

US EPA ARCHIVE DOCUMENT

CATALOG DOCUMENTATION
EMAP- ESTUARIES PROVINCE LEVEL DATABASE
LOUISIANIAN PROVINCE 1991- 1994
STATION LOCATION DATA

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1. DATA SET IDENTIFICATION

1.1 Title

EMAP- Estuaries Province Level Database
Louisianian Province
Station Location Data

1.2 Catalog Author

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1.3 Catalog Revision Date

March 4, 1999

1.4 Data File Name

STATIONS

1.5 Task Group

ESTUARIES

1.6 Data set identification code

00041, 00081, 00121, 00161

1.7 Version number for a data set

001

1.8 Requested acknowledgment

If you plan to publish these data in any way, 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 Estuaries Program, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement should be inferred."

2. INVESTIGATOR INFORMATION

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2.5 Additional Investigators

N/A

3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The EMAP-Estuaries STATIONS data file contains geographic and statistical information on stations in the Louisianian Province. Sampling stations were randomly selected as locations to conduct a specific suite of monitoring activities and sample gathering.

3.2 Keywords for the Data Set

Sampling Sites, water body system, estuary, latitude, longitude, state, station location, EPA region

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 randomly located station sites. Only the randomly located Base Sampling Sites were included in this data set.

4.2 Data Set Objective

The STATIONS data set provides statistical and geographical characterization of the Sampling Sites sampled in the estuaries of the Louisianian Province.

4.3 Data Set Background Information

An unbiased sampling design has been used in the EMAP-Estuaries Provinces so that estuarine resources and characteristics were sampled in proportion to their areal distribution. This sampling design makes it possible to estimate, with known confidence, the proportion or amount of area having defined environmental characteristics. A series of indicators that were representative of the overall health of estuarine resources was measured at each site. These indicators were designed to address three major attributes of concern to estuarine scientists, environmental managers and the public: 1) biotic integrity or the existence of healthy, diverse and sustainable biological communities; 2) pollutant exposure or the condition of the physio-chemical environment in which biota live and 3) societal values or indicators related to public use of estuarine resources.

4.4 Summary of Data Set Parameters

STATIONS data set values were based on the geographic location of the station, independent of the station visit.

4.5 Year-Specific Information about Data

In 1991, 16 sites were selected as indicator testing and evaluation sites based on historically documented conditions of high or low concentrations of dissolved oxygen, high or low agricultural runoff of pesticides, and high or low level of industrial contamination.

Additionally for 1991, a pair of complementary sites were chosen for each small estuary and tidal river segment. One site was randomly located within the estuary or river segment; a second site (index site) was specifically located in an area of sediment deposition within the estuary or river segment.

1993 was the year of the Mississippi River flooding. No sampling took place for this location due to hazardous conditions and the unusual circumstances surrounding any collection of sample in this river. The station identifiers that were generated as randomly selected Mississippi river locations were used instead for a supplemental sampling study for Sabine Lake, Texas. The list of these supplemental sites are: LA93RR01-LA93RR10; LA93ST36-LA93ST38; LA93TR06; LA93RP07; and LA93TR07.

5. METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

The primary goal was to be within 100 m of the assigned latitude and longitude of a sampling site. This objective was set forth so the sample would be collected as true to the exact location selected during the random selection process.

5.1.2 Sample Collection Methods Summary

The EMAP sampling strategy uses a global grid to identify sampling sites. This grid is divided into sub-grids in accordance with the needs of a specific ecosystem or resource type (i.e. estuaries, forest, lakes and streams, wetlands).

In the Louisianian Province, large estuary sampling stations were randomly placed within a hexagonal space associated with each grid point. Large Tidal River sites were selected based on a linear analog of the design for large estuaries where a river was divided into segments of equal area and a station was randomly located within each segment. A list of all small estuary/tidal river systems was determined from existing maps. To ensure the systems selected were geographically dispersed, they were ordered east to west by combining adjacent small estuaries into groups of four and then selecting an estuary randomly without replacement from each group. A sampling site was then select from within the > 1 m depth area in each of these small estuaries. In this manner, only one fourth of the available small estuaries

were sampled each year; all small estuaries were to be sampled over the 4 year sampling cycle.

