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1. DATASET IDENTIFICATION

1.1 Title of Catalog document
National Coastal Assessment-Northeast Region Database
Years 2000-2006
SEDIMENT CHARACTERISTICS DATA

1.2 Authors of the Catalog entry
John Kiddon, U.S. EPA NHEERL-AED
Harry Buffum, Raytheon Corp.

1.3 Catalog revision date
October 2009

1.4 Dataset name
SEDGRAIN

1.5 Task Group
National Coastal Assessment-Northeast

1.6 Dataset identification code
005

1.7 Version
001

1.8 Request for Acknowledgment
EMAP requests that all individuals who download EMAP data acknowledge the source of these data in any reports, papers, or presentations. If you publish these data, please include a statement similar to: "Some or all of the data described in this article were produced by the U. S. Environmental Protection Agency through its Environmental Monitoring and Assessment Program (EMAP)".
2. INVESTIGATOR INFORMATION (for full addresses see Section 13)

2.1 Principal Investigators (NCA Northeast Region)
Donald Cobb, U.S. EPA NHEERL-AED
Walter Galloway, U.S. EPA NHEERL-AED
Stephen Hale, U.S. EPA NHEERL-AED
John Kiddon, U.S. EPA NHEERL-AED
Charles Strobel, U.S. EPA NHEERL-AED
Henry Walker, U.S. EPA NHEERL-AED

2.2 Sample Collection Investigators
Donald Cobb, U.S. EPA NHEERL-AED

2.3 Sample Processing Investigators
John Macauley, U.S. EPA NHEERL-GED

3. DATASET ABSTRACT

3.1 Abstract of the Dataset
The SEDGRAIN data file reports the grain size and total organic carbon (TOC), collected the 2000-2006 NCA program. Data for the states from ME to VA are included here. One record is presented per sampling event.

3.2 Keywords for the Dataset
Percent sand, silt-clay, TOC, Total Organic Carbon

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective
The National Coastal Assessment (NCA) is a national monitoring and assessment program with the primary goal of providing a consistent evaluation of the estuarine condition in U.S. estuaries. It is an initiative of the Environmental Monitoring and Assessment Program (EMAP), and is a partnership of several federal and state environmental agencies, including: EPA’s Regions, Office of Research and Development, and Office of Water; state environmental protection agencies in the 24 marine coastal states and Puerto Rico; and the United States Geological Survey (USGS) and the National Oceanic and Atmospheric Agency (NOAA). The NCA program was initiated in 2000 and completed in 2006.

Stations were randomly selected using EMAP’s probabilistic sampling framework and were sampled once during a summer index period (June to October). A consistent suite of indicators was used to measure conditions in the water, sediment, and in benthic and fish communities. The measured data may be used by the states to meet their reporting requirements under the Clean Water Act, Section 305(b). The data were also used to generate a series of national reports characterizing the condition of the Nation’s estuaries [http://www.epa.gov/nccr/](http://www.epa.gov/nccr/).

4.2 Dataset Objective
The objective of the SEDGRAIN data file is to report the grain size and percent total organic carbon (TOC) in estuarine sediment collected in 2000-2006.
4.3 Dataset Background Discussion

The grain size and total organic carbon content of sediments are properties that may affect the sediment’s ability to bind chemical contaminants. The SEDGRAIN data were measured on the same grabs used to measure chemical and toxicological properties of the sediments, and can therefore be used to help interpret those results.

The grain-size parameters are labeled SAND and SILTCLAY because of the strong correlation between size and composition. Particles larger than 63 microns are defined to be sand, while particles smaller than 63 microns are considered to be silt-clay; however, the mineralogical composition of the sediment particles was not analyzed directly.

The Table below indicates the number of records reporting analyte results by ST_COOP and year. This Table can be used to identify systematic absences of data collection by coops. (Some absent blocks reflect coop name changes in 2005/6; essentially ST_COOP NJ-C = NJ, NJ-DB = DB, and DE = DI in the Table below. See the metadata file for STATIONS for discussion of the ST_COOP parameter). Note that RI, MA, and CT did not collect data in 2002. Only 2005/06 data for MD and VA are contained in this database; contact John Macauley (Section 13) for information regarding earlier data for these states.

