GUIDELINES FOR THE SCIENTIFIC STUDY OF OIL SPILL EFFECTS

STUDY ELEMENT 14

DATA MANAGEMENT

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ELEMENT 14

DATA MANAGEMENT

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Prepared by:	Erich Gundlach, E-Tech, Inc., and Ted Coogan, Arthur D. Little
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INTRODUCTION

This section provides guidelines to be followed by each study team to develop forms and database tables that should assist the systematic recording and management of information about data collected and the integration of data from each Study Team into a single, unified database and geographic information system (GIS).

Each Study Team is responsible for its own data and database management and quality assurance program. The arrival of a centralized data management team should assist and coordinate these efforts, but much of the data entry and data verification tasks should remain the responsibility of the Study Teams.

If data collection is part of a cooperative NRDA process, activities such as QA/QC and COC procedures should be coordinated with the relevant state and federal agencies to ensure their use during the NRDA process.

RATIONALES

A. DECISION CRITERIA

Data management activities are defined for four levels of spill response and are dependent on many factors, such as spill size, politics, nature of impacts, etc. (see Figure 14-1).

- Stage 1. This is the first level as individuals or Study Teams arrive on scene and begin data collection. These first observations and surveys must be systematically recorded or data may potentially be lost as the spill response progresses or demobilizes.

  The forms herein promote consistency among the other Study Elements. This will facilitate use of common data entry fields if the data are later added to a single data management system. Some forms can be used 'as is' by other Study Elements, and some provide structure for data entry on other Study-Element-specific forms. Recording can be done by hand, or by using a basic spreadsheet or database program. *It is not necessary to have a computer to begin recording this information.*

- Stage 2. At this stage it is envisaged that the spill is of sufficient size or importance that one or more Study Teams are called upon to assist in the spill response effort. For data management, each Study Team should designate a Data Coordinator who should be responsible for data management and quality assurance for the Study Team.

  Data can still be recorded manually using the forms provided or directly into a computer program (database or sheet) using the defined formats. It is more likely that

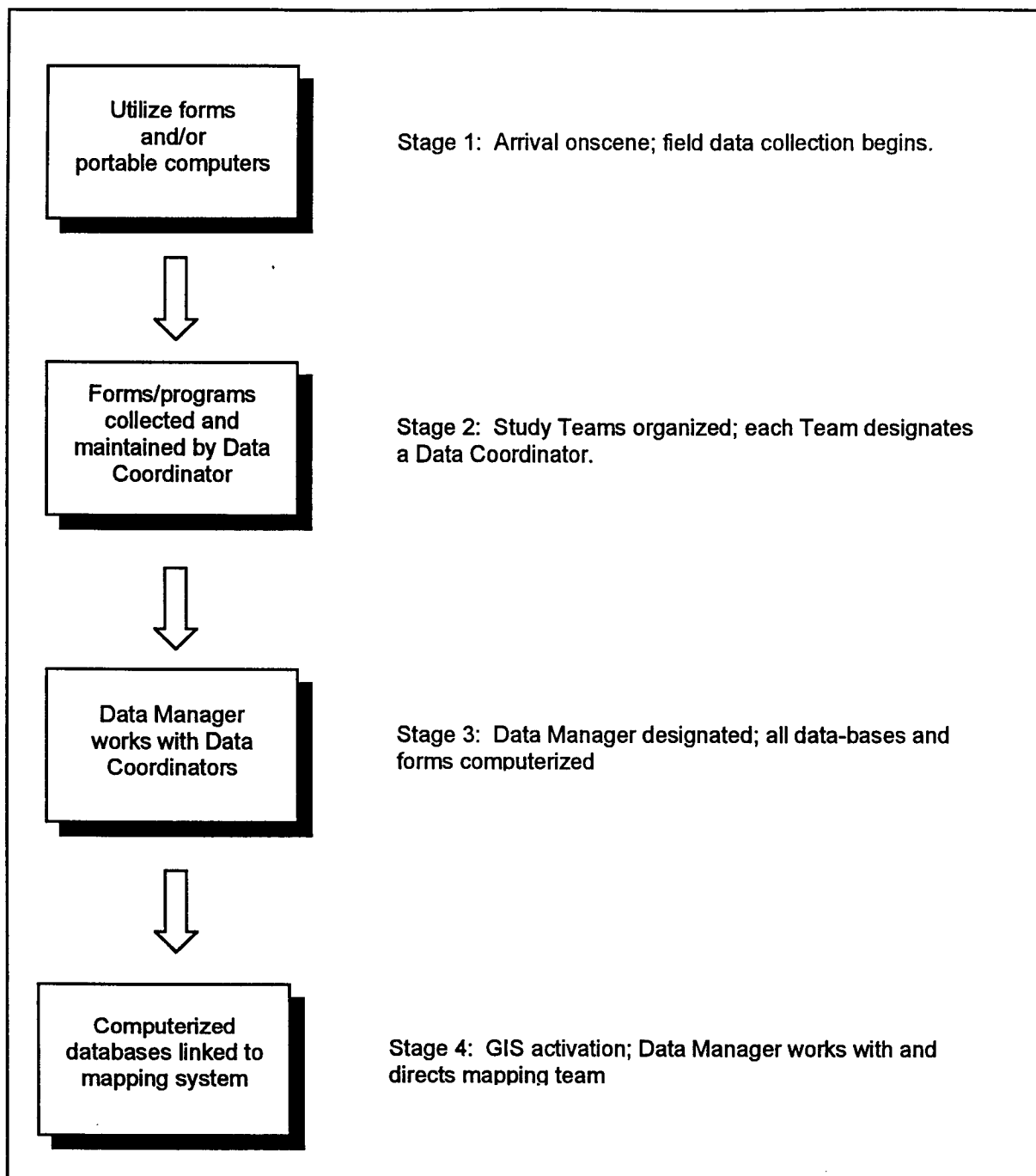|	
Utilize forms and/or portable computers	Stage 1: Arrival onscene; field data collection begins.
⬇	
Forms/programs collected and maintained by Data Coordinator	Stage 2: Study Teams organized; each Team designates a Data Coordinator.
⬇	
Data Manager works with Data Coordinators	Stage 3: Data Manager designated; all data-bases and forms computerized
⬇	
Computerized databases linked to mapping system	Stage 4: GIS activation; Data Manager works with and directs mapping team

Figure 14-1. Description of data management use and roles dependent on stage of a spill, based on four levels. See text for an explanation of each level and equipment required.

computer-based programs and forms should be used by this stage. Maps of oil distribution and other aspects of the spill (e.g., boom location, etc.) can be prepared by hand, pending arrival of a mapping group to prepare maps computer-graphically.

- Stage 3. This stage involves the appointment of a Data Manager (with adequate support) who should work with the Data Coordinators to centralize information about data collected and integrate all previously recorded information.

  Data at this stage should be recorded and published using a relational database management program such as Microsoft Access, Microsoft Visual Foxpro, Oracle, or Informix. The extensive use of computer-based entry forms should be used to efficiently record the data. The Data Manager should be responsible for developing data controls and import/export Methods to collect and provide information to the Study Teams.

- Stage 4. The final stage is the complete utilization of computer-based databases, entry forms and reports linked to spatial data in a GIS to produce on-demand maps of various aspects of the spill such as site maps, oil maps, shoreline maps, etc., using the information directly contained in the database. The software needed include a GIS package such as ArcView, Map info, or AutoCAD Map.

B. KINDS OF DATA

The data-recording Methods in this Study Element are valid if one or one-hundred observers are present in the field. The use of the standardized data formats described herein enables both the expansion of the database and the integration of the observations of different Study Teams. The Methods serve a two-fold function: (1) they provide the formats for data entry into a computerized management system; and (2) they provide forms for recording data (in the proper format) in the field.