5.1.3 Beginning Sampling Date

09 July 1991
08 July 1992
06 July 1993
06 July 1994

5.1.4 Ending Sampling Date

10 September 1991
11 September 1992
19 August 1993
15 September 1994

5.1.5 Sampling Platform

Each team was supplied with a 25-foot SeaArk work boat equipped with a 7.5 L gas engine fitted with a Bravo outdrive, an "A" frame boom assembly and hydraulic winch. On-board electronics consist of: a Loran C unit, GPS (beginning in 1993), radar unit, 2 VHF radios, cellular phone, compass, a depth finder, a tool kit, and all required and suggested safety equipment. One completely outfitted spare boat was stored at the Field Operations Center (EPA Lab) as backup.

5.1.6 Sampling Equipment

The LORAN-C system and Raytheon GPS (Global Positioning System) unit were used to navigate to the proposed sampling site using the predetermined latitude and longitude coordinates associated with a station location. The LORAN was the primary method of navigation. The GPS unit, acquired in 1992, was used as on board backup equipment, in place of LORAN in areas of high interference, and as a data integrity tool to further validate the actual latitude/longitude where the sample were collected.

5.1.7 Manufacturer of Sampling Equipment

5.1.8 Key Variables

5.1.9 Sampling Method Calibration

No formal calibration check required. However, the crew Captains were expected to periodically validate navigational readings by using a fixed point with a known latitude and longitude and comparing that against the instrument reading of the same point.

5.1.10 Sample Collection Quality Control

Field data were entered into field computers and uploaded nightly to a centralized computer system at the EMAP-E

Province field operations center. The station locations were both electronically and manually verified against control data (i.e. proposed sampling station latitudes and longitudes, sampling schedule). A suspect problem could be corrected or explained the next day and a resampling for the questionable stations could be rescheduled.

5.1.11 Sample Collection Method Reference

Macauley, J. M. 1991. Environmental Monitoring and Assessment Program-Near Coastal Louisiana Province: 1991 Monitoring Demonstration. Field Operations Manual. EPA/600/X-91/XXX. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J. M. 1992. Environmental Monitoring and Assessment Program Louisiana Province: 1992 Sampling: Field Operations Manual. EPA/ERL-GB No. SR-119. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J. M. 1993. Environmental Monitoring and Assessment Program Louisiana Province: 1993 Sampling: Field Operations Manual. EPA/ERL-GB No. SR-XXX. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J. M. 1994. Environmental Monitoring and Assessment Program Louisiana Province: 1993 Sampling: Field Operations Manual. EPA/ERL-GB No. SR-XXX. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

5.1.12 Sample Collection Method Deviations

None

5.2 Data Preparation and Sample Processing

Sample processing methods not applicable for station location information.

5.2.1 Data Preparation Objective

N/A

5.2.2 Data Processing Methods Summary

N/A

5.2.3 Sampling Processing Method Calibration

N/A

5. 2. 4 Sample Processing Quality Control

N/A

5. 2. 5 Sample Processing Method Reference

N/A

5. 2. 6 Sample Processing Method Deviations

None

6. DATA MANIPULATIONS

Most values in the Stations data set were assigned, based on geographic location. The areas for stations in tidal rivers and small estuaries were calculated.

6. 1 Name of new or modified values

Station Area

6. 2 Data Manipulation Description

STA_AREA represents the statistical area of a stations. Station located in large estuaries and large tidal rivers are representative of the area of the hexagon (280 km²) or segment in which they are located. Stations selected in small estuaries are representative of the actual area of the estuary. All areas are measured in km².

6. 3 Data Manipulation Examples

Not applicable.

