

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION

National Surface Water Survey: Eastern Lake Survey-Phase II  
BATHYM - Bathymetric Indices

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog Document  
BATHYM\_M

1.2 Authors of the Catalog Entry  
U.S. EPA NHEERL Western Ecology Division  
Corvallis, OR

1.3 Catalog Revision Date  
May 1998

1.4 Data Set Name  
Bathym

1.5 Task Group  
National Acid Precipitation Assessment Program(NAPAP)- Aquatic Effects Research  
Program

1.6 Data Set Identification Code  
150

1.7 Version  
001

1.8 Requested Acknowledgment

This research was funded as apart of the National Acid Precipitation Assessment Program (NAPAP) by the U.S. Environmental Protection Agency (EPA). If you publish these data or use them for analyses in publications, EPA requires a standard statement for work it has supported:

"Although the data described in this article have been funded wholly or in part by the U.S. Environmental Protection Agency, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement of the conclusions should be inferred."

2. INVESTIGATOR INFORMATION

2.1 Principal Investigator  
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NHEERL Western Ecology Division  
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## 2.2 Investigation Participant - Sample Collection

John Baker, Coordinator

### 3. DATA SET ABSTRACT

#### 3.1 Abstract of the Data Set

The Eastern Lake Survey-Phase II (ELS-II), conducted in the spring, summer and fall of 1986. The focus of ELS-II was on the northeastern United States. ELS-II involved the resampling of a subset of lakes in the northeastern United States sampled in ELS-I to determining chemical variability and biological status. Other information was collected as part of ELS-II activities in addition to the data in the three seasonal ELS-II data sets. These include zooplankton species abundance, chlorophyll concentrations, and bathymetry.

#### 3.2 Keywords for the Data Set

### 4. OBJECTIVES AND INTRODUCTION

#### 4.1 Program Objective

The primary objectives of ELS-II were (1) to assess the sampling error associated with the ELS-I fall index sample, (2) to estimate the number of lakes with low acid neutralizing capacity (ANC) (i.e. potentially susceptible) that are not acidic in the fall but that are acidic in other seasons, and (3) to establish seasonal water chemistry characteristics among lakes. In addition to the three seasonal data sets, ancillary ELS-II data sets include zooplankton species abundance, chlorophyll concentrations, and bathymetry.

#### 4.2 Data Set Objective

This data set is part of the National Surface Water Survey (NSWS) and the National Acid Precipitation Assessment Program (NAPAP). The data set contributes to the quantification of the extent, location, and characteristics of sensitive and acidic lakes and streams in the eastern United States sampled during the summer season.

#### 4.3 Data Set Background Discussion

A detailed bathymetric survey was conducted on 126 of the 145 ELS-II target lakes and 3 special interest lakes.

#### 4.4 Summary of Data Set Parameters

### 5. DATA ACQUISITION AND PROCESSING METHODS

#### 5.1 Data Acquisition

##### 5.1.1 Sampling Objective

To obtain bathymetric maps

##### 5.1.2 Sample Collection Methods Summary

Transects were made across the lake and depths were recorded using a Lowrance X-15A depth chart recorder. Lake outlines were scaled up from 7.5 minute USGS using a zoom transfer scope. From these depth tracings and map outlines, a bathymetric map was constructed for each lake.

##### 5.1.3 Sampling Start Date

July 23, 1986

##### 5.1.4 Sampling End Date

August 11, 1986

##### 5.1.5 Platform

- 5.1.6 Sampling Gear  
Merrit, G.D., and V.A. Sheppe. 1988. Eastern Lake Survey- Phase II, Field Operations Report. EPA/600/4-89/029. U.S. Environmental Protection Agency, Las Vegas, Nevada.
- 5.1.7 Manufacturer of Instruments  
NA
- 5.1.8 Key Variables  
NA
- 5.1.9 Sampling Method Calibration  
NA
- 5.1.10 Sample Collection Quality Control  
Mitchell-Hall, T.E., A.C. Neale, S.G. Paulsen, and J.E. Pollard. 1989. Eastern Lake Survey- Phase II: Quality Assurance Report. EPA/600/4-85-017. U.S. Environmental Protection Agency, Las Vegas, Nevada.
- 5.1.11 Sample Collection Method Reference
- 5.1.12 Sample Collection Method Deviations  
NA

- 5.2 Data Preparation and Sample Processing
  - 5.2.1 Sample Processing Objective
  - 5.2.2 Sample Processing Methods Summary
  - 5.2.3 Sample Processing Method Calibration
  - 5.2.4 Sample Processing Quality Control
  - 5.2.5 Sample Processing Method Reference

6. DATA MANIPULATIONS

- 6.1 Name of New or Modified Values  
None.
- 6.2 Data Manipulation Description

7. DATA DESCRIPTION

7.1 Description of Parameters

#	Parameter SAS Name	Data Type	Len	Format	Parameter Label
14	FRATE	Num	8	F	FLUSHING RATE (YRS) [WAREA*RUNOFF/VOL]
1	LAKE_ID	Char	7		LAKE ID
2	LAT_DD	Num	4	F	LATITUDE (DECIMAL DEGREES)
10	LITTAREA	Num	8	F	LITTORAL ZONE (<= 10 FT DEPTH) AREA (HA)
3	LONG_DD	Num	4	F	LONGITUDE (DECIMAL DEGREES)
7	MAXDPM	Num	8	F	Maximum Depth (m)
8	MEANDPM	Num	8	F	MEAN DEPTH (M) [VOL/AREA]
13	RUNOFF	Num	8	F	RUNOFF (CM/YR)

