NOAA Data Report ERL GLERL-4

LAKE ERIE CHEMICAL AND PHYSICAL CHARACTERISTICS DATA FOR 1967

Gerald L. Bell

Great Lakes Environmental Research Laboratory
Ann Arbor, Michigan
January 1980

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LAKE ERIE CHEMICAL AND PHYSICAL CHARACTERISTICS DATA FOR 1967*

Gerald L. Bell

Water samples at standard depths, bottom sediment and meteorological data were collected in Lake Erie at established stations in the course of three cruises during the 1967 open-water season. The sampling program and analytical methods are described. Chemical characteristics of the water and bottom sediment are listed by cruise for each station and sampling depth. Wind, wave, and sediment biological oxygen demand (BOD) data are listed by cruise for each station. The statistical summaries showing lake-wide means, standard deviations, and sample sizes of selected variables are presented by depth for each cruise period.

1. INTRODUCTION

This basic data report presents data collected aboard the Research Vessel *Shenehon* by the Water Characteristics Branch of the Great Lakes Research Center, U.S. Army Corps of Engineers, Lake Survey District, between 14 April and 11 December 1967.

Data was collected systematically so that the vertical and lateral distribution of the chemical and physical characteristics of water in Lake Erie, as well as their variations with respect to time, were measured and examined. The sampling program was designed to provide the basic data that, together with other available data, are necessary for defining relationships of significant water characteristics, determining the rate and extent of mixing of introduced contaminants, forecasting water quality, estimating the nature and magnitude of past events, and developing simulation models for use in management and development of the lake (Great Lakes Research Center, 1969).

Interpretations of the data are not within the scope of this report and will be presented in subsequent publications. Meteorological conditions, as well as profiles of water temperature and transparency recorded at each station, are not included in this report.

2. METHODS

2.1 Sampling Program

Water characteristics, bottom sediment, and meteorological data were collected at 63 established stations (Figure 1, Table 1). Station

*GLERL Contribution No. 170.

FIGURE

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1.	Station locations in Lake Erie during 1967.	2

TABLES

1.	Station locations in Lake Erie during 1967 (by latitude and longitude).	3
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38 was never occupied. Note that station 64 is at the same location as station 1: it was used to identify data obtained by resampling at the end of the cruises. Three cruises were made during the survey season (Table 2). A cruise is defined as the time period starting when the *Shenehon* left home port at the Corps of Engineers Boatyard, Detroit, Mich., and ending upon the return to the home port. A full cruise normally required 11 days, however these cruises were separated by surveys at eleven different harbors in Lakes Erie, Huron, and Michigan (U.S. Army Corps of Engineers, 1969). Shipboard and laboratory determinations made during each cruise are summarized in Table 3.

The ship was navigated and stations were established by using a gyro compass, radar, a sextant, and visual fixes. Polystyrene floats were used to mark the deep-water stations and to facilitate the return to the same location. Water sample depths in feet were determined by a meter wheel and converted to the nearest meter. The water depth to the bottom was determined by a Raytheon Precision Survey Fathometer, Model DE-723B, with a range of 0 to 250 in feet or fathoms and the depth presented as a graphic record on a calibrated paper chart.

Water samples were taken at multiple levels at each station. The samples, collected in Fjarlie bottles, were spaced at 5- or 10-m intervals, depending upon the depth of the water. Bottom sediment samples were taken with a Shipek Sampler.

Water temperatures were recorded at sampling depth to the nearest hundredth degree Celsius by protected reversing thermometers (±0.02° accuracy) attached to each Fjarlie bottle. The temperature of the water circulating through the sea chest, approximately 1.5 m below the surface, was recorded to the nearest tenth degree Celsius and printed with the meteorological data at 6-min intervals. Temperature profiles were recorded at each station to a maximum depth of 80 m with a Marine Advisors, Inc., Electronic Bathythermograph, Model 0-5a. The bathythermograph profiles were corrected by adding or subtracting the average difference between the reversing thermometer and bathythermograph temperatures.

Transparency profiles were made to a maximum depth of 80 m with a G.M. Mfg. and Instrument Corp. Deep-Water Turbidity Meter, Model 17-M-11, modified by the U.S. Lake Survey. Color filters were not used. Transparency was determined by relating light transmission along a 1-m path through the water to the transmission along the same path through air, expressed as a percent.

Meteorological observations were recorded automatically at 0.1-hr intervals by a digital system employing solid state data gathering modules. Wind and wave observations were made while on station. The wave direction was not reported at all stations and in such cases the wind direction was used. Wave height observations were made with a damped staff-type gage or by estimating and periodically checking with the gage. The period is based on an average time of 10 successive waves.

Table 2. Cruise Schedule

Cruise	Day
1	14 Apr.-1 May
2	25 May-14 June
3	20 Nov.-11 Dec.

2.2 Chemical Analyses

The methods used in the water analysis are those described in Standard Methods (American Public Health Association, 1965), Rainwater and Thatcher (1960) and Fishman and Skougstad (1965).

Water samples were analyzed immediately in the *Shenehon* laboratory for dissolved oxygen, specific conductance, chloride, phenolphthalein and total alkalinity, pH, Eh (oxidation-reduction potential), the pH and Eh of the interstitial water of the bottom sediment, and total coliforms.

Dissolved oxygen values were determined with a Beckman Dissolved Oxygen Analyzer, Model 777. After two separate tests were made on each sample, the highest partial pressure and the lowest sample temperature readings were used for calculating the dissolved oxygen. *In situ* temperature was recorded by the reversing thermometer at the sampling depth.

Specific conductance was measured with an Industrial Instruments Conductivity Bridge, Model RC-16B2J. Two separate tests were made on each sample and the average expressed in micromhos at 25°C.

Chloride concentrations were determined by the argentometric method and titration of a 50-ml sample of lake water. The silver nitrate was standardized and the reagent blank value determined at the beginning of each day.

Phenolphthalein and total alkalinity values were determined by titrating 100-ml water samples with standard acid (H_2SO_4) to the end-points of pH 8.2 and 4.5, respectively. The end-points were determined with the pH meter and the results expressed in mg/l of calcium carbonate.

Measurements of pH and Eh were made with a Beckman Zeromatic pH Meter, a glass pH electrode, calomel fiber junction reference electrode, and a platinum Eh electrode. As a means of avoiding contamination, the electrodes were rinsed in a sample of the lake water to be tested. Between tests, the electrodes were immersed in distilled water. Tests of the interstitial water of the bottom sediment were made by inserting the electrodes into the soft sample.

Unpreserved water samples in 500-ml plastic bottles were stored in a dark area below deck and transferred at the end of each cruise to the

Table 3. Shipboard and Laboratory Measurements in Connection with Limnological Studies

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Shipboard Measurements

Meteorological data (printout each 6 min)

- Wind speed (m/sec) (10 m above water)
- Wind direction (10 m above water)
- Barometric pressure (millibars) (3 m above water)
- Air temperature (°C) (10 m above water)
- Water temperature (1.5 m below water surface)
- Solar radiation (incident) (gram-calories per sq. cm, 10 m above water)
- Relative humidity (3 m above water)

On station

- Water
  - Water temperature (°C)
    - Reversing thermometers at sample depth
    - Electronic bathythermograph
    - Infrared thermometer for surface temperature
    - Air-water interface temperatures
  - Transparency (relative to 100% in air)
  - pH
  - Eh (volts)
  - Total and phenolphthalein alkalinity (mg/l $CaCO_3$)
  - Chloride (mg/l)
  - Specific conductance (micromhos at 25°C)
  - Dissolved oxygen (mg/l and pct. sat.)
  - Coliform bacteria (membrane filter proc.)
- Waves
  - Height (m)
  - Period (sec)
  - Direction (nearest 10°)
- Bottom Sediment
  - Description (physical)
  - pH
  - Eh
  - Biochemical oxygen demand

Chemistry Laboratory

Dissolved ions (Beckman DU-2 Spectrophotometer)

Nitrate	(Brucine method, A.P.H.A.*, 1965)
Phosphate	(Ammonium molybdate method, U.S.G.S.**, 1965)
Sulfate	(Turbidimetric method, U.S.G.S.**, 1965)
Silica	(Molybdate blue method, U.S.G.S.**, 1960)
Magnesium	(Eriochrome black T method, U.S.G.S.**, 1960)
Calcium	(Flame photo tech, A.P.H.A.*, 1965)
Sodium	(Flame photo tech, A.P.H.A.*, 1965)
Potassium	(Flame photo tech, A.P.H.A.*, 1965)

Suspended sediment (mg/l)

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*American Public Health Association.
**U.S. Geological Survey.

Appendix A. LIMNOLOGICAL DATA

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6701

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	CD MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 2		MONTH 4		DAY 28		HOUR 12.5		JULIAN DAY 118			LATITUDE 41.900N		LONGITUDE 83.080W						
0.	7.98	.77	.007	16.	11.2			8.6	6.4		69.	0.0	239.	7.89		10.76	94.	12.2	
9.	6.92	.50	.002	15.	12.3	1.5		8.5	6.5		70.	0.0	248.	7.92		11.03	94.	31.8	
9.18														6.91	-.045				
STATION 3		MONTH 4		DAY 28		HOUR 11.7		JULIAN DAY 118			LATITUDE 41.800N		LONGITUDE 83.130W						
0.	7.19	1.08	.002	22.	20.4			9.9	9.7		77.	0.0	306.	8.09	.062	11.08	98.	11.8	
8.	8.09	.36	.004	24.	20.2	1.6		9.7	11.3		77.	0.0	311.	8.01	.100	11.05	96.	13.8	
9.18														7.21	-.051				
STATION 5		MONTH 4		DAY 28		HOUR 10.2		JULIAN DAY 118			LATITUDE 41.640N		LONGITUDE 82.950W						
0.	8.99	1.00	.004	21.	19.7			9.6	9.5		71.	0.0	284.	8.16	.068	10.66	95.	16.4	
7.	8.31	1.54	.004	20.	20.0	.1		9.2	9.4		71.	0.0	284.	8.10	.075	11.15	98.	24.4	
8.20														6.62	.082				
STATION 6		MONTH 5		DAY 1		HOUR 13.0		JULIAN DAY 121			LATITUDE 41.680N		LONGITUDE 82.580W						
0.	9.05	1.23	.014	25.	21.3			9.8	10.4		79.		306.	8.27	.103	10.69	96.		
11.	6.14	0.00	.017	26.	23.1	0.0		9.8	12.9		76.	0.0	328.	7.90	.206	10.90	91.		
12.28														7.16	-.025				
STATION 7		MONTH 5		DAY 1		HOUR 15.2		JULIAN DAY 121			LATITUDE 41.530N		LONGITUDE 82.590W						
0.	9.45	2.46	.021	27.	20.0			9.1	10.0		74.	0.0	300.	8.17	.203	10.32	93.		
11.	6.87	.19	.017	30.	21.9	0.0		8.8	10.2		77.	1.4	300.	8.24	.241	10.53	89.		
13.18														7.31	-.112				
STATION 8		MONTH 5		DAY 1		HOUR 16.4		JULIAN DAY 121			LATITUDE 41.520N		LONGITUDE 82.410W						
0.			.012	26.	22.7			9.0	11.2		79.	0.0	308.	8.20	.189	10.44	92.		
8.		.85	.312	26.	22.7			8.9	11.7		79.	1.8	308.	8.27	.205	10.55	92.		
12.		.19	.010	27.	23.5	1.0		9.2	10.6		78.	0.0	311.	8.10	.205	10.54	91.		
14.68														7.48	-.125				
STATION 9		MONTH 4		DAY 14		HOUR 10.3		JULIAN DAY 104			LATITUDE 41.540N		LONGITUDE 82.210W						
0.		1.23														12.85			
14.		1.08														12.96			
15.58		.50												7.28	-.127				
STATION 10		MONTH 4		DAY 18		HOUR 14.7		JULIAN DAY 108			LATITUDE 41.570N		LONGITUDE 82.050W						
0.	7.16	2.62	.012	34.	19.5			10.5	11.9		77.	1.8	320.	8.48	.054	11.58	95.	12.7	
8.	7.16	2.85	.012	38.	21.0			9.3	11.7		78.	2.7	328.	8.48	.082	11.70	100.	10.4	
15.	7.13	3.85	.010	30.	20.9	0.0		8.1	12.3		79.	2.7	321.	8.52	.099	11.65	99.	19.6	
16.80														7.60	.120				
STATION 11		MONTH 4		DAY 18		HOUR 16.2		JULIAN DAY 108			LATITUDE 41.610N		LONGITUDE 81.820W						
0.	5.26	.19	.010	26.	20.2			9.8	11.2		77.	0.0	300.	8.20	.206	12.05	98.	12.4	
10.	5.28	.36	.008	25.	20.4			9.3	10.9		78.	.9	301.	8.26	.200	12.37	101.	7.3	
17.	5.25	.19	.010	26.	20.9	.1		9.0	10.7		80.	.9	301.	8.25	.201	12.22	99.	10.9	
18.68														7.12	.212				
STATION 12		MONTH 4		DAY 18		HOUR 17.2		JULIAN DAY 108			LATITUDE 41.540N		LONGITUDE 81.790W						
0.	6.57	.92	.008	29.	21.6			9.1	11.2		79.	.9	321.	8.38	.075	11.57	97.	11.6	
8.	4.59	1.38	.014	29.	21.2			9.0	12.0		78.	.9	322.	8.32	.100	11.57	97.	13.1	
14.	6.48	1.85	.010	30.	20.6	.1		10.3	11.9		79.	.9	322.	8.25	.120	11.66	98.	3.3	
16.28														7.35	.145				
STATION 13		MONTH 4		DAY 19		HOUR 8.7		JULIAN DAY 109			LATITUDE 41.640N		LONGITUDE 81.620W						
0.	6.66	2.08	.010	29.	20.1			9.5	13.5		75.	.9	307.	8.25	.055	11.80	100.	4.4	
8.	6.66	1.62	.010	29.	21.2			9.3	11.9		75.	.9	308.	8.26	.086	11.99	101.	4.0	
14.	6.65	2.15	.012	28.	21.0	1.1		9.9	11.9		75.	0.0	308.	8.19	.092	11.87	100.	5.6	
16.88														7.30	.088				
STATION 14		MONTH 4		DAY 19		HOUR 10.0		JULIAN DAY 109			LATITUDE 41.700N		LONGITUDE 81.450W						
0.	7.15	1.92	.012	33.				10.8	12.4							11.65		6.2	
14.	7.18	1.77	.014	30.		.1		9.6	13.5							11.53		6.7	
13.78														7.52	.149				
STATION 15		MONTH 4		DAY 19		HOUR 11.0		JULIAN DAY 109			LATITUDE 41.780N		LONGITUDE 81.520W						
0.	5.33	2.23	.012	30.	19.5			8.9	11.0		75.		314.	8.21	.220	11.61	95.	2.9	
10.	5.29	1.62	.014	27.	19.3			9.5	14.7		76.	0.0	315.	8.20	.218	11.89	97.	1.3	
19.	5.22	1.69	.012	29.	20.4	.1		8.7	10.9		75.	.9	315.	8.25	.215	11.98	97.	1.3	
21.68																			
STATION 16		MONTH 4		DAY 19		HOUR 11.9		JULIAN DAY 109			LATITUDE 41.870N		LONGITUDE 81.580W						
0.	3.44	2.49	.314	27.	20.7			9.2	11.7		75.	0.0	310.	8.09	.092	11.91	92.	1.3	
10.	3.32	1.77	.310	28.	19.6			9.6	10.9		75.	0.0	311.	8.13	.123	12.05	93.	1.6	
21.	3.30	2.54	.312	26.	20.4	0.0		9.9	15.9		76.	0.0	310.	8.00	.126	12.12	94.	.9	
23.88														7.01	.003				

