# CATALOG DOCUMENTATION
# EMAP SURFACE WATERS PROGRAM LEVEL DATABASE
# 1993-1996 MID-ATLANTIC STREAMS DATA
# STREAMS DESIGN DATA

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## 1. DATA SET IDENTIFICATION

### 1.1 Title of Catalog Document
EMAP Surface Waters Lake Database
1993-1996 Mid-Atlantic Streams
Streams Design Data

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

### 1.3 Catalog Revision Date
February 1999

### 1.4 Data Set Name
SDESIGN

### 1.5 Task Group
Surface Waters

### 1.6 Data Set Identification Code
130

### 1.7 Version
003

### 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

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### 2.2 Investigation Participant - Sample Collection

## 3. DATA SET ABSTRACT

### 3.1 Abstract of the Data Set

The primary function of the stream design data are to provide the ability for researchers to calculate population estimates using data collected under the EMAP probability-based statistical survey design.

### 3.2 Keywords for the Data Set

weighting factors, probability design, statistical analysis, regional estimates.

## 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

This data set is part of a demonstration project to evaluate approaches to monitoring streams in EMAP. The data set contains the statistical weighting factors which allow the data to be summarized into statements about the status of Streams in the Mid-Atlantic region.

### 4.3 Data Set Background Discussion

Data on the streams for site selection were summarized from digital and paper sources. Streams were classified as target or non-target; target streams were categorized by their Strahler order. Sample weights for each sampled stream were determined using the sample sizes for each Strahler order and the total length of streams within each order in the region. Locations along streams were chosen randomly, using the nesting attribute of the EMAP hierarchical address to spread the sample spatially across the region. Information on each sampled stream site was collected using information taken from maps, digital sources, and visits to the site.

### 4.4 Summary of Data Set Parameters

Information on each stream sampled, such as the stream name, geographic location of the sample site, Strahler order, county and state are stored in this data set. The weighting factors for each stream site are also stored in this data set. There are separate weighting factors for fish (fish assemblage and fish tissue), and for the other indicator types (chemistry, benthos, etc.). The weighting factors are to be used when computing regional estimates for the entire data set over the two year period. Further details on the methods which should be used when processing these data can be obtained from the Information Management contact, below.

## 5. DATA ACQUISITION AND PROCESSING METHODS

### 5.1 Data Acquisition

#### 5.1.1 Sampling Objective

To allow scientists to summarize indicator data for the defined population of streams in the Mid-Atlantic region during a two month sampling window from July through mid-September.

#### 5.1.2 Sample Collection Methods Summary

Not Applicable

#### 5.1.3 Sampling Start Date

1993

#### 5.1.4 Sampling End Date

1996

#### 5.1.5 Platform

NA

#### 5.1.6 Sampling Gear

NA

#### 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 Lazorchak, et al. 1998.**

**5.1.11 Sample Collection Method Reference**

**Chaloud, D.J. and D.V. Peck. 1994. Environmental Monitoring and Assessment Program: Integrated Quality Assurance Project Plan for the Surface Waters Resource Group, 1994 Activities. EPA 600/X-91/080, Rev. 2.00. U.S. Environmental Protection Agency, Las Vegas Nevada.**

**Lazorchak, J.M., Klemm, D.J., and Peck D.V. (editors). 1998. Environmental Monitoring and Assessment Program- Surface Waters: Field Operations and Methods for Measuring the Ecological Condition of Wadeable Streams. EPA/620/R-94/004F. U.S. Environmental Protection Agency, Washington, D.C.**

