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**DATA BASE DEVELOPMENT FOR CHARACTERIZING  
CONTAMINATED SEDIMENTS IN THE CHESAPEAKE BAY REGION**

**Task 1 Data Base Organization**

**Task 4 Data Processing**

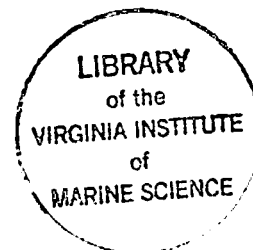
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Work accomplished for Task 1 and Task 4 of USGS/VIMS  
Cooperative Agreement 1434-92-A-0989

April, 1993

## PROJECT DESCRIPTION

This project is one component of the U.S. Geological Survey's National Coastal Geology Program directed to polluted sediments. Its long-term aim is to develop a comprehensive database on estuarine contaminated sediments that provides a summary of information and a digital reference source of detailed and readily accessible data. It focuses on Chesapeake Bay because there is a wealth of data on bottom sediments and sedimentary contaminants. However, this data is fragmented, uncollated and dispersed in many papers, books, reports, files and documents, often local sources, outside the mainstream of national consideration and scientific knowledge. Without an organized body of data, resource managers and research scientists are handicapped in structuring decisions and preparing plans. They may not know what data exists, where to find it and how to obtain it. Potentially valuable data may go unused because it is overlooked, poorly documented or difficult to obtain.

To address problems of contaminated sediment the U.S. Geological Survey's Branch of Atlantic Marine Geology (Woods Hole) executed a cooperative agreement in May 1992 with the Virginia Institute of Marine Science. The project aims to structure a PC accessible database for incorporation into CD ROM media. It draws on existing historical data, mainly from published and unpublished "grey" literature spanning the last 55 years. This contrasts to databases of NOAA's Status and Trends Monitoring Program and EPA's Environmental Monitoring and Assessment Program (EMAP) that draw on new data from field surveys. The data sources come from diverse scientific, academic, commercial and government organizations, and from a range of fields including sedimentology, geochemistry, estuarine marine science, pollution and benthic biology. Historical data are of value for evaluating changes caused by dredging and disposal as well as storms and to assess baseline concentrations prior to contamination.

Database development of this project consists of four components or tasks:

1. To organize and structure a database with a set of procedures, data dictionary and codebook, formatted for transfer to a CD ROM file.
2. A search for data sources in the literature and in files on bottom sediments and their contaminants.
3. An inventory of relevant data sources according to location, station abundance, occurrence of variables, etc.
4. Compilation of prototype digital data files from selected data sources.

It is anticipated that results of this project will show what data sources exist, where they come from and where the gaps are. The database organization and data dictionary facilitate future data processing while the prototype data files provide an initial test of database organization and procedures. The new files help extend the U.S. Geological Survey's East Coast (offshore) sediment database into inshore areas. Once the data are incorporated into CD ROM files they should provide a widely-accessible, high volume comprehensive source of data that can be manipulated in a powerful personal computer.

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## INTRODUCTION

This document describes the overall organization and structure of the contaminated sediment database for Chesapeake Bay developed during the first year of the cooperative agreement. Included also are a description of the procedures used, and a report on the results of preliminary processing of datasets. These elements comprise Task 1 and Task 4 of the first year workplan, as listed in the project description.

While the long-term goal of the project was to make data available in CD-ROM format, the immediate goal of the current year was to develop the methodology for the acquisition, documentation and storage of datasets relevant to the subject of bottom sediments and contaminated sediments in Chesapeake Bay. Thus, in addition to the implementation of a system to store field observations, a system to store and retrieve potential data sources (bibliography) as well as an inventory of known sources (data inventory) were also needed. Much of the effort was devoted to designing and implementing the bibliographic and data inventory databases, which contained the results from literature searches and materials acquisitions. The results of those efforts are described in two companion reports, subtitled:

Task 2 Data Sources and Bibliography

Task 3 Inventory of Data Sources

### Organization of the Digital Data Base, Task 1

The following goals were developed early in the project to guide the overall organization

of data files and design the processing procedures:

1. Review all pertinent data sources, including refereed publications, grey literature, student theses and dissertations, and agency data banks.
2. Preserve as much detail of the original data sources as possible in the final products, including source references, processing notes and assumptions made about the data.
3. Conform the field observations and measurements to a Data Dictionary of common terms.
4. Store observation data in a format that is easily imported into commercially available packages.

A set of procedures were established, illustrated in Figure 1, to meet the objectives outlined above. Beginning with Task 2, the flow chart also represents the path that data sources follow as they pass through the system, from identification as a potential source, to transformation into a digital data file format. Each source was subject to the various checkpoints along the way, including entry into the bibliographic file, elimination of duplicates, acquisition of the hard copy, and an assessment of relevance to the project. The inventory step (Task 3) allowed for further review and detailed documentation of their contents. Finally, field observation data were captured into digital format (Task 4).

The products of the process described above consists of the following elements:

1. **Data Sources and Bibliography** - This is a datafile in which all literature items are first contained. From this file, duplicate entries that were encountered from several searches were removed. It also allowed for tracking of materials through the process, including acquisition, review, and characterization in the inventory. Each item was assigned a unique number, BIBNUMxxx, where xxx was an integer.
2. **Data Inventory** - This is a datafile in which information captured from the bibliography or other data sources are identified in further detail. It contains keywords identifying the type of information contained in the source, such as

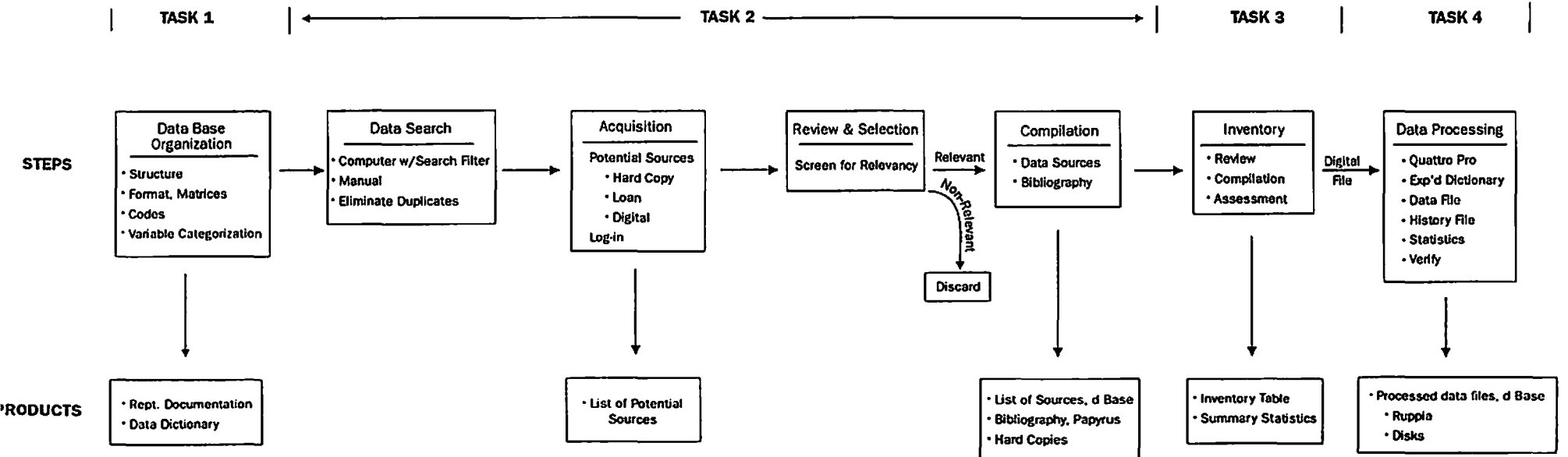


Figure 1. Flow chart of project activities showing tasks, work steps and resultant products.

parameters, dates, geographic coverage, charts and graphs, as well as an estimate of the number of data points and a summary of other information.

3. **Data Files** - These are the final product of processing a given source. Each consists of two files, one containing the observation data, and another containing processing notes and administrative information.

For further detail on the procedures used in Task 2 and Task 3, and the product data base that resulted from them, the reader is referred to the two companion reports. The remainder of this report concerns itself only with Item 3 above, the organization and processing of the resulting data files containing field observations and accompanying documentation.

### Organization of the Data Files

Two digital data files were created to contain information from sources identified in Task 2 and screened in Task 3:

- a. **Data File** - contains actual measurements reported by a study such as the geopositioned station data, including measured observations, station identifiers and locations, detection limits, and any descriptive field notes included in the source. Initially, all datafiles were processed using Quattro Pro spreadsheet software, however, this package could not handle large files (>2500 samples). For the larger databases, dBASE III+ was used instead.
- b. **History File** - contains administrative information about the study such as reference data about the source, funding agency, analytical approach, study abstract, and processing notes. The history file is in every way as important as the data file itself because it contains notes about assumptions that were made during the processing of the source document when creating the data file. Thus, it includes information about the data set that will be needed by any individual who receives a copy of the data file itself.

Copies of the history files for all files processed during the first year are provided in Appendix 2 of this document, and a listing of the datafiles are provided (under separate cover) as Appendix 3.

## Data Dictionary Development

A Data Dictionary was developed in cooperation with scientists at the Branch of Atlantic Marine Geology, U.S. Geological Survey (USGS/AMG) in order to document the content of the datafiles that were collected. The data dictionary contains terms that are used for assigning names to fields in the data files produced from a given source. The benefits of using a data dictionary are:

1. To provide definition of contents, in some cases to the level of the analytical methods that were used.
2. To provide a set of common terms to be used when combining different datasets for composite analysis.
3. To provide a reference to aid those creating the digital data files from the original source materials.

Since USGS/AMG already maintained an extensive dictionary for contaminated sediments from their work in Boston Harbor, the dictionary that they provided was used as a starting point for further development and refinement. As data sources were processed, terms that were missing from the data dictionary were added as needed. Thus the dictionary is a dynamic entity, in that it is constantly being revised, refined, and updated with new information as needed.

The USGS/AMG Dictionary was divided into two dictionaries, one pertaining to the datafiles and one for the history files described above. The datafile dictionary contained field names appropriate for the data observations from the project. On the other hand, the field names in the history file reflect information measured only once about each project, such as origin, processing labs, etc. The history file dictionary is provided in the following table (Table 1).

Table 1. Data Dictionary of Fields used in the History file.

| Field Name | VIMS Brief Description                  | VIMS Expanded Description (as needed)                                      | USGS Number | USGS Brief Description                  |
|------------|---|--|-------------|---|
| VDR        | Cover-Id Unique Sample Identifier (US#) |  | 2           | Cover-Id Unique Sample Identifier (US#) |
| NAVMODE    | Navigational mode                       |  | 17          | Navigational mode                       |
| AGENCY1    | Agency1 (Sponsoring)                    |  | 21          | Agency1 (Sponsoring)                    |
| AGENCY2    | Agency2 (Contracted)                    |  | 22          | Agency2 (Contracted)                    |
| AGENCY3    | Agency3 (Subcontracted)                 |  | 23          | Agency3 (Subcontracted)                 |
| REGNUM     | Regulatory File Number                  |  | 26          | Regulatory File Number                  |
| PROJECT    | Project Name (I.E. Lex Atlantic)        | [Entry of this field not restricted to regulatory action or larger study.] | 27          | Project Name (I.E. Lex Atlantic)        |
| STATE      | State Name                              |  | 28          | State Name                              |
| QUAD       | Quad Name                               |  | 29          | Quad Name                               |
| LOC_GEN    | General Name Of Location or Water Body  |  | 30          | General Name Of Location or Water Body  |
| LOC_SPEC   | Specific Name Of Location or Water Body |  | 31          | Specific Name Of Location or Water Body |
| GEAR       | Sampling Device                         |  | 44          | Sampling Device                         |
| SAM_TYPE   | Sample type                             |  | 45          | Sample type                             |
| LOC_DISP   | Proposed Disposal Area                  |  | 55          | Proposed Disposal Area                  |
| ANAL_MET   | Metals OR other inorganics analyzed?    |  | 56          | Metals and other inorganics analyzed?   |
| ANAL_ORG   | Organic contaminants analyzed ?         |  | 57          | Organic contaminants analyzed ?         |
| ANAL_GR    | Grain sizes analyzed?                   |  | 58          | Grain sizes analyzed?                   |
| ANAL_BIO   | Bioassay data available?                |  | 59          | Bioassay data available?                |

Table 1. Data Dictionary of Fields used in the History file. (continued)

| Field Name | VIMS Brief Description   | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description   |
|------------|--|---------------------------------------|-------------|--|
| BIO_COM    | Comments-Bioassay  |                                       | 60          | Comments-Bioassay  |
| BIO_REF    | Bio reference  |                                       | 61          | Bio reference  |
| ANAL_MSC   | Other types of analysis in reference but not in this database? |                                       | 62          | Other types of analysis in reference but not in this database? |
| MSC_COM    | Comments- other analysis                                       |                                       | 63          | Comments- other analysis                                       |
| MET_LAB    | Metals Testing Lab   |                                       | 63          | Metals Testing Lab   |
| MET_METH   | Analytical technique (metals)                                  |                                       | 66          | Analytical technique (metals)                                  |
| MET_COM    | Analytical comments (metals)                                   |                                       | 67          | Analytical comments (metals)                                   |
| MET_TDTE   | Testing Date (metals)  |                                       | 70          | Testing Date (metals)  |
| MET_TDAY   | Test day (metals)  |                                       | 71          | Test day (metals)  |
| MET_TMO    | Test month (metals)  |                                       | 72          | Test month (metals)  |
| MET_TYR    | Test year (metals)   |                                       | 73          | Test year (metals)   |
| INO_LAB    | "Other inorganics" testing lab                                 |                                       | 74          | Other inorganic testing lab                                    |
| INO_METH   | Analytical technique (Other inorganics)                        |                                       | 77          | Analytical technique (Other inorganics)                        |
| INO_COM    | Analytical comments (Other inorganics)                         |                                       | 78          | Analytical comments (Other inorganics)                         |
| INO_TDTE   | Testing Date (Other inorganics)                                |                                       | 81          | Testing Date (Other inorganics)                                |
| INO_TDAY   | Test day (Other inorganics)                                    |                                       | 82          | Test day (Other inorganics)                                    |
| INO_TMO    | Test month (Other inorganics)                                  |                                       | 83          | Test month (Other inorganics)                                  |
| INO_TYR    | Test year (Other inorganics)                                   |                                       | 84          | Test year (Other inorganics)                                   |
| GOR_LAB    | Organics testing lab for general organic contaminants          |                                       | 269         | Organics testing Lab #1  |

Table 1. Data Dictionary of Fields used in the History file. (continued)

| Field Name | VIMS Brief Description                               | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                      |
|------------|--|---------------------------------------|-------------|---|
| GOR_METH   | Analytical technique, general organic contaminants   |                                       | 272         | Analytical technique (organic contaminants) |
| GOR_COM    | Analytical comments for general organic contaminants |                                       | 273         | Analytical comments (organic contaminants)  |
| GOR_TDTE   | Testing Date for general organic contaminants        |                                       | 276         | Testing Date (Organic Contaminants)         |
| GOR_TDAY   | Test day, General Organic Contaminants)              |                                       | 277         | Test day (Organic Contaminants)             |
| GOR_TMO    | Test month, General Organic Contaminants             |                                       | 278         | Test month (Organic Contaminants)           |
| GOR_TYR    | Test year, General Organic Contaminants              |                                       | 279         | Test year (Organic Contaminants)            |
| SOR_LAB    | Specific organics testing lab (name)                 |                                       | 305         | Organics testing Lab #2                     |
| SOR_METH   | Analytical technique (specific organics)             |                                       | 308         | Analytical technique (specific organics)    |
| SOR_COM    | Analytical comments regarding specific organics      |                                       | 309         | Analytical comments (specific organics)     |
| GR_LAB     | Grain size testing laboratory                        |                                       | 547         | Grain size testing laboratory               |
| GR_METH    | Analytical technique (size)                          |                                       | 550         | Analytical technique (size)                 |
| GR_COM     | Analytical comments (size)                           |                                       | 551         | Analytical comments (size)                  |
| GR_TDTE    | Date Anal.   |                                       | 554         | Date Anal.                                  |
| GR_REQBY   | Requestor  |                                       | 555         | Requestor                                   |
| GR_ANLBY   | Analyst  |                                       | 556         | Analyst                                     |

Since the dictionary of field names for the actual data files changes as more and more sources are processed, a copy and description is provided as part of the results of preliminary processing section of this report (Task 4).

### Processing Procedures

In creating prototype data files during Task 4 of the project, we found that each source often poses its own unique set of questions and problems. Each of these must be resolved on a case by case basis. As problems are encountered and resolved during processing, the solution often feeds back to the Data Dictionary and to the overall processing procedures. As the work continued, the procedures were refined in concert with USGS/AMG suggestions.

Generally, the steps used in processing datafiles were as follows:

1. Identification of data fields.
2. Identification of reference location.
3. Keying-in of numeric data.
4. Conversion to preferred units.
5. Reproduction of original source document.