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6701

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 17		MONTH 4		DAY 19		HOUR 13.3		JULIAN DAY 109			LATITUDE 41.780N		LONGITUDE 81.280W						
0.	8.01	2.08	.010	31.	23.1			9.9	12.0		75.	0.0	331.	8.10	.060	10.90	95.	1.8	
11.	7.39	2.69	.010	32.	22.8	1.1		8.5	12.3		76.	0.0	335.	8.11	.078	11.11	95.	9.1	
12.28														7.00	-.160				
STATION 18		MONTH 4		DAY 19		HOUR 15.5		JULIAN DAY 109			LATITUDE 41.870N		LONGITUDE 81.100W						
0.	5.72	2.15	.010	30.	21.4			9.5	11.9		74.	0.0	322.	8.03	.060	11.64	96.	.4	
8.	5.53	2.92	.012	29.	20.9			9.5	13.6		75.	0.0	328.	8.00	.065	11.80	97.	1.1	
16.	5.36	1.54	.010	31.	21.4	.1		8.6	11.1		75.	0.0	325.	8.02	.090	11.75	96.	1.1	
18.08														7.19	-.140				
STATION 19		MONTH 4		DAY 20		HOUR 7.6		JULIAN DAY 110			LATITUDE 41.950N		LONGITUDE 80.850W						
0.	4.62	1.85	.015	30.	23.7			8.3	14.9		72.	0.0	376.	8.01	.092	12.51	100.	.4	
10.	4.59	1.85	.012	29.	23.2			8.4	15.3		73.	0.0	374.	8.09	.083	12.79	102.	4.9	
17.	4.61	1.85	.014	28.	24.9	.1		9.3	14.1		73.	0.0	377.	8.05	.082	12.72	102.	2.7	
18.68														7.00	.108				
STATION 20		MONTH 4		DAY 20		HOUR 9.2		JULIAN DAY 110			LATITUDE 42.170N		LONGITUDE 80.770W						
0.	2.83	.19	.010	26.	20.2			8.9	10.4		78.	0.0	320.	8.13	.071	13.31	101.	2.0	
10.	2.81	0.00	.010	26.	20.2			9.1	10.2		77.	0.0	322.	8.18	.092	13.46	103.	7.3	
22.	2.78	.57	.008	27.	20.0	0.0		8.6	10.4		78.	.9	321.	8.25	.092	13.19	101.	4.2	
23.58														7.36	.030				
STATION 21		MONTH 4		DAY 20		HOUR 10.9		JULIAN DAY 110			LATITUDE 41.980N		LONGITUDE 80.680W						
0.	4.61	2.15	.012	28.	28.2			9.1	13.0		73.	0.0	352.	8.02	.030	12.54	100.	1.6	
8.	4.71	1.31	.010	29.	27.7			9.0	13.6		73.	0.0	364.	8.03	.061	12.76	102.	.7	
15.	4.83	1.32	.010	29.	27.9	.7		8.7	14.1		73.	0.0	369.	7.95	.072	12.70	102.	2.7	
16.58														7.03	-.130				
STATION 22		MONTH 4		DAY 20		HOUR 12.9		JULIAN DAY 110			LATITUDE 42.050N		LONGITUDE 80.400W						
0.	5.94	1.15	.010	30.				8.5	13.6							12.02		1.8	
12.	5.67	1.15	.010	28.		0.3		8.9	13.8							12.39		1.8	
13.78														7.39	.110				
STATION 23		MONTH 4		DAY 20		HOUR 14.0		JULIAN DAY 110			LATITUDE 42.100N		LONGITUDE 80.250W						
0.	6.63	1.31	.010	29.	22.5			8.7	14.1		72.	0.0	351.	8.32	.100	11.44	96.	.9	
9.	6.50	1.15	.010	28.	21.6	.1		8.8	14.0		73.	0.0	353.	8.19	.125	11.47	96.	3.6	
10.19														7.10					
STATION 24		MONTH 4		DAY 21		HOUR 7.6		JULIAN DAY 111			LATITUDE 42.180N		LONGITUDE 80.020W						
0.	6.49	.43	.008	28.				8.7	11.6							11.14		.7	
12.	6.31	1.15	.014	27.		.2		8.6	11.4							11.07		3.6	
13.79														6.92	-.097				
STATION 25		MONTH 4		DAY 21		HOUR 8.9		JULIAN DAY 111			LATITUDE 42.270N		LONGITUDE 79.830W						
0.	4.98	1.00	.010	28.	19.0			8.5	10.7		75.	0.0	317.	8.16	.090	11.83	96.	10.3	
8.	4.97	.43	.012	26.	18.6			8.6	10.6		77.	0.0	323.	8.19	.140	12.05	97.	.2	
14.	4.98	.70	.008	28.	19.1	.1		7.9	10.6		77.	0.0	322.	8.19	.140	12.13	98.	1.8	
15.88														6.98	.050				
STATION 26		MONTH 4		DAY 21		HOUR 10.3		JULIAN DAY 111			LATITUDE 42.350N		LONGITUDE 79.630W						
0.	4.89	.63	.012	26.	19.5			8.7	10.5		76.		314.	8.22	.091	12.47	100.	.4	
10.	4.86	.77	.010	26.	19.3			7.6	10.7		77.	.9	319.	8.23	.096	12.61	102.		
16.	4.72	.50	.010	26.	19.0	.1		8.8	11.1		77.	.9	318.	8.26	.101	12.55	101.	2.9	
18.38																			
STATION 27		MONTH 4		DAY 21		HOUR 11.8		JULIAN DAY 111			LATITUDE 42.460N		LONGITUDE 79.520W						
0.	2.93	1.92	.007	25.	20.4			8.0	10.2		77.	0.0	320.	8.10	.092	12.63	97.	.9	
10.	2.93	.19	.010	25.	20.6			9.1	10.5		78.	0.0	325.	8.12	.110	12.93	99.	.2	
25.	3.29	.50	.010	25.	20.9	.2		9.1	11.2		78.	0.0	325.	8.12	.112	12.85	99.	1.1	
26.58														7.62	.140				
STATION 28		MONTH 4		DAY 24		HOUR 8.3		JULIAN DAY 114			LATITUDE 42.560N		LONGITUDE 79.540W						
0.	1.51	.63	.007	28.	21.2			9.2	10.3		78.	0.0	319.	7.85	.170	13.07	96.	.2	
10.	1.55	.10	.008	26.	21.0			8.5	10.3		78.	0.0	326.	7.88	.165	13.35	99.	0.0	
30.	1.59	.63	.008	26.	21.2			9.5	10.1		80.	0.0	324.	8.00	.162	13.33	98.	4.2	
41.	1.48	1.08	.008	26.	20.9	.1		8.9	10.3		78.	0.0	323.	7.70	.162	13.19	97.	.7	
44.29														6.66	.118				
STATION 29		MONTH 4		DAY 21		HOUR 13.0		JULIAN DAY 111			LATITUDE 42.530N		LONGITUDE 79.330W						
0.	3.30	.43	.012	24.	21.4			8.8	11.2		77.	0.0	322.	8.09	.062	12.42	96.	.2	
10.	3.25	.28	.007	27.	21.6			9.2	10.2		77.	0.0	325.	8.10	.070	12.59	97.	.4	
19.	3.27	.70	.010	25.	21.6	.2		9.1	12.5		77.	0.0	322.	8.09	.080	12.56	97.	..	
21.09														7.50	.008				

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6701

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLT 100ML
STATION 30		MONTH 4		DAY 21		HOUR 14.1		JULIAN DAY 111			LATITUDE 42.600N		LONGITUDE 79.180W						
0.	3.17	1.63	.010	26.	20.6			9.1	10.5		77.	0.0	324.	8.11	.070	11.51	89.	1.3	
10.	3.08	1.31	.012	26.	20.4			9.4	10.6		77.	0.0	325.	8.14	.085	11.88	91.	2.0	
17.	3.02	.70	.009	26.	20.8	.1		9.0	11.2		78.	0.0	327.	8.16	.110	11.82	91.	6.9	
18.98														7.45	.070				
STATION 34		MONTH 4		DAY 21		HOUR 15.1		JULIAN DAY 111			LATITUDE 42.720N		LONGITUDE 79.220W						
0.	2.66	.70	.007	25.	21.9			8.8	10.3		77.	0.0	323.	8.05	.082	12.07	92.	8.2	
10.	2.61	.70	.011	28.	21.3			9.3	9.9		77.	0.0	325.	8.08	.108	12.04	91.	9.1	
20.	2.56	.28	.007	26.	21.4	.2		8.8	10.3		78.	0.0	323.	8.01	.121	12.12	92.	8.2	
22.38														7.56	.155				
STATION 37		MONTH 4		DAY 24		HOUR 10.3		JULIAN DAY 114			LATITUDE 42.680N		LONGITUDE 79.680W						
0.	3.29	.97	.007	25.	19.5			9.6	9.9		82.	0.0	320.	8.00	.065	13.01	101.	.2	
10.	3.28	.36	.008	27.	19.3			9.7	9.9		81.	0.0	326.	8.03	.080	13.10	101.	2.0	
20.	3.26	.63	.012	31.	20.0			8.6	10.0		81.	0.0	328.	8.05	.092	13.15	102.	.2	
31.	3.27	1.23	.012	27.	19.8	.1		8.5	9.9		81.	0.0	328.	7.99	.099	13.06	101.	4.0	
32.98														6.98	.072				
STATION 39		MONTH 4		DAY 24		HOUR 12.3		JULIAN DAY 114			LATITUDE 42.620N		LONGITUDE 80.000W						
0.	1.89	.36	.007	28.	28.4			8.0	10.1		79.	0.0	312.	7.82	.018	12.83	95.	.7	
10.	2.80	.78	.012	25.	29.2			9.0	10.1		80.	0.0	313.	7.88	.042	13.14	100.	.4	
30.	3.96	0.00	.012	28.	29.2			9.5	9.9		81.	0.0	313.	8.00	.058	13.11	103.	9.1	
40.	3.94	.43	.014	26.	29.8	.1		9.5	9.8		80.	0.0	313.	7.98	.070	12.81	101.	8.2	
43.05														7.01	.112				
STATION 40		MONTH 4		DAY 24		HOUR 13.4		JULIAN DAY 114			LATITUDE 42.520N		LONGITUDE 79.940W						
0.	1.66	.85	.007	27.	19.0			9.7	10.2		79.	0.0	312.	7.80	.025	12.41	92.	0.0	
10.		.57	.010	26.	19.5			9.1	10.0		79.	0.0	314.	7.75	.040	12.44	98.	1.6	
30.	2.05	.85	.008	28.	20.2			8.6	9.9		79.	0.0	318.	7.68	.052	13.14	98.	.1	
60.	2.88	.28	.010	26.	20.4	.2		8.6	10.0		79.	0.0	315.	7.50	.065	12.85	98.	4.0	
63.18														7.12	.169				
STATION 41		MONTH 4		DAY 24		HOUR 14.6		JULIAN DAY 114			LATITUDE 42.430N		LONGITUDE 79.960W						
0.	1.54	.43	.007	25.	20.4			8.8	10.1		79.	0.0	315.	7.95	.075	12.31	91.	.9	
10.	1.94	1.31	.010	26.	20.1			9.3	9.9		79.	0.0	317.	7.92	.082	12.22	91.	3.3	
30.	1.51	.63	.012	26.	19.7			9.1	9.8		80.	0.0	317.	8.01	.093	12.12	89.	2.4	
43.	1.52	.50	.012	26.	20.4	.3		9.1	10.0		79.	0.0	316.	8.00	.102	12.46	92.	4.0	
46.38														7.32	-.020				
STATION 42		MONTH 4		DAY 24		HOUR 15.8		JULIAN DAY 114			LATITUDE 42.370N		LONGITUDE 79.920W						
0.	1.81	.10	.009	27.				8.8	10.1		79.	0.0	309.	7.90	.080	12.19	90.	1.6	
10.	2.00	.10	.007	26.				9.2	10.3		79.	0.0	310.	7.88	.090	12.49	93.	6.0	
30.	1.80	0.00	.009	21.				8.6	11.3		79.	0.0	314.	7.90	.098	12.58	93.	3.1	
36.	1.79	.36	.007	23.		.1		9.3	10.3		79.	0.0	314.	7.85	.100	12.51	93.	8.4	
39.00														7.10	.028				
STATION 43		MONTH 4		DAY 25		HOUR 9.0		JULIAN DAY 115			LATITUDE 42.100N		LONGITUDE 80.330W						
0.	3.38	.63	.011	25.	19.3			8.7	9.9		79.	0.0	310.	8.02	.048	12.80	99.	2.9	
10.	3.40	.36	.006	25.	19.0			8.1	10.0		79.	0.0	313.	8.01	.046	13.02	101.	3.6	
22.	3.51	.77	.016	26.	19.3	.1		8.2	9.5		79.	0.0	314.	8.02	.049	12.94	101.	1.8	
23.89														7.32	.096				
STATION 44		MONTH 4		DAY 25		HOUR 10.0		JULIAN DAY 115			LATITUDE 42.250N		LONGITUDE 80.330W						
0.	2.25	.10	.013	26.	30.1			8.2	9.8		79.	0.0	317.	8.00	.155	12.71	95.	3.6	
10.	2.21	.57	.013	25.	29.3			7.7	9.8		80.	0.0	317.	8.05	.157	12.93	97.	36.4	
18.	2.17	.36	.011	24.	28.8	.2		9.1	9.9		80.	0.0	318.	8.09	.154	12.83	96.	24.0	
20.18																			
STATION 45		MONTH 4		DAY 25		HOUR 10.9		JULIAN DAY 115			LATITUDE 42.330N		LONGITUDE 80.400W						
0.	2.06	.57	.013	26.	20.5			9.3	9.8		81.	0.0	318.	7.90	.122	12.34	92.	1.1	
10.	1.98	.10	.016	24.	20.1			9.0	9.9		80.	0.0	321.	8.00	.120	12.80	95.	4.6	
18.	1.95	.50	.011	28.	20.4	.3		9.4	10.2		80.	0.0	322.	8.01	.095	12.70	95.	20.4	
19.88														7.30	.132				
STATION 46		MONTH 4		DAY 25		HOUR 12.4		JULIAN DAY 115			LATITUDE 42.470N		LONGITUDE 80.460W						
0.	4.67	.77	.013	25.	20.2			9.4	9.9		81.		328.	8.22	.172	12.46	100.	17.1	
10.	4.56	.43	.014	26.	20.2			9.1	9.9		81.	0.0	332.	8.20	.176	12.78	102.	23.3	
18.	4.40	.77	.014	25.	20.6	.1		9.1	9.7		81.	0.0	331.	8.06	.179	12.58	100.	24.4	
19.58															.180				
STATION 47		MONTH 4		DAY 25		HOUR 13.9		JULIAN DAY 115			LATITUDE 42.520N		LONGITUDE 80.680W						
0.	4.62	.43	.014	26.	20.4			8.7	9.9		80.		312.	8.22	.111	12.71	102.	26.9	
8.	4.51	.19	.014	25.	20.4			8.4	9.8		79.		316.	8.21	.115	13.07	104.	21.6	
16.	4.46	.38	.014	26.	20.2	0.8		8.7	10.0		79.	0.0	319.	8.09	.120	13.16	105.	15.1	
17.79																			