Importantly, these Methods provide the structure to record information about the data collected and the linkage to databases containing the actual data. The following Methods provide the details on formatting the various fields of a computerized relational database to enable the products and advantages described earlier. Databases containing results (e.g., chemical concentrations, number of bivalves at a site, etc.) are the responsibility of each Study Team, using the linkage codes to tables provided herein. Specifically, site and survey data must be included using the enclosed format.

A diagram indicating the database tables, Method numbers, and linkages between tables is shown in Figure 14-2. In this Study Element, the term "table(s)" always refers to database tables.

Methods are included to develop the following tables:

- Method 14.1–*Survey Data*. Information about the survey performed by an individual or Study Team.
- Method 14.2–*Site Data*. Information about the site established along the shore or offshore.
- Method 14.3–*Segment Data*. Information about segments delineated along the shore.
- Method 14.4–*Photographic And Video Data*. To record all photo and video information.
- Method 14.5–*Sample Data And Labeling*. Information about each sample collected, using a format that can be used with a computer-based labelling machine.
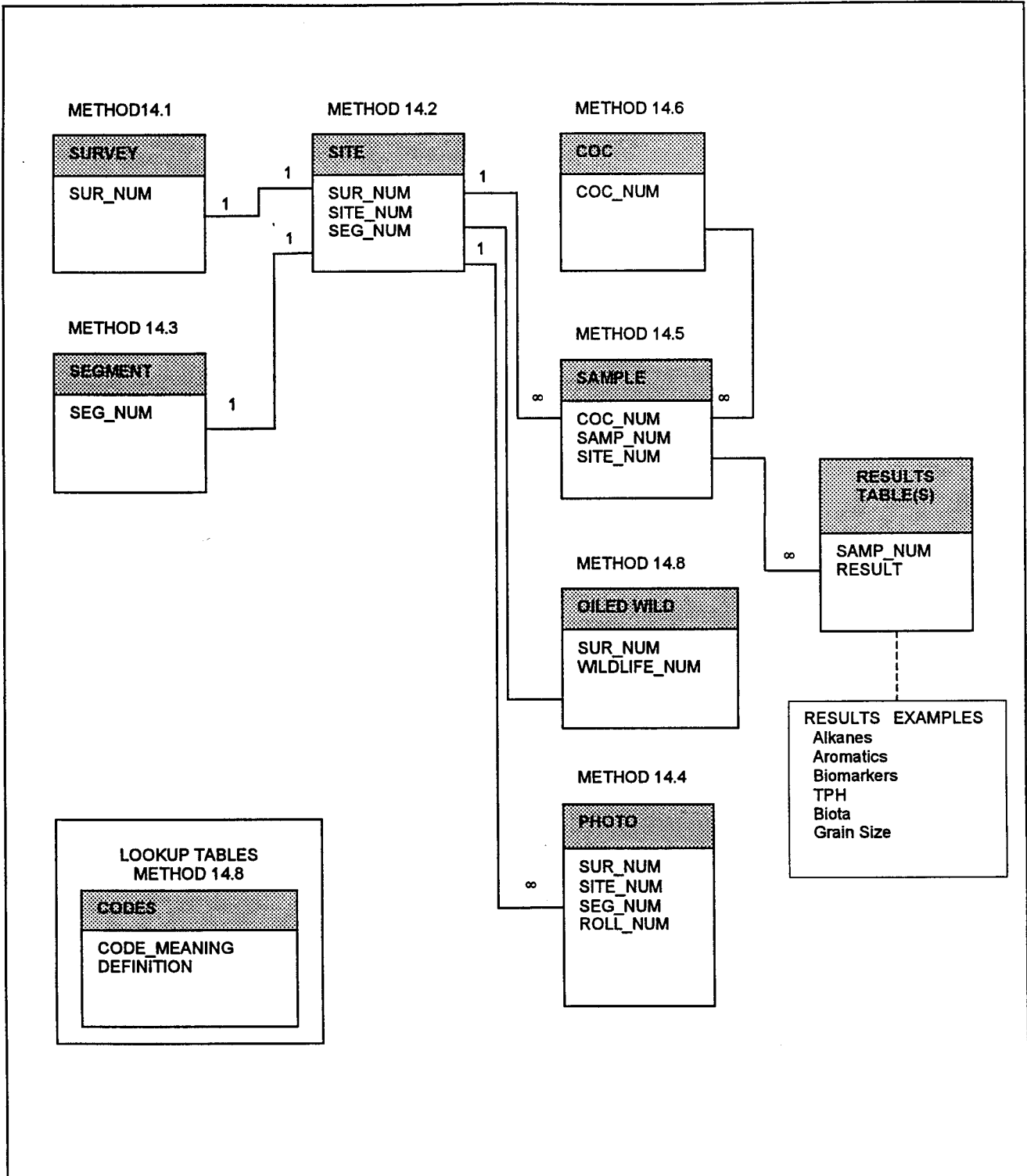- Method 14.6–*Chain-Of-Custody Documentation*. Used to record and track COC information.

Figure 14-2. Primary Data needed for tracking and coordinating scientific information collected at the spill (the Method number is indicated over each table name (in box); the common rows (linkages) between databases are indicated below each table name).

- Method 14.7–*Codes Table*. Contains all codes used in other databases.
- Method 14.8–*Oiled Wildlife Data*. Which is designed to record collection, capture, and release of oiled wildlife.
- Method 14.9–*Database Reports*. Provides the guidelines for developing reports for each data table.

The SEGMENT table (Method 14.3) contains information about each shoreline segment in a standardized format. It is an important component of an integrated database since it forms the link between spatial data and other data types in the GIS.

Other databases would be developed by individual Study Teams, depending on data needs and spill requirements. For instance, an ALKANE data table should be developed by the chemistry program if important for the particular spill. Others databases may include information about transects, infauna, mammal counts, etc. As long as they include SITE, SAMPLE, and/or SURVEY information, they can be linked to all other databases. Upon linkage, reports or queries can be developed relating one data component to the other, e.g., indicating all infaunal sties having high pristane/phytane ratio.

The selection of database tables to to be used outside of a computer environment is dependent on the Study Teams activated and type of spill. As a minimum, the following tables or forms should be completed as related activities are completed: SURVEY, SITE, SAMPLE, and COC (Chain-of-Custody).

Other tables or forms should be necessary during more intensive study, particularly SEGMENT, PHOTOS, OIL_WILDL, and CODES. Data management tables and forms developed by individual Study Teams should be integrated with those presented here.

C. OTHER CONSIDERATIONS

C.1 Data Handling — Personnel

Once the forms are available, in hardcopy or computer-based, data can be entered manually or into a computer by all field personnel having a basic knowledge of scientific Methods and nomenclature.

Each Study Team should appoint a Data Coordinator to maintain and label all records and maps, complete the forms and/or develop a database/spreadsheet to maintain the information, and work with the spill's Data Manager when designated.

The Data Manager, upon designation by Responsible Party (RP), should work with each Study Team's Data Coordinator to integrate and centralize all data collected. A computer-based database with standard entry forms and reports should be developed for all Study Teams. The Data Manager should ensure the consistency and security of the centralized database.

The Study Team Data Coordinators should be aware of the special handling required for all hard-copy documents. Data Coordinators should have experience with environmental datasets in general and specifically with the types of data collected during spill events. If computer-based programs are used, the Data Coordinator should also have knowledge of the programs, database management, backup Methods, and of other operations necessary for the operation of computers. If a GIS is to be utilized, then a working knowledge of integrated mapping and database systems

is needed. To implement advance database and GIS activities, a data management team of several individuals is needed.

C.2   Backups and Hardcopy

For electronically stored data, backup copies should be made and stored by the Data Coordinator on a daily basis using a durable media such as recordable CD-ROM, Zip or Jaz disks.

All original hardcopy forms should securely maintained during the spill by the Study Team data Coordinators pending the arrival of the Data Manager.

C.3   Quality Control/Quality Assurance

It is the responsibility of each individual to ensure that the data recorded (either in the computer or hardcopy) is accurate. The Data Coordinator for each study team has the responsibility of ensuring that data are signed, dated, and stored in a safe location, free from potential manipulation or destruction. A physical review of the data (forms and maps) should be made minimally on a daily basis to ensure that all material is appropriately labeled and recorded.