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</table>
Samples collected in 2000-2006 were analyzed by a variety of state and national-contract analytical labs, identified by the parameter LABCODE. The Table below lists the number of records analyzed by the indicated labs by ST_COOP and year. While some indications of minor systematic laboratory biases may be evident for some analytes and labs, the biases were not considered great enough to exclude the results from the database. The parameter LABCODE can be used to more carefully examine the results for laboratory bias. Addresses of the participating labs follow the Table.

### Count of nutrient records by ST_COOP, LABCODE, and Year

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<td>577</td>
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**Grand Total**: 920 1147 530 562 559 694 849 5261
4.4 Summary of Dataset Parameters
* denotes parameters that should be used as key fields when merging data files

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<td>NY</td>
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<td></td>
<td>NAT</td>
</tr>
</tbody>
</table>

Addresses of analysis laboratories participating in Northeast NCA program:

LABCODE = CT: Environmental Research Institute, University of Connecticut, Storrs, CT 06269-5210w

LABCODE = NY: Marine Sciences Research Center (MSRC), State University of New York at Stony Brook, NY

LABCODE = VA: Water Chemistry Laboratory, Old Dominion University, NORFOLK, VA 23529

LABCODE = NAT: B&B Laboratories, 1902 Pinon. College Station, TX, 77845-5816

NCA planners provide two alternate locations for a station location in the event that the original location cannot be sampled. The parameter STA_ALT indicates whether the station location was the original site, first alternate, or second alternate—STA_ALT = “A”, “B”, or “C”, respectively. Also refer to discussion in the STATIONS metadata file regarding use of this parameter during analysis of the data.
5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition / Field Sampling

5.1.1 Sampling Objective
Sediment was collected for use in measuring physical, chemical, and toxicological characteristics. Separate sediment grabs were taken for benthic macrofaunal analysis.

5.1.2 Sample Collection: Methods Summary
Sediment was collected with a 0.04-m² Young-modified Van-Veen grab or similar sampler. Only the top two centimeters of a grab were retained for physical, chemical, and toxicological analyses. A sufficient number of grabs were processed to provide three liters of the 2-cm composite material. The composite was homogenized and separated into two fractions for storage until analysis. One fraction was frozen and used in the measurement of total organic carbon (TOC) and concentrations of chemical contaminants. The second fraction was chilled but not frozen during storage, and was used for grain-size and toxicity analyses. Separate sediment grabs were taken for benthic macrofaunal analysis.

5.1.3 Beginning Sampling Dates
7 July 2000

5.1.4 Ending Sampling Dates
5 October 2006

5.1.5 Sampling Platform
Samples were collected from gasoline or diesel powered boats, 18 to 133 feet in length.

5.1.6 Sampling Equipment
A 1/25 m², stainless steel (coated with Kynar), Young-modified Van Veen grab sampler was used to collect sediments.

5.1.7 Manufacturer of Sampling Equipment
Young’s Welding, Sandwich, MA

5.1.8 Key Variables
Not applicable

5.1.9 Sample Collection: Methods Calibration
The sampling gear does not require calibration, although it was inspected regularly for damage by mishandling or impact on rocky substrates.

5.1.10 Sample Collection: Quality Control
Care was taken to minimize disturbance to the sediment grabs. Grabs that were incomplete, slumped, less than 7 cm in depth, or comprised chiefly of shelly substrates were discarded. The chance of sampling the same location was minimized by repositioning the boat five meters downstream after three sampling attempts.

Environmental Monitoring and Assessment Program: Coastal
5.1.12 Sample Collection: Alternate Methods

Different grab samplers used by NCA partners include the Smith-MacIntyre and Ponar grab samplers.

5.2 Data Preparation and Sample Processing

5.2.1 Sample Processing Objective

Sediment samples were analyzed to measure the sediment grain size (reported as either < 63 microns or > 63 microns) and the percent total organic carbon (TOC) in sediments collected in the 2001 NCA program (northeastern states).

5.2.2 Sample Processing: Methods Summary

For the grain size analysis, sediments were homogenized and diluted to a suspended slurry with the aid of chemical dispersant, and the suspension passed through a 63 micron sieve. The fine fraction passing through the sieve (<63 micron) and the coarse fraction retained on the filter (>63 micron) were separately dried and weighed. A small correction to the weight was applied to account for the salt and dispersant residue remaining after evaporation. SILTCLAY was calculated as the salt-free weight of the fine fraction divided by the combined fine plus coarse salt-free weights (the result expressed as a percentage). SAND was calculated as 100% minus SILTCLAY.

