l or greater). Suspended solids very abundant
Organics and Humic Materials[2]	Organic materials moderate to light in the benthos. Suspended organics are very low. Humic materials very low or absent	Organic materials moderate in the benthos. Suspended organics are moderate. Humic materials are low or slight	Organic materials higher in the benthos. Suspended organics are abundant. Humic materials are slight, and absent in some lakes	Organic materials abundant in the benthos. Suspended organics are abundant. Humic materials are abundant, but some without humus	Organic materials very abundant in the benthos. Suspended organics quite heavy. Humic materials are abundant
Substrate and Sediment Make-up[1]	Relatively infertile substrate. Light sediment formation with low mineral deposit	Moderately fertile substrate. Light to moderate sediment formation with low to moderate mineral deposit	Fertile substrate. Moderate to heavy sediment formation with moderate to high mineral deposit. Sediment increasing with age. Gyttja silted	Fertile substrate. Heavy sediment formation with abundant mineral deposits. Gyttja silted	Fertile substrate. Heavy sediment formation with abundant mineral deposits. Gyttja silted

TROPHIC STATE CLASSIFICATION	Oligotrophic	Mesotrophic	Eutrophic	Dystrophic	Bog Lakes
Methane and Hydrogen Sulfide Gas Production	Absent	Appears infrequently, and increases with age	Moderate to frequent and increasing with age	Abundant	Abundant

Table 24

Biological Characteristics of Lakes of Different Trophic State
(References cited are 1-Prescott 1939, 2-Welch 1952, 3-Buttner 1963, 4-Hardman 1941, 5-Vollenweider 1963, 6-Sakamoto 1966, and 7-Thomas 1953)

TROPHIC STATE CLASSIFICATION	Oligotrophic	Mesotrophic	Eutrophic	Dystrophic	Bog Lakes
Algal Flora and Algal Blooms[1,2]	Low quantity of algal flora and may be nearly absent. Many species and few individuals - plankton is quantitatively restricted. Desmids and Clorophyceae dominant. Starch formers. Water blooms are rare	Moderate quantity and variable quality of algal flora. Diatoms increasing. Both starch and oil formers present. Water blooms less rare	High quantity and variable quality of algal flora. Myxophyceae and Diatoms predominant. Oil formers. Water blooms are common	Low quantity and variable quality of algal flora. Species diversity low. Filamentous Diatoms present. Myxophyceae may be rich quantitatively. Water blooms variable	Variable quantity and quality of algal flora. May have high quantity of Myxophyceae. High in Chlorophyceae species. Water blooms variable
Macro Flora, Littoral and Profundal Fauna[1,2]	Macro flora low in quantity. Little littoral vegetation. Profundal fauna relatively rich in species and quantity. Tanytarsus type present. Corethra usually absent	Macro flora moderate in quantity. Moderate littoral vegetation. Profundal fauna relatively rich in species and quantity. Some Tanytarsus type and Chironomus type present. Corethra moderate	Macro flora high in quantity (e.g., 882 kg per sq.m. on 52% of bottom). Many species. Littoral vegetation heavy. Profundal fauna in deeper stratified lakes of this type, but poor in species & quantity in hypolimnion. Chironomus type. Corethra present	Macro flora scant to heavy growth if dystrophy has proceeded far. Littoral vegetation moderate. Profundal macro fauna poor to absent. All bottom deposits with very scant fauna. Chironomus sometimes present. Corethra present	Macro flora low in quantity and few species in some bog lakes. Some bog lakes have dense littoral encroachment from the shoreline. Profundal macro fauna poor to absent. All bottom deposits with very scant fauna. Chironomus sometimes present. Corethra present