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6701

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 48		MONTH 4		DAY 26		HOUR 6.9		JULIAN DAY 116			LATITUDE 42.520N		LONGITUDE 80.930W						
0.	4.17	0.00	.016	25.	20.4			9.2	10.6		78.	0.0	318.	8.09	.033	12.23	97.	14.4	
10.	4.18	.19	.016	25.	20.9			8.5	10.2		78.	0.0	321.	8.10	.060	12.60	100.	8.4	
17.	4.16	.10	.018	25.	20.2	.1		9.4	10.4		78.	0.0	322.	8.05	.075	12.34	98.	16.7	
18.98														7.20	.135				
STATION 49		MONTH 4		DAY 26		HOUR 8.3		JULIAN DAY 116			LATITUDE 42.350N		LONGITUDE 80.850W						
0.	3.72	.19	.022	25.	20.4			8.8	10.2		78.	0.0	322.	8.12	.075	12.50	98.	1.6	
10.	3.71	0.00	.018	24.	20.0			9.3	10.3		79.	0.0	323.	8.10	.078	12.44	97.	5.6	
20.	3.72	.36	.018	25.	20.1	.1		9.4	10.4		79.	0.0	322.	8.11	.083	12.50	98.	7.3	
21.39														7.15	.140				
STATION 50		MONTH 4		DAY 26		HOUR 9.7		JULIAN DAY 116			LATITUDE 42.310N		LONGITUDE 81.080W						
0.	3.96	0.00	.024	25.	19.5			9.2	9.8		77.	0.0	321.	8.09	.043	11.99	94.	8.2	
10.	3.91	.10	.027	25.	20.0			7.6	9.9		79.	0.0	321.	8.10	.059	12.40	97.	1.1	
20.	3.91	.43	.022	27.	20.1	.2		8.8	10.3		78.	0.0	321.	8.00	.068	12.10	95.	19.9	
21.98														7.42	.109				
STATION 51		MONTH 4		DAY 26		HOUR 11.1		JULIAN DAY 116			LATITUDE 42.250N		LONGITUDE 81.320W						
0.	3.80	.70	.022	26.	20.0			8.0	9.8		79.	0.0	310.	8.05	.062	11.01	92.	9.1	
10.	3.77	.43	.024	24.	20.1			9.3	10.9		79.	0.0	310.	8.10	.070	11.87	93.	9.1	
21.	3.77	1.69	.006	27.	19.8	.1		9.1	10.6		79.	0.0	310.	7.99	.081	11.80	92.	8.4	
22.95														1.09	.088				
STATION 52		MONTH 4		DAY 26		HOUR 12.2		JULIAN DAY 116			LATITUDE 42.350N		LONGITUDE 81.370W						
0.	3.79	0.00	.014	24.	21.2			8.5	10.8		78.	0.0	322.	8.20	.042	12.16	95.	2.7	
10.	3.79	1.23	.006	25.	21.4			9.4	10.3		78.	0.0	325.	8.05	.048	12.37	97.	6.0	
20.	3.75	3.08	.007	25.	21.4	.1		9.0	10.5		78.	0.0	325.	8.03	.058	12.15	95.	4.0	
21.95														7.19	.090				
STATION 53		MONTH 4		DAY 26		HOUR 14.1		JULIAN DAY 116			LATITUDE 42.380N		LONGITUDE 81.610W						
0.	3.74	.10	.013	23.	20.8			8.8	10.9		79.	0.0	321.	8.09	.026	12.38	97.	4.9	
10.	3.72	.36	.013	28.	20.2			9.6	10.7		79.	0.0	321.	8.10	.038	12.53	98.	1.0	
19.	3.72	.43	.015	26.	20.4	.2		8.8	10.3		79.	0.0	321.	8.15	.051	12.25	96.	1.8	
20.78														7.18	.086				
STATION 54		MONTH 4		DAY 26		HOUR 15.8		JULIAN DAY 116			LATITUDE 42.240N		LONGITUDE 81.810W						
0.	5.27	3.08	.007	23.	20.4			9.0	10.1		79.	0.0	321.	8.10	.020	11.82	96.	2.2	
10.	5.24	.50	.016	28.	20.9			8.7	10.4		79.	0.0	322.	8.11	.035	12.14	99.	1.3	
17.	5.21	1.62	.004	24.	20.4	.1		9.3	8.5		79.	0.0	322.	7.92	.049	12.19	99.	1.1	
18.68														7.25	.100				
STATION 55		MONTH 4		DAY 27		HOUR 7.4		JULIAN DAY 117			LATITUDE 42.120N		LONGITUDE 81.740W						
0.	4.06	.50	.006	25.	20.9			9.2	8.8		78.	0.0	307.	8.01	.094	12.38	97.	2.7	
10.	4.08	.57	.004	25.	20.2			9.3	8.4		78.	0.0	310.	8.05	.090	12.34	97.	2.0	
21.	4.07	1.23	.004	25.	20.9	.1		9.1	8.2		79.	0.0	309.	7.98	.092	12.19	96.	2.4	
22.90														6.85	.095				
STATION 56		MONTH 4		DAY 27		HOUR 8.7		JULIAN DAY 117			LATITUDE 41.990N		LONGITUDE 81.680W						
0.	3.71	1.08	.006	24.	19.5			9.3	8.5		75.	0.0	296.	7.90	.018	12.46	97.	4.2	
10.	3.71	1.31	.004	24.	19.7			9.1	8.7		75.	0.0	300.	7.90	.028	12.51	98.	3.6	
23.	3.71	.19	.004	24.	19.5	.2		9.3	4.9		73.	0.0	300.	7.85	.038	12.33	96.	2.4	
24.48														6.72	-.113				
STATION 57		MONTH 4		DAY 27		HOUR 11.0		JULIAN DAY 117			LATITUDE 42.040N		LONGITUDE 82.040W						
0.	4.42	.19	.006	24.	20.0			8.5	9.3		77.	0.0	316.	8.00	.015	12.15	97.	3.1	
10.	4.32	.50	.007	24.	20.0			8.8	9.6		78.	0.0	316.	8.03	.025	12.30	95.	1.3	
20.	4.31	.63	.006	25.	20.1	.2		8.1	9.2		79.	0.0	311.	8.00	.040	11.95	95.	1.3	
22.38														6.90	-.109				
STATION 58		MONTH 4		DAY 27		HOUR 12.7		JULIAN DAY 117			LATITUDE 42.070N		LONGITUDE 82.300W						
0.	5.25	.36	.004	24.	27.5			6.7	6.6		78.	0.0	321.	8.02	.050	12.15	99.	4.2	
10.	4.66	.10	.007	26.	28.3			7.1	7.3		78.	0.0	322.	8.02	.062	12.27	98.	1.1	
16.	4.63	.43	.007	23.	28.3	.2		7.7	7.2		79.	0.0	321.	7.55	.071	12.09	97.	1.8	
18.38														7.01	.085				
STATION 59		MONTH 4		DAY 27		HOUR 14.1		JULIAN DAY 117			LATITUDE 41.860N		LONGITUDE 82.380W						
0.	5.28	.43	.007	29.	20.9			8.3	7.4		78.	0.0	316.	8.01	.030	12.09	100.	1.8	
8.	5.67	.70	.006	24.	20.9			8.9	7.8		79.	0.0	319.	8.00	.043	12.30	100.	2.1	
12.	5.05	.57	.007	29.	21.2	.1		8.1	7.4		79.	0.0	319.	8.00	.060	12.24	99.	1.6	
13.78														6.95	-.070				
STATION 60		MONTH 4		DAY 27		HOUR 15.2		JULIAN DAY 117			LATITUDE 41.840N		LONGITUDE 82.550W						
0.	7.28	.85	.009	25.	20.6			8.5	7.6		77.	0.0	321.	8.00	.031	11.69	100.	1.6	
10.	6.25	1.00	.007	25.	21.0	.1		8.4	8.8		79.	0.0	323.	8.01	.049	12.04	100.	3.1	
11.38																			

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6701

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	OC MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 61		MONTH 4		DAY 27		HOUR 16.3		JULIAN DAY 117			LATITUDE 41.950N		LONGITUDE 82.630W						
0.	7.85	1.08	.006	19.	19.3			8.1	9.8		75.	0.0	314.	7.95	.072	11.37	99.	1.8	
9.	7.30	.85	.009	23.	19.7	.1		7.6	10.6		76.	0.0	315.	7.92	.083	11.37	97.	4.0	
10.79														7.00	-.070				
STATION 62		MONTH 4		DAY 28		HOUR 8.4		JULIAN DAY 118			LATITUDE 41.850N		LONGITUDE 82.820W						
0.	7.76	.85	.007	18.	21.4			8.2	9.1		73.		288.	8.21	.041	11.44	99.	2.9	
9.	7.17	.70	.007	19.	21.4	.5		7.7	9.1		73.	0.0	294.	8.19	.045	11.49	98.	2.4	
10.19														7.28	.090				
STATION 63		MONTH 4		DAY 28		HOUR 13.3		JULIAN DAY 118			LATITUDE 41.970N		LONGITUDE 83.000W						
0.	9.09	1.38	.004	20.	21.8			7.9	10.0		72.	0.0	309.	7.96	.067	10.91	98.	2.2	
7.	7.83	.10	.007	18.	14.4	.5		7.4	8.0		71.	0.0	284.	7.89	.065	11.11	97.	3.3	
8.88														6.61	.125				

CRUISE 6702

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	OC MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 1		MONTH 6		DAY 1		HOUR 10.2		JULIAN DAY 152			LATITUDE 42.000N		LONGITUDE 83.140W						
0.	14.29	2.75	.003	17.	7.9			7.6			91.	1.7	228.	8.24	.106	9.44	95.	10.8	
7.	14.08	1.00	.010	18.	8.9	.3		8.3			92.	2.6	226.	8.42	.099	9.46	75.	15.3	
9.18														7.72	.115				
STATION 2		MONTH 6		DAY 6		HOUR 12.4		JULIAN DAY 157			LATITUDE 41.900N		LONGITUDE 83.080W						
0.	18.04	0.00	.011	19.	19.6	.7	42.	8.8	8.8	1.4	90.	3.5	268.	8.35	.142	9.47	103.	14.0	
8.	16.21	.32	.016	17.	19.0	.5	42.	8.6	6.8	1.0	89.		248.	8.21	.130	9.46	99.	20.0	
9.88														6.25	-.122				
STATION 3		MONTH 6		DAY 6		HOUR 13.5		JULIAN DAY 157			LATITUDE 41.800N		LONGITUDE 83.130W						
0.	18.26	.22	.012	23.	14.0	.3	41.	9.4	7.4	1.7	95.	4.3	270.	8.45	-.018	9.36	103.	12.4	
8.	14.96	0.00	.011	18.	13.6	.8	43.	8.8	6.3	1.2	93.	0.0	260.	8.10	.020	9.33	96.	14.4	
9.48														6.89	-.180				
STATION 4		MONTH 6		DAY 6		HOUR 14.4		JULIAN DAY 157			LATITUDE 41.720N		LONGITUDE 83.160W						
0.	18.63	.67	.004	34.	19.7	.1	45.	10.4	11.1	2.2	103.	3.5	334.	8.45	-.002	9.15	101.	16.0	
6.	17.72	.41	.005	33.	19.7	.2	44.	10.8	10.9	2.0	104.	2.6	326.	8.39	.021	9.29	101.	32.2	
7.68														7.18	-.142				
STATION 5		MONTH 6		DAY 6		HOUR 16.9		JULIAN DAY 157			LATITUDE 41.640N		LONGITUDE 82.950W						
0.	17.83	0.00	.002	23.	20.1	.3	41.	9.4	10.6	1.6	96.	7.8	290.	8.72	-.040	9.58	104.	12.7	
6.	15.03	.50	.007	25.	19.7	.8	44.	9.5	10.8	1.7	101.		309.	3.22	-.017	9.24	95.	12.7	
8.28														7.18	-.121				
STATION 6		MONTH 6		DAY 7		HOUR 8.3		JULIAN DAY 158			LATITUDE 41.680N		LONGITUDE 82.580W						
0.	17.75	0.00	.004	23.	20.5	.3	42.	8.8	11.4	1.3	93.	4.3	285.	8.49	-.033	9.51	103.	3.6	
10.	13.87	.67	.007	18.	18.6	.4	42.	8.6	10.7	1.5	94.	2.6	270.	8.28	-.034	9.40	94.	10.9	
12.28														6.91	-.112				
STATION 7		MONTH 6		DAY 9		HOUR 8.7		JULIAN DAY 160			LATITUDE 41.530N		LONGITUDE 82.590W						
0.	18.62	0.00	.002	28.	21.6	.4	42.	9.2	11.4	2.1	96.	1.7	301.	8.30	.050	9.22	102.	.7	
12.	13.80	.50	.011	20.	20.7	1.0	43.	9.0	11.4	1.3	99.		294.	8.22	.062	9.17	92.	2.0	
13.78														6.98	-.092				
STATION 8		MONTH 6		DAY 9		HOUR 9.9		JULIAN DAY 160			LATITUDE 41.525N		LONGITUDE 82.410W						
0.	18.60	0.00	.004	24.	20.6	.8	42.	9.1	11.6	1.7	95.	.9	295.	8.25	.009	9.16	101.	8.6	
8.	14.44	0.00	.005	30.	20.7	.5	41.	9.3	11.6	1.3	98.	0.0	307.	7.83	.050	9.25	94.	5.3	
12.	13.67	0.00	0.000	25.	20.8	1.2	42.	8.2	11.8	1.6	98.	0.0	300.	7.92	.068	9.18	91.	9.8	
14.30														7.18	-.151				
STATION 9		MONTH 6		DAY 9		HOUR 11.1		JULIAN DAY 160			LATITUDE 41.540N		LONGITUDE 82.210W						
0.	18.95	.50	.011	26.	23.5	.7	41.	9.1	11.6	1.3	93.	3.9	298.	8.35	-.019	9.17		9.8	
8.	13.63	0.00	.005	31.	23.3	.2	42.	9.5	12.5	1.1	95.	0.0	326.	7.85	.018	9.26		4.4	
14.	13.13	.41	.004	26.	22.4	.9	43.	8.6	11.6	1.1	98.	0.0	311.	7.92	.042	9.06		6.4	
15.88														6.80	-.121				
STATION 10		MONTH 6		DAY 9		HOUR 12.1		JULIAN DAY 160			LATITUDE 41.570N		LONGITUDE 82.050W						
0.	19.17	.92	0.000	24.	23.2	.4	41.	8.8	11.3	1.4	91.	4.3	299.	8.55	-.011	9.27	103.	2.5	
8.	13.49	.32	.009	25.	23.2	.3	43.	8.2	11.0	.9	95.	0.0	309.	7.85	.053	9.19	91.	2.9	
15.	11.20	1.54	0.000	30.	24.6	.5	42.	8.8	12.8	0.8	98.	0.0	329.	8.08	.072	9.11	86.	5.3	
16.88														7.00	-.132				