The details of these steps are:

1. Identification of data fields - This step involves locating the data within a source and identifying the parameters using the Data Dictionary. This is the most important and time consuming step because it provides detailed definition of the content of the resulting data file. In most cases, the text of the document must be read in order to determine the content of the reported data, and often the analytical methods section must be carefully scrutinized to ensure that data items are correctly identified. At this step the history file is first created and header information about the funding source, general approach to sampling, notes about detection limits, and analytical techniques used in the study are recorded. Also recorded in the history file is a log of modifications that were made, such as conversion of units, along with assumptions that were used in making them.
2. Identification of reference location - All data recorded in the digital file are to be associated with a geographic position. Sometimes these are reported in as coordinate pairs, but more often they are merely provided in the form of a study map or chartlet. In this case, charts are used as the source for geopositioning, and

the location of each station are extracted either manually or using a digitizer when necessary. The method used to establish geographical position is recorded in the history file.

3. Keying-in of digital data - Once the field names and geographic locations for the source data have been established, a spreadsheet file is created with appropriate columns to accept each parameter. Data will be keyed manually into the spreadsheet file on a 486 PC compatible with a spreadsheet package, Quattro Pro. To expedite this process for tabular station data we will attempt to employ an optical character scanner.
4. Conversion to preferred units - In the case where a parameter is reported in units other than those preferred as defined in the Data Dictionary, original units are recorded in a field within the data file, and converted to the preferred units and stored within the data file. Notes on assumptions made during the conversion of units, algorithms for conversion, and any unresolved issues are recorded in the history file. Values less than the detection limit were included, and indicated by placing a "less than" symbol ('<') in the qualifier field.
5. Reproduction of the source documents to support the data file - In the case of items which have been received on loan from lending libraries (interlibrary loan), source materials will be xeroxed in order to provide supporting materials for further refinement and scrutiny of the data. In particular, the following sections will always be reproduced for future reference:

- Title pages and abstract
- Methods and materials
- Locational maps
- Data tables

In addition, charts and graphs will be xeroxed for possible scanning and interpretation in a future phase. Also, new data sources will be noted from the reference list.

As each source was processed, the Data Dictionary was expanded and updated with new terms, definitions, and rules for processing were amended as needed.

## Task 4. Results of Preliminary Processing

### Modified Data Dictionary

A copy of the dictionary as it existed after the preliminary processing of three data sources showing additions to the original USGS dictionary is provided in Appendix 1. It contains a combination of information from both VIMS and USGS, showing modifications to the original dictionary as made during the processing of data.

Since the Data Dictionary changes every time a new data source is processed, a set of rules were established for modifying the dictionary terms. This set of rules reflect a basic level of information that is desired for each of the measured parameters, including preferred and original units, analytical limits of detection, and appropriate qualifiers.

### General Rules for Naming Data Fields

1. Field names are limited to eight characters.
2. Each measured parameter has a field for preferred units, the analytical detection limit, a textual qualifier, original units values, and original units identifier. An example for Cadmium follows:

| Field Name | Description                    |
|------------|--------------------------------|
| CD         | Cadmium (ug/g dry weight)      |
| CD_Q       | Qualifier text for Cadmium.    |
| CD_D       | Detection limit for Cadmium.   |
| CD_O       | Cadmium value in other units.  |
| CD_U       | Units if other than preferred. |

## General Rules (Cont'd)

3. All parameters will be recorded in original units, showing original detection limits when available. Values will be converted to the preferred units, when possible. If original units are the same as the preferred units, both fields will be used, with the values duplicated.

Field names were restricted to eight characters because this was the smallest limitation for some commercially available packages.

### Sample Data and History Files

Three data sources were processed as a prototype of the database organization and procedures described above. These were chosen so as to contain a sample of sediment data of different types, including one that contained primarily metals, one for organics, and one containing texture and mass properties. The primary references for the sources that were processed are listed as follows:

1. Baseline Sediment Studies to Determine Distribution, Physical Properties, Sedimentation Budgets in the Virginia Portion of Chesapeake Bay  
Byrne, et al., 1982 (VDR135)
2. Toxic Organic Compounds in the Sediments of the Chesapeake Bay  
Huggett, et al., 1982 (VDR165).
3. Chesapeake Bay Sediment Trace Elements.  
Helz, et al., 1981 (VDR163).

These three files represent over 128,000 data points of field observations for contaminated sediments in Chesapeake Bay. For a summary of the content of these files, the reader is referred to the history files, provided in Appendix 2. The observational data for these sources are listed in Appendix 3.

## Conclusion

The outcome of this project is a set of processing procedures and a compilation of data sources characterizing contaminated sediments for the Chesapeake Bay region. Many of these sources were scattered among local entities, in books, student theses, contract reports and agency data banks. The results of the inventory (Task 3) is a quantification of their content, categorized by a common set of keywords pertinent to Chesapeake Bay sediments. We have only taken the initial steps towards ensuring that these invaluable scientific data are not irretrievably lost. The procedures that were developed will help convert these to a readily available digital format that has been scrutinized and well-documented by experts on the subject of bottom sediments and contaminated sediments in the mid-Atlantic region.

APPENDIX 1: DATA DICTIONARY

Appendix 1. Data Dictionary of VIMS/USGS Chesapeake Bay Sediment Data Base

| Category | Field Name | VIMS Brief Description                            | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                        |
|----------|------------|---|---------------------------------------|-------------|---|
| Source   | OBS        | Local Row or ID Number                            |                                       | 1           | Local Row or ID Number                        |
|          | XCOORD     | X-Coord (State Plane E)                           |                                       | 3           | X-Coord (State Plane E)                       |
|          | YCOORD     | Y-Coord (State Plane N)                           |                                       | 4           | Y-Coord (State Plane N)                       |
| Location | LATDD      | Latitude, decimal degrees north                   |                                       | 5           | Latitude (decimal)                            |
|          | LATD       | Latitude, degrees north                           |                                       | 6           | Lat(deg)n                                     |
|          | LATM       | Latitude, minutes north                           |                                       | 7           | Lat(min)n                                     |
|          | LATS       | Latitude, seconds north                           |                                       | 8           | Lat(sec)n                                     |
|          |            | Lat Orig. position format and precision           |                                       | 9           | Lat Orig. position format and precision       |
|          | LONDD      | Longitude, decimal degrees. West lon is negative. |                                       | 10          | Longitude (decimal) (-) = west long.          |
|          | LOND       | Longitude, degrees (west is negative)             |                                       | 11          | Lon(deg)w                                     |
|          | LONM       | Longitude, minutes (west is negative)             |                                       | 12          | Lon(min)w                                     |
|          | LONS       | Longitude, seconds (west is negative)             |                                       | 13          | Lon(sec)w                                     |
|          |            | Lon Orig. position format and precision           |                                       | 14          | Lon Orig. position format and precision       |
|          |            | Original location in orig. format, if unusual     |                                       | 15          | Original location in orig. format, if unusual |
|          | XYDATUM    | Datum   |                                       | 16          | Datum   |
|          |            | Time Delay 1                                      |                                       |             | Time Delay 1                                  |
|          |            | Time Delay 2                                      |                                       |             | Time Delay 2                                  |
|          |            | Sounding (m)                                      |                                       | 18          | Sounding (m)                                  |

| Category    | Field Name | VIMS Brief Description                                | VIMS Expanded Description (as needed)   | USGS Number | USGS Brief Description                                |
|-------------|------------|---|---|-------------|---|
|             |            | Sounding (in original units, if not m)                |   | 19          | Sounding (in original units, if not m)                |
|             |            | Sounding original units                               |   | 20          | Sounding original units                               |
| Paper-trail |            | Source of Information, Reference, or Reference ID No. |   | 24          | Source of Information, Reference, or Reference ID No. |
|             |            | Original Database ID                                  |   | 25          | Original Database ID                                  |
| Sampling    | STATION_Q  | Location Comments                                     |   | 32          | Location Comments                                     |
|             | DATE_SAM   | Sampling Date   | Sampling date in format: YRMODA (year, month, day without punctuation).   | 33          | Sampling Date   |
|             | DAY        | Da  |   | 34          | Da  |
|             | MONTH      | Mo  |   | 35          | Mo  |
|             | YEAR       | Year  |   | 36          | Year  |
|             | HOUR       | Hr  |   | 37          | Hr  |
|             | MIN        | Min   |   | 38          | Min   |
|             | TIDE_CBP   | Tide position, Ches. Bay Program code.                | Tide position when sample was collected from the natural environment, coded according to Ches. Bay Program coding scheme. | 39          | Tide  |
|             | SAMPLEID   | Sample ID or original Sample Field Number             | Sample ID used when both sample and station have identifiers.   | 40          | Sample ID or original Sample Field Number             |
|             | CRUISEID   | Cruise ID   |   | 41          | Cruise ID   |
|             | STATION    | Orig. sta. #  | Use this field in preference to SAMPLEID.   | 42          | Orig. sta. #  |
|             | COREID     | Core Or Grab #, use when both core and sample # exist |   | 43          | Core Or Grab #  |

| Category     | Field Name | VIMS  |                                  | USGS Number | USGS Brief Description  |
|--------------|------------|---|----------------------------------|-------------|---|
|              |            | VIMS Brief Description  | Expanded Description (as needed) |             |   |
|              | GEAR       | Sampling Device   |                                  | 44          | Sampling Device   |
|              | SAM_TYPE   | Sample type   |                                  | 45          | Sample type   |
|              | CDEPTH     | Depth In Core or sediment,when interval is not given (cm or text) |                                  | 46          | Depth In Core or sediment,when interval is not given (cm or text) |
|              | DEPTHTOP   | Depth interval, TOP of Core section or sample (cm)                |                                  | 47          | Depth interval, TOP of Core or sample (cm)                        |
|              | DEPTHBOT   | Depth interval, BOTTOM of Core section or sample (cm)             |                                  | 48          | Depth interval, BOTTOM of Core or sample (cm)                     |
|              |            | Original Depth in sediment in original units if not centimeters   |                                  | 49          | Original Depth in sediment in original units if not centimeters   |
|              |            | Original depth units  |                                  | 50          | Original depth units  |
|              | CORECOMP   | Compositing Scheme  |                                  | 51          | Compositing Scheme  |
|              | COMMENTS   | General Comments Pertaining To Sample                             |                                  | 52          | General Comments Pertaining To Sample                             |
|              |            | Description/Color   |                                  | 53          | Description/Color   |
|              | COLOR      | Estimated Volume of material to be disposed                       |                                  | 54          | Estimated Volume of material to be disposed                       |
| Related info |            | Laboratory's internal ID number                                   |                                  | 64          | Laboratory's internal ID number                                   |
| Analytical   |            | Laboratory's sample ID number (metals)                            |                                  | 65          | Laboratory's sample ID number (metals)                            |
|              |            | Replicate no ___ of n (metals)                                    |                                  | 68          | Replicate no ___ of n (metals)                                    |
|              |            | Total replicates n (metals)                                       |                                  | 69          | Total replicates n (metals)                                       |
|              |            | Laboratory's internal ID number (Other inorganics)                |                                  | 75          | Laboratory's internal ID number (Other inorganics)                |
|              |            | Laboratory's sample ID number (Other inorganics)                  |                                  | 76          | Laboratory's sample ID number (Other inorganics)                  |

| Category                | Field Name | VIMS Brief Description                   | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                   |
|-------------------------|------------|--|---------------------------------------|-------------|--|
|                         |            | Replicate no ___ of n (Other inorganics) |                                       | 79          | Replicate no ___ of n (Other inorganics) |
|                         |            | Total replicates n (Other inorganics)    |                                       | 80          | Total replicates n (Other inorganics)    |
| Majors and trace metals | AG         | Ag (silver) ug/g                         |                                       | 85          | Ag (silver) µg/g                         |
|                         | AG_D       | Ag det. lim.                             |                                       | 86          | Ag det. lim.                             |
|                         | AG_O       | Ag value, in original units              |                                       |             | Al original units                        |
|                         | AG_U       | Ag original units                        |                                       |             |  |
|                         | AG_Q       | Ag q                                     |                                       | 87          | Ag q                                     |
|                         | AL         | Al (aluminum) ug/g                       |                                       | 88          | Al (aluminum) µg/g                       |
|                         | AL_D       | Al det. lim.                             |                                       | 89          | Al det. lim.                             |
|                         | AL_O       | Al value, in original units              |                                       | 90          | Al original units                        |
|                         | AL_U       | Al original units (unit name)            |                                       | 90          |  |
|                         | AL_Q       | Al qualifier                             |                                       | 91          | Al q                                     |
|                         |            | Al value in original units, if not µg/g  |                                       | 92          | Al value in original units, if not µg/g  |
|                         | AS         | As (arsenic) ug/g                        |                                       | 93          | As (arsenic) µg/g                        |
|                         | AS_D       | As det. lim.                             |                                       | 94          | As det. lim.                             |
|                         | AS_Q       | As qualifier                             |                                       | 95          | As q                                     |
|                         |            | Au (gold) µg/g                           |                                       | 96          | Au (gold) µg/g                           |
|                         |            | Au det. lim.                             |                                       | 97          | Au det. lim.                             |
|                         |            | Au q                                     |                                       | 98          | Au q                                     |
|                         |            | Ba (barium) µg/g                         |                                       | 99          | Ba (barium) µg/g                         |
|                         |            | Ba det. lim.                             |                                       | 100         | Ba det. lim.                             |
|                         |            | Ba original units                        |                                       | 101         | Ba original units                        |
|                         |            | Ba q                                     |                                       | 102         | Ba q                                     |
|                         |            | Ba value in original units               |                                       | 103         | Ba value in original units               |
|                         |            | Be (beryllium) µg/g                      |                                       | 104         | Be (beryllium) µg/g                      |
|                         |            | Be det. lim.                             |                                       | 105         | Be det. lim.                             |
|                         |            | Be q                                     |                                       | 106         | Be q                                     |
|                         |            | Ca (calcium) µg/g                        |                                       | 107         | Ca (calcium) µg/g                        |
|                         |            | Ca det. lim.                             |                                       | 108         | Ca det. lim.                             |
|                         |            | Ca original units                        |                                       | 109         | Ca original units                        |
|                         |            | Ca q                                     |                                       | 110         | Ca q                                     |
|                         |            | Ca value in original units, if not µg/g  |                                       | 111         | Ca value in original units, if not µg/g  |

| Category | Field Name | VIMS Brief Description                  | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                  |
|----------|------------|---|---------------------------------------|-------------|---|
|          | CD         | Cd (cadmium) µg/g, in dry sediment      |                                       | 112         | Cd (cadmium) µg/g                       |
|          | CD_D       | Cd det. lim.                            |                                       | 113         | Cd det. lim.                            |
|          | CD_Q       | Cd qualifier                            |                                       | 114         | Cd q                                    |
|          | CL         | Cl (chloride) µg/g                      |                                       | 115         | Cl (chloride) µg/g                      |
|          | CL_D       | Cl det. lim.                            |                                       | 116         | Cl det. lim.                            |
|          | CL_U       | Cl original units                       |                                       | 117         | Cl original units                       |
|          | CL_Q       | Cl q                                    |                                       | 118         | Cl q                                    |
|          | CL_O       | Cl value in original units, if not µg/g |                                       | 119         | Cl value in original units, if not µg/g |
|          | CO         | Co (cobalt) µg/g, in dry sediment       |                                       | 120         | Co (cobalt) µg/g                        |
|          | CO_D       | Co detection limit                      |                                       | 121         | Co det. lim.                            |
|          | CO_Q       | Co (cobalt) qualifier text              |                                       | 122         | Co q                                    |
|          | CR         | Cr (chromium) µg/g, in dry sediment     |                                       | 123         | Cr (chromium) µg/g                      |
|          | CR_D       | Cr detection limit                      |                                       | 124         | Cr det. lim.                            |
|          | CR_Q       | Cr q                                    |                                       | 125         | Cr q                                    |
|          | CU         | Cu (copper) µg/g                        |                                       | 126         | Cu (copper) µg/g                        |
|          | CU_D       | Cu det. lim.                            |                                       | 127         | Cu det. lim.                            |
|          | CU_Q       | Cu qualifier text                       |                                       | 128         | Cu q                                    |
|          | FE         | Fe (iron) µg/g                          |                                       | 129         | Fe (iron) µg/g                          |
|          | FE_D       | Fe detection limit                      |                                       | 130         | Fe det. lim.                            |
|          | FE_U       | Fe original units (unit name)           |                                       | 131         | Fe original units                       |
|          | FE_Q       | Fe qualifier text                       |                                       | 132         | Fe q                                    |
|          | FE_O       | Fe value in original units, if not µg/g |                                       | 133         | Fe value in original units, if not µg/g |
|          | HG         | Hg (mercury) µg/g                       |                                       | 134         | Hg (mercury) µg/g                       |
|          | HG_D       | Hg det. lim.                            |                                       | 135         | Hg det. lim.                            |
|          | HG_Q       | Hg q                                    |                                       | 136         | Hg q                                    |
|          |            | K (potassium) µg/g                      |                                       | 137         | K (potassium) µg/g                      |
|          |            | K det. lim.                             |                                       | 138         | K det. lim.                             |
|          |            | K original units                        |                                       | 139         | K original units                        |
|          |            | K q                                     |                                       | 140         | K q                                     |
|          |            | K value in original units, if not µg/g  |                                       | 141         | K value in original units, if not µg/g  |
|          |            | Mg (magnesium) µg/g                     |                                       | 142         | Mg (magnesium) µg/g                     |
|          |            | Mg det. lim.                            |                                       | 143         | Mg det. lim.                            |