7.1 Description of Parameters, continued

#	Parameter SAS Name	Data Type	Len	Format	Parameter Label
5	SAREA	Num	8	F	Lake Surface Area (ha)
9	SHORLN	Num	8	F	SHORELINE LENGTH (KM)
12	SHRDEV	Num	8	F	SHORELINE DEVELOPMENT (L/2SQRT(PI*A))
11	VOLDV	Num	8	F	VOLUME DEVEL. (3*MEAN DEPTH/MAX DEPTH)
6	VOLUME	Num	8	F	LAKE VOLUME (10**6 CUBIC METERS)
4	WAREA	Num	8	F	Watershed Area (ha)

7.1.6 Precision to which values are reported

7.1.7 Minimum Value in Data Set

Name	Min
FRATE	0.3
LAT_DD	41.004150391
LITTAREA	0.7
LONG_DD	-67.266662598
MAXDPM	1.2
MEANDPM	0.5
RUNOFF	50.8
SAREA	1.2
SHORLN	0.4
SHRDEV	1.02
VOLDV	0.6
VOLUME	0.029454
WAREA	13

7.1.7 Maximum Value in Data Set

Name	Max
FRATE	1319.1
LAT_DD	46.933868408
LITTAREA	773.5
LONG_DD	-76.320800781
MAXDPM	37.5
MEANDPM	11.8
RUNOFF	88.9
SAREA	1626.9
SHORLN	61.7
SHRDEV	4.32
VOLDV	2.11
VOLUME	110.696
WAREA	81424

7.2 Data Record Example

7.2.1 Column Names for Example Records

FRATE LAKE\_ID LAT\_DD LITTAREA LONG\_DD MAXDPM MEANDPM RUNOFF SAREA SHORLN SHRDEV  
 VOLDV VOLUME WAREA

7.2.2 Example Data Records

1.200, "1A1-003", 43.9569, 5.10, 74.9583, 11.6, 4.6, 76.200, 13.50, 1.900, 1.4700, 1.1000,  
 0.617, 99.40  
 33.400, "1A1-008", 43.7083, 266.40, 74.4750, 3.0, 1.1, 88.900, 266.40, 16.700, 2.8900,  
 1.1000, 3.026, 11361.80  
 1.500, "1A1-012", 43.5875, 17.30, 74.5624, 12.2, 3.9, 88.900, 42.60, 5.400, 2.3200, 0.9500,  
 1.643, 280.30

## 8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude  
-73.3208 decimal degrees

8.2 Maximum Longitude  
-67.2667 decimal degrees

8.3 Minimum Latitude  
41.0042 decimal degrees

8.4 Maximum Latitude  
46.9339 decimal degrees

8.5 Name of Area or Region  
Connecticut, Maine, New York, Pennsylvania, Rhode Island, Massachusetts, and New Hampshire

## 9. QUALITY CONTROL / QUALITY ASSURANCE

9.1 Data Quality Objectives

9.2 Quality Assurance Procedures

9.3 Unassessed Errors  
NA

## 10. DATA ACCESS

10.1 Data Access Procedures

10.2 Data Access Restrictions

10.3 Data Access Contact Persons

10.4 Data Set Format

10.5 Information Concerning Anonymous FTP

10.6 Information Concerning Gopher and WWW

10.7 EMAP CD-ROM Containing the Data

## 11. REFERENCES

Brakke, D.F., D.H. Landers, and J.M. Eilers. 1988. Chemical and physical characteristics of lakes in the northeastern U.S. *Environ. Sci. Technol.* 22:155-163.

Kanciruk, P., J.M. Eilers, R.A. McCord, D.H. Landers, D.F. Brakke, and R.A. Linthurst, 1986. Characteristics of Lakes in the Eastern United States. Volume III: Data Compendium of Site Characteristics and Chemical Variables. EPA-600/4-86-007C, U.S. Environmental Protection Agency, Washington, D.C.

Landers, D.H., W.S. Overton, R.A. Linthurst, and D.F. Brakke. 1988. EPA's Eastern Lake Survey: Regional estimates of lake chemistry. *Environ. Sci. Technol.* 22:128-135.

Landers, D.H., J.M. Eilers, D.F. Brakke, and P.E. Kellar. 1987. Characteristics of acidic lakes in the eastern United States. *Verh. Int. Verein. Limnol.* 23:152-162.

Linthurst, R.A., and W.S. Overton. 1985. Response to ASA Coordinating Committee's comment on Project 3B: National Surface Water Survey, National Lake Survey, Phase I Research Plan. J. Amer. Stat. Assoc. 39:260-274.

Linthurst, R.A., D.H. Landers, J.M. Eilers, D.F. Brakke, W.S. Overton, E.P. Meier, and R.E. Crowe, 1986. Characteristics of Lakes in the Eastern United States. Volume I: Population Descriptions and Physico-Chemical Relationships. EPA-600/4-86-007A, U.S. Environmental Protection Agency, Washington, D.C.

Linthurst, R.A., D.H. Landers, J.M. Eilers, P.E. Kellar, D.F. Brakke, W.S. Overton, R. Crowe, E.P. Meier, P. Kanciruk, and D.S. Jefferies. 1986. Regional chemical characteristics of lakes in North America- II: Eastern United States. Water, Air, Soil Pollut. 31:123-129.

Overton, W.S., P. Kanciruk, L.A. Hook, J.M. Eilers, D.H. Landers, D.J. Blick, Jr., D.F. Brakke, R.A. Linthurst, and M.S. DeHaan, 1986. Characteristics of Lakes in the Eastern United States. Volume II: Lakes Sampled and Descriptive Statistics for Physical and Chemical Variables. EPA-600/4-86-007B, U.S. Environmental Protection Agency, Washington, D.C.

## 12. TABLE OF ACRONYMS

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