6. 4 Data Manipulation Computer Code File

6. 5 Data Manipulation Computer Code Language

6. 6 Data Manipulation Computer Code

7. DESCRIPTION OF PARAMETERS

7. 1 Description of Parameters

7. 1. 1 Parameter Name

Field Name	Data Type	Max Field Len	Format	Field Label
STA_NAME	Char	8	8.	Station Identifier
RESOURCE	Char	10	8	Resource Group Conducting Sampling
PROVINCE	Char	4	4.	Code for Province Conducting Sampling
STATE	Char	2	2.	State Where Station is Located
REG_CODE	Char	2	2.	EPA Region Code of Station Location
SYS_CODE	Char	15	15.	System Where Samples Were Collected

Field Name	Data Type	Max Field Len	Format	Field Label, continued.
ESTUARY	Char	25	25.	Estuary Where Samples Were Collected
CLASCODE	Char	18	18.	Station Class-Determines Sampling Regime
LAT_DEG	Num	2	2.	Station Location-Degrees of Latitude
LAT_MIN	Num	2	2.	Station Location-Minutes of Latitude
LAT_SEC	Num	6	6.4	Station Location-Seconds of Latitude
LNG_DEG	Num	3	3.	Station Location-Degrees of Longitude
LNG_MIN	Num	2	2.	Station Location-Minutes of Longitude
LNG_SEC	Num	6	6.4	Station Location-Seconds of Longitude
STA_AREA	Num	7	7.2	Statistical Area of Station (sq. km)
STRATA	Char	6	6.	Design Strata: Large/ Small/ Tidal River

7. 1. 6 Precision to which values are reported

Latitude and longitude were measured to within 100 m of the predetermined coordinates.

7. 1. 7 Minimum value in data set

Not applicable

7. 1. 8 Maximum value in data set

Not applicable

7. 2 Data Record Example

7. 2. 1 Column Names for Example Records

```

STA_NAME RESOURCE PROVINCE SYS_CODE ESTUARY STATE
REG_CODE CLASCODE LAT_DEG LAT_MIN LAT_SEC LNG_DEG LNG_MIN
LNG_SEC STRATA STA_AREA
    
```

7. 2. 2 Example Data Records

STA_NAME	RESOURCE	PROVINCE	SYS_CODE	ESTUARY	STATE	REG_CODE
LA91LR01	ESTUARIES	LA	AB	APALACHEE BAY	FL	4
LA91LR02	ESTUARIES	LA	AB	APALACHEE BAY	FL	4
LA91LR03	ESTUARIES	LA	AB	APALACHEE BAY	FL	4
LA91LR05	ESTUARIES	LA	MBB	BON SECOUR BAY	AL	4

CLASCODE	LAT_DEG	LAT_MIN	LAT_SEC	LNG_DEG	LNG_MIN	LNG_SEC	STRATA
BASE	30	0	44.4000	83	59	30.0000	L
BASE	29	54	13.8000	84	12		L
BASE	30	1	31.8000	84	16	12.0000	L
BASE	30	18	6.6000	87	57	56.4000	L

STA_AREA

280.00
280.00
280.00
280.00

7.3 Related Data Sets

7.3.1 Related Data Set Name

7.3.2 Related Data Set Identification Code

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-97 Degrees 27 Minutes 13.20 Decimal Seconds

8.2 Maximum Longitude

-82 Degrees 39 Minutes 28.20 Decimal Seconds

8.3 Maximum Latitude

30 Degrees 48 Minutes 30.00 Decimal Seconds

8.4 Minimum Latitude

26 Degrees 02 Minutes 55.80 Decimal Seconds

8.5 Name of the area or region

Louisianan Province - Coastal distribution of sampling is along the Gulf of Mexico from the Rio Grande, TX to Anclote Key, FL. States represented: Texas, Louisiana, Alabama, Mississippi, Florida

8.6 Direct Spatial Reference Method

Point

8.7 Horizontal Coordinate System Used

Universal Transverse Mercator

8.8 Resolution of Horizontal Coordinates

0.5

8.9 Units for Horizontal Coordinates

Meters

8.10 Vertical Coordinate System

N/A

8.11 Resolution of Vertical Coordinates

N/A

8.12 Units for Vertical Coordinates

N/A

9. QUALITY CONTROL/QUALITY ASSURANCE

9.1 Measurement Quality Objectives

The primary quality objective for collecting data for the STATIONS file was to provide an accurate chronology of events that took place at a sampling station. Additionally, a 0.05 nautical mile proximity standard was established to ensure that the samples were collected as close as possible to the randomly generated station location thus following the model agenda without compromise.