| Category | Field Name | VIMS Brief Description                  | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                  |
|----------|------------|---|---------------------------------------|-------------|---|
|          |            | Mg q                                    |                                       | 144         | Mg q                                    |
|          | MN         | Mn (manganese) µg/g, in dry sediment    |                                       | 145         | Mn (manganese) µg/g                     |
|          | MN_D       | Mn det. lim.                            |                                       | 146         | Mn det. lim.                            |
|          | MN_U       | Mn original units                       |                                       | 147         | Mn original units                       |
|          | MN_Q       | Mn q                                    |                                       | 148         | Mn q                                    |
|          | MN_O       | Mn value in original units, if not µg/g |                                       | 149         | Mn value in original units, if not µg/g |
|          |            | Na (sodium) µg/g                        |                                       | 150         | Na (sodium) µg/g                        |
|          |            | Na det. lim.                            |                                       | 151         | Na det. lim.                            |
|          |            | Na original units                       |                                       | 152         | Na original units                       |
|          |            | Na q                                    |                                       | 153         | Na q                                    |
|          |            | Na value in original units, if not µg/g |                                       | 154         | Na value in original units, if not µg/g |
|          | NI         | Ni (nickel) µg/g, in dry sediment       |                                       | 155         | Ni (nickel) µg/g                        |
|          | NI_D       | Ni det. lim.                            |                                       | 156         | Ni det. lim.                            |
|          | NI_Q       | Ni qualifier                            |                                       | 157         | Ni q                                    |
|          |            | P (phosphorous) µg/g                    |                                       | 158         | P (phosphorous) µg/g                    |
|          |            | P det. lim.                             |                                       | 159         | P det. lim.                             |
|          |            | P q                                     |                                       | 160         | P q                                     |
|          | PB         | Pb (lead) µg/g                          |                                       | 161         | Pb (lead ) µg/g                         |
|          | PB_D       | Pb det. lim.                            |                                       | 162         | Pb det. lim.                            |
|          | PB_Q       | Pb q                                    |                                       | 163         | Pb q                                    |
|          |            | Ra (radium) µg/g                        |                                       | 164         | Ra (radium) µg/g                        |
|          |            | Ra det. lim.                            |                                       | 165         | Ra det. lim.                            |
|          |            | Ra q                                    |                                       | 166         | Ra q                                    |
|          |            | Sb (antimony) µg/g                      |                                       | 167         | Sb (antimony) µg/g                      |
|          |            | Sb det. lim.                            |                                       | 168         | Sb det. lim.                            |
|          |            | Sb q                                    |                                       | 169         | Sb q                                    |
|          |            | Se (selenium) µg/g                      |                                       | 170         | Se (selenium) µg/g                      |
|          |            | Se det. lim.                            |                                       | 171         | Se det. lim.                            |
|          |            | Se q                                    |                                       | 172         | Se q                                    |
|          | SI         | Si (silicon) µg/g                       |                                       | 173         | Si (silicon) µg/g                       |
|          | SI_D       | Si detection limit                      |                                       | 174         | Si det. lim.                            |
|          | SI_U       | Si original units                       |                                       | 175         | Si original units                       |
|          | SI_Q       | Si qualifier text                       |                                       | 176         | Si q                                    |
|          | SI_O       | Si value in original units, if not µg/g |                                       | 177         | Si value in original units, if not µg/g |

| Category         | Field Name | VIMS Brief Description                  | VIMS Expanded Description (as needed)      | USGS Number | USGS Brief Description                  |
|------------------|------------|---|--|-------------|---|
|                  | SN         | Sn (tin) µg/g                           |  | 178         | Sn (tin) µg/g                           |
|                  | SN_D       | Sn det. lim.                            |  | 179         | Sn det. lim.                            |
|                  | SN_Q       | Sn qualifier                            |  | 180         | Sn q                                    |
|                  | TI         | Ti (titanium) µg/g, in dry sediment     |  | 184         | Ti (titanium) µg/g                      |
|                  | TI_D       | Ti detection limit                      |  | 185         | Ti det. lim.                            |
|                  | TI_U       | Ti original units                       |  | 186         | Ti original units                       |
|                  | TI_Q       | Ti qualifier text                       |  | 187         | Ti q                                    |
|                  | TI_O       | Ti value in original units, if not µg/g |  | 188         | Ti value in original units, if not µg/g |
|                  |            | Tl (Tellurium) µg/g                     |  |             | Tl (Tellurium) µg/g                     |
|                  |            | Tl det. lim.                            |  |             | Tl det. lim.                            |
|                  |            | Tl q                                    |  |             | Tl q                                    |
|                  |            | Th (thorium) µg/g                       |  | 189         | Th (thorium) µg/g                       |
|                  |            | Th det. lim.                            |  | 190         | Th det. lim.                            |
|                  |            | Th q                                    |  | 191         | Th q                                    |
|                  |            | U (uranium) µg/g                        |  | 181         | U (uranium) µg/g                        |
|                  |            | U det. lim.                             |  | 182         | U det. lim.                             |
|                  |            | U q                                     |  | 183         | U q                                     |
|                  | V          | V (vanadium) µg/g, in dry sediment      |  | 192         | V (vanadium) µg/g                       |
|                  | V_D        | V det. lim.                             |  | 193         | V det. lim.                             |
|                  | V_Q        | V qualifier                             |  | 194         | V q                                     |
|                  | ZN         | Zn (zinc) µg/g, in dry sediment         |  | 195         | Zn (zinc) µg/g                          |
|                  | ZN_D       | Zn det. lim.                            |  | 196         | Zn det. lim.                            |
|                  | ZN_Q       | Zn qualifier                            |  | 197         | Zn q                                    |
| Other inorganics |            | Carbonate CO3 %                         |  | 198         | Carbonate CO3 %                         |
|                  |            | Carbon (inorganic) % dry wt             |  | 198b        | Carbon (inorganic) % dry wt             |
|                  |            | Carbon (carbonate) % dry wt             |  | 199         | Carbon (carbonate) % dry wt             |
|                  | C_TOTORG   | Carbon (total organic) % dry wt         | Total organic carbon in percent dry weight | 200         | Carbon (organic) % dry wt               |
|                  |            | Carbon (organic) dl                     |  | 201         | Carbon (organic) dl                     |

| Category | Field Name | VIMS Brief Description                      | VIMS Expanded Description (as needed)  | USGS Number | USGS Brief Description                      |
|----------|------------|---|--|-------------|---|
|          | C_TOTWP    | Carbon (Total) % dry wt                     | Total carbon (both ORGANIC AND INORGANIC) in the sample expressed as percent dry weight. | 202         | Carbon (Total) % dry wt                     |
|          |            | Carbon q                                    |  | 203         | Carbon q                                    |
|          |            | Hydrogen %                                  |  | 204         | Hydrogen %                                  |
|          | N_TOTWP    | Nitrogen %, dry weight                      |  | 205         | Nitrogen %                                  |
|          |            | Ammonia (NH3) $\mu$ moles/kg                |  | 206         | Ammonia (NH3) $\mu$ moles/kg                |
|          |            | NH3 qualifier                               |  | 207         | NH3 q                                       |
|          |            | Nitrate (NO3) $\mu$ moles/kg                |  | 208         | Nitrate (NO3) $\mu$ moles/kg                |
|          |            | NO3 q                                       |  | 209         | NO3 q                                       |
|          | NO2        | Nitrite (NO2) $\mu$ moles/kg                |  | 210         | Nitrite (NO2) $\mu$ moles/kg                |
|          |            | NO2 qualifier                               |  | 211         | NO2 q                                       |
|          | NO2_Q      | Oxygen (O2) $\mu$ moles/kg                  |  | 212         | Oxygen (O2) $\mu$ moles/kg                  |
|          |            | O2 q  |  | 213         | O2 q  |
|          |            | Sulfide (SO2) $\mu$ moles/kg                |  | 214         | Sulfide (SO2) $\mu$ moles/kg                |
|          |            | SO2 q                                       |  | 215         | SO2 q                                       |
|          |            | Sulfite (SO3) $\mu$ moles/kg                |  | 216         | Sulfite (SO3) $\mu$ moles/kg                |
|          |            | SO3 q                                       |  | 217         | SO3 q                                       |
|          |            | Sulfate (SO4) $\mu$ moles/kg                |  | 218         | Sulfate (SO4) $\mu$ moles/kg                |
|          |            | SO4 q                                       |  | 219         | SO4 q                                       |
|          |            | Acid Volatile Sulfides (AVS) $\mu$ mole-S/g |  | 220         | Acid Volatile Sulfides (AVS) $\mu$ mole-S/g |
|          |            | AVS q                                       |  | 221         | AVS q                                       |
|          |            | Chem Oxygen Demand (COD) $\mu$ g/g          |  | 222         | Chem Oxygen Demand (COD) $\mu$ g/g          |
|          |            | COD q                                       |  | 223         | COD q                                       |
|          |            | Cation Exchange Capacity (CEC) moles/kg     |  | 224         | Cation Exchange Capacity (CEC) moles/kg     |
|          |            | CEC q                                       |  | 225         | CEC q                                       |

| Category     | Field Name | VIMS Brief Description                | VIMS Expanded Description (as needed)   | USGS Number | USGS Brief Description                |
|--------------|------------|---------------------------------------|---|-------------|---------------------------------------|
|              |            | Surface area m2/g                     |   | 226         | Surface area m2/g                     |
|              |            | Surface area q                        |   | 227         | Surface area q                        |
|              |            | Total sample weight g                 |   | 228         | Total sample weight g                 |
|              |            | Total sample weight q                 |   | 229         | Total sample weight q                 |
|              |            | Total Solids weight%                  |   | 230         | Total Solids weight%                  |
|              |            | Total Solids q                        |   | 231         | Total Solids q                        |
|              | H2O        | Water weight% or porosity             |   | 232         | Water weight% or porosity             |
|              |            | Water q                               |   | 233         | Water q                               |
|              |            | Resistivity mohms                     |   | 234         | Resistivity mohms                     |
|              |            | Specific Conductance mmhos            |   | 235         | Specific Conductance mmhos            |
|              |            | Specific Conductance or Resistivity q |   | 236         | Specific Conductance or Resistivity q |
|              | SALIN      | Salinity ppt                          |   | 237         | Salinity ppt                          |
|              |            | Salinity q                            |   | 238         | Salinity q                            |
|              |            | Alkalinity meq/kg                     |   | 239         | Alkalinity meq/kg                     |
|              |            | Alkalinity q                          |   | 240         | Alkalinity q                          |
|              | PH         | PH                                    | The negative log of the hydrogen ion concentration for a wet sediment sample. | 241         | PH                                    |
|              |            | Temperature degrees C                 |   | 242         | Temperature degrees C                 |
|              |            | Temperature q                         |   | 243         | Temperature q                         |
| Radioactives |            | Total Radioactivity mR/hr             |   | 244         | Total Radioactivity mR/hr             |
|              |            | Gross alpha radioactivity pCi/g       |   | 245         | Gross alpha radioactivity pCi/g       |
|              |            | Gross beta radioactivity pCi/g        |   | 246         | Gross beta radioactivity pCi/g        |
|              |            | Pb210 dpm/g                           |   | 247         | Pb210 dpm/g                           |
|              |            | Pb210 q                               |   | 248         | Pb210 q                               |
|              |            | Th228 dpm/g                           |   | 249         | Th228 dpm/g                           |
|              |            | Th228 q                               |   | 250         | Th228 q                               |
|              |            | Th234 dpm/g                           |   | 251         | Th234 dpm/g                           |
|              |            | Th234 q                               |   | 252         | Th234 q                               |
|              |            | Ra226 dpm/g                           |   | 253         | Ra226 dpm/g                           |

| Category         | Field Name | VIMS Brief Description                               | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                               |
|------------------|------------|--|---------------------------------------|-------------|--|
|                  |            | Ra226 q  |                                       | 254         | Ra226 q  |
|                  |            | Th230 dpm/g  |                                       | 255         | Th230 dpm/g  |
|                  |            | Th230 q  |                                       | 256         | Th230 q  |
|                  |            | Cs137 dpm/g  |                                       | 257         | Cs137 dpm/g  |
|                  |            | Cs137 q  |                                       | 258         | Cs137 q  |
|                  |            | Pu239,240 dpm/g                                      |                                       | 259         | Pu239,240 dpm/g                                      |
|                  |            | Pu239,240 q  |                                       | 260         | Pu239,240 q  |
|                  |            | Sr90 dpm/g   |                                       | 261         | Sr90 dpm/g   |
|                  |            | Sr90 q   |                                       | 262         | Sr90 q   |
|                  |            | Carbon 14 %-Delta-14C                                |                                       | 263         | Carbon 14 %-Delta-14C                                |
|                  |            | Carbon 14 q  |                                       | 264         | Carbon 14 q  |
|                  |            | Carbon 13 %-delta-13C                                |                                       | 265         | Carbon 13 %-delta-13C                                |
|                  |            | Carbon 13 q  |                                       | 266         | Carbon 13 q  |
|                  |            | Other radioactivity dpm/g                            |                                       | 267         | Other radioactivity dpm/g                            |
|                  |            | Radioactivity q                                      |                                       | 268         | Radioactivity q                                      |
| Analytical       |            | Laboratory's internal ID number                      |                                       | 270         | Laboratory's internal ID number                      |
|                  |            | Laboratory's sample ID number (organic contaminants) |                                       | 271         | Laboratory's sample ID number (organic contaminants) |
|                  |            | Replicate no ___ of n (organic contaminants)         |                                       | 274         | Replicate no ___ of n (organic contaminants)         |
|                  |            | Total replicates n (organic contaminants)            |                                       | 275         | Total replicates n (organic contaminants)            |
| General organics |            | Total Volatile Solids (TVS)-EPA %                    |                                       | 280         | Total Volatile Solids (TVS)-EPA %                    |
|                  |            | TVS-EPA q  |                                       | 281         | TVS-EPA q  |
|                  |            | Total Volatile Solids (TVS)-NED %                    |                                       | 282         | Total Volatile Solids (TVS)-NED %                    |
|                  |            | Volatile Solids (VS)-NED %                           |                                       | 282         | Volatile Solids (VS)-NED %                           |
|                  |            | VS-NED q   |                                       | 283         | VS-NED q   |
|                  |            | Oil And Grease (O and G) ppm                         |                                       | 284         | Oil And Grease (O and G) ppm                         |

| Category | Field Name | VIMS Brief Description                                | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                                |
|----------|------------|---|---------------------------------------|-------------|---|
|          |            | O and G q   |                                       | 285         | O and G q   |
|          |            | O and G det. lim.                                     |                                       | 286         | O and G det. lim.                                     |
|          |            | Petroleum Hydrocarbons-total (Total PHC) %DW          |                                       | 287         | Petroleum Hydrocarbons-total (Total PHC) %DW          |
|          |            | PHC q   |                                       | 288         | PHC q   |
|          |            | PHC det. lim.   |                                       | 289         | PHC det. lim.   |
|          |            | PCB's (Total Polychlorinated biphenyls) µg/g          |                                       | 290         | PCB's (Total Polychlorinated biphenyls) µg/g          |
|          |            | PCB's q   |                                       | 291         | PCB's q   |
|          |            | PCB's det. lim.                                       |                                       | 292         | PCB's det. lim.                                       |
|          |            | DDT total µg/g  |                                       | 293         | DDT total µg/g  |
|          |            | DDT total q   |                                       | 294         | DDT total q   |
|          |            | DDT total det lim                                     |                                       | 295         | DDT total det lim                                     |
|          |            | Pesticides Total µg/g                                 |                                       | 296         | Pesticides Total µg/g                                 |
|          |            | Pesticides Total q                                    |                                       | 297         | Pesticides Total q                                    |
|          |            | Pesticides Total dl                                   |                                       | 298         | Pesticides Total dl                                   |
|          |            | Aromatic Hydrocarbons (Total Parent PAH) %DW          |                                       | 299         | Aromatic Hydrocarbons (Total Parent PAH) %DW          |
|          |            | PAH q   |                                       | 300         | PAH q   |
|          |            | Lipids ppb  |                                       | 301         | Lipids ppb  |
|          |            | Others  |                                       | 302         | Others  |
|          |            | Clostridium perfringens (spores/g)                    |                                       | 303         | Clostridium perfringens (spores/g)                    |
|          |            | Clostridium perfringens q                             |                                       | 304         | Clostridium perfringens q                             |
|          |            |   |                                       | ::          |   |
|          |            |   |                                       | GSCE-O      |   |
|          |            |   |                                       | R2          |   |
|          |            | Local Row or ID Number                                |                                       | 1           | Local Row or ID Number                                |
|          |            | Cover-Id Unique Sample Identifier (US#)               |                                       | 2           | Cover-Id Unique Sample Identifier (US#)               |
|          |            | Source of Information, Reference, or Reference ID No. |                                       | 24          | Source of Information, Reference, or Reference ID No. |