Upon arrival of the designated Data Manager, responsibilities for data integrity and maintenance of each individual remain the same; however, maintenance and verification of the database should shift over from the study team Data Coordinator to the Data Manager. Data within the database system should be reviewed for accuracy on a repetitive basis.

Overall *Quality Control/Quality Assurance* guidance is provided in Study Element 13.

C.4   Field Sampling

Field Sampling programs should utilize the related tables and forms for tracking the type and location of data and samples collected.

C.5   Laboratory Procedures

Laboratory procedures should include the use of the standardized sample nomenclature to track samples in the laboratory.

C.6   Data Analysis

Data analysis activities fall under specific Study Elements and are not discussed in this Study Element. However, upon decision of RP, results from other study elements can be input into a unified database management system and linked to the tables provided herein.

Method 14.1
SURVEY DATA

Revision No.:   0
Revision Date: June 30, 1999
Prepared by: Erich Gundlach, E-Tech, Inc., and Ted Coogan, Arthur D. Little
Prepared for Petroleum Environmental Research Forum (PERF), Project 94-10

1.0   PURPOSE

This Method describes the format and content of the SURVEY table. This is the primary database table to maintain al information related to who-did-what-where. The accurate cataloging of each team's activities and location should provide a rapid, yet simple, overview of all ongoing studies conducted at the spill site.

It is imperative that each Study Team keep their own records and develop their own unique identifier for the Survey Number. Examples of unique identifiers that can be used for each data field are provided in this Method.

All other tables should refer back to, and or utilize information from this table; therefore, it must be recorded diligently and accurately after every survey.

2.0   DEFINITIONS

None.

3.0   EQUIPMENT

Data may be recorded using computer-based spreadsheet/database programs or manually using the forms provided.

4.0   PROCEDURES

A *Survey data-entry form* is provided in Form 14-1. It can be set up either as a computer-based program or manually completed. The attributes of a database SURVEY table are summarized in Table 14.1-1.

The SURVEY data entry form or database table should be completed by all Study Teams and/or individuals collecting field data as part of the spill-response effort. Most commonly, it should be completed upon return from the survey. In some cases, for example, during surveys that may last several days, the SURVEY data entry form should be completed at the beginning of the survey to ensure proper coding of all sites and samples.

Maintenance and storage of the information recorded is common to all data tables, and is discussed in Rationale C of this Study Element.

Table 14.1-1. Description of attributes in the database table SURVEY.

Attribute	Code	Format[a]	Example
Survey Number	SUR_NUM	C15	OV111292A
(Study Team identifier [see CODES Table, Method 14.7], e.g., OV=OverFlight, WC=Water Column, SH=Shoreline survey, etc., Plus date and alphabetic character (a, b, c, etc.) If more than one survey conducted on the same day. This identifier must be unique.)			
Team Leader	TEAM_LEADER	C20	C.G. Milhouse
Team Members	TEAM_MEMS	C35	T. Odens, B. Ryan (USCG)
Starting Date	START_DATE	Date	12/12/92
Ending Date	END_DATE	Date	12/12/92
Starting Time	START TIME	Time	1205
Ending Time	END_TIME	Time	1535
Survey Conditions	CONDITIONS	C40	Very bad weather, visibility limited.
Comments	COMMENTS	C256	Oil difficult to distinguish from natural reflectance.
Entry Date	ENTRY_DAT	Date	12/25/92
Entry Person	ENTRY_PER	C20	L.B. Johnson

[a] C = Character field, others are number fields of the type indicated.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

These issues are common to all data tables and are discussed in Rationale C.3 of this Study Element.

6.0 DATA PROCESSING

Data should be summarized into a series of reports dependent on spill needs. Commonly required reports are presented in Method 14.9–*Database Reports*.

7.0 DELIVERABLES/REPORTING

Reports dealing with surveys completed should be produced on an as-needed basis. Example report formats are described in Method 14.9– *Database Reports*.

8.0 HEALTH AND SAFETY CONSIDERATIONS

No special health and safety considerations are required.

9.0   PERSONNEL

Personnel and training requirements to complete the forms and maintain the database tables are common to all Methods, and are provided in the Rationales of this Study Element.

10.0 REFERENCE DOCUMENTS

Method 14.7   CODES Table
Method 14.9   Database Reports

Method 14.2
SITE DATA

Revision No.:   0
Revision Date: June 30, 1999
Prepared by: Erich Gundlach, E-Tech, Inc., and Ted Coogan, Arthur D. Little
Prepared for Petroleum Environmental Research Forum (PERF), Project 94-10

1.0   PURPOSE

The purpose of this data table is to provide a record of sites encountered by each survey team. It is linked to the SURVEY table, thereby providing access to information about the specific site as well as survey team members and conditions. It is important that the SURVEY form/database be completed before completing this table.

2.0   DEFINITIONS

Site—The observational location.

Transects—A measurement or profile line within the site.

Stations—Locations where specific observations are made and/or samples are collected at a site.

3.0   EQUIPMENT

Data may be recorded using computer based spreadsheet/database programs or annually using the forms provided.

4.0   PROCEDURES

A *Site data-entry form* is provided in Form 14-2. It can be set up either as a computer-based program or manually completed. This form should be completed only after completing the SURVEY form/table (Method 14.1). The attributes of a database SURVEY table are summarized in Table 14.2-1.

Information required in the SITE data table should be recorded as soon as feasible after site establishment and each subsequent visit.

Maintenance and storage of the information recorded is common to all data tables, and is discussed in Rationale C of this Study Element.

5.0   QUALITY ASSURANCE/QUALITY CONTROL

These issues are common to all data tables and are discussed in Rationale C.3 of this Study Element.

6.0   DATA PROCESSING

Data should be summarized into a series of reports dependent on spill needs. Commonly required reports are presented in Method 14.9–*Database Reports.*

Table 14.2-1. Description of attributes of the database table SITE. As noted in Form 14-2, the Site number is comprised of the study team code and ascending numerical number.

Attribute	Code	Format[a]	Example
Site Number	SITE_NUM	Date	12/12/92
Start Time	START_TIME	Time	1325
End Time	END_TIME	Time	1355
Location	LOCATION	C50	Evinrude Beach
Survey Number	SUR_NUM	C15	OF01
(Linkage to SURVEY table.)			
Segment Number	SEG_NUM	C5	CI05A
(Linkage to SEGMENT table.)			
Purpose	PURPOSE	C25	Document level of oil impact.
Tide Stage	TIDE_STAGE	C15	Near dead low.
Water Depth In Meters	DEPTH_M	N3	97
Beach Profile Record		C20	1212921355
(Linkage to PROFILE table.)			
Latitude degrees	LAT_DEG	N2	34
Latitude minutes	LAT_MIN	N2	01
Latitude seconds	LAT_SEC	N4	2212
Latitude hemisphere	LAT_HEM	C1	N
Longitude degrees	LONG_DEG	N3	120
Longitude minutes	LONG_MIN	N2	22
Longitude seconds	LONG_SECONDS	N4	2512
(The following input is not necessary if lat/long available.)			
Loran 1 reading	LORAN_1	N9	41200
Loran 2 reading	LORAN_2	N9	26200
(The following input is not necessary if lat/long or loran available.)			
UTM easting	UTM_EAST	N8	7420002
UTM northing	UTM_NORTH	N9	3767000
UTM ZONE	UTM_ZONE	N2	23
Entry date	ENTRY_DAT	Date	12/25/92
Entry person	ENTRY_PER	C20	L.B. Johnson

[a] C = Character field, N = Number field, others are number fields of the type indicated.

7.0   DELIVERABLES/REPORTING

Reports dealing with surveys completed should be produced on an as-needed basis. Example report formats are described in Method 14.9– *Database Reports.*

8.0   HEALTH AND SAFETY CONSIDERATIONS

No special health and safety considerations are required.