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6T02

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP WATR MG/L	TOTAL COLI 100ML
STATION 11		MONTH 6		DAY 9		HOUR 13.6		JULIAN DAY 160			LATITUDE 41.610N			LONGITUDE 81.820W					
0.	18.37	0.00	.002	28.	27.6	.1	44.	9.3	12.5	1.7	89.	3.5	313.	8.39	-.011	9.34	102.	5.6	
8.	11.99	0.00	0.000	30.	28.1	.1	42.	9.3	12.6	2.1	94.	0.0	327.	8.02	.022	9.69	93.	3.3	
17.	10.46	.04	.007	28.	28.8	.5	43.	9.3	13.0	2.0	98.	0.0	331.	8.09	.054	9.34	86.	5.1	
18.68														6.76	-.152				
STATION 12		MONTH 6		DAY 9		HOUR 14.4		JULIAN DAY 160			LATITUDE 41.540N			LONGITUDE 81.790W					
0.	17.67	0.00	.002	29.	25.6	.1	44.	9.2	13.1	2.1	89.	6.9	305.	8.69	.124	9.31	105.	2.4	
8.	14.53	0.00	.002	29.	28.2	.1	45.	9.3	13.5	1.9	93.	.9	327.	8.25	.121	9.53	97.	5.3	
15.	11.52	0.00	0.000	28.	28.6	.3	42.	9.0	14.1	1.5	98.		380.	8.20	.135	9.21	87.	2.7	
16.59														6.88	.140				
STATION 13		MONTH 6		DAY 13		HOUR 9.3		JULIAN DAY 164			LATITUDE 41.640N			LONGITUDE 81.620W					
0.	21.96	0.00	.007	27.	28.4	.4	42.	9.4	13.1	2.2	86.		310.	8.25	.225	8.80	103.	6.2	
8.	13.07	0.00	0.000	25.	29.6	.2	41.	9.2	13.5	1.9	94.	0.0	332.	8.19	.179	9.94	98.	6.4	
15.	10.34	0.00	0.000	29.	28.1	.4	39.	9.2	12.5	1.6	96.	0.0	324.	8.01	.178	9.55	88.	4.7	
16.58														7.08	-.099				
STATION 14		MONTH 6		DAY 13		HOUR 10.4		JULIAN DAY 164			LATITUDE 41.700N			LONGITUDE 81.450W					
0.	23.06	0.00	0.000	30.	26.6	.3	40.	9.2	12.2	1.8	89.	8.5	308.	8.72	.040	8.93	107.	3.1	
5.	18.14	0.00	.005	31.	27.1	.6	42.	9.3	14.1	1.4	96.	1.7	331.	8.33	.833	8.97	98.	5.6	
11.	14.54	0.00	0.000	26.	30.8	.1	41.	9.2	14.2	.9	96.	2.5	339.	8.39	.839	9.06	92.	4.9	
12.58																			
STATION 15		MONTH 6		DAY 13		HOUR 11.6		JULIAN DAY 164			LATITUDE 41.780N			LONGITUDE 81.520W					
0.	20.19	.41	0.000	25.	24.1	.1	44.	8.6	11.5	2.9	96.	2.5	314.	8.30	.013	9.15	104.	.4	
10.	19.58	0.00	0.000	27.	24.6	0.0	43.	8.5	12.2	3.0	96.	1.7	316.	8.25	.045	10.02	93.	.0	
20.	9.64	0.00	.005	27.	24.8	.4	42.	8.7	11.9	3.2	97.	0.0	317.	8.09	.070	9.63	87.	5.8	
21.38														7.03	.100				
STATION 16		MONTH 6		DAY 13		HOUR 12.8		JULIAN DAY 164			LATITUDE 41.870N			LONGITUDE 81.580W					
0.	20.31	0.00	0.000	24.	24.6	0.0	43.	8.9	11.6	3.0	95.	2.5	315.	8.35	.020	9.01	102.	1.3	
10.	19.78	0.00	0.000	25.	24.4	.3	44.	8.3	11.6	3.0	97.	0.0	315.	8.12	.074	9.91	92.	7.2	
22.	9.16	0.00	0.000	30.	23.7	.7	40.	8.1	11.5	3.4	100.	0.0	315.	7.95	.109	9.61	86.	6.4	
23.58														6.82	-.130				
STATION 17		MONTH 6		DAY 13		HOUR 14.5		JULIAN DAY 164			LATITUDE 41.780N			LONGITUDE 81.280W					
0.	23.36	0.00	.007	28.	29.1	.6	39.	8.8	13.2	1.6	89.	4.2	325.	8.50	.021	8.70	104.	10.0	
11.	13.29	0.00	.005	31.	176.1	.3	43.	8.6	12.8	2.8	98.	0.0	802.	8.08	.070	9.27	92.		
12.58														6.82	-.158				
STATION 18		MONTH 6		DAY 13		HOUR 16.0		JULIAN DAY 164			LATITUDE 41.870N			LONGITUDE 81.100W					
0.	22.65	0.00	.005	30.	29.1	.1	42.	9.9	11.3	2.5	94.	4.2	326.	8.43	-.016	8.68	103.		
10.	11.99	0.00	.002	29.	40.4	.4	41.	9.8	13.9	2.3	97.	0.0	365.	7.95	.025	9.52	91.		
16.	9.31	0.00	.011	27.	29.6	1.0	44.	9.2	9.3	3.0	100.	0.0	314.	7.86	.065	9.20	83.		
18.38														7.10	-.103				
STATION 19		MONTH 6		DAY 14		HOUR 8.5		JULIAN DAY 165			LATITUDE 41.950N			LONGITUDE 80.850W					
0.	21.73	0.00	.005	27.	24.7	.6	41.	9.2	11.0	2.3	97.	2.5	323.	8.40	.011	8.80	103.		
10.	10.74	0.00	.005	26.	29.6	.5	43.	9.0	10.4	2.6	99.	2.5	320.	8.40	.018	9.89	92.		
17.	9.14	.32	.002	25.	24.4	.5	43.	8.5	10.0	2.5	101.	0.0	316.	8.09	.042	9.45	85.		
18.68														7.33	-.112				
STATION 20		MONTH 6		DAY 14		HOUR 10.2		JULIAN DAY 165			LATITUDE 42.170N			LONGITUDE 80.770W					
0.	18.91	0.00	.011	25.	24.6	1.0	44.	8.4	9.7	2.8	97.	0.0	308.	8.16	.005	9.29	103.		
10.	11.46	0.00	.004	25.	23.7	0.0	42.	7.9	9.8	1.1	97.		312.	8.27	.004	9.80	93.		
21.	9.16	0.00	.005	24.	23.8	.8	42.	8.3	9.5	1.8	101.	1.7	313.	8.35	.018	9.81	88.		
22.68														7.70	.060				
STATION 21		MONTH 6		DAY 14		HOUR 11.8		JULIAN DAY 165			LATITUDE 41.980N			LONGITUDE 80.680W					
0.	21.84	0.00	0.000	28.	26.2	1.1	44.	8.9	10.8	1.3	96.	4.2	318.	8.45	.025	8.69	101.		
8.	17.68	.22	.011	27.	24.3	1.2	43.	8.6	11.3	1.4	99.	3.4	320.	8.46	.027	9.66	105.		
16.	9.35	0.00	.005	24.	24.1	1.4	42.	8.9	10.9	1.3	99.	0.0	315.	8.08	.048	9.26	84.		
16.88														7.40	.050				
STATION 22		MONTH 6		DAY 14		HOUR 13.4		JULIAN DAY 165			LATITUDE 42.050N			LONGITUDE 80.400W					
0.	21.63	0.00	.004	24.	24.4	1.2	43.	8.6	11.2	1.1	97.	2.5	313.	8.42	.012	8.56	100.		
8.	13.79	.22	.002	24.	24.6	1.4	42.	8.9	11.3	1.6	97.	1.7	315.	8.40	.035	9.50	95.		
12.	9.93	.50	.011	24.	24.5	1.5	42.	8.7	11.0	1.3	101.		313.	8.25	.065	9.55	87.		
13.48														7.25	.040				
STATION 23		MONTH 6		DAY 14		HOUR 14.5		JULIAN DAY 165			LATITUDE 42.100N			LONGITUDE 80.250W					
0.	22.27	0.00	.002	27.	24.9	0.0	43.	8.6	11.5	1.5	96.	4.2	314.	8.50	.160	8.49	100.		
8.	13.91	.59	.004	26.	24.5	.1	42.	8.0	11.3	1.2	101.	4.2	317.	8.48	.152	9.40	94.		
9.88														7.22	.140				

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 4702

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 24		MONTH 5		DAY 25		HOUR 9.4			JULIAN DAY 145			LATITUDE 42.140N		LONGITUDE 80.020W					
0.	9.62	.32	.004	29.	25.7				9.7		94.	1.7	325.	8.29	.049	11.44	104.	1.3	
8.	9.03	.84	.006	27.	26.4				9.6		94.	.9	325.	8.22	.052	11.52	103.	6.4	
12.	7.59	1.14	.004	27.	26.3	.1			9.0		98.	0.0	318.	8.13	.059	11.65	101.	1.8	
13.48														7.18	-.142				
STATION 25		MONTH 5		DAY 25		HOUR 10.8			JULIAN DAY 145			LATITUDE 42.270N		LONGITUDE 79.830W					
0.	8.27	.41	0.000	27.	25.7				8.6		95.	0.0	318.	8.10	.066	11.59	102.	5.1	
8.	7.19	.22	.001	25.	25.7				8.9		96.	0.0	318.	8.12	.063	11.86	101.	7.3	
14.	6.23	.50	.010	25.	26.9	.1			9.2		97.	0.0	318.	8.12	.063	11.82	100.	5.3	
17.78														6.92	.063				
STATION 26		MONTH 5		DAY 25		HOUR 12.3			JULIAN DAY 145			LATITUDE 42.350N		LONGITUDE 79.630W					
0.	8.11	1.07	0.000	25.	25.1				9.0		95.	0.0	312.	8.03	.018	11.55	101.	4.4	
8.	5.98	.59	.003	28.	23.1				8.5		96.	0.0	314.	8.05	.023	12.05	100.	3.6	
16.	5.62	.50	.003	25.	25.3	.1			8.9		97.	0.0	315.	8.01	.044	12.03	99.	2.0	
18.08														7.18	.115				
STATION 27		MONTH 5		DAY 25		HOUR 13.5			JULIAN DAY 145			LATITUDE 42.460N		LONGITUDE 79.520W					
0.	8.53	.59	.006	25.	25.6				8.1		95.	0.0	315.	8.18	.123	11.05	98.	.7	
10.	6.85	.22	0.000	25.	26.4				8.8		95.	0.0	318.	8.09	.145	11.10	94.	2.4	
25.	5.60	0.00	.004	26.	24.6	.1			8.7		97.	0.0	319.	8.00	.159	11.76	97.	6.4	
27.18																			
STATION 28		MONTH 5		DAY 25		HOUR 14.6			JULIAN DAY 145			LATITUDE 42.560N		LONGITUDE 79.540W					
0.	5.75	.50	.004	24.	23.8				9.3		95.	0.0	311.	7.95	.065	11.91	98.	.9	
10.	4.99	.59	.010	24.	23.5				8.8		95.	0.0	312.	7.95	.109	12.18	98.	2.0	
30.	4.66	.59	0.000	24.	22.7				8.2		95.	0.0	312.	7.90	.136	12.10	97.	2.0	
41.	4.64	.32	.003	24.	23.4	.2			7.5		96.	0.0	312.	7.92	.148	11.94	95.	2.2	
43.96														6.98	-.148				
STATION 29		MONTH 5		DAY 26		HOUR 7.7			JULIAN DAY 146			LATITUDE 42.530N		LONGITUDE 79.330W					
0.	8.78	.41	0.000	24.	23.6				8.4		95.	0.0	317.	7.95	.060	11.45	102.	1.2	
10.	8.65	.76	.004	26.	22.8				9.0		95.	0.0	317.	8.00	.088	11.52	102.	1.8	
19.	6.56	.59	.002	26.	22.3	.1			9.3		96.	0.0	317.	8.00	.098	11.58	98.	3.3	
20.74														7.11	.069				
STATION 30		MONTH 5		DAY 26		HOUR 9.0			JULIAN DAY 146			LATITUDE 42.600N		LONGITUDE 79.160W					
0.	8.61	.76	.004	26.	26.1				9.1		95.		320.	8.20	.075	11.70	104.	1.8	
10.	7.49	.92	.005	26.	25.8				8.9		95.	0.0	320.	8.12	.180	11.85	102.	1.6	
17.	6.77	1.91	.007	25.	25.9	.1			9.3		96.	0.0	320.	8.10	.108	11.90	101.	2.4	
19.28														7.38	-.130				
STATION 31		MONTH 5		DAY 26		HOUR 10.4			JULIAN DAY 146			LATITUDE 42.730N		LONGITUDE 79.050W					
0.	9.56	0.00	0.000	28.	28.1				9.4		75.	0.0	305.	7.98	.038	11.08	100.	1.5	
8.	9.08	.98	0.000	27.	27.6				9.1		76.	0.0	305.	8.14	.066	11.11	170.	3.8	
14.	7.61	.10	.002	27.	26.6	0.0			9.2		94.	0.0	305.	8.09	.090	11.26	97.	4.7	
16.28														7.01	.130				
STATION 32		MONTH 5		DAY 26		HOUR 11.5			JULIAN DAY 146			LATITUDE 42.840N		LONGITUDE 78.920W					
0.	9.00	.76	.002	26.	27.2				8.9		93.		318.	8.22	.168	11.05	101.		
12.	7.84	2.10	.005	28.	26.4				9.1		94.	0.0	319.	8.19	.170	11.46	100.		
12.88														7.30	.130		P		
STATION 33		MONTH 5		DAY 26		HOUR 12.4			JULIAN DAY 146			LATITUDE 42.820N		LONGITUDE 79.070W					
0.	9.34	.10	.007		25.2				8.9		97.	3.5	315.	8.40	.101	11.12	100.	1.1	
10.	7.85	1.14	.004	28.	25.6				9.3		98.	.9	318.	8.25	.122	11.36	99.	7.3	
16.	7.85	1.91	.009	25.	24.7	.1			8.6		99.		317.	8.20	.136	11.25	98.	1.6	
18.08																			
STATION 34		MONTH 5		DAY 26		HOUR 13.7			JULIAN DAY 146			LATITUDE 42.720N		LONGITUDE 79.220W					
0.	9.37	.32	0.000	25.	25.7				9.4		95.	1.7	316.	8.28	.079	11.24	101.	1.8	
8.	8.22	4.68	.002	24.	24.9				9.2		94.	1.7	316.	8.30	.104	11.24	99.	1.1	
20.	7.05	3.92	.002	25.	24.6	.1			8.7		95.		314.	8.20	.112	11.53	98.	5.1	
21.98														7.15	-.082				
STATION 35		MONTH 5		DAY 26		HOUR 15.0			JULIAN DAY 146			LATITUDE 42.820N		LONGITUDE 79.280W					
0.	9.77	1.91	.007	27.	24.1				8.3		99.	3.5	317.	8.48	.055	11.20	102.	6.0	
10.	8.25	2.83	.002	28.	23.8				8.6		100.	3.5	323.	8.50	.072	11.61	102.	6.5	
17.	7.45	3.41	0.000	27.	23.7	.1			7.8		101.	2.6	322.	8.35	.088	11.52	99.	3.3	
19.29														7.46	.120				
STATION 36		MONTH 5		DAY 27		HOUR 8.7			JULIAN DAY 147			LATITUDE 42.800N		LONGITUDE 79.580W					
0.	9.36	3.08	0.000	28.	22.5				9.4		99.	6.1	313.	8.70	.047	11.24	101.	4.9	
10.	7.25	2.75	0.000	25.	22.7				9.5		99.	2.6	314.	8.45	.075	11.61	99.	3.3	
20.	.65	3.08	0.000	24.	23.2	.1			9.4		98.		317.	8.20	.095	11.84	95.	2.0	
21.35														7.52	.121				

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6702

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 37		MONTH 5		DAY 27		HOUR 9.8		JULIAN DAY 147			LATITUDE 42.680N		LONGITUDE 79.680W						
0.	4.19	.84	0.000	26.	22.3			9.2			96.	2.6	306.	8.49	.062	11.28	101.	1.1	
10.	6.11	1.00	0.000	27.	22.7			9.0			97.	0.0	314.	8.12	.092	11.78	98.	1.6	
20.	6.05	.67	.011	27.	23.2			9.2			96.	0.0	314.	8.09	.115	11.59	96.	.2	
31.	5.60	1.14	.004	24.	23.2	.2		9.3			99.	0.0	315.	8.15	.128	11.41	94.	5.1	
33.28														7.22	-.141				
STATION 39		MONTH 5		DAY 27		HOUR 11.7		JULIAN DAY 147			LATITUDE 42.620N		LONGITUDE 80.000W						
0.	9.55	.41	.010	26.	23.2			8.4			97.	2.6	312.	8.35	.047	11.13	101.	9.3	
10.	5.83	.92	.010	25.	23.7			8.9			97.		313.	8.22	.068	11.76	97.	4.7	
30.	4.99	1.00	.013	26.	23.5			8.8			97.	0.0	315.	8.11	.089	11.80	95.	2.2	
41.	4.71	.41	.003	25.	23.7	.2		9.2			99.	0.0	317.	8.04	.103	11.83	95.	6.4	
42.49														7.10	-.155				
STATION 40		MONTH 5		DAY 27		HOUR 12.7		JULIAN DAY 147			LATITUDE 42.520N		LONGITUDE 79.940W						
0.	8.42	.41	.008	26.	23.5			8.7			97.		318.	8.22	.070	11.45	101.	7.1	
10.	5.68	.41	.013	26.	23.8			8.8			99.	0.0	318.	8.06	.062	11.86	98.	2.4	
30.	5.48	.59	.016	26.	23.7			9.0			99.	0.0	318.	8.00	.097	11.87	97.	5.3	
59.	4.86	1.91	.004	23.	23.8	.1		8.3			99.	0.0	318.	7.99	.112	11.90	96.	6.4	
61.68														7.22	-.120				
STATION 41		MONTH 5		DAY 27		HOUR 13.6		JULIAN DAY 147			LATITUDE 42.430N		LONGITUDE 79.960W						
0.	8.43	1.45	.015	25.	23.4			8.7			98.	2.6	314.	8.32	.065	11.51	101.	4.4	
10.	6.12	3.08	.008	25.	23.6			6.6			99.	.3	314.	8.24	.088	11.90	99.	5.6	
30.	4.79	3.00	.013	25.	23.8			8.9			98.	0.0	314.	8.12	.105	12.10	97.	5.8	
44.	4.68	2.58	.008	25.	24.1	.1		8.3			99.	0.0	315.	8.04	.121	12.03	96.	3.1	
46.08														7.42	.100				
STATION 42		MONTH 5		DAY 27		HOUR 14.4		JULIAN DAY 147			LATITUDE 42.370N		LONGITUDE 78.820W						
0.	11.32	.50	.006	26.	25.6			9.4			97.	5.2	314.	8.62	.080	10.77	102.	.9	
10.	5.55	2.30	.008	25.	24.1			8.2			97.		314.	8.20	.101	11.55	95.	6.4	
30.	4.60	.32	.001	24.	24.5			7.9			98.	0.0	314.	8.15	.125	11.64	93.	4.0	
37.	4.22	.10	0.000	23.	23.8	.1		8.1			99.	0.0	314.	8.12	.138	11.66	93.	6.7	
39.08														7.50	.142				
STATION 43		MONTH 5		DAY 29		HOUR 11.0		JULIAN DAY 149			LATITUDE 42.160N		LONGITUDE 80.330W						
0.	9.22	1.37	.001	23.	23.4			8.4			98.		310.	8.20	.049	11.72	105.	9.8	
10.	9.26	.76	.003	23.	23.7			8.9			98.	1.7	311.	8.32	.040	11.80	107.	5.3	
20.	7.93	.67	.006	24.	23.8	.1		9.7			98.	1.7	311.	8.35	.042	11.88	103.	6.4	
23.58														7.00	.070				
STATION 44		MONTH 5		DAY 29		HOUR 11.8		JULIAN DAY 149			LATITUDE 42.250N		LONGITUDE 80.330W						
0.	8.85	0.00	0.000	24.	22.7			9.1			98.	2.6	304.	8.38	.098	11.84	106.	6.7	
8.	8.88	1.21	0.000	23.	22.9			8.9			98.	2.6	308.	8.36	.070	11.95	106.	10.7	
16.	8.76	0.00	.001	22.	23.0	.1		10.5			98.	3.5	309.	8.46	.080	12.03	107.	8.4	
18.98																			
STATION 45		MONTH 5		DAY 29		HOUR 12.7		JULIAN DAY 149			LATITUDE 42.330N		LONGITUDE 80.400W						
0.	9.45	.50	.004	24.	23.3			9.1			96.	0.0	306.	8.13	.070	11.74	106.	36.4	
8.	9.45	0.00	0.000	23.	23.3			9.0			96.		308.	8.25	.100	11.91	104.	10.8	
16.	9.27	1.00	.006	21.	23.7	.1		8.9			97.	.9	308.	8.38	.111	11.78	106.	11.6	
18.98														7.41	.135				
STATION 46		MONTH 5		DAY 29		HOUR 14.2		JULIAN DAY 149			LATITUDE 42.470N		LONGITUDE 80.460W						
0.	9.63	0.00	.003	21.	23.7			8.7			96.	0.0	304.	8.12	.065	11.38	104.	11.2	
8.	9.75	.50	.006	23.	22.7			9.0			95.		306.	8.22	.080	11.45	104.	3.1	
16.	8.87	0.00	0.000	21.	22.7	.1		8.5			96.	1.7	306.	8.30	.093	11.51	103.	3.3	
18.38														7.50	.100				
STATION 47		MONTH 5		DAY 29		HOUR 15.6		JULIAN DAY 149			LATITUDE 42.520N		LONGITUDE 80.480W						
0.	10.07	1.07	.004	22.	22.7			9.1			97.		307.	8.22	.080	11.09	102.	5.1	
8.	9.99	0.00	.004	22.	22.9			8.8			97.	.9	308.	8.27	.100	11.19	102.	6.4	
15.	9.32	.32	0.000	23.	23.5	.1		9.7			98.	.9	309.	8.28	.129	11.30	102.	9.8	
16.88														7.00	.137				
STATION 48		MONTH 5		DAY 30		HOUR 7.0		JULIAN DAY 150			LATITUDE 42.520N		LONGITUDE 80.930W						
0.	9.78	0.00	0.000	23.	24.1			9.2			94.	0.0	302.	8.12	.086	10.96	100.	4.0	
10.	9.65	.10	.008	23.	24.6			8.7			94.	0.0	304.	8.10	.086	11.08	100.	5.3	
17.	8.08	.84	.001	22.	24.2	.1		9.2			97.	0.0	305.	8.00	.099	11.23	98.	6.4	
18.98														6.98	-.128				
STATION 49		MONTH 5		DAY 30		HOUR 8.3		JULIAN DAY 150			LATITUDE 42.350N		LONGITUDE 80.850W						
0.	9.42	0.00	.008	24.	23.8			9.8			95.	0.0	301.	8.18	.075	11.06	100.	6.9	
10.	10.28	1.14	0.000	24.	24.1			9.1			95.	0.0	306.	8.12	.092	11.23	103.	2.0	
20.	8.06	0.00	.003	23.	24.1	.1		8.6			96.	0.0	307.	8.00	.113	11.36	99.	9.6	
21.39														7.32	-.144				