Table of  
Specific  
Organic  
Contaminants

| Category   | Field Name                 | VIMS Brief Description                              | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                              |                |
|------------|----------------------------|---|---------------------------------------|-------------|---|----------------|
| Analytical |                            | Laboratory's internal ID number (specific organics) |                                       | 306         | Laboratory's internal ID number (specific organics) |                |
|            |                            | Laboratory's sample ID number (specific organics)   |                                       | 307         | Laboratory's sample ID number (specific organics)   |                |
|            |                            | Replicate no ___ of n (specific organics)           |                                       | 310         | Replicate no ___ of n (specific organics)           |                |
|            |                            | Total replicates n (specific organics)              |                                       | 311         | Total replicates n (specific organics)              |                |
|            |                            | Testing Date (specific organics)                    |                                       | 312         | Testing Date (specific organics)                    |                |
|            |                            | Test day (specific organics)                        |                                       | 313         | Test day (specific organics)                        |                |
|            |                            | Test month (specific organics)                      |                                       | 314         | Test month (specific organics)                      |                |
|            |                            | Test year (specific organics)                       |                                       | 315         | Test year (specific organics)                       |                |
|            | Specific organic compounds |   | PCB*8 ppb                             |             | 316   | PCB*8 ppb      |
|            |                            |   | PCB*18 ppb                            |             | 317   | PCB*18 ppb     |
|            |                            |   | PCB*28 ppb                            |             | 318   | PCB*28 ppb     |
|            |                            |   | PCB*44 ppb                            |             | 319   | PCB*44 ppb     |
|            |                            |   | PCB*52 ppb                            |             | 320   | PCB*52 ppb     |
|            |                            |   | PCB*66 ppb                            |             | 321   | PCB*66 ppb     |
|            |                            |   | PCB*77/110 ppb                        |             | 322   | PCB*77/110 ppb |
|            |                            | PCB*101 ppb   |                                       | 323         | PCB*101 ppb   |                |
|            |                            | PCB*105 ppb   |                                       | 324         | PCB*105 ppb   |                |
|            |                            | PCB*118 ppb   |                                       | 325         | PCB*118 ppb   |                |
|            |                            | PCB*126 ppb   |                                       | 326         | PCB*126 ppb   |                |
|            |                            | PCB*128 ppb   |                                       | 327         | PCB*128 ppb   |                |
|            |                            | PCB*138 ppb   |                                       | 328         | PCB*138 ppb   |                |
|            |                            | PCB*153 ppb   |                                       | 329         | PCB*153 ppb   |                |
|            |                            | PCB*179 ppb   |                                       | 330         | PCB*179 ppb   |                |
|            |                            | PCB*180 ppb   |                                       | 331         | PCB*180 ppb   |                |

| Category | Field Name | VIMS Brief Description  | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description  |
|----------|------------|-------------------------|---------------------------------------|-------------|-------------------------|
|          |            | PCB*187 ppb             |                                       | 332         | PCB*187 ppb             |
|          |            | PCB*195 ppb             |                                       | 333         | PCB*195 ppb             |
|          |            | PCB*206 ppb             |                                       | 334         | PCB*206 ppb             |
|          |            | PCB*209 ppb             |                                       | 335         | PCB*209 ppb             |
|          |            | PCB q                   |                                       | 336         | PCB q                   |
|          |            | PCB det lim             |                                       | 337         | PCB det lim             |
|          |            | Arochlor* 1016/1242 ppb |                                       | 338         | Arochlor* 1016/1242 ppb |
|          |            | Arochlor* 1221 ppb      |                                       | 339         | Arochlor* 1221 ppb      |
|          |            | Arochlor* 1232 ppb      |                                       | 340         | Arochlor* 1232 ppb      |
|          |            | Arochlor* 1248 ppb      |                                       | 341         | Arochlor* 1248 ppb      |
|          |            | Arochlor* 1254 ppb      |                                       | 342         | Arochlor* 1254 ppb      |
|          |            | Arochlor* 1260 ppb      |                                       | 343         | Arochlor* 1260 ppb      |
|          |            | Arochlor q              |                                       | 344         | Arochlor q              |
|          |            | Arochlor det. lim.      |                                       | 345         | Arochlor det. lim.      |
|          |            | Toxaphene ppb           |                                       | 346         | Toxaphene ppb           |
|          |            | Toxaphene q             |                                       | 347         | Toxaphene q             |
|          |            | Toxaphene det. lim.     |                                       | 348         | Toxaphene det. lim.     |
|          |            | DDT 4,4' ppb            |                                       | 349         | DDT 4,4' ppb            |
|          |            | DDT 4,4' det lim        |                                       | 350         | DDT 4,4' det lim        |
|          |            | DDT 4,4' q              |                                       | 351         | DDT 4,4' q              |
|          |            | DDT 2,4' ppb            |                                       | 352         | DDT 2,4' ppb            |
|          |            | DDT 2,4' det lim        |                                       | 353         | DDT 2,4' det lim        |
|          |            | DDT 2,4' q              |                                       | 354         | DDT 2,4' q              |
|          |            | DDE total ppb           |                                       | 355         | DDE total ppb           |
|          |            | DDE total q             |                                       | 356         | DDE total q             |
|          |            | DDE total det. lim.     |                                       | 357         | DDE total det. lim.     |
|          |            | DDE 4,4' ppb            |                                       | 358         | DDE 4,4' ppb            |
|          |            | DDE 4,4' det lim        |                                       | 359         | DDE 4,4' det lim        |
|          |            | DDE 4,4' q              |                                       | 360         | DDE 4,4' q              |
|          |            | DDE 2,4 ppb             |                                       | 361         | DDE 2,4 ppb             |
|          |            | DDE 2,4' det lim        |                                       | 362         | DDE 2,4' det lim        |
|          |            | DDE 2,4' q              |                                       | 363         | DDE 2,4' q              |
|          |            | DDD total ppb           |                                       | 364         | DDD total ppb           |
|          |            | DDD total q             |                                       | 365         | DDD total q             |
|          |            | DDD total det. lim.     |                                       | 366         | DDD total det. lim.     |
|          |            | DDD 4,4' ppb            |                                       | 367         | DDD 4,4' ppb            |
|          |            | DDD 4,4' det lim        |                                       | 368         | DDD 4,4' det lim        |

| Category | Field Name | VIMS Brief Description       | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description       |
|----------|------------|------------------------------|---------------------------------------|-------------|------------------------------|
|          |            | DDD 4,4' q                   |                                       | 369         | DDD 4,4' q                   |
|          |            | DDD 2,4 ppb                  |                                       | 370         | DDD 2,4 ppb                  |
|          |            | DDD 2,4' det lim             |                                       | 371         | DDD 2,4' det lim             |
|          |            | DDD 2,4' q                   |                                       | 372         | DDD 2,4' q                   |
|          | HEPCL      | Heptachlor ppb               |                                       | 373         | Heptachlor ppb               |
|          | HEPCL_Q    | Heptachlor qualifier         |                                       | 374         | Heptachlor q                 |
|          | HEPCL_D    | Heptachlor det. lim.         |                                       | 375         | Heptachlor det. lim.         |
|          | HEPCLX     | Heptachlor epoxide ppb       |                                       | 376         | Heptachlor epoxide ppb       |
|          | HEPCLX_Q   | Heptachlor epoxide qualifier |                                       | 377         | Heptachlor epoxide q         |
|          | HEPCLX_D   | Heptachlor epoxide det. lim. |                                       | 378         | Heptachlor epoxide det. lim. |
|          |            | Hexachlorobenzene (HCB) ppb  |                                       | 379         | Hexachlorobenzene (HCB) ppb  |
|          |            | Hexachlorobenzene q          |                                       | 380         | Hexachlorobenzene q          |
|          |            | Hexachlorobenzene det. lim.  |                                       | 381         | Hexachlorobenzene det. lim.  |
|          | ENDRIN     | Endrin ppb                   |                                       | 382         | Endrin ppb                   |
|          | ENDRIN_Q   | Endrin qualifier             |                                       | 383         | Endrin q                     |
|          | ENDRIN_D   | Endrin det. lim.             |                                       | 384         | Endrin det. lim.             |
|          |            | Endrin Aldehyde ppb          |                                       | 385         | Endrin Aldehyde ppb          |
|          |            | Endrin Aldehyde q            |                                       | 386         | Endrin Aldehyde q            |
|          |            | Endrin Aldehyde det. lim.    |                                       | 387         | Endrin Aldehyde det. lim.    |
|          |            | Aldrin ppb                   |                                       | 388         | Aldrin ppb                   |
|          |            | Aldrin q                     |                                       | 389         | Aldrin q                     |
|          |            | Aldrin det. lim.             |                                       | 390         | Aldrin det. lim.             |
|          | DIELDR     | Dieldrin ppb                 |                                       | 391         | Dieldrin ppb                 |
|          | DIELDR_Q   | Dieldrin qualifier           |                                       | 392         | Dieldrin q                   |
|          | DIELDR_D   | Dieldrin det. lim.           |                                       | 393         | Dieldrin det. lim.           |
|          |            | Cyclohexane (total) ppb      |                                       | 394         | Cyclohexane (total) ppb      |
|          |            | Cyclohexane (total) det. lim |                                       | 395         | Cyclohexane (total) det. lim |
|          |            | Cyclohexane (total) q        |                                       | 396         | Cyclohexane (total) q        |
|          |            | Cyclohexane (alpha) ppb      |                                       | 397         | Cyclohexane (alpha) ppb      |
|          |            | Cyclohexane (alpha) det. lim |                                       | 398         | Cyclohexane (alpha) det. lim |

| Category | Field Name | VIMS Brief Description       | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description       |
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|          |            | Cyclohexane (alpha) q        |                                       | 399         | Cyclohexane (alpha) q        |
|          |            | Cyclohexane (beta) ppb       |                                       | 400         | Cyclohexane (beta) ppb       |
|          |            | Cyclohexane (beta) det. lim  |                                       | 401         | Cyclohexane (beta) det. lim  |
|          |            | Cyclohexane (beta) q         |                                       | 402         | Cyclohexane (beta) q         |
|          |            | Cyclohexane (gamma) ppb      |                                       | 403         | Cyclohexane (gamma) ppb      |
|          |            | Cyclohexane (gamma) det. lim |                                       | 404         | Cyclohexane (gamma) det. lim |
|          |            | Cyclohexane (gamma) q        |                                       | 405         | Cyclohexane (gamma) q        |
|          |            | Chlordane (total) ppb        |                                       | 406         | Chlordane (total) ppb        |
|          |            | Chlordane (total) det. lim   |                                       | 407         | Chlordane (total) det. lim   |
|          |            | Chlordane (total) q          |                                       | 408         | Chlordane (total) q          |
|          |            | Chlordane (alpha) ppb        |                                       | 409         | Chlordane (alpha) ppb        |
|          |            | Chlordane (alpha) det. lim   |                                       | 410         | Chlordane (alpha) det. lim   |
|          |            | Chlordane (alpha) q          |                                       | 411         | Chlordane (alpha) q          |
|          |            | Chlordane (gamma) ppb        |                                       | 412         | Chlordane (gamma) ppb        |
|          |            | Chlordane (gamma) det. lim   |                                       | 413         | Chlordane (gamma) det. lim   |
|          |            | Chlordane (gamma) q          |                                       | 414         | Chlordane (gamma) q          |
|          |            | Trans-nonachlor ppb          |                                       | 415         | Trans-nonachlor ppb          |
|          |            | Trans-nonachlor det. lim     |                                       | 416         | Trans-nonachlor det. lim     |
|          |            | Trans-nonachlor q            |                                       | 417         | Trans-nonachlor q            |
|          |            | Mirex ppb                    |                                       | 418         | Mirex ppb                    |
|          |            | Mirex q                      |                                       | 419         | Mirex q                      |
|          |            | Mirex det. lim.              |                                       | 420         | Mirex det. lim.              |
|          |            | Parathion ppb                |                                       | 421         | Parathion ppb                |
|          |            | Parathion q                  |                                       | 422         | Parathion q                  |
|          |            | Parathion det. lim.          |                                       | 423         | Parathion det. lim.          |
|          |            | Malathion ppb                |                                       | 424         | Malathion ppb                |
|          |            | Malathion q                  |                                       | 425         | Malathion q                  |
|          |            | Malathion det. lim.          |                                       | 426         | Malathion det. lim.          |
|          |            | Methoxychlor ppb             |                                       | 427         | Methoxychlor ppb             |
|          |            | Methoxychlor q               |                                       | 428         | Methoxychlor q               |
|          |            | Methoxychlor det. lim.       |                                       | 429         | Methoxychlor det. lim.       |

| Category | Field Name | VIMS                             |                                  | USGS Number | USGS Brief Description          |
|----------|------------|----------------------------------|----------------------------------|-------------|---------------------------------|
|          |            | VIMS Brief Description           | Expanded Description (as needed) |             |                                 |
|          |            | BHC (alpha) ppb                  |                                  | 430         | BHC (alpha) ppb                 |
|          |            | BHC (alpha) q                    |                                  | 431         | BHC (alpha) q                   |
|          |            | BHC (alpha) det. lim.            |                                  | 432         | BHC (alpha) det. lim.           |
|          |            | BHC (beta) ppb                   |                                  | 433         | BHC (beta) ppb                  |
|          |            | BHC (beta) q                     |                                  | 434         | BHC (beta) q                    |
|          |            | BHC (beta) det. lim.             |                                  | 435         | BHC (beta) det. lim.            |
|          | LIND       | BHC-gamma (Lindane) ppb          |                                  | 436         | BHC (gamma) = Lindane ppb       |
|          | LIND_Q     | BHC-gamma (Lindane) qualifier    |                                  | 437         | BHC (gamma) = Lindane q         |
|          |            | BHC (gamma) = Lindane det. lim.  |                                  | 438         | BHC (gamma) = Lindane det. lim. |
|          |            | BHC (delta) ppb                  |                                  | 439         | BHC (delta) ppb                 |
|          |            | BHC (delta) q                    |                                  | 440         | BHC (delta) q                   |
|          |            | BHC (delta) det. lim.            |                                  | 441         | BHC (delta) det. lim.           |
|          |            | Benzene ppb                      |                                  | 442         | Benzene ppb                     |
|          |            | Benzene q                        |                                  | 443         | Benzene q                       |
|          |            | Benzene det. lim.                |                                  | 444         | Benzene det. lim.               |
|          | DBTHIO     | dibenzothiophene ppb             |                                  | 445         | dibenzothiophene ppb            |
|          | DBTHIO_Q   | dibenzothiophene qualifier field |                                  | 446         | dibenzothiophene q              |
|          | DBTHIO_D   | dibenzothiophene det lim         |                                  | 447         | dibenzothiophene det lim        |
|          |            | dibenzothiophene (total) ppb     |                                  |             | dibenzothiophene (total) ppb    |
|          |            | dibenzothiophene (total)q        |                                  |             | dibenzothiophene (total)q       |
|          |            | dibenzothiophene (total) dl      |                                  |             | dibenzothiophene (total) dl     |
|          |            | dibenzothiophene (C1) ppb        |                                  |             | dibenzothiophene (C1) ppb       |
|          |            | dibenzothiophene (C1) q          |                                  |             | dibenzothiophene (C1) q         |
|          |            | dibenzothiophene (C1) dl         |                                  |             | dibenzothiophene (C1) dl        |
|          |            | dibenzothiophene (C2) ppb        |                                  |             | dibenzothiophene (C2) ppb       |
|          |            | dibenzothiophene (C2) q          |                                  |             | dibenzothiophene (C2) q         |