9.0   PERSONNEL

Personnel and training requirements to complete the forms and maintain the database tables are common to all Methods, and are provided in the Rationales of this Study Element.

10.0 REFERENCE DOCUMENTS

Method 14.1   Survey Data
Method 14.9   Database Reports

Method 14.3
SEGMENT DATA

Revision No.:   0
Revision Date: June 30, 1999
Prepared by: Erich Gundlach, E-Tech, Inc., and Ted Coogan, Arthur D. Little
Prepared for Petroleum Environmental Research Forum (PERF), Project 94-10

1.0 PURPOSE

This Method describes the format and content of shoreline segmentation information to be entered into the data management system. The process for defining the segments themselves is described in Method 1.6–*Shoreline Segmentation*.

2.0 DEFINITIONS

None.

3.0 EQUIPMENT

Data may be recorded using computer-based spreadsheet/database programs or manually using the forms provided.

4.0 PROCEDURES

A *Segment data-entry form* is provided in Form 14-3. It should be set up either as a computer-based program or manually completed. The information is generated in Method 1.6–*Shoreline Segmentation*. This form should be completed only after completing the SURVEY form/table (Method 14.1). The attributes of a database SEGMENT table are summarized in Table 14.3-1.

Information required in the SEGMENT table should be recorded as soon as feasible after site establishment and each subsequent visit.

Table 14.3-1. Description of attributes of the database table SEGMENT.

Attribute	Code	Format[a]	Example
Segment Code	SEG_NUM	C5	CI01A
Segment Description	SEG_DESCR	C35	Catalina Is. –N.Side
Sites in Segment	SEG_SITES	C25	BI05, CH11, GE12
Boundary 1	SEG_BNDRY1	C15	Point Alvarez
Boundary 2	SEG_BNDRY2	C15	Point Wilson
Comments	SEG_COMMENT	C256	Approx. 4 km shore

[a] C = Character field.

Maintenance and storage of the information recorded is common to all data tables, and is discussed in Rationale C of this Study Element.

5.0   QUALITY ASSURANCE/QUALITY CONTROL

These issues are common to all data tables and are discussed in Rationale C.3 of this Study Element.

6.0   DATA PROCESSING

Data should be summarized into a series of reports dependent on spill needs. Commonly required reports are presented in Method 14.9–*Database Reports*.

7.0   DELIVERABLES/REPORTING

Reports dealing with surveys completed should be produced on an as-needed basis. Example report formats are described in Method 14.9– *Database Reports*.

8.0   HEALTH AND SAFETY CONSIDERATIONS

No special health and safety considerations are required.

9.0   PERSONNEL

Personnel and training requirements to complete the forms and maintain the database tables are common to all Methods, and are provided in the Rationales of this Study Element.

10.0 REFERENCE DOCUMENTS

Method 1.6   Shoreline Segmentation
Method 14.1   Survey Data
Method 14.9   Database Reports

Maps and/or other cartographic information used in Method 1.6 may also be needed.

Method 14.4
PHOTOGRAPHIC AND VIDEO DATA

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1.0 PURPOSE

The overall purpose of this database is to provide an account of all photographs and video taken at the spill site, which can then be accessed by all Study Teams. The format and content of the PHOTOS data table is described.

Also see Method 1.4–*Ground Assessment Survey Documentation* for detailed information regarding film labeling.

2.0 DEFINITIONS

None.

3.0 EQUIPMENT

Data may be recorded using computer-based spreadsheet/database programs or manually using the forms provided.

4.0 PROCEDURES

The sources of photographic and video data may include, for example, Method 1.1–*Aerial Reconnaissance Survey Procedures*, Method 1.3–*Ground Assessment Survey Procedures*, Method 5.1–*Site Selection, Setup, and Photodocumentation* and other Methods in Element 5–*Intertidal Biota*, Method 9.3–*Open Water Bird and Marine Mammal Surveys*, etc.

A form for storing the information in hardcopy is provided in Form 14-4–*Form for PHOTOS Table*. It can be used in conjunction with a computer-based program or as a final document if computers are not available. Data entry can occur directly into the computer as well. Data entry in PHOTOS should occur only after the SURVEY form/table (Method 14.1) is completed. The attributes of a database PHOTOS table are summarized in Table 14.4-1.

Information required in the PHOTOS table should be recorded as soon as feasible after processing of film or viewing of video.

Each photographer/videographer and/or study team is responsible for the secure maintenance of all photographs and video. The Data Coordinator of each field team should ensure the proper maintenance, labeling, and storage of each photograph. The Data Coordinator of each study team should work with the designated Data Manager to coordinate the reproduction and exchange of all photographs between scientists and others.

Table 14.4-1. Description of attributes in the database table PHOTOS.

Attribute	Code	Format[a]	Example
Date	PHOTO_DATE	Date	12/12/92
Time	PHOTO_Time	Time	1335
Location	LOCATION	C50	Overview of wreck site.
Survey Number *(Linkage to SURVEY table.)*	SUR_NUM	C15	OF111292A
Segment Number *(Linkage to SEGMENT table.)*	SEG_NUM	C5	A001B
Site Number *(Linkage to SITE table.)*	SITE_NUM	C6	BI027A
Roll Number *(Composed of roll number and initials of photographer.)*	ROLL_NUM	C10	10BJP
Frame Number	FRAME_NUM	C2	11
Description	DESCRIPTION	C150	Ground view of oil coming ashore.
Photographer	PHOTOG	C20	B.J. Photomore
Video meter start	VID_START	C8	120
Video meter end	VID_END	C8	165

(The following input is not necessary if linked to a site or a well-defined location.)

Latitude degrees	LAT_DEG	N2	45
Latitude minutes	LAT_MIN	N2	56
Latitude seconds	LAT_SEC	N4	1013
Longitude degrees	LONG_DEG	N3	45
Longitude minutes	LONG_MIN	N2	56
Longitude seconds	LONG_SEC	N4	1012
Longitude hemisphere	LONG_HEM	C1	N

(The following input is not necessary if linked to a well-defined location, site, or lat/long coordinate.)

Loran 1 reading	LORAN_1	N9	41200
Loran 2 reading	LORAN_2	N9	26200

(The following input is not necessary if linked to a well-defined location, site, or lat/long coordinate.)

UTM northing	UTM_NORTH	N	128739
UTM easting	UTM_EAST	N	23898
Entry date	ENTRY_DAT	Date	12/25/92
Entry person	ENTRY_PER	C20	B.J. Photomore

[a] C = Character field, N = Number field, others are number fields of the type indicated.

Maintenance and storage of the information recorded is common to all data tables, and is discussed in Rationale C of this Study Element.

5.0   QUALITY ASSURANCE/QUALITY CONTROL

These issues are common to all data tables and are discussed in Rationale C.3 of this Study Element.

6.0   DATA PROCESSING

Data should be summarized into a series of reports dependent on spill needs. Commonly required reports are presented in Method 14.9–*Database Reports*.

7.0   DELIVERABLES/REPORTING

Reports dealing with surveys completed should be produced on an as-needed basis. Example report formats are described in Method 14.9– *Database Reports*.

Specific to the PHOTOS table, labels for the back of photographic prints can be printed directly from the table. The format and columns for the printed label are provided in Figure 14.4-1.

8.0   HEALTH AND SAFETY CONSIDERATIONS

No special health and safety considerations are required.

9.0   PERSONNEL

Personnel and training requirements to complete the forms and maintain the database tables are common to all Methods, and are provided in the Rationales of this Study Element.

Photographer: *(PHOTOG)*	Roll/Frame: *(ROLL_NUM/FRAME_NUM)*
Date: *(PHOTO_DATE)*	Time: *(PHOTO_TIME)*
Survey Number: *(SUR_NUM)*	Site Number: *(SITE_NUM)*
Location: *(LOCATION)*	

Reason: *(REASON)*

Lat/Long: *(LAT_DEG LAT_MIN LAT_SEC, LONG_DEG LONG_MIN LONG_SEC)*
Loran: *(LORAN_1, LORAN_2)*

Figure 14.4-1. Sample back-of-print label to be printed direct from the table. Attributes in the table are indicated.