TROPHIC STATE CLASSIFICATION	Oligotrophic	Mesotrophic	Eutrophic	Dystrophic	Bog Lakes
Bacteriological Content and Insects	Bacteriological content low. Coliform nearly absent or very low. Insect populations minimal to moderate and least active	Bacteriological content low to moderate. Low coliform. Insect populations moderate, and not a major nuisance problem. Insects more active at warmer temperatures	Bacteriological content moderate to high. Coliform variable -- low to high. Insect populations at nuisance levels. Midges and mosquitoes abundant. Floating microorganisms at water surface. Insects very active at higher temperatures	High bacteriological content. Coliform variable and can be frequently high. Insects very active and at nuisance levels. Abundant insect populations, particularly in marshland areas	High bacteriological content. Coliform variable and can be very high frequently. Insects abundant, active, and at nuisance levels. Many shallow areas provide ideal habitat for insect propagation. Insect activity variable, depending on temperature
Fish and Waterfowl[1]	Fish are diverse in species, but low in number and average size, depending on fishing pressure. Characteristic of a primitive trout lake. Exclusively cold-water species. Low to moderate waterfowl	Fish are diverse in species, with mainly cold water and some warm water species. Shifts towards warm water species with age. Fish more abundant and larger in average size. Moderate numbers of waterfowl	Fish are less in species diversity, with mainly warm water species. Few or absence of cold water species such as trout. Suitable for perch, pike, bass and other warm water species. Large average size, and abundant in numbers, but mostly trash species. Abundant waterfowl	Fish are lower in species diversity, with exclusively warm water species in advanced dystrophic lakes. Fish are small in average size, abundant in numbers, and mostly trash species. Abundant waterfowl	Low productivity. Yellow perch, blue gill, and bullhead present--mainly trash species, and small in average size. Abundant waterfowl

SECTION IX

SUMMARY

APPENDIX

Table A-1. WIND PATTERNS FOR LAKE GEORGE, N.Y.

(Stewart, 1972)

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED:KNOTS
20172	00-06	0	0.0
20172	06-12	0	0.0
20172	12-18	0	0.0
20172	18-24	0	0.0
20272	00-06	0	0.0
20272	06-12	0	0.0
20272	12-18	0	0.0
20272	18-24	3	1.00
20372	00-06	3	1.00
20372	06-12	5	1.00
20372	12-18	4	3.00
20372	18-24	3	4.00
20472	00-06	7	4.00
20472	06-12	7	7.00
20472	12-18	7	6.00
20472	18-24	7	6.00
20572	00-06	7	5.00
20572	06-12	7	6.00
20572	12-18	7	8.00
20572	18-24	5	1.00
20672	00-06	6	1.00
20672	06-12	5	2.00
20672	12-18	5	4.00
20672	18-24	5	1.00
20772	00-06	3	1.00
20772	06-12	3	2.00
20772	12-18	1	3.00
20772	18-24	1	2.00
20872	00-06	8	2.00
20872	06-12	5	2.00
20872	12-18	7	4.00
20872	18-24	7	2.00
20972	00-06	7	1.00
20972	06-12	7	2.00
20972	12-18	5	3.00
20972	18-24	7	2.00
21072	00-06	7	1.00
21072	06-12	5	2.00
21072	12-18	5	3.00
21072	18-24	5	1.00
21172	00-06	7	1.00
21172	06-12	3	2.00
21172	12-18	5	3.00
21172	18-24	6	1.00
21272	00-06	7	2.00
21272	06-12	7	2.00
21272	12-18	6	2.00
21272	18-24	6	1.00

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOTS
21372	00-06	7	1.00
21372	06-12	7	2.00
21372	12-18	2	2.00
21372	18-24	3	2.00
21472	00-06	5	1.00
21472	06-12	6	1.00
21472	12-18	8	6.00
21472	18-24	7	2.00
21572	00-06	7	1.00
21572	06-12	4	3.00
21572	12-18	5	4.00
21572	18-24	6	5.00
21672	00-06	7	4.00
21672	06-12	7	4.00
21672	12-18	1	3.00
21672	18-24	7	2.00
21772	00-06	7	2.00
21772	06-12	5	3.00
21772	12-18	3	2.00
21772	18-24	4	1.00
21872	00-06	7	1.00
21872	06-12	7	2.00
21872	12-18	5	5.00
21872	18-24	4	7.00
21972	00-06	3	4.00
21972	06-12	2	2.00
21972	12-18	2	3.00
21972	18-24	1	2.00
22072	00-06	1	2.00
22072	06-12	8	6.00
22072	12-18	8	8.00
22072	18-24	8	7.00
22172	00-06	8	3.00
22172	06-12	5	3.00
22172	12-18	5	4.00
22172	18-24	6	6.00
22272	00-06	6	3.00
22272	06-12	8	6.00
22272	12-18	1	4.00
22272	18-24	1	2.00
22372	00-06	0	1.00
22372	06-12	5	2.00
22372	12-18	4	4.00
22372	18-24	6	2.00
22472	00-06	6	2.00
22472	06-12	5	2.00
22472	12-18	4	2.00
22472	18-24	3	2.00

