

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION
EMAP SURFACE WATERS PROGRAM LEVEL DATABASE
1991-1994 NORTHEAST LAKES DATA
LAKE WATERSHED DATA

TABLE OF CONTENTS

1. DATA SET IDENTIFICATION
2. INVESTIGATOR INFORMATION
3. DATA SET ABSTRACT
4. OBJECTIVES AND INTRODUCTION
5. DATA ACQUISITION AND PROCESSING METHODS
6. DATA MANIPULATIONS
7. DATA DESCRIPTION
8. GEOGRAPHIC AND SPATIAL INFORMATION
9. QUALITY CONTROL / QUALITY ASSURANCE
10. DATA ACCESS
11. REFERENCES
12. TABLE OF ACRONYMS
13. PERSONNEL INFORMATION

1. DATA SET IDENTIFICATION

1.1 Title of Catalog Document
EMAP Surface Waters Lake Database
1991-1994 Northeast Lakes
Lake Watershed Characteristic Data Summarized by Lake

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

1.3 Catalog Revision Date
April 1998

1.4 Data Set Name
WATCHR

1.5 Task Group
Surface Waters

1.6 Data Set Identification Code
0112

1.7 Version
001

1.8 Requested Acknowledgment

These data were produced as part of the U.S. EPA's Environmental Monitoring and Assessment Program (EMAP). 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 through its EMAP Surface Waters Program, 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

Dr. John Stoddard
U.S. Environmental Protection Agency
NHEERL Western Ecology Division
200 S.W. 35th Street
Corvallis, OR 97333

2.2 Investigation Participant - Sample Collection

Dartmouth College
Harvard University
New York State Museum of Natural History
Oregon State University
SUNY Syracuse College of Environmental Sciences and Forestry
Queens University
University of Maine
U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
Office of Research and Development
Regions 1 and 2

3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The primary function of the lake-watershed characteristics data is to provide a description of the physical setting for the lake. The data can provide insight into the expected lake conditions and the extent to which human activities within the watershed impact the lake quality.

3.2 Keywords for the Data Set

Watershed, land cover, land use, road density, human population, lake watersheds

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The Environmental Monitoring and Assessment Program (EMAP) was designed to periodically estimate the status and trends of the Nation's ecological resources on a regional basis. EMAP provides a strategy to identify and bound the extent, magnitude and location of environmental degradation and improvement on a regional scale based on a probability-based statistical survey design.

4.2 Data Set Objective

Information is gathered to describe the physical setting, thus helping to define the "expected conditions" for the lake, and to describe the human activities within the watershed which are expected to impact lake quality.

4.3 Data Set Background Discussion

Watershed information is gathered to describe the watershed setting, thus helping to define the "expected conditions" for the lake, and to describe the human activities within the watershed which are expected to impact lake quality.

4.4 Summary of Data Set Parameters

Lake and watershed characterization parameters include lake surface area, length of shoreline, estimated mean depth, estimated volume, elevation, road density, estimated population of watershed, and percentages of watershed classified as urban, non-residential urban, agriculture, forest, wetland, and barren.

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

To characterize physical attributes of the lake and watershed based on the most recent data sources available.

5.1.2 Sample Collection Methods Summary

The watershed for each lake is outlined on topographic maps then both the lake and watershed were digitized into a GIS coverage. Lake area, watershed area, and lake shore length are derived from this process. The coverage is also overlain with other data sources, such as remote-sensing based land cover data, digital maps of road networks, or point source discharge locations. The data intersecting each watershed boundary is then summarized as a series of watershed characteristics or metrics.

5.1.3 Sampling Start Date

July 1991

5.1.4 Sampling End Date

September 1994

5.1.5 Platform

Desk top

5.1.6 Sampling Gear

Sun Work Station and ARC-INFO GIS software

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
See Baker et al. (1997).

5.1.11 Sample Collection Method Reference

Baker, J.R., G.D. Merritt, and D.W. Sutton (eds.). 1997. Environmental Monitoring and Assessment Program - Surface Waters: Field Operations Manual for Lakes.

Chaloud, D.J. and D.V. Peck. 1994. Environmental Monitoring and Assessment Program - Surface Waters: Integrated Quality Assurance Project Plan for the Surface Waters Resource Group.