For the percent total organic carbon (TOC) analysis, sediment samples were acidified by immersion in 10% HCl to remove inorganic carbonate materials. The dried sediments were oxidized in a muffle furnace at 950 °C in pure O2. The evolved CO2 gass was integrated, compared to standard curves, and reported as percent organic carbon based on dry weight.

The procedures for these analyses are those developed for the EMAP-Estuaries program and described in “EMAP-Estuaries Laboratory Methods Manual Volume 1- Biological and Physical Analyses” (U.S. EPA, 1995).

5.2.3 Sample Processing: Calibration

The apparatus for TOC measurements was calibrated by combusting standard reference materials, in accordance with standard laboratory procedures.

5.2.4 Sample Processing: Quality Control

Replicate analyses are performed on 10% of samples. Standard materials are included with each batch of TOC analyses.

5.2.5 Sample Processing: References


-7-
5.2.6 Sample Processing: Alternate Methods
Not Applicable

6. DATA ANALYSIS AND MANIPULATIONS

6.1 Name of New or Modified Values
Not applicable

6.2 Description of Data Manipulation
Not applicable

7. DATA DESCRIPTION

7.1 Description of Parameters

7.1.1 Components of the Dataset

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<td>Contract/Lab Identifier</td>
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</table>

7.1.2 Precision of Reported Values
SAND, SILTCLAY and TOC are reported as percentages to 0.01%. Values are reliable to no more than three significant digits; however more significant digits may be reported in the dataset because of formatting restrictions.

7.1.3 Minimum Value in Dataset
SAND 0%
SILTCLAY 0.02%
TOC 0%

7.1.4 Maximum Value in Dataset
SAND 99.98%
SILTCLAY 99.98%
TOC 100%

7.2 Data Record Example

7.2.1 Column Names for Example Records

STATION STAT_ALT EVNTDATE SILTCLAY SAND TOC LABCODE
7.2.2 Example Data Records

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8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude (Westernmost)
-77.304 decimal degrees

8.2 Maximum Longitude (Easternmost)
-66.946 decimal degrees

8.3 Minimum Latitude (Southernmost)
36.564 decimal degrees

8.4 Maximum Latitude (Northernmost)
45.1848 decimal degrees

8.5 Name of Region
The National Coastal Assessment Northeast Region covers the northeastern US coastline from Maine to Delaware

9. QUALITY CONTROL AND QUALITY ASSURANCE

9.1 Measurement Quality Objectives
Measure replicate grain size of samples to within a precision of 10% (see USEPA 2001).

9.2 Data Quality Assurance Procedures

9.3 Actual Measurement Quality

10. DATA ACCESS

10.1 Data Access Procedures
Data can be downloaded from the web

10.2 Data Access Restrictions
None

10.3 Data Access Contact Persons
John Kiddon, U.S. EPA NHEERL-AED, Narragansett, RI
401-782-3034, 401-782-3030 (FAX), kiddon.john@epa.gov

Harry Buffum, Data Manager, Raytheon, Narragansett, RI
401-782-3183, 401-782-3030 (FAX), buffum.harry@epa.gov

10.4 Dataset Format
ASCII (CSV) and SAS Export files
10.5 Information Concerning Anonymous FTP
   Not available

10.6 Information Concerning WWW
   No gopher access, see Section 10.1 for WWW access

10.7 EMAP CD-ROM Containing the Dataset
   Data not available on CD-ROM

11. REFERENCES

   Salonen, K. 1979. A versatile method for the rapid and accurate
determination of carbon by high temperature combustion. Limnol. Oceanogr.
24: 1770-183.

Environmental Protection Agency, Office of Research and Development,
National Health and Environmental Effects Research Laboratory, Gulf Ecology
Division, Gulf Breeze, FL. EPA/620/R-01/002. 189 p

Narragansett, RI: U.S. Environmental Protection Agency, Office of Research
and Development, EPA/620/R-95/008.

12. TABLE OF ACRONYMS

   AED  Atlantic Ecology Division
   EMAP  Environmental Monitoring and Assessment Program
   EPA  Environmental Protection Agency
   NCA  National Coastal Assessment
   NHEERL  National Health and Environmental Effects Research Laboratory
   QA/QC  Quality Assurance/Quality Control

13. PERSONNEL INFORMATION

   Chuck Audette, Database Analyst
   Raytheon Corporation
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