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6702

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP WATR MG/L	TOTAL COLI 100ML
STATION 50		MONTH 5		DAY 30		HOUR 9.7		JULIAN DAY 150			LATITUDE 42.310N		LONGITUDE 81.080W						
0.	9.45	.10	0.000	24.	24.1			9.5			95.	0.0	309.	8.10	.050	11.07	100.	8.7	
10.	9.02	0.00	0.000	23.	23.7			8.6			95.	0.0	310.	8.10	.080	11.16	100.	6.2	
20.	7.93	.92	0.000	21.	23.5	.1		8.9			96.	0.0	309.	8.00	.088	11.34	99.	6.9	
22.38														7.32	-.138				
STATION 51		MONTH 5		DAY 30		HOUR 11.1		JULIAN DAY 150			LATITUDE 42.250N		LONGITUDE 81.320W						
0.	9.58	0.00	.003	22.	24.2			9.4			94.	0.0	307.	7.99	.040	10.90	99.	8.8	
10.	8.80	.32	.004	23.	24.1			8.9			95.	0.0	307.	8.01	.061	11.08	98.	2.4	
21.	7.82	0.00	.008	24.	24.6	.1		8.3			95.	0.0	307.	7.99	.075	11.13	97.	2.7	
23.28														6.92	-.119				
STATION 52		MONTH 5		DAY 30		HOUR 12.3		JULIAN DAY 150			LATITUDE 42.350N		LONGITUDE 81.370W						
0.	10.07	.32	0.000	24.	24.0			8.7			93.	0.0	302.	8.00	.038	10.91	96.	2.5	
10.	9.06	0.00	.003	24.	23.8			9.0			93.	0.0	305.	8.00	.058	10.70	96.	1.1	
20.	7.91	0.00	0.000	24.	24.1	.1		9.4			95.	0.0	306.	7.98	.074	10.88	95.	1.3	
22.38														6.92	-.132				
STATION 53		MONTH 5		DAY 30		HOUR 14.3		JULIAN DAY 150			LATITUDE 42.380N		LONGITUDE 81.610W						
0.	11.98	0.00	.003	23.	23.7			8.3			95.	0.0	309.	7.97	.003	10.14		1.3	
10.	9.82	0.00	0.000	23.	24.1			8.1			94.	0.0	309.	7.98	.030	10.61		3.1	
19.	9.16	0.00	.001	24.	24.0	.1		9.3			96.	0.0	310.	7.95	.049	10.68		5.7	
21.08														6.97	-.135				
STATION 54		MONTH 5		DAY 30		HOUR 16.1		JULIAN DAY 150			LATITUDE 42.240N		LONGITUDE 81.810W						
0.	12.20	0.00	.001	25.	23.6			9.3			98.	0.0	313.	8.12	.034	10.03	97.	2.2	
8.	12.33	.22	.006	24.	22.7			8.0			96.	0.0	310.	8.18	.074	10.38	100.	1.8	
17.	9.99	0.00	0.000	23.	23.7	.2		8.4			100.	0.0	309.	8.15	.080	10.36	95.	3.1	
19.28														7.21	-.151				
STATION 55		MONTH 5		DAY 31		HOUR 7.4		JULIAN DAY 151			LATITUDE 42.120N		LONGITUDE 81.740W						
0.	10.35	.32	.006	23.	23.8			7.8			94.	0.0	305.	7.97	.030	10.92	101.	1.8	
10.	10.37	0.00	.008	24.	24.3			9.1			95.	0.0	305.	7.98	.030	10.87	100.	2.2	
21.	8.90	.67	.004	25.	23.9	.1		9.5			95.	0.0	306.	7.95	.041	10.92	97.	3.8	
23.28														7.04	-.056				
STATION 56		MONTH 5		DAY 31		HOUR 8.5		JULIAN DAY 151			LATITUDE 43.990N		LONGITUDE 81.660W						
0.	10.09	2.10	0.000	23.	24.0			9.3			94.	0.0	304.	8.01	.030	11.13	102.	1.3	
10.	10.10	0.00	.003	23.	24.3			8.9			95.	0.0	304.	8.08	.051	11.00	101.	3.6	
22.	9.93	1.29	.036	24.	24.4	.2		9.1			95.	0.0	304.	8.09	.070	11.09	101.	2.0	
25.08														7.61	-.121				
STATION 57		MONTH 5		DAY 31		HOUR 10.5		JULIAN DAY 151			LATITUDE 42.040N		LONGITUDE 82.040W						
0.	10.66	0.00	.004	24.	23.5			8.1			96.	0.0	301.	8.00	.015	10.81	101.	1.3	
10.	10.67	.84	0.000	25.	23.7			9.1			97.	0.0	303.	8.06	.035	10.99	102.	1.8	
22.	9.90	.22	.001	23.	23.6	.1		8.0			97.	0.0	303.	8.12	.050	10.86	99.	3.2	
25.38														7.18	-.109				
STATION 58		MONTH 5		DAY 31		HOUR 12.2		JULIAN DAY 151			LATITUDE 42.070N		LONGITUDE 82.300W						
0.	10.71	1.29	.010	24.	23.6			9.3			96.	0.0	301.	8.00	.012	10.53	98.	2.4	
8.	10.93	.22	.008	25.	23.0			8.3			97.	0.0	301.	8.06	.058	10.57	98.	2.9	
15.	11.31	.59	0.000	22.	23.2	.1		9.2			98.		302.	8.20	.062	10.53	99.	4.0	
18.08														7.24	-.119				
STATION 59		MONTH 5		DAY 31		HOUR 14.1		JULIAN DAY 151			LATITUDE 41.880N		LONGITUDE 82.380W						
0.	12.12	0.00	.004	22.	23.4			8.6			97.	0.0	301.	8.03	.048	10.35	99.	5.8	
11.	12.06	.67	.004	22.	23.6	.1		9.3			97.	0.0	302.	8.12	.075	10.22	96.	4.2	
14.38														7.10	.062				
STATION 60		MONTH 5		DAY 31		HOUR 15.3		JULIAN DAY 151			LATITUDE 41.840N		LONGITUDE 82.550W						
0.	13.07	.50	.013	18.	22.7			8.4			97.	0.0	298.	8.18	.175	9.90	97.	4.2	
9.	13.03	0.00	0.000	17.	23.7	.1		9.3			97.	1.7	298.	8.28	.165	10.00	98.	8.2	
11.58																			
STATION 61		MONTH 5		DAY 31		HOUR 16.5		JULIAN DAY 151			LATITUDE 41.950N		LONGITUDE 82.630W						
0.	13.99	1.45	.006	19.	21.0			8.3			90.	2.6	267.	8.35	.252	9.78	97.	5.1	
8.	13.96	.10	0.000	18.	19.1	0.0		8.6			93.	3.5	267.	8.50	.255	9.93	99.	7.3	
11.09														7.12	-.130				
STATION 62		MONTH 6		DAY 1		HOUR 8.1		JULIAN DAY 152			LATITUDE 41.850N		LONGITUDE 82.880W						
0.	18.06	.50	.004	21.	18.7			7.7			90.	1.7	278.	8.28	.042	9.73	98.	12.0	
9.	18.04	.10	.008	20.	18.2	.1		7.8			92.	2.6	277.	8.40	.062	9.89	99.	17.1	
10.78														7.18	-.050				
STATION 63		MONTH 6		DAY 1		HOUR 9.2		JULIAN DAY 152			LATITUDE 41.970N		LONGITUDE 83.080W						
0.	18.18	2.49	.011	20.	24.1			7.2			94.	2.6	295.	8.50	.040	9.66	97.	11.6	
7.	18.08	0.00	.001	19.	24.6	.1		7.5			95.	2.6	296.	8.49	.049	9.78	98.	6.7	
8.88														7.03	-.085				

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6703

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 1		MONTH 12		DAY 11		HOUR 14.4		JULIAN DAY 345			LATITUDE 42.000N		LONGITUDE 83.140W						
0.	3.45		.024	18.		.8	28.	7.0	5.7	1.5			225.			13.78	107.	12.9	
9.	3.48		.017	17.		.8	29.	7.2	5.3	1.2			221.			13.52	105.	12.2	2310.
10.49																			
STATION 2		MONTH 12		DAY 11		HOUR 13.4		JULIAN DAY 345			LATITUDE 41.900N		LONGITUDE 83.080W						
0.	1.92		.027	23.		1.4	34.	7.0	10.6	1.4			290.			14.47	108.	22.6	
8.	1.90		.020	20.		1.3	35.	8.0	10.4	1.3			290.			14.64	109.	22.9	2190.
10.18																			
STATION 3		MONTH 11		DAY 25		HOUR 11.7		JULIAN DAY 324			LATITUDE 41.800N		LONGITUDE 83.130W						
0.	4.22		0.000	18.	19.5	1.3	29.	6.3	8.7	1.5	86.	0.0	253.	7.78	.210	13.14	104.	12.2	
8.	4.33		.004	20.	17.5	1.2	32.	7.8	8.7	1.9	91.	0.0	257.	7.81	.205	13.17	105.	19.1	3430.
9.48														7.32	-.028				
STATION 4		MONTH 11		DAY 20		HOUR 10.8		JULIAN DAY 324			LATITUDE 41.720N		LONGITUDE 83.160W						
0.	4.06		.018	19.	18.5	1.2	32.	7.0	8.5	1.6	84.	0.0	260.	7.91	.195	13.08	103.	20.0	
6.	4.33		.011	18.	18.5	1.2	31.	7.5	8.8	1.4	88.	0.0	265.	8.05	.188	12.99	103.	19.3	1800.
7.90														7.22	-.070				
STATION 5		MONTH 11		DAY 20		HOUR 13.4		JULIAN DAY 324			LATITUDE 41.640N		LONGITUDE 82.950W						
0.	3.71		.011	22.	21.2	.6	33.	7.7	10.3	1.2	91.	0.0	286.	8.10	.109	13.20	103.	22.4	
6.	3.71		.004	21.	21.7	.8	32.	7.6	10.1	1.3	92.	1.6	289.	8.32	.121	13.20	103.	22.9	644.
8.28														7.40	-.025				
STATION 6		MONTH 11		DAY 21		HOUR 8.2		JULIAN DAY 325			LATITUDE 41.680N		LONGITUDE 82.580W						
0.	8.59		.008	21.	19.8	.1	32.	7.4	9.1	1.2	87.	0.0	269.	7.95	-.287	13.23	106.	5.1	
11.	4.72		0.000	21.	19.2	0.0	33.	7.8	9.1	1.5	91.		270.	8.22	.210	13.43	108.	4.4	1400.
12.58														7.09	.090				
STATION 7		MONTH 11		DAY 21		HOUR 9.4		JULIAN DAY 325			LATITUDE 41.530N		LONGITUDE 82.590W						
0.	5.77		0.000	20.	21.2	.1	33.	7.5	10.3	1.2	90.	0.0	279.	8.02	.127	12.44	103.	7.8	
12.	5.92		.004	21.	21.5	0.0	33.	7.1	9.5	1.5	91.	0.0	280.	8.00	.172	12.32	102.	8.9	7000.
13.48														7.11	-.020				
STATION 8		MONTH 11		DAY 21		HOUR 10.6		JULIAN DAY 325			LATITUDE 41.520N		LONGITUDE 82.410W						
0.	5.53		.025	26.	21.2	0.0	34.	7.0	9.8	1.4	91.	0.0	285.	7.98	.116	12.65	104.	7.3	
8.	5.66		.022	24.	20.5	0.0	32.	7.2	10.0	1.4	92.	0.0	285.	7.96	.142	12.70	50.	7.3	
12.	5.63		.033	24.	20.7	.1	33.	6.5	9.7	1.3	92.	0.0	287.	8.02	.161	12.64	104.	1.1	9100.
14.08														6.92	.210				
STATION 9		MONTH 11		DAY 21		HOUR 11.8		JULIAN DAY 325			LATITUDE 41.540N		LONGITUDE 82.210W						
0.	5.08		.022	19.	20.5	0.0	30.	7.7	9.5	1.3	88.	0.0	282.	7.96	.118	12.89	104.	5.3	
8.	5.21		.022	20.	20.2	0.0	33.	7.5	8.7	1.1	90.	0.0	283.	7.94	.145	12.92	105.	6.4	
14.	5.26		0.000	21.	20.5	0.0	32.	7.0	10.1	1.2	90.	0.0	283.	8.20	.158	13.20	108.	5.9	7480.
16.28														7.20	.031				
STATION 10		MONTH 11		DAY 21		HOUR 12.9		JULIAN DAY 325			LATITUDE 41.570N		LONGITUDE 82.050W						
0.	5.48		.018	22.	19.9	.1	34.	7.2	9.5	1.2	89.	0.0	292.	7.98	.148	12.67	104.	9.8	
8.	5.56		.022	21.	20.3	.1	33.	8.1	9.3	1.1	90.	0.0	294.	7.97	.158	12.65	104.	8.9	
15.	5.67		.029	21.	20.2	.4	32.	7.8	9.8	1.2	90.	0.0	294.	7.96	.162	12.63	104.	5.8	20000.
16.88														7.00	-.056				
STATION 11		MONTH 11		DAY 21		HOUR 14.2		JULIAN DAY 325			LATITUDE 41.610N		LONGITUDE 81.820W						
0.	7.29		.008	24.	28.6	.1	37.	9.0	11.5	1.9	92.	0.0	313.	7.90	.111	11.76	101.	3.3	
8.	7.34		.004	24.	25.6	.3	37.	8.9	11.2	1.4	93.	0.0	309.	7.95	.138	12.10	104.	12.9	
17.	7.42		.018	23.	27.6	0.0	35.	8.8	10.9	1.4	95.	0.0	308.	7.98	.144	12.06	104.	6.2	6000.
18.68														7.08	-.073				
STATION 12		MONTH 11		DAY 21		HOUR 15.1		JULIAN DAY 325			LATITUDE 41.540N		LONGITUDE 81.790W						
0.	6.28		.025	24.	24.1	.2	34.	8.1	9.5	1.1	89.	0.0	301.	7.93	.110	12.01	100.	5.1	
8.	6.28		.011	20.	23.5	0.0	33.	8.3	9.7	1.3	90.	0.0	299.	7.92	.135	12.48	104.	7.8	
14.	6.42		.025	22.	23.9	0.0	32.	8.4	9.5	1.1	92.		288.	8.25	.146	12.38	104.	8.4	6600.
16.29														7.36	-.087				
STATION 13		MONTH 11		DAY 22		HOUR 11.9		JULIAN DAY 326			LATITUDE 41.640N		LONGITUDE 81.620W						
0.	6.09		.005	21.	24.1	.1	32.	8.3	9.8	1.2	88.	0.0	295.	8.10	.132	12.48	104.	8.0	
8.	6.04		.008	22.	23.2	0.0	33.	8.3	10.0	1.3	91.	0.0	296.	7.99	.128	12.44	103.	8.2	
15.	6.18		0.000	19.	22.9	0.0	32.	7.8	10.5	1.2	89.	0.0	292.	8.15	.134	12.40	103.	8.0	14250.
16.59														7.22	-.118				
STATION 14		MONTH 11		DAY 22		HOUR 13.7		JULIAN DAY 326			LATITUDE 41.700N		LONGITUDE 81.450W						
0.	5.37		.048	24.	25.6	.1	33.	8.5	11.3	1.4	91.	0.0	295.	7.98	.092	12.53	102.	16.2	
10.	5.44		.036	20.	23.5	.2	33.	7.9	11.2	1.3	93.	0.0	293.	8.05	.105	12.42	101.	17.6	5950.
12.28																			