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOTS
22572	00-06	3	1.00
22572	06-12	3	2.00
22572	12-18	4	5.00
22572	18-24	1	1.00
22672	00-06	7	2.00
22672	06-12	7	3.00
22672	12-18	3	1.00
22672	18-24	3	1.00
22772	00-06	8	1.00
22772	06-12	4	2.00
22772	12-18	5	4.00
22772	18-24	6	4.00
22872	00-06	6	4.00
22872	06-12	5	3.00
22872	12-18	7	4.00
22872	18-24	7	1.00
22972	00-06	0	0.0
22972	06-12	0	0.0
22972	12-18	3	2.00
22972	18-24	7	1.00
30172	00-06	6	3.00
30172	06-12	5	3.00
30172	12-18	3	4.00
30172	18-24	3	2.00
30272	00-06	5	1.00
30272	06-12	6	3.00
30272	12-18	5	4.00
30272	18-24	1	2.00
30372	00-06	0	0.0
30372	06-12	0	0.0
30372	12-18	0	0.0
30372	18-24	0	0.0
30472	00-06	0	0.0
30472	06-12	0	0.0
30472	12-18	0	0.0
30472	18-24	0	0.0
30572	00-06	0	0.0
30572	06-12	0	0.0
30572	12-18	0	0.0
30572	18-24	0	0.0
30672	00-06	7	3.00
30672	06-12	7	5.00
30672	12-18	8	6.00
30672	18-24	7	1.00
30772	00-06	6	1.00
30772	06-12	6	2.00
30772	12-18	6	6.00
30772	18-24	5	3.00

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOT.
30872	00-06	5	1.00
30872	06-12	6	4.00
30872	12-18	7	6.00
30872	18-24	7	4.00
30972	00-06	7	4.00
30972	06-12	7	4.00
30972	12-18	7	3.00
30972	18-24	6	1.00
31072	00-06	7	2.00
31072	06-12	6	3.00
31072	12-18	7	3.00
31072	18-24	7	2.00
31172	00-06	7	3.00
31172	06-12	5	4.00
31172	12-18	5	5.00
31172	18-24	6	5.00
31272	00-06	6	3.00
31272	06-12	6	2.00
31272	12-18	5	2.00
31272	18-24	3	1.00
31372	00-06	5	1.00
31372	06-12	3	2.00
31372	12-18	3	3.00
31372	18-24	3	1.00
31472	00-06	7	1.00
31472	06-12	5	2.00
31472	12-18	4	2.00
31472	18-24	3	1.00
31572	00-06	2	1.00
31572	06-12	3	1.00
31572	12-18	3	1.00
31572	18-24	3	1.00
31672	00-06	0	0.0
31672	06-12	0	0.0
31672	12-18	6	3.00
31672	18-24	7	3.00
31772	00-06	8	1.00
31772	06-12	7	1.00
31772	12-18	1	1.00
31772	18-24	1	1.00
31872	00-06	6	2.00
31872	06-12	7	2.00
31872	12-18	7	5.00
31872	18-24	7	3.00
31972	00-06	1	1.00
31972	06-12	7	2.00
31972	12-18	7	3.00
31972	18-24	7	2.00