**5.1.12 Sample Collection Method Deviations**

## 5.2 DATA PREPARATION AND SAMPLE PROCESSING

**5.2.1 Sample Processing Objective**
**See Lazorchak, et al. (1998) and Chaloud and Peck (1994).**

**5.2.2 Sample Processing Methods Summary**
**See Lazorchak, et al. (1998) and Chaloud and Peck (1994).**

**5.2.3 Sample Processing Method Calibration**
**See Lazorchak, et al. (1998) and Chaloud and Peck (1994).**

**5.2.4 Sample Processing Quality Control**
**See Lazorchak, et al. (1998) and Chaloud and Peck (1994).**

**5.2.5 Sample Processing Method Reference**
**See Lazorchak, et al. (1998) 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 SAS Name | Data Type | Len | Format | Parameter Label |
|---|---|---|---|---|
| COUNTY | Char | 12 | | Stream County Location |
| DOMECO | Char | 4 | | Predominant ecoregion in watershed |
| DOMLAB | Char | 40 | | Name of dominant ecoregion |
| DRAINA | Char | 15 | | Large Scale Drainage Basin |
| DRAINAGE | Char | 25 | | Major River Drainage Basin |
| DRAINB | Char | 25 | | River Drainage Basin Label |
| FLOWSITE | Char | 8 | $ | Flow Status Along Sample Reach |
| HEX_ID | Num | 8 | | EMAP Hexagon ID |
| HUC | Char | 8 | | Hydrologic Unit Code |
| LAT_DD | Num | 8 | | Sample Site Latitude (Decimal Degrees) |
| LON_DD | Num | 8 | | Sample Site Longitude (Decimal Degrees) |
| MAP100 | Char | 25 | $ | 100,000 Scale Usgs Map Name |
| MAP75 | Char | 22 | | Stream Site 7.5 Map Name |
| MILE | Num | 8 | | RF3 Mile ID |
| ORDER | Char | 1 | $ | Rf3 Stream Order |
| RCH_TYP | Char | 1 | | RF3 reach type (S=start,R=reg.) |
| REPEAT93 | Char | 1 | $ | 1993 Index Repeat Visit Site (Y/N) |
| REPEAT94 | Char | 1 | | EMAP 1994 Index Repeat Site (Y/N) |
| REPEAT95 | Char | 1 | | 2x2 Repeat Visit Site in 1995 (Y/N) |
| REPEAT96 | Char | 1 | | 2x2 Repeat Visit Site in 1996 (Y/N) |
| SEGM | Char | 5 | | RF3 Segment ID |
| SITECLS | Char | 12 | $ | Stream Sample Site Class |
| SITEECO | Char | 3 | | Ecoregion at sample site |
| STATE | Char | 7 | | Site State Location |
| STRMNAME | Char | 40 | | Stream Name from 7.5 map |
| STRM_ID | Char | 7 | | EMAP Stream Identifier |
| TIME_REP | Char | 1 | $ | Annual TIME revisit site? (Y/N) |
| WGT_1X93 | Num | 8 | | 1X Grid Weight (km) for 1993 Prob. Sites |
| WGT_1X94 | Num | 8 | | 1X Grid Weight (km) for 1994 Prob. Sites |
| WGT_1X95 | Num | 8 | | 1X Grid Weight (km) for 1995 Prob. Sites |
| WGT_7X93 | Num | 8 | | 1X/7X Weight (km) for 1993 Prob. Streams |
| WGT_7X94 | Num | 8 | | 1X/7X Weight (km) for 1994 Prob. Streams |
| WGT_7X95 | Num | 8 | | 1X/7X Weight (km) for 1995 Prob. Streams |
| WGT_FS93 | Num | 8 | | Fish Sample Weight (km) for 1993 Streams |
| WGT_FS94 | Num | 8 | | Fish Sample Weight (km) for 1994 Streams |
| YEAR | Num | 8 | | Site year of data collection |
| YEARORIG | Num | 8 | | Site Year Panel Origin |

#### 7.1.6 Precision to which values are reported

### 7.1.7 Minimum Value in Data Set

| Name | Min |
|---|---|
| HEX_ID | 1301311.73 |
| LAT_DD | 36.523061111 |
| LON_DD | -83.60395 |
| MILE | 0 |
| WGT_1X93 | 0 |
| WGT_1X94 | 0 |
| WGT_1X95 | 0 |
| WGT_7X93 | 0 |
| WGT_7X94 | 0 |
| WGT_7X95 | 0 |
| WGT_FS93 | 0 |
| WGT_FS94 | 0 |
| YEAR | 1993 |
| YEARORIG | 1993 |