10.0 REFERENCE DOCUMENTS

Method 1.1   Aerial Reconnaissance Survey Procedures
Method 1.3   Ground Assessment Survey Procedures
Method 1.4   Ground Assessment Survey Documentation
Method 5.1   Site Selection, Setup, and Photodocumentation
Method 9.3   Open Water Bird and Marine Mammal Surveys
Method 1.6   Shoreline Segmentation
Method 14.1   Survey Data
Method 14.9   Database Reports
Study Element 5   Intertidal Biota

Method 14.5
SAMPLE DATA AND LABELING

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Prepared by: Erich Gundlach, E-Tech, Inc., and Ted Coogan, Arthur D. Little
Prepared for Petroleum Environmental Research Forum (PERF), Project 94-10

1.0 PURPOSE

This Method provides the means to track all samples taken during the spill incident. Through linkage to the COC table (Method 14.6–*Chain-of-Custody Documentation*), the transport and location of samples can also be tracked. The Method describes the procedures required for development of the SAMPLE data table, sample labeling techniques and coding, and describes the relation to COC documentation.

The combination of the SAMPLE table with an automated labeling and COC system is designed to provide useful, easily interpretable data sets for the Study Teams, provide usable labels and COC forms for the field teams, reduce transcription errors, and permit efficient sample tracking through the use of bar codes.

2.0 DEFINITIONS

None.

3.0 EQUIPMENT

Data may be recorded using computer-based spreadsheet/database programs or manually using the forms provided. A label printer linked to the database provides maximum efficiency for label production and tracking.

4.0 PROCEDURES

This procedure should be valid for all samples collected. The Data Coordinator for each study team should be responsible for the proper labeling and handling of all samples. The designated Data Manager upon arrival on-scene should monitor all sampling and labeling activities.

Pending the arrival of an automated label-making system, samples should be labeled and recorded by hand using the forms and sample nomenclature provided.

If a computer-integrated label printer is available, samples should be labeled using the attributes described in Table 14.5-1. Upon arrival of an automated labeling and recording system, each label should be pre-printed using the sample numbering system as described in this Method. Labels should include a barcode of the sample number in addition to plain text if possible (e.g., Figure 14.5-1). Code 128 is the preferred barcode symbology since it allows encoding of the complete ASCII 128 character set and allows for variable length symbols. The Study Team should fill in only the "Entry Person" (Initials) and the "Time" and "Date" sections of labels for all samples collected within site and transect delineations; all other information should be pre-printed.

Table 14.5-1. Description of attributes in the SAMPLE table.

Attribute	Code	Format[a]	Example
Sample number	SAMP_NUM	C18	BIO27A121292A1SCR2
(Composed of the Site Number, Date of Sample, Site Code, Transect Designation, Sample Type, and Sieve Replicate.)			
Site Number	SITE_NUM	C6	BIO27A
(Linkage to SITE table.)			
Date of Sample	SAMP_DATE	Date	12/12/91
Station Designation	STATION	C1	A
(Related to position within the site; A=Upper Intertidal, etc. Linkage to CODES table.)			
Transect Name	TRANSECT	N	1
(Related to transect within the site; 1=Transect 1, etc. Linkage to CODES table.)			
Sample Type	SAMP_TYPE	C2	SC
(Related to type of sample; SC=Sediment Chemistry, etc. Linkage to CODES table.)			
Sieve Fraction/Replicate	SIEV_REPL	C2	A2
(Related to sieve fraction (1.0 mm or 0.5 mm) and Replicate (1,2,3,). First character = sieve fraction, second character refers to replicate (A=1.0 mm fraction, 2=2nd replicate). Links to CODES table.)			
Survey Number	SUR_NUM	C15	OF1112921535
(Linkage to SURVEY table.)			
COC Number	COC_NUM	C10	OF014567
(Comprised of Study Team Code and ascending values. Linkage to COC table.)			
Entry date	ENTRY_DAT	Date	12/25/92
Entry person	ENTRY_PER	C20	L.B. Johnson

[a] C = Character field, N = Number field, others are number fields of the type indicated.

Labels with zeros in the site and station designator positions should be provided for mussel samples or others that may be collected outside site delineations.

"Generic" labels should also be produced for each site. The first 14 positions (site number and date) should be pre-printed before going into the field. The remaining parts of the labels should be left blank. These labels can be used as replacements for damaged labels. The recorder should be required to fill in site, transect, recorder and date, as well as the code number. Immediately prior to sample collection, READ THE LABEL to ensure you have the correct container for the sample you are about to collect.

Duplicates of all labels should be printed. One label should be affixed to the sample container and the other label should be affixed to the COC form at the time of sampling.

```
┌─────────────────────────────────────────────────────────────┐
│  Shoreline Ecology Program                                    │
├─────────────────────────────────────────────────────────────┤
│                                        Analysis: PAH          │
│  Site Num:  B1027A    Samp Type: SC                           │
│  Station:   A         Rep/Sieve Frac: A2                      │
│  Transect:  2                          Time Coll: _____ │
│                                                               │
│  ▌▐█ ▐▐▐ █▐█▐ █ ▐█▐█▐ ▐ █▐ ▐█ █▐▐   Date Coll: ____ / /1999   │
│                                                               │
│  B1027AA2SCA2                          Initials: _____  │
└─────────────────────────────────────────────────────────────┘
```

Figure 14.5-1. Example of preprinted sample labels using computer-integrated label printer. (Coll. = Collected)

Labels should be applied to sample containers in a lengthwise manner (i.e., up and down direction of a standing jar or bottle), maintained as clean and dry as possible, and taped over with clear tape wrapped completely around the container, overlapping itself. Both label and tape must be applied smoothly to permit reading of the bar code.

If computer generated labels are not available, provide sample information as shown in Figure 14.5-2. A Form for storing the information on hardcopy is provided in Form 14-5 (*Manual Sample Labeling Form*). It can be used in conjunction with a computer-based program or as a final document if computers are not available. Data entry can occur directly into the computer as well. Data entry in SAMPLE should occur only after the SURVEY form/table (Method 14.1) is completed.

The SURVEY form or table (Method 14.1) must be completed first since it contains the record of Survey participants and purpose. For later computer entry, adherence to thenumber of characters allowed is imperative. Spaces between data elements are not necessary. Use a separate data page for each new survey and date.

5.0   QUALITY ASSURANCE/QUALITY CONTROL

Diligence must be exercised in all the handling and labeling of samples. The Data Coordinator for each field team should ensure that samples are properly labeled and stored as the site work is being completed. Issues related to database input are common to all data tables and are discussed under the Introduction to this Study Element.

6.0   DATA PROCESSING

Data should be summarized into a series of reports dependent on spill needs. Commonly required reports are presented in Method 14.9–*Database Reports*.

Site Number	Date of Sample	Station	Transact	Sample Type	Sieve Fraction / Replicate
C6	Date	C1	N1	C2	C2

Survey Number:

Figure 14.5-2. Example of sample label. The attribute formats described in Table 14.5-1 should be followed. Survey number (C15) comes from Method 14.1.

7.0 DELIVERABLES/REPORTING

Reports dealing with surveys completed should be produced on an as-needed basis. Example report formats are described in Method 14.9– *Database Reports*.

8.0 HEALTH AND SAFETY CONSIDERATIONS

Health and safety considerations are related to the sample being taken and preservatives used. See each Study Element for details. No special health and safety considerations are required.

9.0 PERSONNEL

Personnel and training requirements to complete the forms and maintain the database tables are common to all Methods, and are provided in the Rationales of this Study Element.