5.1.12 Sample Collection Method Deviations
NA

5.2 Data Preparation and Sample Processing

5.2.1 Sample Processing Objective
See Baker et al. (1997) and Chaloud and Peck (1994).

5.2.2 Sample Processing Methods Summary
See Baker et al. (1997) and Chaloud and Peck (1994).

5.2.3 Sample Processing Method Calibration
See Baker et al. (1997) and Chaloud and Peck (1994).

5.2.4 Sample Processing Quality Control
See Baker et al. (1997) and Chaloud and Peck (1994).

5.2.5 Sample Processing Method Reference
See Baker et al. (1997) and Chaloud and Peck (1994).

6. DATA MANIPULATIONS

6.1 Name of New or Modified Values
None.

6.2 Data Manipulation Description
See Chaloud and Peck (1994).

7. DATA DESCRIPTION

7.1 Description of Parameters

Parameter Data			Parameter
SAS Name	Type	Len	Format Label
AG_TOT	Num	8	% watershed agricultural/range
AREA_WS	Num	8	Area of watershed (ha) excluding sampled lake
AV_DEP	Num	8	Est. Mean depth (m)
BAR_TOT	Num	8	% watershed barren land
COM_STRS	Char	50	Comments on data peculiarities
DISTOT	Num	8	% watershed human disturbed land (AG_TOT + URB_TOT + MINE_TOT)
DOMECO	Num	8	Dominant ecoregion in watershed(level 3)
DOMLAB	Char	40	Name of dominant ecoregion(level 3)
ECOREG4	Char	3	Level 4 ecoregion for lake center-point
ELEV	Num	8	Lake elevation (m) from map
FOR_TOT	Num	8	% watershed - forest
H2O_TOT2	Num	8	% watershed in H2O excluding sample lake
HI_PT	Num	8	High point of watershed (m)
HOUDENKM	Num	8	Housing unit density (housing/sq km)
HOUSINGU	Num	8	Est. # housing units in watershed
HYDSHRDV	Num	8	Hydrologic shoreline development
KM_SEA	Num	8	Distance from ocean (km)
LAKENAME	Char	30	Lake Name
LAKE_ID	Char	8	Lake Identification Code
LAT_DD	Num	8	Lake Latitude (decimal degrees)
LKVOL2M3	Num	8	Est. lake volume (m**3)
LK_HA	Num	8	Lake surface area (ha)
LON_DD	Num	8	Lake Longitude (-decimal degrees)
LTROFF_M	Num	8	Long term average annual runoff (m)
MAPSCDIG	Num	8	Denominator of map scale used to digitize
MINE_TOT	Num	8	% watershed-strip mine/quarry/gravel pit
NONRES	Num	8	% watershed non-residential urban land
POPDENKM	Num	8	Population density (persons/sq km)
POPEST	Num	8	Est. Human population in watershed
PRECIP_M	Num	8	Long term average precipitation (m)
RD_DEN	Num	8	Road density (m/ha) (TOT_RD / AREA_WS)
RETENT	Num	8	Est. water retention time for lakes (yrs)
SAMPLED	Char	20	Field sampled (Yes/No)
SAMPLK	Num	8	% watershed occupied by sampled lake
SHR_LTH	Num	8	Length of shoreline including islands
SLOPE	Num	8	Est. slope of the watershed (%/100) (HI_PT/watershed length)
STUDY	Char	8	EMAP/REMAP/TIME
TOT_RD	Num	8	Meters of road length in watershed
URB_TOT	Num	8	% watershed urban (NONRES + residential)
WETL_TOT	Num	8	% watershed wetlands
YEAR	Num	8	Sample Year

7.1.6 Precision to which values are reported

NA

7.1.7 Minimum Value in Data Set

Name	Min
AG_TOT	0
AREA_WS	5.97
AV_DEP	0
BAR_TOT	0
DISTOT	0
DOMECO	58
ELEV	1
FOR_TOT	0
H2O_TOT2	0
HI_PT	16
HOUDENKM	0
HOUSINGU	0
HYDSHRDV	1.07
KM_SEA	0
LAT_DD	39.2262
LKVOL2M3	0
LK_HA	0.62
LON_DD	-78.97917
LTROFF_M	0.34
MAPSCDIG	24000
MINE_TOT	0
NONRES	0
POPDENKM	0
POPEST	0
PRECIP_M	0.8
RD_DEN	0
RETENT	0
SAMPLK	0.01
SHR_LTH	331.54
SLOPE	0
TOT_RD	0
URB_TOT	0
WETL_TOT	0
YEAR	1991

7.1.7 Maximum Value in Data Set

Name	Max
AG_TOT	90.11
AREA_WS	792078.86
AV_DEP	21.9
BAR_TOT	22.12
DISTOT	100
DOMECO	596
ELEV	753
FOR_TOT	100.01
H2O_TOT2	20.72
HI_PT	1483
HOUDENKM	1330.526
HOUSINGU	159683.8
HYDSHRDV	5.93
KM_SEA	407
LAT_DD	47.2125
LKVOL2M3	542404840.8
LK_HA	4284.53
LON_DD	-67.30111
LTROFF_M	0.99
MAPSCDIG	250000
MINE_TOT	35.55
NONRES	88.7
POPDENKM	3388.536
POPEST	394159.43
PRECIP_M	1.372
RD_DEN	151.26
RETENT	9.376
SAMPLK	39.34
SHR_LTH	111477.03
SLOPE	0.5
TOT_RD	2829912.18
URB_TOT	94.06
WETL_TOT	53.95
YEAR	1994