| Category | Field Name | VIMS Brief Description         | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description         |
|----------|------------|--------------------------------|---------------------------------------|-------------|--------------------------------|
|          |            | dibenzothiophene (C2) dl       |                                       |             | dibenzothiophene (C2) dl       |
|          |            | dibenzothiophene (C3) ppb      |                                       |             | dibenzothiophene (C3) ppb      |
|          |            | dibenzothiophene (C3) q        |                                       |             | dibenzothiophene (C3) q        |
|          |            | dibenzothiophene (C3) dl       |                                       |             | dibenzothiophene (C3) dl       |
|          |            | dibenzofuran (total) ppb       |                                       | 448         | dibenzofuran (total) ppb       |
|          |            | dibenzofuran q                 |                                       | 449         | dibenzofuran q                 |
|          |            | dibenzofuran det. lim          |                                       | 450         | dibenzofuran det. lim          |
|          |            | Naphthalene ppb                |                                       |             | Naphthalene ppb                |
|          |            | Naphthalene q                  |                                       |             | Naphthalene q                  |
|          |            | Naphthalene det. lim.          |                                       |             | Naphthalene det. lim.          |
|          |            | Naphthalenes (total) ppb       |                                       | 451         | Naphthalenes (total) ppb       |
|          |            | Naphthalenes (total) q         |                                       | 452         | Naphthalenes (total) q         |
|          |            | Naphthalenes (total) det. lim. |                                       | 453         | Naphthalenes (total) det. lim. |
|          |            | Naphthalenes (C1) ppb          |                                       | 454         | Naphthalenes (C1) ppb          |
|          |            | Naphthalenes (C1) q            |                                       | 455         | Naphthalenes (C1) q            |
|          |            | Naphthalenes (C1) det. lim.    |                                       | 456         | Naphthalenes (C1) det. lim.    |
|          |            | 1-Methyl-Napthalene ppb        |                                       | 457         | 1-Methyl-Napthalene ppb        |
|          |            | 1-Methyl-Napthalene q          |                                       | 458         | 1-Methyl-Napthalene q          |
|          |            | 1-Methyl-Napthalene det. lim.  |                                       | 459         | 1-Methyl-Napthalene det. lim.  |
|          |            | 2-Methyl-Napthalene ppb        |                                       | 460         | 2-Methyl-Napthalene ppb        |
|          |            | 2-Methyl-Napthalene q          |                                       | 461         | 2-Methyl-Napthalene q          |
|          |            | 2-Methyl-Napthalene det. lim.  |                                       | 462         | 2-Methyl-Napthalene det. lim.  |
|          |            | Naphthalenes (C2) ppb          |                                       | 463         | Naphthalenes (C2) ppb          |
|          |            | Naphthalenes (C2) q            |                                       | 464         | Naphthalenes (C2) q            |
|          |            | Naphthalenes (C2) det. lim.    |                                       | 465         | Naphthalenes (C2) det. lim.    |

| Category | Field Name | VIMS                            |                                  | USGS Number | USGS Brief Description          |
|----------|------------|---------------------------------|----------------------------------|-------------|---------------------------------|
|          |            | Brief Description               | Expanded Description (as needed) |             |                                 |
|          |            | Naphthalenes (C3) ppb           |                                  | 466         | Naphthalenes (C3) ppb           |
|          |            | Naphthalenes (C3) q             |                                  | 467         | Naphthalenes (C3) q             |
|          |            | Naphthalenes (C3) det. lim.     |                                  | 468         | Naphthalenes (C3) det. lim.     |
|          |            | Naphthalenes (C4) ppb           |                                  |             | Naphthalenes (C4) ppb           |
|          |            | Naphthalenes (C4) q             |                                  |             | Naphthalenes (C4) q             |
|          |            | Naphthalenes (C4) det. lim.     |                                  |             | Naphthalenes (C4) det. lim.     |
|          | BIPHEN     | Biphenyl ppb                    |                                  | 469         | Biphenyl ppb                    |
|          | BIPHEN_Q   | Biphenyl q                      |                                  | 470         | Biphenyl q                      |
|          | BIPHEN_D   | Biphenyl det. lim.              |                                  | 471         | Biphenyl det. lim.              |
|          |            | Acenaphthene ppb                |                                  | 472         | Acenaphthene ppb                |
|          |            | Acenaphthene q                  |                                  | 473         | Acenaphthene q                  |
|          |            | Acenaphthene det. lim.          |                                  | 474         | Acenaphthene det. lim.          |
|          |            | Acenaphthylene ppb              |                                  | 475         | Acenaphthylene ppb              |
|          |            | Acenaphthylene q                |                                  | 476         | Acenaphthylene q                |
|          |            | Acenaphthylene det. lim.        |                                  | 477         | Acenaphthylene det. lim.        |
|          | FLUOR      | Fluorene ppb                    |                                  | 478         | Fluorene ppb                    |
|          | FLUOR_Q    | Fluorene q                      |                                  | 479         | Fluorene q                      |
|          | FLUOR_D    | Fluorene det. lim.              |                                  | 480         | Fluorene det. lim.              |
|          |            | Fluorene (C1) ppb               |                                  |             | Fluorene (C1) ppb               |
|          |            | Fluorene (C1) q                 |                                  |             | Fluorene (C1) q                 |
|          |            | Fluorene (C1) det. lim.         |                                  |             | Fluorene (C1) det. lim.         |
|          |            | Fluorene (C2) ppb               |                                  |             | Fluorene (C2) ppb               |
|          |            | Fluorene (C2) q                 |                                  |             | Fluorene (C2) q                 |
|          |            | Fluorene (C2) det. lim.         |                                  |             | Fluorene (C2) det. lim.         |
|          | PANTH      | Phenanthrene ppb                |                                  | 481         | Phenanthrene ppb                |
|          | PANTH_Q    | Phenanthrene qualifier          |                                  | 482         | Phenanthrene q                  |
|          | PANTH_D    | Phenanthrene det. lim.          |                                  | 483         | Phenanthrene det. lim.          |
|          |            | 1-Methyl-Phenanthrene ppb       |                                  | 484         | 1-Methyl-Phenanthrene ppb       |
|          |            | 1-Methyl-Phenanthrene q         |                                  | 485         | 1-Methyl-Phenanthrene q         |
|          |            | 1-Methyl-Phenanthrene det. lim. |                                  | 486         | 1-Methyl-Phenanthrene det. lim. |

| Category | Field Name | VIMS Brief Description            | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description            |
|----------|------------|-----------------------------------|---------------------------------------|-------------|-----------------------------------|
|          |            | Phenanthrene* (C2)                |                                       |             | Phenanthrene* (C2)                |
|          |            | Phenanthrene* (C2) q              |                                       |             | Phenanthrene* (C2) q              |
|          |            | Phenanthrene* (C2) dl             |                                       |             | Phenanthrene* (C2) dl             |
|          |            | Phenanthrene* (C3)                |                                       |             | Phenanthrene* (C3)                |
|          |            | Phenanthrene* (C3) q              |                                       |             | Phenanthrene* (C3) q              |
|          |            | Phenanthrene* (C3) dl             |                                       |             | Phenanthrene* (C3) dl             |
|          |            | Phenanthrene* (C4)                |                                       |             | Phenanthrene* (C4)                |
|          |            | Phenanthrene* (C4) q              |                                       |             | Phenanthrene* (C4) q              |
|          |            | Phenanthrene* (C4) dl             |                                       |             | Phenanthrene* (C4) dl             |
|          | ANTH       | Anthracene ppb                    |                                       | 487         | Anthracene ppb                    |
|          | ANTH_Q     | Anthracene qualifier              |                                       | 488         | Anthracene q                      |
|          | ANTH_D     | Anthracene det. lim.              |                                       | 489         | Anthracene det. lim.              |
|          | BAANTH     | Benz(a) anthracene ppb            |                                       | 490         | Benz(a) anthracene ppb            |
|          | BAANTH_Q   | Benz(a) anthracene qualifier      |                                       | 491         | Benz(a) anthracene q              |
|          | BAANTH_D   | Benz (a) anthracene det. lim.     |                                       | 492         | Benz (a) anthracene det. lim.     |
|          |            | dibenz (a,h) anthracene ppb       |                                       | 493         | dibenz (a,h) anthracene ppb       |
|          |            | dibenz (a,h) anthracene q         |                                       | 494         | dibenz (a,h) anthracene q         |
|          |            | dibenz (a,h) anthracene det. lim. |                                       | 495         | dibenz (a,h) anthracene det. lim. |
|          | PYREN      | Pyrene ppb                        |                                       | 496         | Pyrene ppb                        |
|          | PYREN_Q    | Pyrene q                          |                                       | 497         | Pyrene q                          |
|          | PYREN_D    | Pyrene det. lim.                  |                                       | 498         | Pyrene det. lim.                  |
|          |            | Pyrene (C1) ppb                   |                                       |             | Pyrene (C1) ppb                   |
|          |            | Pyrene(C1) q                      |                                       |             | Pyrene(C1) q                      |
|          |            | Pyrene (C1) det. lim.             |                                       |             | Pyrene (C1) det. lim.             |
|          | BAPYRE     | Benzo (a) pyrene ppb              |                                       | 499         | Benzo (a) pyrene ppb              |
|          | BAPYRE_Q   | Benzo (a) pyrene qualifier        |                                       | 500         | Benzo (a) pyrene q                |
|          | BAPYRE_D   | Benzo (a) pyrene det. lim.        |                                       | 501         | Benzo (a) pyrene det. lim.        |
|          | BEPYRE     | Benzo (e) pyrene ppb              |                                       | 502         | Benzo (e) pyrene ppb              |
|          | BEPYRE_Q   | Benzo (e) pyrene qualifier        |                                       | 503         | Benzo (e) pyrene q                |
|          | BEPYRE_D   | Benzo (e) pyrene det. lim.        |                                       | 504         | Benzo (e) pyrene det. lim.        |
|          | INDPYR     | Indeno(123)Pyrene ppb             |                                       | 505         | Indeno(123)Pyrene ppb             |
|          | INDPYR_Q   | Indeno(123)Pyrene qualifier       |                                       | 506         | Indeno(123)Pyrene q               |

| Category | Field Name | VIMS Brief Description           | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description          |
|----------|------------|----------------------------------|---------------------------------------|-------------|---------------------------------|
|          | INDPYR_D   | Indeno(123)Pyrene det. lim.      |                                       | 507         | Indeno(123)Pyrene det. lim.     |
|          |            | 3,4 Benzo pyrene ppb             |                                       | 508         | 3,4 Benzo pyrene ppb            |
|          |            | 3,4 Benzo pyrene q               |                                       | 509         | 3,4 Benzo pyrene q              |
|          |            | 3,4 Benzo pyrene dl              |                                       | 510         | 3,4 Benzo pyrene dl             |
|          | FANTH      | Fluoranthene ppb                 |                                       | 511         | Fluoranthene ppb                |
|          | FANTH_Q    | Fluoranthene qualifier           |                                       | 512         | Fluoranthene q                  |
|          | FANTH_D    | Fluoranthene det. lim.           |                                       | 513         | Fluoranthene det. lim.          |
|          |            | Fluoranthene (C1)                |                                       |             | Fluoranthene (C1)               |
|          |            | Fluoranthene (C1) q              |                                       |             | Fluoranthene (C1) q             |
|          |            | Fluoranthene (C1) det. lim.      |                                       |             | Fluoranthene (C1) det. lim.     |
|          |            | Benzo (b) floranthene ppb        |                                       | 514         | Benzo (b) floranthene ppb       |
|          |            | Benzo (b) floranthene q          |                                       | 515         | Benzo (b) floranthene q         |
|          |            | Benzo (b) floranthene det. lim.  |                                       | 516         | Benzo (b) floranthene det. lim. |
|          | BKFLAN     | Benzo (k) floranthene ppb        |                                       | 517         | Benzo (k) floranthene ppb       |
|          | BKFLAN_Q   | Benzo (k) floranthene qualifier  |                                       | 518         | Benzo (k) floranthene q         |
|          | BKFLAN_D   | Benzo (k) floranthene det. lim.  |                                       | 519         | Benzo (k) floranthene det. lim. |
|          | CHRYSE     | Chrysene ppb                     |                                       | 520         | Chrysene ppb                    |
|          | CHRYSE_Q   | Chrysene qualifier               |                                       | 521         | Chrysene q                      |
|          | CHRYSE_D   | Chrysene det. lim.               |                                       | 522         | Chrysene det. lim.              |
|          | PERYLE     | Perylene ppb                     |                                       | 523         | Perylene ppb                    |
|          | PERYLE_Q   | Perylene qualifier               |                                       | 524         | Perylene q                      |
|          | PERYLE_D   | Perylene det. lim.               |                                       | 525         | Perylene det. lim.              |
|          |            | Benzo (g) Perylene ppb           |                                       | 526         | Benzo (g) Perylene ppb          |
|          |            | Benzo (g) Perylene q             |                                       | 527         | Benzo (g) Perylene q            |
|          |            | Benzo (g) Perylene det. lim.     |                                       | 528         | Benzo (g) Perylene det. lim.    |
|          | BGHIPE     | Benzo (g,h,i) Perylene ppb       |                                       | 529         | Benzo (g,h,i) Perylene ppb      |
|          | BGHIPE_Q   | Benzo (g,h,i) Perylene qualifier |                                       | 530         | Benzo (g,h,i) Perylene q        |

| Category | Field Name | VIMS                                    |                                  | USGS   |   |
|----------|------------|---|----------------------------------|--------|---|
|          |            | Brief Description                       | Expanded Description (as needed) | Number | Brief Description                       |
|          | BGHIPE_D   | Benzo (g,h,i) Perylene det. lim.        |                                  | 531    | Benzo (g,h,i) Perylene det. lim.        |
|          |            | monobutyl tin ppb                       |                                  |        | monobutyl tin ppb                       |
|          |            | monobutyl tin q                         |                                  |        | monobutyl tin q                         |
|          |            | monobutyl tin det. lim.                 |                                  |        | monobutyl tin det. lim.                 |
|          |            | Dibutyl tin ppb                         |                                  | 532    | Dibutyl tin ppb                         |
|          |            | Dibutyl tin q                           |                                  | 533    | Dibutyl tin q                           |
|          |            | Dibutyl tin det. lim.                   |                                  | 534    | Dibutyl tin det. lim.                   |
|          |            | Tributyl tin ppb                        |                                  | 535    | Tributyl tin ppb                        |
|          |            | Tributyl tin q                          |                                  | 536    | Tributyl tin q                          |
|          |            | Tributyl tin det. lim.                  |                                  | 537    | Tributyl tin det. lim.                  |
|          |            | Tetrabutyl tin ppb                      |                                  |        | Tetrabutyl tin ppb                      |
|          |            | Tetrabutyl tin q                        |                                  |        | Tetrabutyl tin q                        |
|          |            | Tetrabutyl tin det. lim.                |                                  |        | Tetrabutyl tin det. lim.                |
|          |            | Endosulfan II ppb                       |                                  | 538    | Endosulfan II ppb                       |
|          |            | Endosulfan II q                         |                                  | 539    | Endosulfan II q                         |
|          |            | Endosulfan II det. lim.                 |                                  | 540    | Endosulfan II det. lim.                 |
|          |            | Endosulfan Sulfate ppb                  |                                  | 541    | Endosulfan Sulfate ppb                  |
|          |            | Endosulfan Sulfate q                    |                                  | 542    | Endosulfan Sulfate q                    |
|          |            | Endosulfan Sulfate det. lim.            |                                  | 543    | Endosulfan Sulfate det. lim.            |
|          |            | Endosulfan I ppb                        |                                  | 544    | Endosulfan I ppb                        |
|          |            | Endosulfan I q                          |                                  | 545    | Endosulfan I q                          |
|          |            | Endosulfan I det. lim.                  |                                  | 546    | Endosulfan I det. lim.                  |
|          |            |   |                                  | ::     |   |
|          |            |   |                                  | GSCE-S |   |
|          |            |   |                                  | IZ     |   |
|          |            | Local Row or ID Number                  |                                  | 1      | Local Row or ID Number                  |
|          |            | Cover-ID Unique Sample Identifier (US#) |                                  | 2      | Cover-ID Unique Sample Identifier (US#) |