10.0 REFERENCE DOCUMENTS

Method 14.1   Survey Data
Method 14.2   Site Data
Method 14.6   Chain of Custody Documentation
Method 14.9   Database Reports

Method 14.6
CHAIN–OF-CUSTODY DOCUMENTATION

Revision No.:   0
Revision Date: June 30, 1999
Prepared by: Erich Gundlach, E-Tech, Inc., and Ted Coogan, Arthur D. Little
Prepared for Petroleum Environmental Research Forum (PERF), Project 94-10

1.0 PURPOSE

This Method describes the Methods for handling chain-of-custody (COC) documentation and both computerized and non-computerized tracking.

The location of each sample can be followed through use of the COC forms and accompanying table. Tracking is done using a number placed on each COC form which relates to the samples contained on each form.

2.0 DEFINITIONS

None.

3.0 EQUIPMENT

Data may be recorded using computer-based spreadsheet/database programs or manually using the forms provided. An automated label printer linked to the database provides maximum efficiency for COC tracking.

4.0 PROCEDURES

For every sample, tracking information should be entered and stored on a form such as Form 14-5 (*Chain-of-Custody Form*). The information can be entered manually or using an automated labelmaker (see Method 14.5–*Sample Data and Labeling*). Figure 14.6-1 contains a form for tracking sample transport. The COC forms should be printed on a single sheet of water-proof paper. Note that each form has a unique value, the COC number. The bottom of the form coincides with data required in the COC table. The attributes of those COC database table entries are summarized in Table 14.4-1. The Study Team Codes (for the COC number) are found in Method 14.7–*Codes Table*.

Sample numbers should be recorded on the COC form. When an automated system is used, the items on the top left hand corner of the COC form should be preprinted. A duplicate sample label should be attached to the COC form. If a sample is suspected to be damaged or if there was any deviation from specified sampling Rationale, it must be noted in the comments column. If any sample label is affixed to the COC form and then the sample is not collected, a single line is drawn diagonally across the label and "Not Collected" is written in the comments column. All changes or crossed-out labels must be initialed by the recorder.

The COC form is signed under "Relinquished by" and dated by the Chief Scientist at the time the samples are handed over to the air freight or any other carrier. The type of "Transporter" is recorded on the form. A photocopy of the COC form should be kept by

Table 14.6-1. Description of attributes in the "COC" table.

Attribute	Code	Format[a]	Example
COC Number	COC_NUM	C10	OF014567
(Comprised of Study Team Code and ascending values. Linkage to SAMPLE table.)			
Relinquished by	RELING_BY	C20	P.B. Loam
Transporter	TRANSPORTER	C20	FedEx
Received by	RECEIV_BY	C30	J. Smith, ADL Lab
Date of transfer	RELING_DAT	Date	01/24/93
Entry date	ENTRY_DAT	Date	01/25/93
Entry person	ENTRY_PER	C20	P.B. Loam

[a] C = Character field, others are number fields of the type indicated.

the Data Coordinator of each Study Team as a field copy. The Data Coordinator should place the COC forms in one of the sample coolers and mark the outside of this cooler as containing all COC forms. Frozen samples are to be marked with the site identification code and the preservation procedure (i.e., frozen, refrigerated). Custody seals (e.g., dated & initialed, permanent tape that will be broken when the container is opened) should be applied to all coolers prior to transportation. Following shipment of samples to analytical laboratories, a photocopy of each COC form should be sent to the designated Data Manager.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

Diligence must be exercised in all the handling and transfer of samples. The Data Coordinator for each field team should ensure that samples are properly packaged and documented as the site work is being completed and prior to transfer. Issues related to database input are common to all data tables and are discussed in Rationale C.3 of this Study Element.

6.0 DATA PROCESSING

Data should be summarized into a series of reports dependent on spill needs. Commonly required reports are presented in Method 14.9–*Database Reports*.

7.0 DELIVERABLES/REPORTING

Reports dealing with surveys completed should be produced on an as-needed basis. Example report formats are described in Method 14.9– *Database Reports*.

8.0 HEALTH AND SAFETY CONSIDERATIONS

No special considerations are necessary for operation of the data management system.

9.0 PERSONNEL

Personnel and training requirements to complete the forms and maintain the database tables· are common to all Methods, and are provided in the Rationales of this Study Element.

10.0 REFERENCE DOCUMENTS

Method 14.5   Sample Data and Labeling
Method 14.7   Codes Table
Method 14.9   Database Reports

Method 14.7
CODES TABLE

Revision No.:   0
Revision Date: June 30, 1999
Prepared by: Erich Gundlach, E-Tech, Inc., and Ted Coogan, Arthur D. Little
Prepared for Petroleum Environmental Research Forum (PERF), Project 94-10

1.0   PURPOSE

This Method contains the source of and the means of tracking all codes used in other databases. Linkage to other tables is based on the use of exactly the same code, so it is important that the same character or number string be consistently used.

The compilation of all codes into a single database table, despite their topic of reference (e.g., Study Team and sampling site location), has the distinct advantage of centralizing all codes and preventing duplications.

Additional codes can easily be added to the enclosed list to match the particular circumstances of the spill and sampling program.

2.0   DEFINITIONS

None.

3.0   EQUIPMENT

This table provides the basis for codes used in all databases and is valid for manual or computerized entries.

4.0   PROCEDURES

A preliminary list of codes is provided in Table 14.7-1. In a database management system, these would be entered into the CODES table (see Table 14.7-2 for attributes). These codes should be used by all relevant Study Elements.

Other codes should be added as necessary, coordinating between Study Teams and the designated Data Manager to avoid duplication. Form 14-7 (*New Codes Entry Form*) should be used to provide the information to the Data Manager.

5.0   QUALITY ASSURANCE/QUALITY CONTROL

Particular care must be taken to avoid duplicating codes (e.g., a Study Team IB equal to both Intertidal Biology and Integrated Biostation). Other than this, issues related to database input are common to all data tables and are discussed in Rationale C.3 of this Study Element.

Table 14.7-1. Examples of CODES used in a Data Management system. All look-up codes should be contained in one table for simplicity and ease of maintenance.

Tables where used, and Code Meaning	Code
Study Team Designations (SURVEY, SITE, and SAMPLE tables)	
Intertidal Biology	IB
Bird and Mammals	BM
Shoreline	SH
Subtidal Biology	SB
Oceanography	OC
Offshore	OF
Overflights	OV
Aerial Videotape	OT
Aerial Reconnaissance	OR
Station Designations (SAMPLE table)	
Upper Intertidal, Site A	A
Middle Intertidal, Site B	B
Lower Intertidal, Site C	C
Subtidal (-3 m), Site D	D
Shallow Water (-3 to –10 m), Site E	E
Deep Water (-10 to –30 m), Site F	F
Other	O
Sample Type (SAMPLE table)	
Sediment Chemistry	SC
Subsurface Sediment Chemistry	DC
Mussels Chemistry	MC
Sediment Microbiology	SM
Sediment Toxicology	ST
Chemistry Sediment Blank	FB
Equipment Blank	EB
Photo Chemistry	PC
Core Biology CB	
Sieve Fraction/Replicate (SAMPLE table)	
1.0 mm Fraction	A
0.5 mm Fraction	B
Replicate 1	1
Replicate 2	2
Replicate 3	3

Table 14.7-2. Description of attributes in the CODE table.

Attribute	Code	Format	Example
Code Meaning	CODE	C10	SC

6.0 DATA PROCESSING

This table should be incorporated into data tables and included in reports. Commonly required reports are presented in Method 14.9—*Database Reports*.

7.0 DELIVERABLES/REPORTING

Reports dealing with this table should be produced on as as-needed basis. Example report formats are described in Method 14.9– *Database Reports*.

8.0 HEALTH AND SAFETY CONSIDERATIONS

See each Study Element for details. No special considerations are necessary for operation of the data management system.

9.0 PERSONNEL

Personnel and training requirements to complete the forms and maintain the database tables are common to all Methods, and are provided in the Rationales of this Study Element.