7.2 Data Record Example

7.2.1 Column Names for Example Records

AG_TOT, AREA_WS, AV_DEP, BAR_TOT, COM_STRS, DISTOT, DOMECO, DOMLAB, ECOREG4, ELEV, FOR_TOT, H2O_TOT2, HI_PT, HOUDENKM, HOUSINGU, HYDSHRDV, KM_SEA, LAKENAME, LAKE_ID, LAT_DD, LKVOL2M3, LK_HA, LON_DD, LTROFF_M, MAPSCDIG, MINE_TOT, NONRES, POPDENKM, POPEST, PRECIP_M, RD_DEN, RETENT, SAMPLED, SAMPLK, SHR_LTH, SLOPE, STUDY, TOT_RD, URB_TOT, WETL_TOT, YEAR

7.2.2 Example Data Records

3.12,909.04,1.25,0,"XXXXX",9.21,592,"Northeastern Coastal Zone",
"592",205,86.26,1.25,366,7.269,65.774,1.902,60,
"BISSONETTE POND","CT002L",41.92417,251186.4,
20.05,-72.21889,0.634,24000,0,5.74,19.579,177.178,1.217,17.08,0.043,
"Yes",2.16,3019.53,0.04,"EMAP",15528.57,6.09,1.12,1991

0,166.68,3.9,0,"1992_REPEAT",0,593,"Northeastern Coastal Zone","593",92,72.86,
0.87,163,8.794,14.738,2.276,16,"WYASSUP LAKE","CT004L",41.48833,1529808,
39.25,-71.87278,0.7112,24000,0,0,16.289,27.296,1.153,16.73,1.045,"Yes",
19.06,5054.841,0.04,"EMAP",2787.93,0,7.21,1991

1.36,161.86,1.44,0," ",1.36,593,"Northeastern Coastal Zone","593",118,95.4,0,160,
12.66,20.52,1.29,32,"CRANBERRY LAKE","CT250L",41.67667,103708.64,7.21,-72.03389,
0.69,24000,0,0,33.62,54.49,1.14,26.54,0.09,"Yes",4.26,1223.99,0.03,
" ",4295.65,0,0,1992

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-78 Degrees 51 Minutes 6.84 Seconds West (-78.8519 Decimal Degrees)

8.2 Maximum Longitude

-67 Degrees 18 Minutes 4.00 Seconds West (-67.30111 Decimal Degrees)

8.3 Minimum Latitude

39 Degrees 13 Minutes 34.32 Seconds North (39.2262 Decimal Degrees)

8.4 Maximum Latitude

47 Degrees 11 Minutes 59.28 Seconds North (47.1998 Decimal Degrees)

8.5 Name of Area or Region

Northeast: EPA Regions I and II which includes Connecticut, Massachusetts,
Maine, New Hampshire, New Jersey, New York, Vermont, Rhode Island

9. QUALITY CONTROL / QUALITY ASSURANCE

9.1 Data Quality Objectives

See Chaloud and Peck (1994)

9.2 Quality Assurance Procedures

See Chaloud and Peck (1994)

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

Baker, J.R., G.D. Merritt, and D.W. Sutton (eds.). 1997. Environmental Monitoring and Assessment Program - Surface Waters: Field Operations Manual for Lakes. EPA/620/R-97/001. U.S. Environmental Protection Agency. Office of Research and Development. Washington, D.C.

Chaloud, D.J. and D.V. Peck. 1994. Environmental Monitoring and Assessment Program - Surface Waters: Integrated Quality Assurance Project Plan for the Surface Waters Resource Group. U.S. Environmental Protection Agency. Office of Research and Development.

12. TABLE OF ACRONYMS

13. PERSONNEL INFORMATION

Project Manager
Dr. John Stoddard
U.S. Environmental Protection Agency
NHEERL Western Ecology Division
200 S.W. 35th Street
Corvallis, OR 97333
541-754-4441
541-754-4716(FAX)
stoddard@mail.cor.epa.gov

Quality Assurance Officer
Dave Peck
U.S. Environmental Protection Agency
NHEERL Western Ecology Division
200 S.W. 35th Street
Corvallis, OR 97333
541-754-4426
541-754-4716(FAX)
davep@mail.cor.epa.gov

Information Management, EMAP-Surface Waters
Marlys Cappaert
OAO c/o U.S. Environmental Protection Agency
NHEERL Western Ecology Division
200 S.W. 35th Street
Corvallis, OR 97333
541-754-4467
541-754-4716(FAX)
cappaert@mail.cor.epa.gov