9.2 Quality Assurance/Control Methods

Field site audits were conducted during the sampling seasons by the Quality Assurance Officer and the Logistics Coordinator to determine compliance with the Quality Assurance plan and Field Operations manual. Corrective action was initiated if discrepancies were noted. Computer equipment was regularly checked and/or serviced to maintain operation readiness.

9.3 Actual Measurement Quality

N/A

10. DATA ACCESS

10.1 Data Access Procedures

A Data Request Package can be requested from a contact under Section 7.3. Data can be downloaded from the WWW site.

10.2 Data Access Restrictions

Data can only be accessed from the WWW site.

10.3 Data Access Contact Persons

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10.4 Data Set Format

Data can be transmitted in a variety of formats derived from SAS data files when a Data Request Form is submitted.

10.5 Information Concerning Anonymous FTP

Not accessible

10.6 Information Concerning World Wide Web

Data can be downloaded from the WWW

10.7 EMAP CD-ROM Containing the Data set

Data not available on CD-ROM

11. REFERENCES

11.1 EMAP References

Heitmuller, P. T. and R. Valente. 1991. Environmental Monitoring and Assessment Program: EMAP-Estuarines Louisiana Province: 1991 quality assurance project plan. EPA/ERL-GB No. SR-120. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J. M. 1991. Environmental Monitoring and Assessment Program-Near Coastal Louisiana Province: 1991 Monitoring Demonstration. Field Operations Manual. EPA/600/X-91/XXX. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J. M. and J. K. Summers. 1991. Environmental Monitoring and Assessment Program, Near Coastal - Louisiana Province: 1991 Field Reconnaissance Report - East Region. EPA/600/04-91/XXX. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J. M. and J. K. Summers. 1991. Environmental Monitoring and Assessment Program, Near Coastal - Louisiana Province: Field Training Manual - Crew Chiefs. EPA/600/05-91/XXX. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J. M. and J. K. Summers. 1991. Environmental Monitoring and Assessment Program, Near Coastal - Louisiana Province: Field Training Manual - Crews. EPA/600/05-91/XXX. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Summers, J. K., J. M. Macauley and P. T. Heitmuller. 1991. Environmental Monitoring and Assessment Program. Implementation Plan for Monitoring the Estuarine Waters of the Louisiana Province - 1991 Demonstration. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561. EPA/600/5-91/228.

Summers, J. K., J. M. Macauley, J. M., P. T. Heitmuller, V. D. Engle, A. M. Adams and G. T. Brooks. 1992. Annual Statistical Summary: EMAP-Estuaries Louisiana Province - 1991. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561. EPA/600/R-93/001.

U. S. EPA. 1995. Environmental Monitoring and Assessment Program (EMAP): Laboratory Methods Manual - Estuaries, Volume 1: Biological and Physical Analyses. United States Environmental Protection Agency, Office of Research and Development, Narragansett, RI. EPA/620/R-95/008.

11.2 Background References

Engle, V. D., J. K. Summers, G. R. Gaston. 1994. A Benthic Index of Environmental Condition of Gulf of Mexico Estuaries. Estuaries. 17: 372-384.

Summers, J. Kevin, John F. Paul, Andrew Robertson. 1995.
Monitoring The Ecological Condition Of Estuaries In The United
States. U. S. Environmental Protection Agency, Office of Research
and Development, Environmental Research Laboratory, Gulf Breeze,
FL 32651.

12. GLOSSARY AND TABLE OF ACRONYMS

12.1 Acronym used in the Detailed Documentation

12.2 Definition of Acronym

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