10.0 REFERENCE DOCUMENTS

Method 14.9   Database Reports

Method 14.8
OILED WILDLIFE DATA

Revision No.:   0
Revision Date: June 30, 1999
Prepared by: Erich Gundlach, E-Tech, Inc., and Ted Coogan, Arthur D. Little
Prepared for Petroleum Environmental Research Forum (PERF), Project 94-10

1.0 PURPOSE

This section contains a Method for tracking the collection of dead or oiled wildlife, including mammals, birds, reptiles, and others.

Oiled wildlife may be collected by Study Teams in the field but also from specialist agencies and the public. The location of recovered wildlife can be linked to the geographic information system provided that there is a unique identifier associated with each recovery.

2.0 DEFINITIONS

None.

3.0 EQUIPMENT

Data may be recorded manually or using a computer-based program.

4.0 PROCEDURES

Each Study Team should track collected dead or alive wildlife (see Method 9.9–*Beached Animal Retrieval*). The roles of the Data Coordinator with each Study Team and the designated Data Manager have been defined in Rationales A and C of this Study Element.

Form 14-8 (*Oiled Wildlife Data Entry Form*) and Table 14.8-1 (Attributes) can also be used to capture data from other organizations such as wildlife agencies and bird rescue groups. The Study Team or data management group to undertake this task should be designated.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

Issues related to database input are common to all data tables and are discussed in Rationale C.3 to this Study Element.

6.0 DATA PROCESSING

This table should be incorporated into data tables and included in reports. Commonly required reports are presented in Method 14.9—*Database Reports*.

Table 14.8-1. Description of attributes in database table "OIL_WILDL".

Attribute	Code	Format	Example
Wildlife Number	WILDLIFE_NUM	C8	COEI12

(Unique identifier; given to each organism or group of organisms to enable tracking and release and integration into a GIS mapping system. See Form 14-8.)

Attribute	Code	Format	Example
Common Name	COMMON_NAME	C20	Common Eider
Collection Date	COLL_DATE	Date	04/15/92
Collection Time	COLL_TIME	Time	1315
Sex	SEX	C1	M
Age	AGE	C8	Adult
Number Collected	NUM_COLLECT	N	1
Condition	CONDITION	C15	Lightly oiled
Location	LOCATION	C50	Point Angel
Survey Number	SUR_NUM	C15	OF111292A
Release Date	REL_DATE	Date	06/17/92
Comments	COMMENTS	C30	Bird was lethargic upon capture.
Entry date	ENTRY_DAT	Date	04/25/92
Entry person	ENTRY_PER	C20	J.K. Fenwick

[a] C = Character field, N = Number field, others are number fields of the type indicated.

7.0 DELIVERABLES/REPORTING

Reports dealing with this table should be produced on as as-needed basis. Example report formats are described in Method 14.9– *Database Reports.*

8.0 HEALTH AND SAFETY CONSIDERATIONS

See each Study Element for details. No special considerations are necessary for operation of the data management system.

9.0 PERSONNEL

Personnel and training requirements to complete the forms and maintain the database tables are common to all Methods, and are provided in the Rationales of this Study Element.

10.0 REFERENCE DOCUMENTS

Method 9.9   Beached Animal Retrieval
Method 14.9   Database Reports

Method 14.9

Method 14.9
DATABASE REPORTS

Revision No.:   0
Revision Date: June 30, 1999
Prepared by: Erich Gundlach, E-Tech, Inc., and Ted Coogan, Arthur D. Little
Prepared for Petroleum Environmental Research Forum (PERF), Project 94-10

1.0 PURPOSE

This section provides examples of reports that can be created using the database tables described in Methods 14.1 through 14.8 and that respond to common needs for information. Exact report definition will depend on program needs.

2.0 DEFINITIONS

None.

3.0 EQUIPMENT

These reports are all generated form a computerized database.

4.0 PROCEDURES

Reports should be developed by the Data Manager or Study Team Data Coordinators responding to requests for information. The examples of reports in this Study Element may be modified according to specific data requests.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The reports are only as good as the data entered. Issues related to database input are common to all data tables and are discussed in Rationale C.3 this Study Element.

6.0 DATA PROCESSING

None.

7.0 DELIVERABLES/REPORTING

The following are examples of report formats for deliverables:

Survey summary – Table 14.9-1
Samples per survey – Table 14.9-2
Site summary – Table 14.9-3
Samples per site – Table 14.9-4
Segment summary – Table 14.9-5
Photos summary – Table 14.9-6
Sample summary – Table 14.9-7
Chain-of-custody summary – Table 14.9-8
Oiled wildlife summary – Table 14.9-9

8.0 HEALTH AND SAFETY CONSIDERATIONS

No special considerations are necessary for operation of the data management system.

9.0 PERSONNEL

Personnel and training requirements to complete the forms and maintain the database tables are common to all Methods, and are provided under the Introduction to this Study Element.

10.0 REFERENCE DOCUMENTS

Method 14.1	Survey Data
Method 14.2	Site Data
Method 14.3	Segment Data
Method 14.4	Photographic and Video Data
Method 14.5	Sample
Method 14.6	COC Table
Method 14.7	Codes Table
Method 14.8	Oiled Wildlife Data

Table 14.9-1. Survey Report, containing information related to each survey undertaken. All attributes are from the SURVEY table.

Survey Number: *(SUR_NUM)*
Team Leader: *(TEAM_LEADER)*
Team Members: *(TEAM_MEMS)*

Starting Date: *(START_DATE)*   Ending Date: *(END_DATE)*
Starting Time: *(START_TIME)*   Ending Time: *(END_TIME)*

Survey Conditions: *(CONDITIONS)*

Comments: *(COMMENTS)*

Entry date: *(ENTRY_DAT)*
Entry person: *(ENTRY_PER)*

Table 14.9-2. Samples per Survey Report. Attributes are from the SURVEY table unless noted otherwise.

Survey Number	+	Team Leader	+	Sample Number	+	Date of Sample
(SUR_NUM)		*(TEAM_LEADER)*		*(SAMPLE/SAMP_NUM)*		*(SAMPLE/SAMP_DATE)*

Table 14.9-3. Site Report. Summary of sites established. Attributes are from the SITE table.

Site Number: *(SITE_NUM)*

Date of site: *(SITE_DATE)*
Start Time: *(START_TIME)*   End Time: *(END_TIME)*

Location: *(LOCATION)*

Survey Number: *(SUR_NUM)*

Purpose: *(PURPOSE)*

Tide Stage: *(TIDE_STAGE)*
Water Depth in Meters: *(DEPTH_M)*

Beach Profile Record: *(PROF_REC)*

Latitude   +   Longitude
(LAT_DEG LAT_MIN LAT_SEC, LONG_DEG LONG_MIN LONG_SEC)

Loran 1   +   Loran 2
(LORAN_1   ,   LORAN_2)

UTM easting   +   UTM northing
(UTM_EAST   ,   UTM_NORTH)

Table 14.9-4. Samples per Site Report. Attributes are from the SITE table unless noted otherwise. Linkage is via SURVEY table; SUR_NUM is common to both SITE and SAMPLES.

Site Number	+	Team Leader	+	Sample Number	+	Date of Site
(SITE_NUM)		*(SURVEY/TEAM_LEADER)*		*(SAMPLE/SAMP_NUM)*		*(SITE_DATE)*

Table 14.9-5. Segment Report, containing information related to each segment established. All attributes are from the SEGMENT table. SEG_NUM is the primary database field.

Segment Code: *(SEG_NUM)*
Description: *(SEG_DESCR)*
Sites in Segment: *(SEG_SITES)*
Boundary 1: *(SEG_GNDRY1)*
Boundary 2: *(SEG_BNDRY2)*
Comments: *(SEG_COMMENT)*

Table 14.9-6. Photos Report. Attributes are from the PHOTOS table. Sorting can be by roll or video frame, date, location, or photographer. See also METHOD Table 14.4-3 for producing print photograph labels.