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6703

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 15		MONTH 11		DAY 22		HOUR 13.9		JULIAN DAY 326			LATITUDE 41.780N			LONGITUDE 81.520W					
0.	6.76		.018	22.	25.1	.1	33.	8.5	11.2	1.4	93.	0.0	300.	7.91	.135	12.88	109.	9.3	
10.	6.74		.015	24.	24.4	0.0	34.	8.8	11.2	1.4	93.	0.0	299.	7.88	.140	12.31	104.	5.8	
18.	6.78		.025	26.	26.6	0.0	34.	8.8	12.2	1.3	93.	0.0	302.	7.85	.155	12.47	106.	8.2	600.
20.78														6.85	.065				
STATION 16		MONTH 11		DAY 24		HOUR 9.6		JULIAN DAY 328			LATITUDE 41.870N			LONGITUDE 81.580W					
0.	7.80		.008	24.	26.8	.3	33.	7.0	11.9	1.3	94.	0.0	303.	8.13	.100	11.34	96.	4.4	
11.	7.17		.015	25.	27.6	.2	33.	7.5	14.3	2.2	94.	0.0	304.	8.03	.089	11.42	98.	2.9	
21.	7.10		.004	23.	27.1	0.0	34.	7.0	11.3	1.2	96.		307.	8.22	.098	11.46	98.	4.2	TNTC
23.88														7.05	.070				
STATION 17		MONTH 11		DAY 24		HOUR 12.6		JULIAN DAY 328			LATITUDE 41.780N			LONGITUDE 81.280W					
0.	4.82		.008	24.	26.6	0.0	33.	7.6	12.5	1.5	92.	0.0	326.	7.85	.132	12.64	102.	10.0	
9.	4.87		.011	25.	37.4	.3	36.	8.6	14.2	1.5	93.	0.0	370.	8.09	.135	12.64	109.	18.2	91800.
11.08														7.03	.063				
STATION 18		MONTH 11		DAY 24		HOUR 14.9		JULIAN DAY 328			LATITUDE 41.870N			LONGITUDE 81.100W					
0.	5.77		.018	24.	30.4	.2	35.	8.5	11.3	1.6	91.	0.0	335.	7.96	.085	12.30	101.	14.8	
10.	5.81		.004	24.	29.1	.1	35.	8.1	16.8	1.5	92.	0.0	335.	7.93	.122	12.52	103.	4.7	
15.	5.93		.008	23.	29.6	0.0	34.	8.2	11.0	1.3	93.	0.0	341.	8.10	.132	12.52	104.	7.1	23000.
18.38														6.92	-.123				
STATION 19		MONTH 11		DAY 24		HOUR 15.2		JULIAN DAY 328			LATITUDE 41.950N			LONGITUDE 80.850W					
0.	6.17		.004	25.	26.6	0.0	34.	9.0	11.0	1.3	92.	0.0	310.	7.98	.069	12.22	102.	4.4	
10.	6.22		.004	23.	24.5	.2	33.	9.3	10.5	1.7	92.	0.0	313.	7.97	.092	12.37	103.	3.8	
16.	6.26		.011	24.	24.6	.1	33.	8.1	10.4	1.7	95.	0.0	312.	7.95	.120	12.44	104.	7.3	12100.
18.98														6.81	-.113				
STATION 20		MONTH 11		DAY 25		HOUR 9.4		JULIAN DAY 329			LATITUDE 42.170N			LONGITUDE 80.770W					
0.	6.65		.008	25.	26.1	0.0	34.	7.5	10.5	1.8	96.	0.0	305.	8.01	.088	13.95	118.	6.0	
10.	6.50		.025	25.	26.6	0.0	34.	9.0	12.7	1.4	96.	0.0	310.	8.00	.101	13.81	116.	5.3	
20.	6.65		.008	23.	26.1	.3	34.	8.8	10.9	1.4	97.	0.0	311.	8.05	.106	12.85	108.	4.4	30000.
23.28																			
STATION 21		MONTH 11		DAY 25		HOUR 7.9		JULIAN DAY 329			LATITUDE 41.980N			LONGITUDE 80.680W					
0.	5.97		.011	24.	24.4	.3	34.	8.0	9.8	1.1	91.	0.0	298.	7.92	.091	13.00	108.	10.4	
10.	5.96		.004	22.	24.8	.1	34.	8.8	10.4	1.4	91.	0.0	299.	7.96	.092	12.86	107.	6.9	
15.	6.12		.008	24.	24.4	0.0	32.	8.1	10.0	1.3	94.	0.0	297.	8.12	.100	12.47	104.	5.1	50000.
16.59														6.98	-.105				
STATION 22		MONTH 11		DAY 25		HOUR 11.3		JULIAN DAY 329			LATITUDE 42.050N			LONGITUDE 80.406W					
0.	5.58		.011	25.	27.6	0.0	35.	8.2	12.4	1.1	95.	0.0	324.	8.05	.050	13.56	111.	7.3	
12.	5.67		.008	24.	27.1	0.0	34.	7.5	11.9	1.8	96.	0.0	323.	8.12	.075	14.25	116.	8.7	1550.
13.48														7.05	.133				
STATION 23		MONTH 11		DAY 25		HOUR 12.3		JULIAN DAY 329			LATITUDE 42.100N			LONGITUDE 80.250W					
0.	5.49		.004	27.	27.4	0.0	34.	7.9	11.6	1.8	95.	0.0	316.	8.16	.168	12.45	102.	8.7	
4.	5.48		.004	22.	27.1	.1	35.	8.5	11.7	2.0	97.	0.0	318.	8.12	-.188	12.70	104.	13.1	15450.
10.18														7.33	.142				
STATION 24		MONTH 11		DAY 29		HOUR 9.1		JULIAN DAY 333			LATITUDE 42.180N			LONGITUDE 80.020W					
0.	3.92		.004	25.	27.1	.4	33.	8.2	11.7	1.9	94.	0.0	303.	8.13	.131	12.90	101.	27.2	
14.	3.89		.008	24.	27.8	.3	33.	7.8	10.8	1.9	94.	0.0	307.	8.11	.160	13.22	104.	29.3	2100.
14.09																			
STATION 25		MONTH 11		DAY 29		HOUR 10.5		JULIAN DAY 333			LATITUDE 42.270N			LONGITUDE 79.830W					
0.	4.47		.015	22.	27.9	.2	33.	8.1	10.7	1.9	97.	0.0	311.	8.05	.058	12.82	102.	16.0	
8.	4.47		.004	27.	27.4	0.0	35.	7.8	11.2	2.0	97.	0.0	317.	8.03	.063	12.98	104.	19.1	
14.	4.41		.004	26.	27.6	.1	34.	7.6	10.8	2.0	97.	.8	314.	8.33	.085	13.22	105.	18.4	TNTC
16.88														7.42	-.051				
STATION 26		MONTH 11		DAY 29		HOUR 11.8		JULIAN DAY 333			LATITUDE 42.350N			LONGITUDE 79.630W					
0.	4.10		.008	26.	26.6	.1	33.	7.9	13.2	1.9	95.	0.0	305.	8.05	.090	12.74	101.	19.6	
8.	4.10		0.000	24.	26.6	.2	34.	7.9	10.8	2.1	96.	0.0	306.	8.06	.145	13.01	102.	19.3	
15.	4.10		.010	24.	26.3	.1	34.	8.6	11.9	1.3	98.	0.0	308.	8.12	.158	12.82	101.	31.3	TNTC
17.78														7.55	.020				
STATION 29		MONTH 11		DAY 30		HOUR 7.9		JULIAN DAY 334			LATITUDE 42.530N			LONGITUDE 79.330W					
0.	4.62		.010	23.	28.1	.2	34.	8.4	11.5	1.5	98.	0.0	314.	8.06	.168	12.95	104.	9.6	
10.	4.62		.013	25.	28.6	.3	34.	9.1	11.2	1.4	98.	0.0	315.	8.08	.178	13.47	108.	11.8	
19.	4.43		.006	26.	28.1	.3	34.	9.1	12.6	1.5	100.		316.	8.20	.178	13.49	107.	15.5	1300.
20.48														7.62	-.012				
STATION 30		MONTH 11		DAY 30		HOUR 9.3		JULIAN DAY 334			LATITUDE 42.600N			LONGITUDE 79.180W					
0.	6.03		.010	24.	27.1	.1	35.	8.4	11.7	1.4	99.	0.0	311.	8.05	.100	12.72	105.	15.3	
8.	6.01		.006	22.	27.6	0.0	34.	8.0	12.0	1.5	99.	0.0	317.	8.08	.150	12.88	107.	16.7	
16.	5.98		.013	23.	27.4	0.0	34.	8.0	11.3	1.5	100.	0.0	316.	8.12	.158	12.88	107.	13.3	900.
19.29														7.25	-.092				

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6703

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 31		MONTH 11		DAY 30		HOUR 10.8		JULIAN DAY 334			LATITUDE 42.730N		LONGITUDE 79.050W						
0.	4.89		.002	25.	27.7	.2	35.	8.6	11.2	1.6	99.	0.0	313.	8.02	.091	13.21	106.	15.6	
8.	4.89		.013	23.	27.1	.1	33.	8.7	11.1	1.5	100.	0.0	316.	8.00	.149	13.50	109.	12.0	
13.	4.89		.013	24.	27.2	0.0	35.	9.1	11.0	1.6	101.	0.0	316.	8.08	.152	13.45	108.	18.4	20500.
15.28														7.38	.160				
STATION 32		MONTH 11		DAY 30		HOUR 12.1		JULIAN DAY 334			LATITUDE 42.840N		LONGITUDE 78.920W						
0.	4.03		.017	23.	27.1	.3	32.	9.1	11.8	1.2	98.	0.0	346.	8.03	.093	13.56	107.	17.8	
11.	4.00		.006	24.	26.9	0.0	30.	8.7	11.5	1.3	101.	0.0	346.	8.16	.120	13.94	110.	28.0	3600.
12.58														7.68	.025				
STATION 33		MONTH 11		DAY 30		HOUR 13.2		JULIAN DAY 334			LATITUDE 42.820N		LONGITUDE 79.070W						
0.	3.80		.010	25.	26.4	.1	30.	9.2	11.6	1.3	103.	0.0	319.	8.02	.125	13.58	106.	20.7	
10.	3.78		.010	23.	25.8	0.0	29.	9.8	11.6	1.5	104.	0.0	322.	8.18	.138	14.05	110.	13.8	
16.	3.77		.017	24.	25.6	.2	30.	9.1	11.7	1.4	104.		321.	8.20	.146	13.94	109.	11.1	7450.
18.38														7.20	.072				
STATION 34		MONTH 11		DAY 30		HOUR 14.3		JULIAN DAY 334			LATITUDE 42.720N		LONGITUDE 79.220W						
0.	5.37		.013	24.	26.1	.2	28.	8.7	12.0	1.4	98.	0.0	317.	8.08	.605	13.00	106.	14.6	
10.	5.39		.013	24.	26.6	0.0	27.	8.3	11.6	1.5	100.	0.0	315.	8.05	.109	13.18	108.	16.2	
12.	5.38		.013	24.	26.4	0.0	27.	8.3	11.5	1.5	101.	0.0	318.	8.10	.124	13.21	108.	40.2	650.
21.38														7.58	.140				
STATION 35		MONTH 11		DAY 30		HOUR 15.3		JULIAN DAY 334			LATITUDE 42.820N		LONGITUDE 79.280W						
0.	4.53		.017	24.	26.1	0.0	27.	7.8	11.4	1.5	99.	0.0	317.	8.08	.082	13.68	109.	18.4	
10.	4.63		.018	24.	25.8	.4	27.	7.7	11.0	1.6	99.	0.0	318.	8.08	.103	13.72	110.	13.3	
17.	4.60		.013	29.		0.0	30.	8.5	12.1	1.6	100.		316.	8.20	.108	13.59	109.	8.0	550.
18.68														8.10	.155				
STATION 36		MONTH 12		DAY 1		HOUR 9.3		JULIAN DAY 335			LATITUDE 42.800N		LONGITUDE 79.580W						
0.	5.51		.017	28.	26.6	0.0	30.	8.1	11.1	1.7	100.	0.0	324.	8.08	.106	12.18	100.	18.2	
10.	5.49		.024	27.	26.5	0.0	30.	8.4	11.1	1.6	100.	0.0	331.	8.10	.115	12.28	100.	7.6	
20.	5.47		.010	28.	26.0	.1	31.	9.2	11.2	1.5	101.		331.	8.22	.117	12.25	100.	10.0	75000.
21.98														7.62	.008				
STATION 37		MONTH 12		DAY 1		HOUR 10.5		JULIAN DAY 335			LATITUDE 42.680N		LONGITUDE 79.680W						
0.	5.96		.002	26.	26.9	0.0	29.	8.5	10.5	1.7	100.	0.0	332.	8.02	.121	11.92	99.	7.6	
10.	5.85		.002	26.	27.1	.3	29.	8.0	11.1	1.6	101.	0.0	337.	8.02	.152	11.96	99.	7.1	
20.	5.85		.013	26.	26.8	0.0	30.	7.8	10.2	1.7	100.	0.0	340.	8.00	.168	11.92	99.	6.7	
29.	4.94		.006	28.	26.2	0.0	29.	8.6	10.5	1.7	102.		339.	8.25	.169	12.31	99.	8.4	115.
33.28														7.52	-.013				
STATION 39		MONTH 12		DAY 1		HOUR 12.3		JULIAN DAY 335			LATITUDE 42.620N		LONGITUDE 80.000W						
0.	6.14		.010	27.	27.5	.1	28.	9.0	8.8	1.6	99.	0.0	313.	8.09	.150	12.01	100.	8.7	
10.	6.14		.006	27.	26.6	0.0	29.	7.5	10.9	1.9	99.	0.0	314.	8.06	.162	11.92	99.	6.2	
30.	6.59		.041	25.	26.4	0.0	35.	8.2	13.0	1.9	100.	0.0	312.	8.12	.178	11.90	100.	5.1	
40.	5.99		.006	25.	26.1	0.0	35.	7.7	12.2	1.6	101.		312.	8.20	.178	11.75	99.	8.7	66.
42.78														7.50	-.078				
STATION 41		MONTH 12		DAY 1		HOUR 13.8		JULIAN DAY 335			LATITUDE 42.420N		LONGITUDE 79.960W						
0.	6.29		.002	28.	27.1	0.0	35.	8.1	12.1	1.4	99.	0.0	316.	8.10	.120	11.67	99.	6.5	
10.	6.24		.006	25.	27.1	0.0	35.	8.5	12.2	1.8	99.	0.0	317.	8.08	.133	11.99	100.	5.1	
30.	6.28		.017	26.	27.6	0.0	35.	8.1	12.4	1.7	100.	0.0	317.	8.08	.142	11.92	99.	8.9	
43.	6.08		.006	25.	27.2	0.0	35.	8.3	12.7	1.7	102.		317.	8.20	.143	12.01	100.	5.6	6000.
46.08														7.40	.043				
STATION 42		MONTH 1[illegible]		DAY 1		HOUR 14.7		JULIAN DAY 335			LATITUDE 42.370N		LONGITUDE 79.920W						
0.	6.61		.006	6.	26.1	0.0	36.	8.6	12.2	1.9	100.	0.0	336.	8.06	.092	11.76	99.	13.1	
10.	6.53		.006	25.	26.6	0.0	36.	7.8	11.7	1.7	100.	0.0	338.	8.08	.138	11.68	98.	8.4	
30.	6.70		.020	25.	26.6	.3	36.	7.7	12.2	1.9	100.	0.0	334.	8.02	.145	11.68	99.	7.6	
56.	6.56		.006	26.	26.9	.1	35.	8.3	11.6	1.9	100.	0.0	334.	8.12	.155	11.75	99.	9.3	14750.
58.78														7.61	.072				
STATION 43		MONTH 12		DAY 2		HOUR 9.2		JULIAN DAY 336			LATITUDE 42.160N		LONGITUDE 80.320W						
0.	5.58		.011	25.	26.1	0.0	35.	9.4	12.0	1.7	98.	0.0	312.	8.08	.131	14.00	115.	4.4	
10.	5.59		.011	27.	26.1	0.0	36.	7.9	11.8	1.6	99.	0.0	319.	8.00	.145	12.64	104.	4.0	
19.	5.55		.025	26.	25.6	.1	35.	8.8	12.0	2.1	98.	0.0	332.	8.08	.150	12.66	104.	3.6	37300.
21.68														7.48	.177				
STATION 44		MONTH 12		DAY 2		HOUR 10.1		JULIAN DAY 336			LATITUDE 42.250N		LONGITUDE 80.330W						
0.	5.54		.008	27.	26.1	0.0	36.	8.3	11.7	1.8	99.	0.0	317.	8.14	.131	12.11	99.	9.8	
8.	5.47		.011	28.	26.6	0.0	36.	8.4	12.3	1.7	98.	0.0	322.	8.18	.162	12.47	102.	5.8	
16.	5.51		.011	26.	26.4	0.0	35.	8.1	11.8	1.9	98.	0.0	320.	8.18	.172	12.47	102.	4.0	8300.
19.58														7.01	.160				