Table of  
Sediment Grain  
Size and Other  
Physical  
Properties

| Category   | Field Name                  | VIMS Brief Description                                | VIMS Expanded Description (as needed) | USGS Number                 | USGS Brief Description                                |
|------------|-----------------------------|---|---------------------------------------|-----------------------------|---|
| Analytical |                             | Source of Information, Reference, or Reference ID No. |                                       | 24                          | Source of Information, Reference, or Reference ID No. |
|            |                             | Laboratory ID number (size)                           |                                       | 548                         | Laboratory ID number (size)                           |
|            |                             | Laboratory's sample ID number (size)                  |                                       | 549                         | Laboratory's sample ID number (size)                  |
|            |                             | Replicate no ____ of n                                |                                       | 552                         | Replicate no ____ of n                                |
|            |                             | Total replicates n                                    |                                       | 553                         | Total replicates n                                    |
|            |                             | Sample weight   |                                       | 557                         | Sample weight   |
|            |                             | Sample weight units                                   |                                       | 558                         | Sample weight units                                   |
|            |                             | Physical description of sample                        |                                       | 559                         | Physical description of sample                        |
|            |                             | Dominant soil or sediment class                       |                                       | 560                         | Dominant soil or sediment class                       |
|            |                             | Classification system used                            |                                       | 561                         | Classification system used                            |
|            |                             | Grain Size Curve-Med                                  |                                       | 562                         | Grain Size Curve-Med                                  |
|            |                             | Grain Size Curve-Q1                                   |                                       | 563                         | Grain Size Curve-Q1                                   |
|            |                             | Grain Size Curve-Q2                                   |                                       | 564                         | Grain Size Curve-Q2                                   |
|            |                             | Grain Size Curve-Q3                                   |                                       | 565                         | Grain Size Curve-Q3                                   |
|            | Grain Size Curve-%Curve [?] |   | 566                                   | Grain Size Curve-%Curve [?] |   |
|            | Specific Gravity g/cm3      |   | 47                                    | Specific Gravity g/cm3      |   |
| 567        | GRAVEL                      | Gravel (%DW)  |                                       | 48                          | Gravel (%DW)  |
| 568        | SAND                        | Sand (%DW)  |                                       | 49                          | Sand (%DW)  |
| 569        | SILT                        | Silt (%Dw)  |                                       | 50                          | Silt (%Dw)  |
| 570        |                             |   |                                       |                             |   |

| Category | Field Name | VIMS Brief Description | VIMS Expanded Description (as needed)          | USGS Number | USGS Brief Description |
|----------|------------|------------------------|--|-------------|------------------------|
|          | CLAY       | Clay (%Dw)             |  | 51          | Clay (%Dw)             |
| 571      |            | Total Fines (%Dw)      |  | 572         | Total Fines (%Dw)      |
|          | MEAN_FG    | Mean                   | Mean grain size, Folk's graphic, phi units     | 573         | Mean                   |
|          | MEDIANF50  | Median                 | Median grain size, Folk's, phi 50th percentile | 574         | Median                 |
|          | SORT_FGI   | Sorting                | Folk inclusive graphic std-sorting coefficient | 575         | Sorting                |
|          | SKEW_FGI   | Skewness               | Folk inclusive graphic skewness                | 576         | Skewness               |
|          | KURT_FGI   | Kurtosis               | Folk Inclusive graphic kurtosis                | 577         | Kurtosis               |
|          |            | Mode 1 (phi units)     |  | 578         | Mode 1 (phi units)     |
|          |            | Mode 1 strength        |  | 579         | Mode 1 strength        |
|          |            | Mode 2 (phi units)     |  | 580         | Mode 2 (phi units)     |
|          |            | Mode 2 strength        |  | 581         | Mode 2 strength        |
|          |            | Mode 3 (phi units)     |  | 582         | Mode 3 (phi units)     |
|          |            | Mode 3 strength        |  | 583         | Mode 3 strength        |
|          |            | No. of modes           |  | 584         | No. of modes           |
|          |            | From phi               |  | 585         | From phi               |
|          |            | To phi                 |  | 586         | To phi                 |
|          |            | Phi step               |  | 587         | Phi step               |
|          |            | Phi -11                |  | 588         | Phi -11                |
|          |            | Phi -10                |  | 589         | Phi -10                |
|          |            | Phi -9                 |  | 590         | Phi -9                 |
|          |            | Phi -8                 |  | 591         | Phi -8                 |
|          |            | Phi -7                 |  | 592         | Phi -7                 |
|          |            | Phi <-6                |  | 593         | Phi <-6                |
|          |            | Phi -6                 |  | 594         | Phi -6                 |
|          |            | Phi -5                 |  | 595         | Phi -5                 |
|          |            | Phi -4                 |  | 596         | Phi -4                 |
|          |            | Phi -3                 |  | 597         | Phi -3                 |

| Category | Field Name | VIMS Brief Description | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description |
|----------|------------|------------------------|---------------------------------------|-------------|------------------------|
|          |            | Phi -2                 |                                       | 598         | Phi -2                 |
|          |            | Phi <-1                |                                       | 599         | Phi <-1                |
|          |            | Phi -1                 |                                       | 600         | Phi -1                 |
|          |            | Phi 0                  |                                       | 601         | Phi 0                  |
|          |            | Phi 1                  |                                       | 602         | Phi 1                  |
|          |            | Phi 2                  |                                       | 603         | Phi 2                  |
|          |            | Phi 3                  |                                       | 604         | Phi 3                  |
|          |            | Phi 4                  |                                       | 605         | Phi 4                  |
|          |            | Phi 5                  |                                       | 606         | Phi 5                  |
|          |            | Phi 6                  |                                       | 607         | Phi 6                  |
|          |            | Phi 7                  |                                       | 608         | Phi 7                  |
|          |            | Phi 8                  |                                       | 609         | Phi 8                  |
|          |            | Phi 9                  |                                       | 610         | Phi 9                  |
|          |            | Phi 10                 |                                       | 611         | Phi 10                 |
|          |            | Phi 11                 |                                       | 612         | Phi 11                 |
|          |            | Phi >10                |                                       | 613         | Phi >10                |
|          |            | Phi 12                 |                                       | 614         | Phi 12                 |
|          |            | Phi 13                 |                                       | 615         | Phi 13                 |
|          |            | Phi 14                 |                                       | 616         | Phi 14                 |
|          |            | Phi 15                 |                                       | 617         | Phi 15                 |
|          |            | Phi 16                 |                                       | 618         | Phi 16                 |
|          |            | Phi 17                 |                                       | 619         | Phi 17                 |
|          |            | Phi 18                 |                                       | 620         | Phi 18                 |
|          |            | Phi 19                 |                                       | 621         | Phi 19                 |
|          |            | Phi 20                 |                                       | 622         | Phi 20                 |
|          |            | Phi 21                 |                                       | 623         | Phi 21                 |
|          |            | HPhi <=-3.0            |                                       | 624         | HPhi <=-3.0            |
|          |            | HPhi -2.5              |                                       | 625         | HPhi -2.5              |
|          |            | HPhi -2.0              |                                       | 626         | HPhi -2.0              |
|          |            | HPhi -1.5              |                                       | 627         | HPhi -1.5              |
|          |            | HPhi -1.0              |                                       | 628         | HPhi -1.0              |
|          |            | HPhi -0.5              |                                       | 629         | HPhi -0.5              |
|          |            | HPhi 0.0               |                                       | 630         | HPhi 0.0               |
|          |            | HPhi 0.5               |                                       | 631         | HPhi 0.5               |
|          |            | HPhi 1.0               |                                       | 632         | HPhi 1.0               |
|          |            | HPhi 1.5               |                                       | 633         | HPhi 1.5               |
|          |            | HPhi 2.0               |                                       | 634         | HPhi 2.0               |
|          |            | HPhi 2.5               |                                       | 635         | HPhi 2.5               |

| Category | Field Name | VIMS Brief Description | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description |
|----------|------------|------------------------|---------------------------------------|-------------|------------------------|
|          |            | HPhi 3.0               |                                       | 636         | HPhi 3.0               |
|          |            | HPhi 3.5               |                                       | 637         | HPhi 3.5               |
|          |            | HPhi 4.0               |                                       | 638         | HPhi 4.0               |
|          |            | HPhi 4.5               |                                       | 639         | HPhi 4.5               |
|          |            | HPhi 5.0               |                                       | 640         | HPhi 5.0               |
|          |            | HPhi 6.0               |                                       | 641         | HPhi 6.0               |
|          |            | HPhi 7.0               |                                       | 642         | HPhi 7.0               |
|          |            | HPhi 8.0               |                                       | 643         | HPhi 8.0               |
|          |            | HPhi 9.0               |                                       | 644         | HPhi 9.0               |
|          |            | HPhi 10.0              |                                       | 645         | HPhi 10.0              |
|          |            | HPhi 11.0              |                                       | 646         | HPhi 11.0              |
|          |            | HPhi >10               |                                       | 647         | HPhi >10               |
|          |            | QPhi <=-2.50           |                                       | 648         | QPhi <=-2.50           |
|          |            | QPhi -2.25             |                                       | 649         | QPhi -2.25             |
|          |            | QPhi -2.00             |                                       | 650         | QPhi -2.00             |
|          |            | QPhi -1.75             |                                       | 651         | QPhi -1.75             |
|          |            | QPhi -1.50             |                                       | 652         | QPhi -1.50             |
|          |            | QPhi -1.25             |                                       | 653         | QPhi -1.25             |
|          |            | QPhi -1.00             |                                       | 654         | QPhi -1.00             |
|          |            | QPhi -0.75             |                                       | 655         | QPhi -0.75             |
|          |            | QPhi -0.50             |                                       | 656         | QPhi -0.50             |
|          |            | QPhi -0.25             |                                       | 657         | QPhi -0.25             |
|          |            | QPhi 0.00              |                                       | 658         | QPhi 0.00              |
|          |            | QPhi 0.25              |                                       | 659         | QPhi 0.25              |
|          |            | QPhi 0.50              |                                       | 660         | QPhi 0.50              |
|          |            | QPhi 0.75              |                                       | 661         | QPhi 0.75              |
|          |            | QPhi 1.00              |                                       | 662         | QPhi 1.00              |
|          |            | QPhi 1.25              |                                       | 663         | QPhi 1.25              |
|          |            | QPhi 1.50              |                                       | 664         | QPhi 1.50              |
|          |            | QPhi 1.75              |                                       | 665         | QPhi 1.75              |
|          |            | QPhi 2.00              |                                       | 666         | QPhi 2.00              |
|          |            | QPhi 2.25              |                                       | 667         | QPhi 2.25              |
|          |            | QPhi 2.50              |                                       | 668         | QPhi 2.50              |
|          |            | QPhi 2.75              |                                       | 669         | QPhi 2.75              |
|          |            | QPhi 3.00              |                                       | 670         | QPhi 3.00              |
|          |            | QPhi 3.25              |                                       | 671         | QPhi 3.25              |
|          |            | QPhi 3.50              |                                       | 672         | QPhi 3.50              |
|          |            | QPhi 3.75              |                                       | 673         | QPhi 3.75              |

| Category | Field Name | VIMS Brief Description | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description |
|----------|------------|------------------------|---------------------------------------|-------------|------------------------|
|          |            | QPhi 4.00              |                                       | 674         | QPhi 4.00              |
|          |            | QPhi 4.25              |                                       | 675         | QPhi 4.25              |
|          |            | QPhi 4.50              |                                       | 676         | QPhi 4.50              |
|          |            | QPhi 4.75              |                                       | 677         | QPhi 4.75              |
|          |            | QPhi 5.00              |                                       | 678         | QPhi 5.00              |
|          |            | QPhi 6.00              |                                       | 679         | QPhi 6.00              |
|          |            | QPhi 7.00              |                                       | 680         | QPhi 7.00              |
|          |            | QPhi 8.00              |                                       | 681         | QPhi 8.00              |
|          |            | QPhi 9.00              |                                       | 682         | QPhi 9.00              |
|          |            | QPhi 10.00             |                                       | 683         | QPhi 10.00             |
|          |            | QPhi 11.00             |                                       | 684         | QPhi 11.00             |
|          |            | QPhi >10               |                                       | 685         | QPhi >10               |
|          |            | Class 1                |                                       | 686         | Class 1                |
|          |            | Class 1 %              |                                       | 687         | Class 1 %              |
|          |            | Class 2                |                                       | 688         | Class 2                |
|          |            | Class 2 %              |                                       | 689         | Class 2 %              |
|          |            | Class 3                |                                       | 690         | Class 3                |
|          |            | Class 3 %              |                                       | 691         | Class 3 %              |
|          |            | Class 4                |                                       | 692         | Class 4                |
|          |            | Class 4 %              |                                       | 693         | Class 4 %              |
|          |            | Class 5                |                                       | 694         | Class 5                |
|          |            | Class 5 %              |                                       | 695         | Class 5 %              |
|          |            | Class 6                |                                       | 696         | Class 6                |
|          |            | Class 6 %              |                                       | 697         | Class 6 %              |
|          |            | Class 7                |                                       | 698         | Class 7                |
|          |            | Class 7 %              |                                       | 699         | Class 7 %              |
|          |            | Class 8                |                                       | 700         | Class 8                |
|          |            | Class 8 %              |                                       | 701         | Class 8 %              |
|          |            | Class 9                |                                       | 702         | Class 9                |
|          |            | Class 9 %              |                                       | 703         | Class 9 %              |
|          |            | Class 10               |                                       | 704         | Class 10               |
|          |            | Class 10 %             |                                       | 705         | Class 10 %             |
|          |            | Class 11               |                                       | 706         | Class 11               |
|          |            | Class 11 %             |                                       | 707         | Class 11 %             |
|          |            | Class 12               |                                       | 708         | Class 12               |
|          |            | Class 12 %             |                                       | 709         | Class 12 %             |
|          |            | Class 13               |                                       | 710         | Class 13               |
|          |            | Class 13 %             |                                       | 711         | Class 13 %             |

| Category            | Field Name | VIMS Brief Description                                | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                                |
|---------------------|------------|---|---------------------------------------|-------------|---|
|                     |            | Class 14  |                                       | 712         | Class 14  |
|                     |            | Class 14 %  |                                       | 713         | Class 14 %  |
|                     |            | Class 15  |                                       | 714         | Class 15  |
|                     |            | Class 15 %  |                                       | 715         | Class 15 %  |
|                     |            | Class 16  |                                       | 716         | Class 16  |
|                     |            | Class 16 %  |                                       | 717         | Class 16 %  |
|                     |            | Class 17  |                                       | 718         | Class 17  |
|                     |            | Class 17 %  |                                       | 719         | Class 17 %  |
|                     |            | Class 18  |                                       | 720         | Class 18  |
|                     |            | Class 18 %  |                                       | 721         | Class 18 %  |
|                     |            | Class 19  |                                       | 722         | Class 19  |
|                     |            | Class 19 %  |                                       | 723         | Class 19 %  |
|                     |            | Class 20  |                                       | 724         | Class 20  |
|                     |            | Class 20 %  |                                       | 725         | Class 20 %  |
|                     |            | Class 21  |                                       | 726         | Class 21  |
|                     |            | Class 21 %  |                                       | 727         | Class 21 %  |
|                     |            | Class 22  |                                       | 728         | Class 22  |
|                     |            | Class 22 %  |                                       | 729         | Class 22 %  |
|                     |            | Class 23  |                                       | 730         | Class 23  |
|                     |            | Class 23 %  |                                       | 731         | Class 23 %  |
|                     |            | Class 24  |                                       | 732         | Class 24  |
|                     |            | Class 24 %  |                                       | 733         | Class 24 %  |
|                     |            | Class 25  |                                       | 734         | Class 25  |
|                     |            | Class 25 %  |                                       | 735         | Class 25 %  |
|                     |            |   |                                       | ::          |   |
| Table of References |            |   |                                       | GSCE-R      |   |
|                     |            | Local Row or ID Number                                |                                       | EF          |   |
|                     |            | Cover-Id Unique Sample Identifier (US#)               |                                       | 1           | Local Row or ID Number                                |
|                     |            | Source of Information, Reference, or Reference ID No. |                                       | 2           | Cover-Id Unique Sample Identifier (US#)               |
|                     |            |   |                                       | 24          | Source of Information, Reference, or Reference ID No. |
| Reference           |            | Author(s)   |                                       | 736         | Author(s)   |
|                     |            | year  |                                       | 737         | year  |

| Category       | Field Name | VIMS Brief Description                            | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description                            |
|----------------|------------|---|---------------------------------------|-------------|---|
|                |            | Title   |                                       | 738         | Title   |
|                |            | Journal or document source                        |                                       | 739         | Journal or document source                        |
| Organizational |            | List of agencies acronym for agencies             |                                       | 740         | List of agencies acronym for agencies             |
|                |            | List of laboratories acronym for laboratories     |                                       | 741         | List of laboratories acronym for laboratories     |
|                |            | List of Location Names                            |                                       | 742         | List of Location Names                            |
|                |            | Abreviation for location names                    |                                       | 743         | Abreviation for location names                    |
|                |            | List of sampling devices                          |                                       | 744         | List of sampling devices                          |
|                |            | Abreviation for sampling devices                  |                                       | 745         | Abreviation for sampling devices                  |
|                |            | List of units                                     |                                       | 746         | List of units                                     |
|                |            | Abreviation for units                             |                                       | 747         | Abreviation for units                             |
|                |            | List of navigational modes                        |                                       | 748         | List of navigational modes                        |
|                |            | Abreviation for navigational modes                |                                       | 749         | Abreviation for navigational modes                |
|                |            | List of journal or reference names                |                                       | 750         | List of journal or reference names                |
|                |            | Abreviation for journal or reference names        |                                       | 751         | Abreviation for journal or reference names        |
|                |            | List of analytical methods                        |                                       | 752         | List of analytical methods                        |
|                |            | Abreviation for analytical methods                |                                       | 753         | Abreviation for analytical methods                |
|                |            | Additional frequently cited items                 |                                       | 754         | Additional frequently cited items                 |
|                |            | Abreviation for additional frequently cited items |                                       | 755         | Abreviation for additional frequently cited items |
|                |            | List of fields added by data entry person         |                                       | 756         | List of fields added by data entry person         |
|                |            |   |                                       | 757         |   |