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOTS
32072	00-06	7	2.00
32072	06-12	5	3.00
32072	12-18	4	4.00
32072	18-24	5	1.00
32172	00-06	1	2.00
32172	06-12	3	2.00
32172	12-18	5	2.00
32172	18-24	7	1.00
32272	00-06	7	2.00
32272	06-12	4	3.00
32272	12-18	4	2.00
32272	18-24	8	2.00
32372	00-06	7	1.00
32372	06-12	4	2.00
32372	12-18	5	2.00
32372	18-24	0	0.0
32472	00-06	0	1.00
32472	06-12	0	1.00
32472	12-18	0	1.00
32472	18-24	7	3.00
32572	00-06	7	3.00
32572	06-12	7	4.00
32572	12-18	7	4.00
32572	18-24	7	3.00
32672	00-06	7	1.00
32672	06-12	7	3.00
32672	12-18	7	5.00
32672	18-24	7	3.00
32772	00-06	7	1.00
32772	06-12	7	4.00
32772	12-18	8	3.00
32772	18-24	2	2.00
32872	00-06	7	1.00
32872	06-12	3	2.00
32872	12-18	2	3.00
32872	18-24	8	2.00
32972	00-06	8	1.00
32972	06-12	6	1.00
32972	12-18	2	2.00
32972	18-24	2	1.00
33072	00-06	6	2.00
33072	06-12	6	2.00
33072	12-18	5	2.00
33072	18-24	5	2.00
33172	00-06	6	2.00
33172	06-12	6	2.00
33172	12-18	3	3.00
33172	18-24	5	1.00

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOTS
40172	00-06	0	0.0
40172	06-12	0	0.0
40172	12-18	4	5.00
40172	18-24	4	2.00
40272	00-06	6	2.00
40272	06-12	5	1.00
40272	12-18	5	1.00
40272	18-24	0	0.0
40372	00-06	0	0.0
40372	06-12	0	0.0
40372	12-18	8	4.00
40372	18-24	7	2.00
40472	00-06	7	1.00
40472	06-12	6	2.00
40472	12-18	6	3.00
40472	18-24	8	4.00
40572	00-06	7	2.00
40572	06-12	6	3.00
40572	12-18	6	5.00
40572	18-24	7	3.00
40672	00-06	7	1.00
40672	06-12	6	3.00
40672	12-18	6	2.00
40672	18-24	3	2.00
40772	00-06	1	1.00
40772	06-12	1	3.00
40772	12-18	3	3.00
40772	18-24	1	1.00
40872	00-06	7	1.00
40872	06-12	3	3.00
40872	12-18	3	4.00
40872	18-24	1	3.00
40972	00-06	8	2.00
40972	06-12	8	4.00
40972	12-18	8	4.00
40972	18-24	7	4.00
41072	00-06	1	2.00
41072	06-12	1	2.00
41072	12-18	8	3.00
41072	18-24	7	1.00
41172	00-06	6	1.00
41172	06-12	3	1.00
41172	12-18	5	2.00
41172	18-24	8	1.00
41272	00-06	8	1.00
41272	06-12	4	3.00
41272	12-18	4	4.00
41272	18-24	5	1.00

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOTS
41372	00-06	7	2.00
41372	06-12	4	2.00
41372	12-18	6	2.00
41372	18-24	6	2.00
41472	00-06	8	2.00
41472	06-12	1	3.00
41472	12-18	2	3.00
41472	18-24	7	1.00
41572	00-06	7	1.00
41572	06-12	6	3.00
41572	12-18	6	4.00
41572	18-24	7	1.00
41672	00-06	7	1.00
41672	06-12	5	2.00
41672	12-18	3	1.00
41672	18-24	7	1.00
41772	00-06	7	2.00
41772	06-12	5	3.00
41772	12-18	8	5.00
41772	18-24	8	2.00
41872	00-06	8	2.00
41872	06-12	4	4.00
41872	12-18	4	4.00
41872	18-24	7	2.00
41972	00-06	2	1.00
41972	06-12	1	1.00
41972	12-18	1	1.00
41972	18-24	0	0.0
42072	00-06	2	1.00
42072	06-12	1	1.00
42072	12-18	1	1.00
42072	18-24	0	0.0
42172	00-06	0	0.0
42172	06-12	8	3.00
42172	12-18	1	4.00
42172	18-24	1	1.00
42272	00-06	7	2.00
42272	06-12	4	3.00
42272	12-18	5	2.00
42272	18-24	8	1.00
42372	00-06	7	1.00
42372	06-12	5	2.00
42372	12-18	7	2.00
42372	18-24	1	1.00
42472	00-06	7	1.00
42472	06-12	7	3.00
42472	12-18	8	3.00
42472	18-24	8	2.00