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6703

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SOA MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 45		MONTH 12		DAY 2		HOUR 11.1		JULIAN DAY 336			LATITUDE 42.350N		LONGITUDE 83.400W						
0.	5.41		.018	26.	26.1	0.0	36.	8.4	12.3	2.1	100.	0.0	317.	8.18	.180	12.44	102.	7.6	
8.	5.45		.008	25.	26.6	0.0	36.	7.6	11.9	2.0	99.	0.0	319.	8.10	.186	12.35	102.	7.6	
13.	5.39		.011	27.	26.5	.3	36.	8.2	11.8	2.1	100.		317.	8.20	.188	12.59	103.	10.7	22600.
15.88														7.78	.180				
STATION 48		MONTH 12		DAY 5		HOUR 8.0		JULIAN DAY 339			LATITUDE 42.520N		LONGITUDE 80.950W						
0.	4.60		.011	27.	26.8	.4	35.	7.8	11.3	2.3	97.	0.0	312.	8.12	.240	13.82	110.	7.6	
8.	4.44		.025	27.	27.1	0.0	34.	8.0	12.1	1.8	98.	0.0	317.	8.16	2.244	14.05	112.	9.1	
16.	4.58		.011	26.	27.1	0.0	34.	8.4	12.8	1.8	99.	0.0	312.	8.16	.238	12.84	103.	9.3	20000.
18.69																			
STATION 49		MONTH 12		DAY 5		HOUR 9.4		JULIAN DAY 339			LATITUDE 42.350N		LONGITUDE 80.850W						
0.	4.79		.029	27.	26.2	0.0	34.	8.4	11.5	1.7	96.	0.0	307.	8.00	.192	12.43	100.	8.0	
10.	4.77		.011	29.	26.6	0.0	34.	7.2	11.1	1.9	97.	0.0	307.	8.01	.200	12.65	102.	7.1	
18.	4.77		.022	27.	26.1	0.0	34.	8.6	11.7	2.0	97.	0.0	309.	8.03	.200	12.67	102.	7.8	40.
21.00														7.23	.062				
STATION 50		MONTH 12		DAY 5		HOUR 10.8		JULIAN DAY 339			LATITUDE 42.310N		LONGITUDE 81.040W						
0.	4.99		.015	27.	27.1	0.0	34.	8.4	11.2	1.9	96.	0.0	307.	8.12	.132	12.71	102.	9.1	
10.	4.67		.011	29.	26.6	0.0	34.	8.8	11.5	2.0	97.	0.0	309.	8.02	.145	12.71	102.	9.6	
19.	4.89		.011	27.	26.6	0.0	35.	8.6	11.4	2.0	96.	0.0	308.	8.06	.155	12.65	102.	9.1	2000.
21.68														7.18	.022				
STATION 52		MONTH 12		DAY 5		HOUR 12.3		JULIAN DAY 339			LATITUDE 42.350N		LONGITUDE 81.370W						
0.	4.88		.325	30.	25.6	.1	34.	9.4	12.1	1.9	96.	0.0	310.	8.03	.140	12.77	103.	5.6	
10.	4.83		.015	26.	25.6	0.0	33.	8.4	11.0	2.1	96.	0.0	310.	8.01	.149	12.86	103.	7.6	
19.	4.87		.017	26.	25.6	0.0	31.	9.0	12.1	2.0	96.	0.0	309.	8.08	.148	12.79	103.	10.7	18.
21.98														7.02	-.048				
STATION 53		MONTH 12		DAY 5		HOUR 14.0		JULIAN DAY 339			LATITUDE 42.380N		LONGITUDE 81.610W						
0.	4.99		.020	27.	27.1	0.0	34.	8.7	12.2	1.9	96.	0.0	118.	8.02	.138	12.89	104.	13.6	
8.	5.09		.027	29.	27.4	0.0	34.	8.1	13.2	1.8	96.	0.0	320.	8.00	.155	13.01	105.	13.8	
18.	4.93		.013	28.	27.1	0.0	34.	9.4	12.2	2.0	96.	0.0	321.	8.16	.168	12.48	101.	7.6	2000.
21.08														7.19	-.082				
STATION 54		MONTH 12		DAY 5		HOUR 15.7		JULIAN DAY 339			LATITUDE 42.240N		LONGITUDE 81.810W						
0.	4.98		.020	31.	27.6	0.0	32.	9.2	11.9	2.5	96.	0.0	315.	8.05	.115	12.66	102.	10.2	
8.	4.92		.010	27.	27.1	.1	32.	8.2	11.8	1.9	96.	0.0	311.	8.08	.122	14.08	113.	10.7	
16.	4.96		.024	27.	26.6	0.0	34.	8.9	12.1	1.9	97.	[illegible]	310.	8.18	.144	14.16	114.	9.3	50.
18.68														7.19	-.025				
STATION 55		MONTH 12		DAY 6		HOUR 8.3		JULIAN DAY 340			LATITUDE 42.120N		LONGITUDE 81.740W						
0.	5.24		.013	27.	27.6	0.0	34.	8.5	12.0	2.0	95.	0.0	320.	8.17	.111	13.43	109.	8.0	
10.	5.21		.017	29.	27.4	0.0	33.	8.2	11.5	1.9	96.	0.0	321.	8.19	.105	13.80	112.	10.4	
21.	5.23		.017	28.	26.6	.1	34.	7.6	11.5	1.9	97.	0.0	321.	8.18	.112	13.77	112.	9.6	180.
23.88														7.09	-.092				
STATION 56		MONTH 11		DAY 24		HOUR 10.4		JULIAN DAY 328			LATITUDE 41.990N		LONGITUDE 82.660W						
0.	6.99		.020	30.	27.6	0.0	33.	8.1	11.7	2.0	96.	0.0	305.	7.57	-.105	11.68	99.	10.0	
10.	7.03		.020	30.	28.4	0.0	33.	7.8	11.1	1.9	91.	0.0	306.	8.01	.120	13.74	100.	12.0	
22.	7.26		.017	27.	29.6	0.0	34.	8.4	12.1	1.7	91.	0.0	303.	8.03	.142	11.76	101.	7.8	3000.
24.78														7.00	.161				
STATION 57		MONTH 12		DAY 6		HOUR 10.0		JULIAN DAY 340			LATITUDE 42.040N		LONGITUDE 82.040W						
0.	5.26		.013	27.	26.4	0.0	34.	8.0	10.9	1.8	95.	0.0	327.	8.09	.082	14.18	115.	6.0	
10.	5.14		.031	26.	26.9	0.0	33.	8.5	10.5	1.9	95.	0.0	327.	8.08	.103	14.32	116.	5.6	
19.	5.23		.020	27.	26.6	0.0	34.	8.0	10.8	1.9	97.	0.0	327.	8.18	.109	14.01	114.	6.2	1040.
21.98														7.05	-.072				
STATION 58		MONTH 12		DAY 6		HOUR 11.9		JULIAN DAY 340			LATITUDE 42.070N		LONGITUDE 82.300W						
0.	5.07		.010	26.	27.6	0.0	33.	8.1	11.1	2.1	95.	0.0	322.	8.13	.076	14.95	121.	7.3	
8.	4.95		.013	27.	26.6	0.0	33.	7.8	11.3	1.7	96.	0.0	323.	8.12	.108	14.85	119.	6.9	
17.	5.03		.024	28.	26.6	0.0	33.	8.4	11.0	2.0	97.	0.0	322.	8.17	.106	15.00	121.	7.1	40.
18.38														7.04	.075				
STATION 59		MONTH 12		DAY 6		HOUR 13.1		JULIAN DAY 340			LATITUDE 41.980N		LONGITUDE 82.380W						
0.	3.47		.017	31.	23.7	.2	30.	7.5	10.0	1.9	92.	0.0	295.	8.08	.096	13.98	109.	7.3	
8.	3.62		.015	28.	23.2	.3	30.	9.2	9.6	1.6	92.	0.0	295.	8.10	.098	12.91	108.	10.9	
13.	3.63		.015		24.1	0.0	29.	9.0	10.1	2.3	97.	0.0	297.	8.18	.125	13.73	107.	14.7	2735.
14.98														7.15	-.110				
STATION 61		MONTH 12		DAY 6		HOUR 14.4		JULIAN DAY 340			LATITUDE 41.640N		LONGITUDE 82.550W						
0.	2.51		.043	22.	25.4	.1	27.	8.6	10.9	1.6	87.	0.0	281.	7.98	.098	14.28	108.	20.0	
10.	2.47		.036	21.	25.9	0.0	27.	7.6	10.6	1.6	90.	0.0	281.	8.00	.108	14.17	107.	18.7	10.
11.98																			

LIMNOLOGICAL DATA
LAKE ERIE

CRUISE 6T03

SAMPLE DEPTH M	WATER TEMP C	NO3 MG/L N	PO4 MG/L P	SO4 MG/L	CL MG/L	SIO2 MG/L	CA MG/L	MG MG/L	NA MG/L	K MG/L	T.ALK MG/L CACO3	P.ALK MG/L CACO3	SPEC. COND. MICRO-MHOS	PH	EH VOLTS	DO MG/L	DO PCT. SAT.	TOT. SUSP MATR MG/L	TOTAL COLI 100ML
STATION 61		MONTH 12		DAY 6		HOUR 15.3		JULIAN DAY 340			LATITUDE 41.950N			LONGITUDE 82.630W					
0.	2.63		.018	17.	22.7	0.0	28.	7.6	9.5	1.6	86.	0.0	276.	7.95	.144	16.36	124.	18.3	
9.	2.60		.029	18.	22.7	0.0	29.	8.1	9.3	1.6	88.	0.0	277.	8.10	.150	16.15	122.	18.0	2900.
11.38														7.33	-.088				
STATION 62		MONTH 12		DAY 7		HOUR 8.8		JULIAN DAY 341			LATITUDE 41.850N			LONGITUDE 82.880W					
0.	2.13		.071	18.	17.7	0.0	27.	8.4	8.3	1.5	87.	0.0	262.	8.18	.088	14.67	110.		
9.	2.11		.071	19.	17.7	0.0	27.	7.6	8.1	1.8	87.		263.	8.21	.092	14.56	109.		470.
11.68														7.50	-.055				
STATION 63		MONTH 12		DAY 7		HOUR 10.0		JULIAN DAY 341			LATITUDE 41.970N			LONGITUDE 83.000W					
0.	1.55		.018	18.	14.8	0.0	28.	8.7	6.5	2.0	94.	0.0	254.	8.18	.111	15.43	114.	21.1	
7.	1.33		.015	19.	19.7	0.0	31.	7.8	7.9	1.9	98.		282.	8.21	.128	15.27	112.	21.3	1170.
8.58														7.12	.020				

CRUISE 6T04

STATION 3		MONTH 12		DAY 11		HOUR 12.6		JULIAN DAY 345			LATITUDE 41.800N			LONGITUDE 83.130W					
0.	2.52		.068			.2	29.	8.0	9.0	1.6			264.			13.98	106.	37.6	
8.	2.50		.061			.1	28.	7.5	8.7	1.8			264.			14.18	107.	34.7	1100.
9.88																			

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Appendix B. WIND, WAVE, AND SEDIMENT DATA

NOAA FORM 31-18

25 BOTTOM PAGE NUMBERS

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LAKE ERIE

CRUISE 6701

STA	WIND DIR DEG.	WIND VEL M/S	WAVE DIR DEG. X10	WAVE HGT M	WAVE PER SEC.	BOTTOM DEPTH M	BOTTOM SEDIMENT DRY SOLIDS PCT.	BOTTOM SEDIMENT VOLA-TILES PCT.	BOTTOM SEDIMENT OIL + GREASE PCT. DS	BOD MG/G	BOD DAYS RUN
2	168	4.0	0	0.0	0.0	9.1					
3	116	2.4	0	0.0	0.0	9.1					
13	350	6.1	36	.8	4.0	16.8					
14	320	5.0	36	.6	4.1	13.7					
15	310	3.9	36	.6	4.0	21.6					
16	335	1.8	34	.5	3.6	23.8					
17	245	2.1	34	.3	3.5	12.2					
18	260	5.2	34	.3	3.5	18.0					
19	40	1.3	5	.3	3.0	18.6					
20	70	3.3	5	.2	2.3	23.5					
21	60	4.4	5	.2	2.3	16.5					
22	50	8.3	5	.5	2.9	13.7					
23	45	7.1	2	.5	2.6	10.1					
24	180	9.6	18	.3	2.2	13.7					
25	180	8.1	18	.3	2.2	15.8					
26	280	5.9	23	.3	2.9	18.3					
27	100	4.3	23	.3	2.5	26.5					
28	303	5.2	32	.3	3.0	44.2					
29	130	4.9	23	.2	2.4	21.0					
30	170	7.5	23	.2	1.6	18.3					
34	310	.6	32	.2	1.9	22.3					
37	279	9.2	27	.4	3.4	32.9					
39	289	7.8	32	.5	3.5	43.0					
40	295	10.4	32	.6	3.8	63.1					
41	298	11.6	32	.6	3.8	46.3					
42	275	9.2	27	.8	4.2	39.0					
43	332	3.8	32	.3	3.0	23.8					
44	304	2.0	32	.3	3.0	28.1					
45	246	3.6	23	.2	2.8	19.8					
46	242	5.0	23	.3	3.0	19.5					
47	236	7.2	23	.4	3.3	17.7					
48	94	5.8	9	.2	2.8	18.9					
49	86	5.6	9	.3	2.9	21.3					
50	73	6.0	5	.3	3.0	21.9					
51	55	8.2	5	.4	3.2	22.9					
52	58	6.8	5	.4	3.1	21.9					
53	69	5.0	5	.3	3.0	20.7					
54	72	5.0	5	.3	3.0	18.6					
55	356	9.4	36	.6	4.0	22.9					
56	11	5.8	36	.6	4.0	24.4					
57	79	2.7	9	.4	3.3	22.3					
58	177	3.2	18	.2	2.5	18.3					
59	198	2.8	18	.2	2.6	13.7					
60	209	4.0	23	.2	2.8	11.3					
61	263	2.2	0	0.0	0.0	10.7					
62	90	2.2	0	0.0	0.0	10.1					
63	185	3.4	18	.2	2.4	8.8					