| Category | Field Name | VIMS Brief Description  | VIMS Expanded Description (as needed)  | USGS Number | USGS Brief Description    |
|----------|------------|---|--|-------------|---------------------------|
|          |            | Placement of added fields                                       |  |             | Placement of added fields |
|          | CBP_SEG    | Ches. Bay Program code for section of Bay (same as CBP SEGMENT) | The code indicating the geographic segment of the Chesapeake Bay, as defined by the Chesapeake Bay Program. Identical to C.B.P. field named SEGMENT. |             |                           |
|          | ZR         | Zr (zirconium) ug/g, in dry sediment                            |  |             |                           |
|          | YB         | Yb (ytterbium) ug/g, in dry sediment                            |  |             |                           |
|          | AGE_YR     | Year of deposition of sediment by 210Pb dating                  |  |             |                           |
|          | GA         | Ga (gallium) ug/g, in dry sediment                              |  |             |                           |
|          | LA         | La (lanthanum) ug/g, in dry sediment                            |  |             |                           |
|          | DY         | Dy (dysprosium) ug/g, in dry sediment                           |  |             |                           |
|          | CE         | Ce (cerium) ug/g, in dry sediment                               |  |             |                           |
|          | PYRO       | pyrogenic organics in sediment, ug/kg                           |  |             |                           |
|          | NON_PYRO   | non-pyrogenic organics in sediment, ug/kg                       |  |             |                           |
|          | DBTHIO_O   | dibenzothiophene value in original units, if not ppb            |  |             |                           |
|          | DBTHIO_U   | dibenzothiophene original units                                 |  |             |                           |
|          | ANTH_O     | anthracene value in original units, if not ppb                  |  |             |                           |
|          | ANTH_U     | anthracene original units                                       |  |             |                           |
|          | BIPHEN_O   | biphenyl value in original units, if not ppb                    |  |             |                           |

| Category | Field Name | VIMS Brief Description                                     | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description |
|----------|------------|--|---------------------------------------|-------------|------------------------|
|          | BIPHEN_U   | biphenyl original units                                    |                                       |             |                        |
|          | PANTH_O    | phenanthrene value in original units, if not ppb           |                                       |             |                        |
|          | PANTH_U    | phenanthrene original units                                |                                       |             |                        |
|          | FLUOR_O    | fluorene value in original units, if not ppb               |                                       |             |                        |
|          | FLUOR_U    | fluorene original units                                    |                                       |             |                        |
|          | PERYLE_O   | Perylene value in original units, if not ppb               |                                       |             |                        |
|          | PERYLE_U   | Perylene original units                                    |                                       |             |                        |
|          | INDPYR_O   | Indeno(123)Pyrene value in original units, if not ppb      |                                       |             |                        |
|          | FANTH_O    | Fluoranthene value in original units, if not ppb           |                                       |             |                        |
|          | FANTH_U    | Fluoranthene original units                                |                                       |             |                        |
|          | PYREN_O    | Pyrene value in original units, if not ppb                 |                                       |             |                        |
|          | PYREN_U    | Pyrene original units                                      |                                       |             |                        |
|          | BAPYRE_O   | Benzo (a) pyrene value in original units, if not ppb       |                                       |             |                        |
|          | BAPYRE_U   | Benzo (a) pyrene original units                            |                                       |             |                        |
|          | BEPYRE_O   | Benzo (e) pyrene value in original units, if not ppb       |                                       |             |                        |
|          | BEPYRE_U   | Benzo (e) pyrene original units                            |                                       |             |                        |
|          | BAANTH_O   | Benz (a) anthracene value in original units, if not ppb    |                                       |             |                        |
|          | BAANTH_U   | Benz (a) anthracene original units                         |                                       |             |                        |
|          | CHRYSE_O   | Chrysene value in original units, if not ppb               |                                       |             |                        |
|          | CHRYSE_U   | Chrysene original units                                    |                                       |             |                        |
|          | BKFLAN_O   | Benzo (k) fluoranthene value in original units, if not ppb |                                       |             |                        |
|          | BKFLAN_U   | Benzo (k) fluoranthene original units                      |                                       |             |                        |
|          | INDPYR_U   | Indeno(123)Pyrene original units                           |                                       |             |                        |

| Category | Field Name | VIMS Brief Description                                     | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description |
|----------|------------|--|---------------------------------------|-------------|------------------------|
|          | BAFLUR     | Benzo (a) fluorene, ppb                                    |                                       |             |                        |
|          | BAFLUR_O   | Benzo (a) fluorene value in original units, if not ppb     |                                       |             |                        |
|          | BAFLUR_U   | Benzo (a) fluorene original units                          |                                       |             |                        |
|          | BAFLUR_Q   | Benzo (a) fluorene qualifier                               |                                       |             |                        |
|          | BAFLUR_D   | Benzo (a) fluorene detection limit                         |                                       |             |                        |
|          | BGHIPE_O   | Benzo (g,h,i) perylene value in original units, if not ppb |                                       |             |                        |
|          | BGHIPE_U   | Benzo (g,h,i) perylene original units                      |                                       |             |                        |
|          | TOT_ORG    | Total resolvable organics (PYRO & non-pyro)                |                                       |             |                        |
|          | NH4        | Ammonium, umoles/kg  |                                       |             |                        |
|          | NH4_O      | Ammonium, value in original units if not umoles/kg         |                                       |             |                        |
|          | NH4_U      | Ammonium original units                                    |                                       |             |                        |
|          | NO2_O      | Nitrite (NO2) value in original units, if not umoles/kg    |                                       |             |                        |
|          | NO2_U      | Nitrite (NO2) original units, if not umoles/kg             |                                       |             |                        |
|          | NO3_O      | Nitrate (NO3) value in original units, if not umoles/kg    |                                       |             |                        |
|          | NO3_U      | Nitrate (NO3) original units, if not umoles/kg             |                                       |             |                        |
|          | PO4        | Phosphate (PO4) in umoles/kg                               |                                       |             |                        |
|          | PO4_O      | Phosphate (PO4) original value, if not in umoles/kg        |                                       |             |                        |
|          | PO4_U      | Phosphate (PO4) original units, if not umoles/kg           |                                       |             |                        |
|          | LORANTDX   | Loran-C x lane coordinate                                  |                                       |             |                        |
|          | LORANTDY   | Loran-C y lane coordinate                                  |                                       |             |                        |
|          | RAYD_GRN   | Raydist green lane coordinate                              |                                       |             |                        |
|          | RAYD_RED   | Raydist red lane coordinate                                |                                       |             |                        |

| Category | Field    | VIMS   | VIMS  | USGS   | USGS              |
|----------|----------|--|---|--------|-------------------|
|          | Name     | Brief Description  | Expanded Description<br>(as needed)   | Number | Brief Description |
|          | MEDIANUP | Median grain size, phi units, method of determination unknown. | Median grain size, in phi units, where method of determination is unknown (not specified by data source). |        |                   |
|          | MEAN_UP  | Mean grain size, phi units, method of determination unknown.   | Mean grain size, in phi units, where method of determination is unknown (not specified by data source).   |        |                   |
|          | MUD      | Mud, weight percent of dry sample.                             | Mud, weight percent of dry sample. Use this field also for data labelled "silt + clay".                   |        |                   |
|          | AS_O     | As (arsenic) value in original units, if not ug/g              |   |        |                   |
|          | AS_U     | As (arsenic) original units, if not ug/g.                      |   |        |                   |
|          | CD_O     | Cd (cadmium) value in original units, if not ug/g.             |   |        |                   |
|          | CD_U     | Cd (cadmium) original units, if not ug/g.                      |   |        |                   |
|          | HG_O     | Hg (mercury) value in original units, if not ug/g.             |   |        |                   |
|          | HG_U     | Hg (mercury) original units, if not ug/g.                      |   |        |                   |
|          | PB_O     | Pb (lead) value in original units, if not ug/g.                |   |        |                   |
|          | PB_U     | Pb (lead) original units, if not ug/g.                         |   |        |                   |
|          | SN_O     | Sn (tin) value in original units, if not ug/g.                 |   |        |                   |
|          | SN_U     | Sn (tin) original units, if not ug/g.                          |   |        |                   |

| Category | Field Name | VIMS Brief Description   | VIMS Expanded Description (as needed)  | USGS Number | USGS Brief Description |
|----------|------------|--|--|-------------|------------------------|
|          | DMPHOL_O   | 2,4-dimethylphenol, value in original units, if not ppb (dry wt.)  |  |             |                        |
|          | DMPHOL_U   | 2,4-dimethylphenol original units, if not ppb.                     |  |             |                        |
|          | DMPHOL     | 2,4-dimethylphenol, ppb, dry weight.                               |  |             |                        |
|          | HEPCL_O    | Heptachlor, value in original units, if not ppb.                   |  |             |                        |
|          | HEPCL_U    | Heptachlor original units, if not ppb.                             |  |             |                        |
|          | HEPCLX_O   | Heptachlor epoxide, value in original units, if not ppb.           |  |             |                        |
|          | HEPCLX_U   | Heptachlor epoxide, original units, if not ppb.                    |  |             |                        |
|          | DIELDR_O   | Dieldrin value in original units, if not ppb.                      |  |             |                        |
|          | DIELDR_U   | Dieldrin original units, if not ppb.                               |  |             |                        |
|          | ENDRIN_O   | Endrin value in original units, if not ppb.                        |  |             |                        |
|          | ENDRIN_U   | Endrin original units, if not ppb.                                 |  |             |                        |
|          | STA_ID     | Station ID code, provided in addition to station or sample number. | This field encountered in data file VDR135. Significance unknown.  |             |                        |
|          | DATE_SAS   | Date in SAS format.  | Date is stored as an integer in SAS format. Integer represents number of days since the "baseline" or reference date for SAS (Jan. 1, 1960). |             |                        |
|          | SAM_FRAC   | Sample of fraction analyzed.                                       | A code representing the fraction of the sample that was analyzed: 0=bulk, 1=fine fraction.   |             |                        |

| Category | Field Name | VIMS Brief Description | VIMS Expanded Description (as needed) | USGS Number | USGS Brief Description |
|----------|------------|------------------------|---------------------------------------|-------------|------------------------|
|          | CWP0000    | Cumulative wt.% at     | 0.00 phi                              |             |                        |
|          | CWP0025    | Cumulative wt.% at     | 0.25 phi                              |             |                        |
|          | CWP0050    | Cumulative wt.% at     | 0.50 phi                              |             |                        |
|          | CWP0075    | Cumulative wt.% at     | 0.75 phi                              |             |                        |
|          | CWP0100    | Cumulative wt.% at     | 1.00 phi                              |             |                        |
|          | CWP0125    | Cumulative wt.% at     | 1.25 phi                              |             |                        |
|          | CWP0150    | Cumulative wt.% at     | 1.50 phi                              |             |                        |
|          | CWP0175    | Cumulative wt.% at     | 1.75 phi                              |             |                        |
|          | CWP0200    | Cumulative wt.% at     | 2.00 phi                              |             |                        |
|          | CWP0225    | Cumulative wt.% at     | 2.25 phi                              |             |                        |
|          | CWP0250    | Cumulative wt.% at     | 2.50 phi                              |             |                        |
|          | CWP0275    | Cumulative wt.% at     | 2.75 phi                              |             |                        |
|          | CWP0300    | Cumulative wt.% at     | 3.00 phi                              |             |                        |
|          | CWP0325    | Cumulative wt.% at     | 3.25 phi                              |             |                        |
|          | CWP0350    | Cumulative wt.% at     | 3.50 phi                              |             |                        |
|          | CWP0375    | Cumulative wt.% at     | 3.75 phi                              |             |                        |
|          | CWP0400    | Cumulative wt.% at     | 4.00 phi                              |             |                        |
|          | CWP0425    | Cumulative wt.% at     | 4.25 phi                              |             |                        |
|          | CWP0450    | Cumulative wt.% at     | 4.50 phi                              |             |                        |
|          | CWP0475    | Cumulative wt.% at     | 4.75 phi                              |             |                        |
|          | CWP0500    | Cumulative wt.% at     | 5.00 phi                              |             |                        |
|          | CWP0600    | Cumulative wt.% at     | 6.00 phi                              |             |                        |
|          | CWP0700    | Cumulative wt.% at     | 7.00 phi                              |             |                        |
|          | CWP0800    | Cumulative wt.% at     | 8.00 phi                              |             |                        |
|          | CWP0900    | Cumulative wt.% at     | 9.00 phi                              |             |                        |
|          | CWP1000    | Cumulative wt.% at     | 10.00 phi                             |             |                        |
|          | CWP1100    | Cumulative wt.% at     | 11.00 phi                             |             |                        |
|          | CWP_0025   | Cumulative wt.% at     | -0.25 phi                             |             |                        |
|          | CWP_0050   | Cumulative wt.% at     | -0.50 phi                             |             |                        |
|          | CWP_0075   | Cumulative wt.% at     | -0.75 phi                             |             |                        |
|          | CWP_0100   | Cumulative wt.% at     | -1.00 phi                             |             |                        |
|          | CWP_0125   | Cumulative wt.% at     | -1.25 phi                             |             |                        |
|          | CWP_0150   | Cumulative wt.% at     | -1.50 phi                             |             |                        |
|          | CWP_0175   | Cumulative wt.% at     | -1.75 phi                             |             |                        |
|          | CWP_0200   | Cumulative wt.% at     | -2.00 phi                             |             |                        |

**APPENDIX 2: HISTORY FILES**

VDR135

\\VIMS DATA HISTORY FILE:

From the Virginia Institute of Marine Science, Gloucester, Virginia.  
This file contains information which supplements the data file listed below.

\\CONTACT: For more information, please contact Gary Anderson.

\\FILE NAME: VDR135.DBF

\\FILE DATE: 04/16/93

\\FILE SIZE: 2,102,784

\\BIBLIOGRAPHY: Reference # VDR 135 (BIBNUM 299)

\\ABSTRACT

\\SAMPLING SUMMARY:

|                               |  |
|-------------------------------|--|
| Data collection type:         | Surface sediment grabs   |
| Number of stations or sites:  | 2168 (each record is believed to represent a separate station) |
| Number of measured variables: | 57   |
| Number of observations:       | 119,773  |

\\NOTES:

- 4/87 > Received data in ASCII format from C.H. Hobbs, III.  
04/07/93 > Converted to dBase format using SAS procedure PROC DBF.  
04/08/93 > Reassigned field names.  
04/15/93 > Converted west longitude to negative values.  
> Reassigned null (missing) values.
- > This file is in DBF format since its size prevents its import to Quattro Pro.  
> Verification of data file against the published report is limited to one table, # 3A (p. 29) containing 8 samples. C.H. Hobbs, III (co-author) confirms that the text specified here matches the data file. (See BIBLIOGRAPHY.)
- > We did not remove the null values in use, but merely replaced them, since dBase lacks the ability to create blank fields. We assume three null values to be in use--16 nines, 999 and 999.875. After comparing the dbf file with a partial printout obtained directly from the SAS file (ie, without converting to dbf format) and with a completely separate file in ASCII format, we feel the value 999.875 is equivalent to 999.0 and represents a missing value.
- Since different nulls occur in the same field, it is possible that there is a reason for the use of two nulls, thus we have replaced them with separate values; 16 nines becomes -9999, and both 999.0 and 999.875 become -999. Note that the value 16 nines appears to be at dBase's numeric limit.
- > The significance of STA\_ID is unknown (contains null values).  
> Phi units are assumed for MEDIAN and MODE.  
> Percent dry weight is assumed for C\_TOTWP and C\_TOTORG.  
> S\_TOTRED is assumed to include elemental sulfur, hydrogen sulfide, and metal sulfides.  
> Methods of determination for KURT and SKEW are unknown.

VDR135 (continued)

> Minimal data assessment was done and uncovered erroneous values for three fields: C\_TOTWP, C\_TOTORG, S\_TOTRED. The mean values for these fields did not match those given in the text, and a spot check of two records against the original data sheets indicated the fields should be a factor of 10 lower. We adjusted these values accordingly, and the recalculated means now agree with the text. In addition, two samples needed further correction--they were originally off by 100 (verified against original data sheets):

Station 127; field C\_TOTORG  
Station 434; field C\_TOTWP

> Values for several statistical variables appear unusual. The following fields contain values which may lie outside accepted ranges; SKEW, SKEW\_MM, KURT, KURT\_MM, KURT, FG. Since data quality assessment is not part of this project phase, no further consideration will be given to this problem at this time.