### 7.1.7 Maximum Value in Data Set

| Name | Max |
|---|---|
| HEX_ID | 1702330.72 |
| LAT_DD | 42.355663889 |
| LON_DD | -74.2589 |
| MILE | 40.16 |
| WGT_1X93 | 3257.754 |
| WGT_1X94 | 6804.109 |
| WGT_1X95 | 7084.946 |
| WGT_7X93 | 3257.754 |
| WGT_7X94 | 6804.109 |
| WGT_7X95 | 7084.946 |
| WGT_FS93 | 3257.754 |
| WGT_FS94 | 6804.109 |
| YEAR | 1996 |
| YEARORIG | 1995 |

## 7.2 Data Record Example

### 7.2.1 Column Names for Example Records

"COUNTY","DOMECO","DOMLAB","DRAINA","DRAINAGE","DRAINB","FLOWSITE","HEX_ID",
"HUC","LAT_DD","LON_DD","MAP100","MAP75","MILE","ORDER","RCH_TYP","REPEAT93",
"REPEAT94","REPEAT95","REPEAT96","SEGM","SITECLS","SITEECO","STATE",
"STRMNAME","STRM_ID","TIME_REP","WGT_1X93","WGT_1X94","WGT_1X95","WGT_7X93",
"WGT_7X94","WGT_7X95","WGT_FS93","WGT_FS94","YEAR","YEARORIG"

### 7.2.2 Example Data Records

```
" "," "," "," "," "," "," ","N/A",1420000,"2060008",38.74980,-75.44465," ",
" ",8.42,"3","R"," "," ","N"," ","20","NO VISIT"," ","DE",
"GRAVELLY BRANCH NANTICOKE RIVER","DE000S","N",0,0,1180.824,
0,0,1180.824,0,0,1995,1995

"SUSSEX"," "," "," ","DELAWARE"," ","N/A",1402222,"2040207",
38.78194,-75.17258,"SEAFORD","LEWES",0,"1"," "," "," "," "," "," ","661","NON-MAHA",
" ","DE"," ","DE500S","N",3257.754,0,0,3257.754,0,0,3257.754,0,1993,1993

"KENT"," "," "," ","DELAWARE"," ","N/A",1313332,"2040207",39.17705,
-75.51146,"DOVER","DOVER",4.34,"1"," "," "," "," "," ","866","NON-MAHA",
" ","DE"," ","DE501S","N",3257.754,0,0,3257.754,0,0,3257.754,0,1993,1993
```

## 8. GEOGRAPHIC AND SPATIAL INFORMATION

### 8.1 Minimum Longitude
-83 Degrees 14 Minutes 39 Seconds West (-83.24444 Decimal Degrees )

### 8.2 Maximum Longitude
-74 Degrees 15 Minutes 32 Seconds West (-74.25890 Decimal Degrees )

### 8.3 Minimum Latitude
36 Degrees 33 Minutes 12 Seconds North (36.55350 Decimal Degrees )

### 8.4 Maximum Latitude
42 Degrees 21 Minutes 20 Seconds North (42.35566 Decimal Degrees )

### 8.5 Name of Area or Region
Mid-Atlantic: EPA Region III which includes Delaware, Maryland, Virginia and West Virginia

## 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

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. Washington, D.C.

Diaz-Ramos, S., D.L. Stevens, Jr., and A.R. Olsen. 1996. EMAP Statistical Methods Manual. U.S. Environmental Protection Agency. Office of Research and Development. EPA/620/R-96/002.

Lazorchak, J.M., Klemm, D.J., and Peck D.V. (editors). 1998. Environmental Monitoring and Assessment Program- Surface Waters: Field Operations and Methods for Measuring the Ecological Condition of Wadeable Streams. EPA/620/R-94/004F. U.S. Environmental Protection Agency, Washington, D.C.

## 12. TABLE OF ACRONYMS

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