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOTS
42572	00-06	8	1.00
42572	06-12	3	4.00
42572	12-18	2	3.00
42572	18-24	1	2.00
42672	00-06	7	1.00
42672	06-12	1	3.00
42672	12-18	1	3.00
42672	18-24	7	2.00
42772	00-06	7	3.00
42772	06-12	3	4.00
42772	12-18	3	4.00
42772	18-24	8	1.00
42872	00-06	1	1.00
42872	06-12	1	3.00
42872	12-18	7	4.00
42872	18-24	7	1.00
42972	00-06	7	1.00
42972	06-12	1	1.00
42972	12-18	1	3.00
42972	18-24	1	3.00
43072	00-06	7	4.00
43072	06-12	5	4.00
43072	12-18	7	4.00
43072	18-24	8	1.00
50172	00-06	6	3.00
50172	06-12	5	3.00
50172	12-18	3	4.00
50172	18-24	3	2.00
50272	00-06	0	0.0
50272	06-12	0	0.0
50272	12-18	5	2.00
50272	18-24	5	2.00
50372	00-06	5	3.00
50372	06-12	4	2.00
50372	12-18	7	2.00
50372	18-24	1	2.00
50472	00-06	7	2.00
50472	06-12	7	2.00
50472	12-18	7	2.00
50472	18-24	4	4.00
50572	00-06	7	2.00
50572	06-12	7	2.00
50572	12-18	7	2.00
50572	18-24	4	4.00
50672	00-06	6	5.00
50672	06-12	6	4.00
50672	12-18	6	3.00
50672	18-24	7	2.00

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOTS
50772	00-06	1	2.00
50772	06-12	1	2.00
50772	12-18	2	1.00
50772	18-24	1	1.00
50872	00-06	1	1.00
50872	06-12	5	2.00
50872	12-18	6	2.00
50872	18-24	7	2.00
50972	00-06	2	2.00
50972	06-12	7	3.00
50972	12-18	7	2.00
50972	18-24	3	2.00
51072	00-06	5	1.00
51072	06-12	7	1.00
51072	12-18	5	2.00
51072	18-24	8	3.00
51172	00-06	7	2.00
51172	06-12	7	3.00
51172	12-18	7	2.00
51172	18-24	7	3.00
51272	00-06	7	3.00
51272	06-12	7	2.00
51272	12-18	7	3.00
51272	18-24	5	3.00
51372	00-06	4	4.00
51372	06-12	6	2.00
51372	12-18	6	3.00
51372	18-24	4	3.00
51472	00-06	0	0.0
51472	06-12	0	0.0
51472	12-18	0	0.0
51472	18-24	0	0.0
51572	00-06	0	0.0
51572	06-12	0	0.0
51572	12-18	0	0.0
51572	18-24	0	0.0
51672	00-06	0	0.0
51672	06-12	0	0.0
51672	12-18	0	0.0
51672	18-24	0	0.0
51772	00-06	0	0.0
51772	06-12	0	0.0
51772	12-18	0	0.0
51772	18-24	0	0.0
51872	00-06	0	0.0
51872	06-12	0	0.0
51872	12-18	0	0.0
51872	18-24	0	0.0

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED/KNOTS
51972	00-06	0	0.0
51972	06-12	0	0.0
51972	12-18	0	0.0
51972	18-24	0	0.0
52072	00-06	0	0.0
52072	06-12	0	0.0
52072	12-18	0	0.0
52072	18-24	0	0.0
52172	00-06	0	0.0
52172	06-12	0	0.0
52172	12-18	0	0.0
52172	18-24	0	0.0
52272	00-06	0	0.0
52272	06-12	0	0.0
52272	12-18	0	0.0
52272	18-24	0	0.0
52372	00-06	0	0.0
52372	06-12	0	0.0
52372	12-18	0	0.0
52372	18-24	0	0.0
52472	00-06	0	0.0
52472	06-12	0	0.0
52472	12-18	0	0.0
52472	18-24	0	0.0
52572	00-06	0	0.0
52572	06-12	0	0.0
52572	12-18	0	0.0
52572	18-24	0	0.0
52672	00-06	0	0.0
52672	06-12	0	0.0
52672	12-18	0	0.0
52672	18-24	0	0.0
52772	00-06	0	0.0
52772	06-12	0	0.0
52772	12-18	0	0.0
52772	18-24	0	0.0
52872	00-06	0	0.0
52872	06-12	0	0.0
52872	12-18	0	0.0
52872	18-24	0	0.0
52972	00-06	0	0.0
52972	06-12	0	0.0
52972	12-18	0	0.0
52972	18-24	0	0.0
53072	00-06	0	0.0
53072	06-12	0	0.0
53072	12-18	0	0.0
53072	18-24	0	0.0