\\

\\HEADER FIELDS

Key: NAP=NOT APPLICABLE; NAV=NOT AVAILABLE

| USGS # | FIELD NAME | FIELD CONTENTS   |
|--------|------------|--|
| 2      | VDR        | 135  |
| 17     | NAVMODE    | LORAN C  |
| 21     | AGENCY1    | EPA Chesapeake Bay Program   |
| 22     | AGENCY2    | VIMS   |
| 23     | AGENCY3    | NAP  |
| 26     | REGNUM     | NAP  |
| 27     | PROJECT    | Baseline Sediment Studies to Determine<br>Distribution, Physical Properties, Sedimentation<br>Budgets and Rates in the Virginia Portion of the<br>Chesapeake Bay |
| 28     | STATE      | Virginia   |
| 29     | QUAD       |  |
| 30     | LOC_GEN    | Chesapeake Bay, Virginia Portion   |
| 31     | LOC_SPEC   |  |
| 44     | GEAR       | Smith-MacIntyre stainless steel grab sampler   |
| 45     | SAM_TYPE   | grab   |
| 55     | LOC_DISP   | NAP  |
| 56     | ANAL_MET   | N  |
| 57     | ANAL_ORG   | N  |
| 58     | ANAL_GR    | Y  |
| 59     | ANAL_BIO   | N  |
| 60     | BIO_COM    | NAP  |
| 61     | BIO_REF    | NAP  |
| 62     | ANAL_MSC   | Y  |
| 63     | MSC_COM    | Graphic: bathymetric change; sand accumulation.<br>Tabular: sand, silt, clay accumulation; shoreline<br>erosion/accretion (sediment mass)                        |
| 63     | MET_LAB    | NAP  |
| 66     | MET_METH   | NAP  |
| 67     | MET_COM    | NAP  |
| 70     | MET_TDTE   | NAP  |
| 71     | MET_TDAY   | NAP  |
| 72     | MET_TMO    | NAP  |
| 73     | MET_TYR    | NAP  |
| 74     | INO_LAB    | NAP  |
| 77     | INO_METH   | NAP  |
| 78     | INO_COM    | NAP  |

VDR135 (continued)

|     |          |   |
|-----|----------|---|
| 81  | INO_TDTE | NAP   |
| 82  | INO_TDAY | NAP   |
| 83  | INO_TMO  | NAP   |
| 84  | INO_TYR  | NAP   |
| 269 | GOR_LAB  | NAP   |
| 272 | GOR_METH | NAP   |
| 273 | GOR_COM  | NAP   |
| 276 | GOR_TDTE | NAP   |
| 277 | GOR_TDAY | NAP   |
| 278 | GOR_TMO  | NAP   |
| 279 | GOR_TYR  | NAP   |
| 305 | SOR_LAB  | NAP   |
| 308 | SOR_METH | NAP   |
| 309 | SOR_COM  | NAP   |
| 547 | GR_LAB   | VIMS and MD Geological Survey   |
| 550 | GR_METH  | Rapid sediment analyzer, sieving, Coulter counter   |
| 551 | GR_COM   | All samples received the same pre-treatment but analytical methods varied according to sample fraction. See text, p. 21, for details. |
| 554 | GR_TDTE  | NAV   |
| 555 | GR_REQBY | NAV   |
| 556 | GR_ANLBY | NAV   |

//

\\STATISTICS

Unable to provide at this time.

//

VDR165

\\VIMS DATA HISTORY FILE:

From the Virginia Institute of Marine Science, Gloucester, Virginia.  
This file contains information which supplements the data file listed below.

\\CONTACT: For more information, please contact Gary Anderson.

\\FILE NAME: VDR165.WQ1

\\FILE DATE: 04/26/93

\\FILE SIZE: 133,339

\\BIBLIOGRAPHY: Reference # VDR 165 (BIBNUM 398, 275)

\\ABSTRACT

The objective of this study was to establish a system to detect, identify, and quantify toxic organic compounds of significance in the water column, in sediments, and in oyster tissues from the Chesapeake Bay and selected tributaries.

This data set specifically contains organic toxics measured in sediments and whole water samples. The data were obtained on tape. Examination of the published reports failed to locate these data values that are included in this data set. Considerably more data are contained in the published reports than are contained in this file.

\\SAMPLING SUMMARY:

|                              |                               |
|------------------------------|-------------------------------|
| Data collection type:        | Surface sediment grabs, cores |
| Number of stations or sites: | 123                           |
| Number of variables:         | 20                            |
| Number of observations:      | 2159                          |

\\NOTES:

6/90 > Received data in SAS format from CBP Computer Center, EPA Chesapeake Bay Program .

01/23/93 > Converted to dBase format using SAS procedure PROC DBF.

02/02/93 > Further converted to Quattro Pro file.  
> Reassigned field names. Added columns to hold units.  
> Converted west longitude to negative values.  
> Deleted null (missing) values.

04/06/93 > Converted the field DATE\_SAS to DATE\_SAM by using date functions of Quattro Pro. Both fields included in the data set.

> Verification of the data file was attempted with BIBNUM 398 and was unsuccessful. Verification should be attempted with BIBNUM 275. Information presented here is based on BIBNUM 398.

> We assume that  $1 \times 10^{16}$  is used as a null value (to represent missing values) and does not represent actual data.  
> Unit of measure for total resolvable organics is assumed to be  $\mu\text{g}/\text{kg}$ .

## \\HEADER FIELDS

VDR 165  
 NAVMODE Loran C and shore bearing (instrument not stated)  
 AGENCY1 EPA Chesapeake Bay Program  
 AGENCY2 VIMS  
 AGENCY3 NAP  
 REGNUM NAP  
 PROJECT Toxic Organic Compounds in the Sediments of the Chesapeake Bay  
 LOC\_GEN Chesapeake Bay mainstem  
 LOC\_SPEC  
 GEAR 0.1 m<sup>2</sup> stainless steel Smith-MacIntyre grab  
 SAM\_TYPE [YET TO BE RESOLVED--WHAT TO ENTER HERE? CODE TABLE NEEDED?]  
 LOC\_DISP NAP  
 ANAL\_MET N  
 ANAL\_ORG Y  
 ANAL\_GR N [BUT GRAVEL/SAND/SILT/CLAY % PROVIDED--NOTE THIS ELSEWHERE?]  
 ANAL\_BIO Y  
 BIO\_COM  
 BIO\_REF  
 ANAL\_MSC Y  
 ANAL\_COM METALS, SEE VDR163.  
 MET\_LAB NAP  
 MET\_METH NAP  
 MET\_COM NAP  
 INO\_LAB NAP  
 INO\_METH NAP  
 INO\_COM NAP  
 INO\_TDTE NAP  
 INO\_TDAY NAP  
 INO\_TMO NAP  
 INO\_TYR NAP  
 GOR\_LAB NAP  
 GOR\_METH NAP  
 GOR\_COM NAP  
 SOR\_LAB NAP  
 SOR\_METH gel permeation chromatography, HPLC, gas chromatography  
 SOR\_COM  
 GR\_LAB [not stated, VIMS assumed]  
 GR\_METH [not stated]  
 GR\_COM  
 GR\_TDTE  
 GR\_REQBY  
 GR\_ANLBY

\\

## \\STATISTICS

| VARIABLE | # SAMPLES | AVERAGE | MAXIMUM  | MINIMUM | STD DEV |
|----------|-----------|---------|----------|---------|---------|
| DBTHIO_O | 111       | 204.50  | 10422.00 | 0.00    | 1030.58 |
| DBTHIO_U |           |         |          |         |         |
| BIPHEN_O | 89        | 56.99   | 719.00   | 0.00    | 116.89  |
| BIPHEN_U |           |         |          |         |         |
| FLUOR_O  | 102       | 350.22  | 21854.00 | 0.00    | 2206.53 |
| FLUOR_U  |           |         |          |         |         |
| PANTH_O  | 118       | 774.22  | 19370.00 | 2.00    | 2213.15 |
| PANTH_U  |           |         |          |         |         |
| ANTH_O   | 111       | 386.77  | 12158.00 | 0.00    | 1376.83 |

## VDR165 (continued)

|          |     |          |           |        |          |
|----------|-----|----------|-----------|--------|----------|
| ANTH_U   |     |          |           |        |          |
| FANTH_O  | 119 | 1559.91  | 34616.00  | 1.00   | 4034.09  |
| FANTH_U  |     |          |           |        |          |
| PYREN_O  | 119 | 1363.87  | 26377.00  | 1.00   | 3136.95  |
| PYREN_U  |     |          |           |        |          |
| BAFLUR_O | 117 | 465.18   | 9182.00   | 0.00   | 1165.71  |
| BAFLUR_U |     |          |           |        |          |
| BBFLAN_O | 115 | 887.59   | 24756.00  | 0.00   | 2459.28  |
| BBFLAN_U |     |          |           |        |          |
| BAANTH_O | 117 | 541.35   | 9999.00   | 0.00   | 1173.06  |
| BAANTH_U |     |          |           |        |          |
| CHRYSE_O | 118 | 847.36   | 15099.00  | 2.00   | 1797.81  |
| CHRYSE_U |     |          |           |        |          |
| BKFLAN_O | 94  | 1128.04  | 12032.00  | 0.00   | 1901.30  |
| BKFLAN_U |     |          |           |        |          |
| BEPYRE_O | 118 | 567.37   | 11185.00  | 0.00   | 1247.48  |
| BEPYRE_U |     |          |           |        |          |
| BAPYRE_O | 118 | 641.77   | 15581.00  | 1.00   | 1597.57  |
| BAPYRE_U |     |          |           |        |          |
| PERYLE_O | 122 | 441.65   | 10152.00  | 0.00   | 1026.80  |
| PERYLE_U |     |          |           |        |          |
| INDPYR_O | 116 | 324.15   | 10766.00  | 0.00   | 1090.26  |
| INDPYR_U |     |          |           |        |          |
| BGHIPE_O | 118 | 273.73   | 9734.00   | 0.00   | 952.08   |
| BGHIPE_U |     |          |           |        |          |
| TOTR_ORG | 79  | 34136.79 | 333888.00 | 613.00 | 56261.58 |
| PYRO     | 79  | 11518.49 | 91992.00  | 435.00 | 14850.05 |
| NON_PYRO | 79  | 22618.45 | 299872.00 | 110.00 | 44743.42 |

\\

VDR163

\\VIMS DATA HISTORY FILE:

From the Virginia Institute of Marine Science, Gloucester, Virginia.  
This file contains information which supplements the data file listed below.

\\CONTACT: For more information, please contact Gary Anderson.

\\FILE NAME: VDR163.WQ1

\\FILE DATE: 04/26/93

\\FILE SIZE: 164,958

\\BIBLIOGRAPHY: Reference # VDR 163 (BIBNUM 119)

\\ABSTRACT

This study presents the results of analyses of surface samples and cores from the main stem of Chesapeake Bay. For the surface samples, both the fine fraction and the unfractionated sediment were analyzed for Cr, Mn, Fe, Co, Ni, Cu, Zn, Cd, and Pb by atomic absorption spectrometry. For the cores, water content, Pb-210, C, N, Al, Si, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, and Zr were determined at various depths. Alpha spectrometry was used for Pb-210, and DC plasma emission spectrometry was used for all elements except C and N, which were determined by a CHN analyzer. Roughly 10,000 individual analyses are reported, making this the first reasonably comprehensive survey of trace element chemistry in the Bay.

This study consisted of three components: 1) concentrations of nine elements were determined in 246 surface samples in order to establish the current geographic distribution of these elements; 2) vertical profiles were determined in 45 cores to investigate the possibility of historical changes; and 3) Pb-210 and Ra-226 activity in certain cores was measured in order to determine deposition rates and provide a time scale for historical dating.

Sediment cores were collected between November 1978, May to June 1979, and May to June 1981.

This file contains the data for the vertical core profiles for the main Bay, Table D1 of the published report [p. 167].

\\SAMPLING SUMMARY:

|                               |                              |
|-------------------------------|------------------------------|
| Data collection type:         | Cores, grabs, and deep cores |
| Number of stations or sites:  | 17 station cores             |
| Number of measured variables: | 20                           |
| Number of observations:       | 7152                         |

\\NOTES:

6/90 > Received data in SAS format from the CBP Computer Center, EPA Chesapeake Bay Program.

01/23/93 > Converted to dBase format using SAS procedure PROC DBF.

01/27/93 > Further converted to Quattro Pro file.  
> Reassigned field names.  
> Data verified against Table D1 of the published report. (See BIBLIOGRAPHY.)  
> Converted west longitude to negative values.  
> Removed null (missing) values.

> We assume that  $1 \times 10^{16}$  is used as a null value (to represent missing values) and does not represent actual data.

- > We assume C\_TOTWP (originally "C") represents total carbon.  
 > We assume "percent" means weight percent for all variables.

\\

\\HEADER FIELDS

Key: NAP=NOT APPLICABLE; NAV=NOT AVAILABLE

| USGS # | FIELD NAME | FIELD CONTENTS  |
|--------|------------|---|
| 2      | VDR        | 163   |
| 17     | NAVMODE    | NAV   |
| 21     | AGENCY1    | EPA Chesapeake Bay Program                                      |
| 22     | AGENCY2    | U. Maryland, Dept. Chemistry                                    |
| 23     | AGENCY3    | NAP   |
| 26     | REGNUM     | NAP   |
| 27     | PROJECT    | Chesapeake Bay Sediment Trace Elements                          |
| 28     | STATE      | Maryland, Virginia  |
| 29     | QUAD       |   |
| 30     | LOC_GEN    | Chesapeake Bay mainstem   |
| 31     | LOC_SPEC   |   |
| 44     | GEAR       | gravity corer   |
| 45     | SAM_TYPE   | [YET TO BE RESOLVED--WHAT TO ENTER HERE? CODE TABLE<br>NEEDED?] |
| 55     | LOC_DISP   | NAP   |
| 56     | ANAL_MET   | Y   |
| 57     | ANAL_ORG   | N   |
| 58     | ANAL_GR    | N   |
| 59     | ANAL_BIO   | N   |
| 60     | BIO_COM    | NAP   |
| 61     | BIO_REF    | NAP   |
| 62     | ANAL_MSC   | N   |
| 63     | MSC_COM    | NAP   |
| 63     | MET_LAB    | U. Maryland Chemistry Dept.                                     |
| 66     | MET_METH   | alpha spectrometry, DC plasma emission spectrometry             |
| 67     | MET_COM    |   |
| 70     | MET_TDTE   | NAV   |
| 71     | MET_TDAY   | NAV   |
| 72     | MET_TMO    | NAV   |
| 73     | MET_TYR    | NAV   |
| 74     | INO_LAB    | U. Maryland Chemistry Dept.                                     |
| 77     | INO_METH   | CHN analyzer  |
| 78     | INO_COM    |   |
| 81     | INO_TDTE   | NAV   |
| 82     | INO_TDAY   | NAV   |
| 83     | INO_TMO    | NAV   |
| 84     | INO_TYR    | NAV   |
| 269    | GOR_LAB    | NAP   |
| 272    | GOR_METH   | NAP   |
| 273    | GOR_COM    | NAP   |
| 276    | GOR_TDTE   | NAP   |
| 277    | GOR_TDAY   | NAP   |
| 278    | GOR_TMO    | NAP   |
| 279    | GOR_TYR    | NAP   |
| 305    | SOR_LAB    | NAP   |
| 308    | SOR_METH   | NAP   |
| 309    | SOR_COM    | NAP   |
| 547    | GR_LAB     | NAP   |
| 550    | GR_METH    | NAP   |
| 551    | GR_COM     | NAP   |
| 554    | GR_TDTE    | NAP   |

555 GR\_REQBY            NAP  
 556 GR\_ANLBY            NAP

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\\STATISTICS

| VARIABLE | # SAMPLES | AVERAGE   | MINIMUM  | MAXIMUM   | STD DEV  |
|----------|-----------|-----------|----------|-----------|----------|
| AGE_YR   | 378       | 1849.6243 | 622.0000 | 1979.0000 | 203.4209 |
| AL_O     | 380       | 5.3770    | 2.0000   | 8.3999    | 1.2209   |
| AL_U     |           |           |          |           |          |
| C_TOTWP  | 157       | 2.1694    | 0.4000   | 9.7695    | 1.2611   |
| CE       | 380       | 76.3605   | 10.0000  | 150.0000  | 26.7607  |
| CE_Q     |           |           |          |           |          |
| CO       | 380       | 22.4526   | 7.0000   | 76.0000   | 13.1067  |
| CO_Q     |           |           |          |           |          |
| CR       | 380       | 71.7605   | 27.0000  | 140.0000  | 19.4656  |
| CU       | 380       | 39.5447   | 2.0000   | 1700.0000 | 106.0840 |
| CU_Q     |           |           |          |           |          |
| DY       | 380       | 3.5994    | 1.0000   | 7.5000    | 1.3363   |
| DY_Q     |           |           |          |           |          |
| FE_O     | 380       | 3.0105    | 2.0000   | 5.0000    | 0.8078   |
| FE_U     |           |           |          |           |          |
| GA       | 380       | 20.1132   | 6.0000   | 43.0000   | 4.6742   |
| LA       | 380       | 34.1000   | 15.0000  | 73.0000   | 10.6435  |
| MN       | 380       | 604.5789  | 155.0000 | 3000.0000 | 512.0814 |
| N_TOTWP  | 157       | 0.2494    | 0.0100   | 0.8700    | 0.1380   |
| NI       | 380       | 41.1342   | 13.0000  | 110.0000  | 16.1965  |
| SI_O     | 380       | 27.4158   | 12.0000  | 39.0000   | 3.9948   |
| SI_U     |           |           |          |           |          |
| TI_O     | 380       | 0.5617    | 0.3500   | 0.8300    | 0.0992   |
| TI_U     |           |           |          |           |          |
| V        | 380       | 100.3816  | 48.0000  | 140.0000  | 20.7009  |
| YB       | 380       | 2.1777    | 0.0100   | 3.6000    | 0.8000   |
| ZN       | 380       | 136.0395  | 37.0000  | 710.0000  | 101.4895 |
| ZR       | 380       | 223.6211  | 96.0000  | 720.0000  | 96.9060  |

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VIMS GC 97.8 C5 D38 1993 v.  
Data base development for  
characterizing contaminated  
sediments in the Chesapeake  
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