CRUISE 6702

1	119	6.0	14	.3	3.1	9.1					
2	213	5.4	23	.2	2.2	9.8					
3	195	3.3	23	.2	2.5	9.4					
4	163	3.0	0	0.0	0.0	7.6					
5	136	2.8	0	0.0	0.0	8.2					
6	229	5.0	23	.2	2.6	12.2					
7	241	6.8	23	.2	2.3	13.7					
8	233	5.0	23	.2	2.2	14.3					
9	243	5.5	23	.2	2.3	15.8					
10	258	7.4	23	.2	2.4	16.8					

LAKE ERIE

CRUISE 6702

STA	WIND DIR DEG.	WIND VEL M/S	WAVE DIR DEG. X10	WAVE HGT M	PER SEC.	BOTTOM DEPTH M	BOTTOM SEDIMENT DRY SOLIDS PCT.	VOLA-TILES PCT.	OIL + GREASE PCT. DS	BOD MG/G	DAYS RUN
11	214	4.2	0	0.0	0.0	18.6					
12	217	7.0	0	0.0	0.0	16.3					
13	239	2.8	0	0.0	0.0	16.5					
14	297	4.2	0	0.0	0.0	12.5					
15	262	1.2	0	0.0	0.0	21.3					
16	98	0.0	0	0.0	0.0	23.5					
17	62	.8	0	0.0	0.0	12.5					
18	76	3.4	0	0.0	0.0	18.3					
19	181	4.6	0	0.0	0.0	18.6					
20	291	0.0	0	0.0	0.0	22.6					
21	310	3.6	0	0.0	0.0	16.8					
22	179	.6	0	0.0	0.0	13.4					
23	192	0.0	0	0.0	0.0	9.8					
24	57	4.0	0	0.0	0.0	13.4					
25	60	2.0	0	0.0	0.0	17.7					
26	21	1.8	0	0.0	0.0	18.0					
27	3	5.6	0	0.0	0.0	27.1					
28	46	4.6	0	0.0	0.0	43.9					
29	40	4.2	5	.2	2.7	20.7					
30	332	4.4	0	0.0	0.0	19.2					
31	304	3.2	0	0.0	0.0	16.2					
32	23	5.0	0	0.0	0.0	12.8					
33	247	3.6	0	0.0	0.0	18.0					
34	292	3.6	0	0.0	0.0	21.9					
35	244	4.0	0	0.0	0.0	19.2					
36	190	2.8	0	0.0	0.0	21.3					
37	94	3.6	0	0.0	0.0	33.2					
39	73	5.4	0	0.0	0.0	42.4					
40	66	5.2	0	0.0	0.0	61.6					
41	59	5.2	0	0.0	0.0	46.0					
42	84	6.4	0	0.0	0.0	39.8					
43	63	4.8	5	1.4	4.6	23.5					
44	62	6.4	5	1.1	4.2	18.9					
45	42	6.4	5	.8	3.3	18.9					
46	44	8.0	5	.8	3.2	18.3					
47	101	5.6	5	.8	3.0	16.8					
48	32	2.0	0	0.0	0.0	18.9					
49	249	1.6	0	0.0	0.0	21.3					
50	300	2.4	0	0.0	0.0	22.3					
51	316	2.6	0	0.0	0.0	23.2					
52	219	3.8	0	0.0	0.0	22.3					
53	242	3.7	0	0.0	0.0	21.0					
54	230	.4	0	0.0	0.0	19.2					
55	67	7.0	5	1.5	4.3	23.8					
56	68	9.2	5	1.5	4.2	25.0					
57	81	7.4	5	1.5	4.3	25.3					
58	98	5.4	5	1.5	4.4	18.0					
59	81	4.6	9	1.4	3.9	14.3					
60	85	9.4	9	1.1	3.5	11.9					
61	104	7.6	9	.8	3.0	11.4					
62	79	6.4	9	.3	3.0	10.7					
63	102	5.5	14	.3	3.0	8.8					

CRUISE 6703

1	105	6.2	14	.9	3.2	10.4				1.53	4
2	126	6.2	14	.5	3.2	10.1				.59	4
3	37	1.8	5	.2	2.1	9.4				.29	5
4	28	3.2	5	.3	2.6	7.9				.75	5
5	81	.8	0	0.0	0.0	8.2				.46	5

LAKE ERIE

CRUISE 6703

STA	WIND DIR DEG.	WIND VEL M/S	WAVE DIR DEG. X10	WAVE HGT M	WAVE PER SEC.	BOTTOM DEPTH M	BOTTOM SEDIMENT DRY SOLIDS PCT.	BOTTOM SEDIMENT VOLA-TILES PCT.	BOTTOM SEDIMENT OIL + GREASE PCT. DS	BOD MG/G	BOD DAYS RUN
6	148	5.8	14	.6	3.2	12.9				.61	5
7	154	3.8	14	.5	2.7	13.4				.58	5
8	155	7.0	14	.6	3.1	14.0				.81	5
9	132	4.6	14	.6	3.1	16.2				.53	5
10	148	4.6	14	.2	2.3	16.8				.49	5
11	138	7.0	14	.3	2.7	18.6				.43	5
12	135	5.1	14	.3	2.7	16.2				.55	5
13	271	6.1	27	.7	4.0	15.5				1.33	5
14	271	6.6	27	.8	4.1	12.2				.27	5
15	268	9.3	27	1.0	4.5	20.7				.66	5
16	226	9.2	23	1.0	4.3	23.8				.87	5
17	216	7.2	23	.6	3.7	11.0				.75	5
18	214	7.0	23	.6	3.7	38.3				.81	5
19	193	7.4	18	.6	3.6	18.9				.77	5
20	229	12.8	23	1.3	5.0	23.2					
21	215	9.0	23	.9	4.1	36.5				.91	5
22	220	9.8	23	.8	4.0	13.4				.52	5
23	219	8.8	23	.8	4.1	10.1				.23	5
24	251	7.6	27	.9	3.8	14.0					
25	228	6.8	23	1.1	4.1	16.8				1.06	5
26	220	9.1	23	1.1	4.2	17.7				.68	5
29	113	8.0	14	.2	2.1	20.4				.83	5
30	107	7.0	9	.3	2.6	19.2				.32	5
31	93	5.4	9	.3	2.6	15.2					
32	76	8.0	9	.3	2.6	12.5				.36	5
33	85	7.4	9	.5	3.1	18.3				.36	5
34	69	8.2	9	.5	3.2	21.3				.72	5
35	59	8.1	5	.5	3.2	18.6				.42	5
36	89	5.0	9	.4	3.1	21.9				.14	5
37	116	6.0	14	.4	3.0	33.2				.58	5
39	109	4.4	14	.4	3.0	42.7				.43	5
41	97	5.0	9	.4	3.0	46.0				.78	5
42	64	5.4	5	.4	3.0	38.7				.16	5
43	161	14.3	18	1.3	4.2	21.6				.32	5
44	174	10.0	18	1.3	4.3	19.5					
45	170	12.0	18	1.5	4.6	15.8					
48	183	4.0	18	.8	4.7	18.6					
49	191	3.4	18	.6	4.5	21.0				.37	5
50	198	4.6	18	.6	4.5	21.6				.68	5
52	217	4.6	23	.8	4.1	21.9				.50	5
53	225	6.2	23	.6	3.7	21.0				.73	5
54	223	4.0	23	.5	3.4	18.6				.76	5
55	150	4.8	9	.2	2.2	23.8				.72	5
56	218	10.5	23	1.2	4.6	24.7				.78	5
57	103	5.0	14	.2	2.3	21.9				.65	5
58	93	3.4	9	.2	2.2	18.3				.48	5
59	139	3.6	0	0.0	0.0	14.9				.52	5
60	164	4.0	0	0.0	0.0	11.9					
61	159	4.2	0	0.0	0.0	11.3				.64	5
62	148	5.8	0	0.0	0.0	11.0				.63	5
63	151	5.6	0	0.0	0.0	8.5				.76	5

CRUISE 6704

3	119	7.2	14	.3	2.7	9.8					

WATER TEMP.CELSIUS

LAKE ERIE
1967

DATE-	104-121	145-165	324-345
DEPTH M			
MEAN-			
0	5.007	13.648	4.996
5	8.100	15.810	3.123
10	4.634	10.475	5.145
15	5.238	9.151	5.238
20	3.510	8.176	5.636
25	3.500	5.600	
30	2.348	5.820	6.118
35	1.790	4.280	6.560
40	2.710	4.675	5.990
45	1.520	4.680	6.080
50			
60	2.880	4.860	
STANDARD DEVIATION-			
0	2.228	5.152	1.281
5	.297	1.979	1.584
10	1.674	2.995	1.187
15	1.149	1.818	.995
20	.824	1.335	.927
25	.297		
30	1.026	.426	.809
35			
40	1.739	.349	
45			
50			
60			
SAMPLE SIZE-			
0	53	62	56
5	2	2	3
10	50	61	54
15	15	21	21
20	17	16	14
25	2	1	
30	6	6	4
35	1	1	1
40	2	2	1
45	1	1	1
50			
60	1	1	

NITRATE MG/L

LAKE ERIE
1967

DATE-	104-121	145-163	324-345
DEPTH M			
MEAN-			
0	1.065	.895	
5	.820	.637	
10	.830	.947	
15	1.288	1.014	
20	.988	1.337	
25	.345		
30	.835	1.187	
35	.360	.100	
40	.755	.365	
45	.500	2.580	
50			
60	.280	1.913	
STANDARD DEVIATION-			
0	.779	.760	
5	1.018	.318	
10	.701	.982	
15	.977	.901	
20	.813	1.276	
25	.219		
30	.283	.975	
35			
40	.460	.064	
45			
50			
60			
SAMPLE SIZE-			
0	51	35	
5	2	3	
10	38	39	
15	16	14	
20	17	9	
25	2		
30	4	6	
35	1	1	
40	2	2	
45	1	1	
50			
60	1	1	

SULFATE MG/L

LAKE ERIE
1967

DATE-	104-121	145-165	324-345
DEPTH M			
MEAN-			
0	25.833	24.869	24.107
5	19.000	25.200	19.333
10	26.057	24.689	23.852
15	27.333	25.193	24.250
20	26.294	24.688	26.286
25	24.500	26.000	
30	26.000	24.833	26.000
35	23.000	23.000	26.000
40	26.000	24.500	25.000
45	26.000	25.300	25.000
50			
60	26.000	23.000	
STANDARD DEVIATION-			
0	3.272	3.299	3.229
5	1.414	6.797	1.528
10	2.663	3.165	2.949
15	2.410	2.786	2.511
20	1.759	2.056	1.590
25	.707		
30	2.608	.983	1.414
35			
40		.707	
45			
50			
60			
SAMPLE SIZE-			
0	54	61	56
5	2	5	3
10	53	61	54
15	15	21	20
20	17	16	14
25	2	1	
30	6	6	4
35	1	1	1
40	2	2	1
45	1	1	1
50			
60	1	1	

SILICA (SIO2) MG/L

LAKE ERIE
1967

DATE-	104-121	145-165	324-345
DEPTH M			
MEAN-			
0		.460	.323
5	.300	.480	1.000
10	.630	.479	.335
15	.231	.343	.214
20	.157	.213	.180
25	.200	.100	
30	.100	.200	.300
35	.190	.100	.100
40	.100	.200	
45	.300	.100	
50			
60	.200	.100	
STANDARD DEVIATION-			
0		.346	.369
5	.283	.292	.285
10	.613	.453	.353
15	.309	.370	.121
20	.065	.233	.110
25			
30			
35			
40			
45			
50			
60			
SAMPLE SIZE-			
0		20	30
5	2	5	2
10	16	24	20
15	13	20	7
20	14	15	5
25	2	1	
30	1	1	1
35	1	1	1
40	2	2	
45	1	1	
50			
60	1	1	

CALCIUM MG/L

LAKE ERIE
1967

DATE-	104-121	145-165	324-345
DEPTH M			
MEAN-			
0		42.273	32.536
5		43.333	31.333
10		42.364	32.593
15		42.250	33.000
20		41.333	33.429
25			
30			33.750
35			35.000
40			35.000
45			35.000
50			
60			
STANDARD DEVIATION-			
0		1.518	2.628
5		1.155	.577
10		1.082	2.653
15		1.488	1.817
20		1.155	1.555
25			
30			3.282
35			
40			
45			
50			
60			
SAMPLE SIZE-			
0		22	56
5		3	3
10		22	54
15		8	21
20		3	14
25			
30			4
35			1
40			1
45			1
50			
60			

MAGNESIUM MG/L

LAKE ERIE
1967

DATE-	104-121	145-165	324-345
DEPTH M			
MEAN-			
0	8.909	8.874	8.127
5	8.300	9.080	7.633
10	8.847	8.782	8.085
15	8.953	8.995	8.281
20	8.929	8.906	8.507
25	9.200	8.700	
30	8.967	8.683	8.150
35	9.300	8.100	8.300
40	9.200	8.350	7.700
45	9.100	8.300	8.300
50			
60	8.680	8.300	
STANDARD DEVIATION-			
0	.684	.559	.666
5	1.273	1.254	.153
10	.625	.506	.599
15	.720	.541	.533
20	.438	.535	.680
25	.141		
30	.463	.527	.370
35			
40	.424	1.202	
45			
50			
60			
SAMPLE SIZE-			
0	54	42	56
5	2	5	3
10	53	61	54
15	15	21	21
20	17	16	14
25	2	1	
30	6	6	4
35	1	1	1
40	2	2	1
45	1	1	1
50			
60	1	1	

SPEC. COND- MICROMHOS

LAKE ERIE
1967

DATE-	104-121	145-165	329-345
DEPTH M			
MEAN-			
0	315.333	305.645	303.143
5	284.000	297.600	278.667
10	318.961	317.918	307.389
15	326.429	317.381	309.095
20	319.353	310.625	315.500
25	312.500	319.000	
30	319.000	314.667	325.500
35	314.000	314.000	334.000
40	318.000	314.500	312.000
45	316.000	315.000	317.000
50			
60	315.000	318.000	
STANDARD DEVIATION-			
0	18.055	16.462	22.991
5		42.371	12.342
10	17.156	65.400	23.387
15	20.935	16.357	13.487
20	6.234	4.787	11.155
25	17.678		
30	5.865	1.966	13.026
35			
40	7.071	3.536	
45			
50			
60			
SAMPLE SIZE-			
0	51	62	56
5	2	5	3
10	51	61	54
15	14	21	21
20	17	16	14
25	2	1	
30	6	6	4
35	1	1	1
40	2	2	1
45	1	1	1
50			
60	1	1	

TOTAL SUSP. MAT. MG/L

LAKE ERIE
1967

DATE-	104-121	145-165	324-345
DEPTH M			
MEAN-			
0	4.910	5.576	11.545
5	13.850	10.540	21.167
10	6.877	5.231	11.130
15	6.593	5.044	11.214
20	7.188	4.273	7.970
25	1.750	6.400	
30	3.867	4.067	7.500
35	8.400	6.700	9.300
40	4.550	4.300	4.700
45	4.800	3.100	5.800
50			
60	4.800	6.400	
STANDARD DEVIATION-			
0	5.657	4.437	5.785
5	14.920	4.187	1.894
10	7.822	3.986	6.741
15	6.128	2.645	7.288
20	8.176	2.518	5.136
25	.919		
35	2.908	1.634	1.687
35			
40	5.162	2.970	
45			
50			
60			
SAMPLE SIZE-			
0	50	55	55
5	2	5	3
10	47	52	53
15	15	18	21
20	17	15	14
25	2	1	
30	6	6	4
35	1	1	1
40	2	2	1
45	1	1	1
50			
60	1	1	