Role+Frame or Meter from Meter to	+	Date	+	Location	+	Photographer
(ROLL_NUM) (FRAME_NUM) *(VID_START) (VID_END)*		*(PHOTO_DATE)*		*(LOCATION)*		*(PHOTOGRAPHER)*

Table 14.9-7. Sample Report. Attributes are from the SAMPLE table unless noted otherwise.

Sample Number	+	COC Number	+	Survey Number
(SAMP_NUM)		*(COC_NUM)*		*(SUR_NUM)*

(Sample Number is comprised of Site Number (first 6 characters), Date of Sample (next 6 characters), Station Designation (character 13), Transect Name (digit 14), Sample Type (characters 15 and 16), Sieve Fraction or Replicate (characters 17 and 18).

Table 14.9-8. Chain-of-Custody Report.

COC Number *(COC_NUM)*	+	Relinquished by *(RELEAS_BY)*	+	Received by *(RECEIV_BY)*	+	Date of Transfer *(RELING_DATE)*

Table 14.9-9. Oiled Wildlife Report. Attributes are from the OIL_WILDL table.

Wildlife Number: *(WILDLIFE_NUM)*   Common Name: *(COMMON_NAME)*
Collection Date: *(COLL_DATE)*   Collection Time: *(COLL_TIME)*
Sex: *(SEX)*   Age: *(AGE)*   Number collected: *(NUM_COLLECT)*

Condition: *(CONDITION)*
Location: *(LOCATION)*
Survey Number: *(SUR_NUM)*   Release Date: *(REL_DATE)*

Comments: *(COMMENTS)*

Entry date: *(ENTRY_DAT)*
Entry person: *(ENTRY_PER)*

FORMS

(If one wishes to use Forms to facilitate uniform data gathering,
these may need to be modified to fit the specific needs of the project.)

Form 14.1　　**DATA ENTRY FORM for the SURVEY Table**

Survey Number: _____

(Ex: OF111292A. Use no more than 15 characters. Working group identifier, e.g., OV=OverFlight, WC=Water Column, SH=Shoreline survey, etc.; plus date and alphabetic character (a, b, c, etc.) if more than one survey conducted on the same day. This identifier must be unique.)

Team Leader: _____

(Ex: C.G. Milhouse. Use initials plus last name, no more than 20 characters.)

Team Members: _____

_____

(Ex: T. Odens, B. Ryan. Use initials and/or last name; no more than 35 characters.)

Starting date: _____ *(format: 12/12/92)*

Ending Date: _____ *(format: 12/13/92)*

Starting Time: _____ *(format: 1205 or 0945)*

Ending Time: _____ *(format: 1535 or 0945)*

Survey Conditions: _____

_____

(Use no more than 40 characters. Describe weather/sea and other conditions that may affect observations/results).

Comments: _____

_____

_____

(Use no more than 256 characters to comment on results or factors influencing results.)

Entry date: _____ *(format: 12/25/92)*

Entry person: _____ *(format: L.B. Johnson; no more than 20 characters)*

DATA ENTRY FORM for the SITE table

Site Number: _____

(Ex: B1027A. Comprised of study team code (see CODES table), and ascending numerical order. Last character provided in case several sites placed in the same vicinity SITE_NUM provides linkage with PHOTOS and other tables.)

Date of site: _____ *(format: 12/12/92)*

Start time: _____ *(format: 1205)*

Ending Time: _____ *(format: 13:15)*

Location: _____

(ex: Evenrude Beach; use no more than 50 characters.)

Survey Number: _____ *(From Survey Table)*

(Derived from SURVEY table during which this site was placed. Survey Number must be exactly the same.)

Segment Number: _____ *(Segment Descriptor Code)*

Purpose: _____

(Briefly provide purpose of site using no more than 25 characters.)

Tide Stage: _____

(Briefly describe stage of tide using no more than 15 characters..)

Water Depth in Meters: _____ *(numbers only, no decimals)*

Beach Transect Record: _____

(Ex: 1212921355. If profiles/transects were run, enter combined date, site, transect; no more than 20 characters. This provides linkage to Transect table.)

Latitude degrees:	_____	*(format: 34)*
Latitude minutes:	_____	*(format: 01)*
Latitude seconds	_____	*(format: 22)*
Longitude degrees:	_____	*(format: 120)*
Longitude minutes:	_____	*(format: 22)*
Longitude seconds:	_____	*(format: 25)*

(The following input is not necessary if lat/long available.)

Loran 1 reading:	_____	*(format: 41200)*
Loran 2 reading:	_____	*(format: 26200)*

(The following input is not necessary if lat/long or loran available.)

UTM easting:	_____	*(format: 742000)*
UTM northing:	_____	*(format: 3767000)*
Entry date:	_____	*(format: 12/13/92)*
Entry person	_____	*(format: L.B. Johnson)*

DATA ENTRY FORM for the SEGMENT Table

Segment Code: _____ *(format: CI05A)*

Segment Description: _____

_____

(Ex: N. side Catalina Island; use no more than 35 characters)

Sites in Segment: _____

(List sites found in the segment. Ex: BI05, CH02, GE101. Use no more than 25 characters.)

Boundaries: _____

_____

(List both boundaries. Ex: Point Alvarez to Pt. Wilson)

Comments: _____

_____

_____

_____

(Ex: Long complex shoreline with many coves. Use no more than 256 characters.)

Form 14.4   **FORM for PHOTOS Table**

Use new form for each survey and roll or video cartridge.

Photographer:_____   Survey Number:_____

Frame or Meter	Date & Time	Location (incl. Site Number, Segment Number, Lat / Long or Loran if available)	Description

MANUAL SAMPLE LABELING FORM

To be used pending the arrival of a computerized system. See Table 14.5-1 for format and CODES table (Table 14.7-1) for codes used. Preprinted labels (on label paper) can be peeled-off and pasted here; otherwise the sample number and comments must be recorded manually here.

The SURVEY form or table (Method 14.1) must be completed first since it contains the record of Survey participants and purpose. For later computer entry, adherence to the number of characters allowed is imperative. Spaces between data elements are not necessary. Use a separate data page for each new survey and date.

Site Number	Date of Sample	Station	Transact	Sample Type	Sieve Fraction / Replicate
C6	Date	C1	N1	C2	C2

Survey Number: _____

Entry Date:_____ (Date: 14/25/94)
Entry Person:_____(C20, J.H.Smith)

Sample Number	Comments / Collector

Form 14.6   **CHAIN-OF-CUSTODY FORM**

Chain of Custody Form for_____   _____
                                                                    COC Number

Send Samples to: _____

    (Address)   _____

                    _____

Preservative:_____

Recorder:_____

Date:_____

Enter ID Number or Affix Copy of Sample Label	Comments

Please return this completed Chain of Custody Form to RP

Relinquished by (Date/Time):	Transporter:	Received by (Date/Time):
Relinquished by (Date/Time):	Transporter:	Received by (Date/Time):

NEW CODES ENTRY FORM

Study Team:_____

(Code = no more than 10 characters. Meaning has no more than 25 characters.)

Code	Meaning	Entry Person and Date

OILED WILDLIFE DATA ENTRY FORM

(for database table OIL_WILDL).

Wildlife Number: _____

(Enter a 8 character unique identifier; e.g., the 4 digit namecode from Element 9, Appendix A plus ascending number. Ex: COEI12 = Common Eider duck number 12.)

Common name:_____   *(no more than 20 characters)*

Collection Date:_____   *(format: 04/15/92)*

Collection Time:_____   *(format: 1419 or 0945)*

Sex:_____   *(format: M or F or U (unknown))*

Age:_____   *(8 letter text; e.g., juvenile or adult)*

Number collected:_____   *(1 to 999)*

Condition:_____   *(no more than 15 characters)*

Location:_____   *(no more than 50 characters)*

Survey Number:_____

(Enter from SURVEY sheet, METHOD Table 14.1-2)

Release Date:_____   *(format: 04/15/92)*

Comments:_____

(No more than 30 characters.)

Entry date:_____   *(format: 12/25/92)*

Entry person:_____   *(format: L.B. Johnson; no more than 20 characters)*