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOTS
53172	00-06	0	0.0
53172	06-12	0	0.0
53172	12-18	0	0.0
53172	18-24	0	0.0
60172	00-06	0	0.0
60172	06-12	0	0.0
60172	12-18	0	0.0
60172	18-24	0	0.0
60272	00-06	6	2.00
60272	06-12	8	1.00
60272	12-18	0	0.0
60272	18-24	0	0.0
60372	00-06	7	1.00
60372	06-12	4	4.00
60372	12-18	4	4.00
60372	18-24	7	2.00
60472	00-06	6	2.00
60472	06-12	6	2.00
60472	12-18	5	3.00
60472	18-24	8	1.00
60572	00-06	7	1.00
60572	06-12	3	4.00
60572	12-18	3	3.00
60572	18-24	7	2.00
60672	00-06	7	2.00
60672	06-12	4	3.00
60672	12-18	6	3.00
60672	18-24	7	1.00
60772	00-06	7	1.00
60772	06-12	7	3.00
60772	12-18	1	2.00
60772	18-24	7	1.00
60872	00-06	7	2.00
60872	06-12	4	2.00
60872	12-18	6	1.00
60872	18-24	6	1.00
60972	00-06	6	2.00
60972	06-12	7	3.00
60972	12-18	3	3.00
60972	18-24	5	1.00
61072	00-06	3	2.00
61072	06-12	1	2.00
61072	12-18	8	4.00
61072	18-24	7	4.00
61172	00-06	7	2.00
61172	06-12	7	3.00
61172	12-18	7	4.00
61172	18-24	7	2.00

WIND SPEED AND DIRECTION

INVESTIGATOR:STEWART

STATION:SOUTH BASIN(LAKE GEORGE)(1971-1972)

DATE	HOURS	DIRECTION	WIND SPEED(KNOTS
61272	00-06	7	2.00
61272	06-12	5	3.00
61272	12-18	6	2.00
61272	18-24	7	2.00
61372	00-06	7	1.00
61372	06-12	5	1.00
61372	12-18	4	3.00
61372	18-24	6	1.00
61472	00-06	5	1.00
61472	06-12	4	3.00
61472	12-18	6	3.00
61472	18-24	6	3.00
61572	00-06	6	3.00
61572	06-12	5	3.00
61572	12-18	5	5.00
61572	18-24	6	2.00
61672	00-06	6	2.00
61672	06-12	5	1.00
61672	12-18	4	3.00
61672	18-24	1	1.00
61772	00-06	7	2.00
61772	06-12	3	4.00
61772	12-18	3	4.00
61772	18-24	3	4.00
61872	00-06	7	2.00
61872	06-12	3	3.00
61872	12-18	5	3.00
61872	18-24	7	1.00
61972	00-06	5	2.00
61972	06-12	5	2.00
61972	12-18	5	2.00
61972	18-24	6	2.00
62072	00-06	5	2.00
62072	06-12	4	2.00
62072	12-18	6	4.00
62072	18-24	6	3.00
62172	00-06	5	2.00
62172	06-12	5	2.00
62172	12-18	4	2.00
62172	18-24	4	2.00
62272	00-06	3	4.00
62272	06-12	3	4.00
62272	12-18	3	4.00
62272	18-24	3	7.00
62372	00-06	4	5.00
62372	06-12	3	7.00
62372	12-18	3	5.00
62372	18-24	3	3.00

SECTION X

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