United States
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Agency

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EPA

GIS Conceptual Database Design Study

Conceptual Database Design Report

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USEPA Region II GIS Conceptual Database Design
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Section 1

Introduction

1.1 Background

A geographic information system (GIS) is a powerful data management and analytical tool for integrating diverse sources of information that have one common element—they can be related to a location on the earth's surface. The basic elements of a GIS consist of system users, data, hardware, a communications network, software, user applications, and support staff. The United States Environmental Protection Agency (EPA) Region II (Region) is developing a GIS to support environmental analysis and decision making by regional staff.

The Region's GIS effort began in 1989 when its Office of Policy and Management (OPM) began planning for GIS implementation. Since that time the Region has made steady progress in developing its equipment, software, and communications infrastructure; training staff; coordinating with state GIS programs (New York, New Jersey, Commonwealth of Puerto Rico, and the Virgin Islands); completing specific pilot applications; and acquiring and processing certain Region-wide data. A significant amount of development work remains to be done, however, with limited resources. This database design effort will allow the Region to maximize output from its resources, and is intended to help ensure that the Region's GIS

- Provides a common information base for environmental management by each Division
- Provides mechanisms to transfer information into and out of the GIS database
- Allows for a dynamic, rather than static, view of environmental conditions
- Is flexible enough to meet the diverse needs of the regulatory programs administered by the Region
- Is compatible with state GIS databases

- Can be accessed and used by all program staff
- Becomes fully integrated into Regional operations as a routine decision-making tool.

The Region II GIS database design involved the following three steps: (1) survey and analysis of user needs, (2) inventory and evaluation of data sources, and (3) development of a conceptual database design. Each step in the process was documented in a draft report that was provided to the Region for its review and input. Review comments and revisions were incorporated into final reports.

The survey and analysis of user needs provides fundamental information for design of a shared system. It focuses on the tasks performed by and responsibilities of the users for collection, provision, and maintenance of geographically referenced information. The user needs analysis helps determine the range of geographic data required to support these activities. The *User Needs Assessment Working Paper,* completed in January 1993, documents the results of the analysis.

The inventory and evaluation of data sources is conducted to determine the usefulness and appropriateness of data for inclusion in the GIS database. Factors such as geographic extent, availability, accuracy, collection methods, and format are used to evaluate each identified data source. The database inventory provides a catalog or reference of geographic data used by or available to the Region. It is used to select relevant data for incorporation into the Regional GIS. The *Data Inventory/Evaluation Working Paper,* completed in February 1993, documents the results of the second step in the design process.

The third step, the conceptual database design, is the subject of this report. The design addresses factors such as the general categories of data elements, database organization for cartographic and tabular data items, appropriate keys for linking related files of data, methods of collection and update, quality and source of data, and compatibility with existing state GIS data development efforts.

1.2 Content of Report

In addition to this introductory section, the Conceptual Database Design Report is composed of three main sections and four appendixes. **Section 2, Region II GIS Database Concept,** presents the Region's conceptual database design, logically structured within the framework of a data model. The Region's priority data layers are presented, along with considerations for working in the relational database environment. **Section 3, Database Development and Maintenance Considerations,** presents issues and considerations in database development and maintenance over time, including linkages to EPA databases, use of geographic coordinates data standards, database documentation, data sharing with other data developers and setting priorities for data layer development. **Appendix A** presents the basics of GIS database design, including spatial and descriptive data concepts, and database structure. It also addresses the concept of a

shared database, and presents basic procedures for database creation. **Appendix B** provides a graphic and tabular depiction of the GIS database. Individual data layers are described, their structure outlined, and data sources and methods of development discussed. **Appendix C** provides a list of fields in EPA databases considered high priority for use with GIS. **Appendix D** provides a list of acronyms used in the report.

Section 2

Region II GIS Database Concept

2.1 Objectives and Considerations in Database Design

Several objectives and considerations have guided the development of the Region's GIS conceptual database design, and include the following:

- The database should be simply designed for ease of use and maintenance.
- The database should be relational in structure and capable of being implemented in the Region's relational database management system (RDBMS) of choice (ORACLE).
- The database must support analysis and decision making at multiple levels. Inherent in the levels of application are requirements related to data types, resolution, compilation, scale, frequency of updating, and others.
- The database will be used by many end users for numerous applications, and each can require a different "logical view" of the database. A logical view is how the database appears to be structured to the user, as opposed to how it is physically organized. Different logical views are facilitated by storing the most elemental form of the data whenever possible and practical.
- A number of data layers have coincidental boundaries. Where possible, some level of data interpretation/integration is recommended to ensure consistency between related data sets.
- The GIS database should be multiscaled. Three levels of detail may be required: small scale (1:100,000 or smaller); medium scale (1:24,000); and large scale (1:1,200). Initially, much of the data may be small scale because of its availability. These data are also useful for applications requiring display of the entire Region and beyond, such as ozone transport through the Northeast. Over time, the database should be developed to also contain most layers at the 1:24,000 scale. Some areas may require even larger-scale data for analysis and modeling purposes, such as Superfund Remediation Monitoring. These may be kept in a separate library, with features

generalized to the 1:24,000 level. This large-scale data may also include CAD drawings, which may be stored on-line. Also, large-scale site data may be scanned and referenced to a point layer.

- It is assumed that the Region's approach to automation/conversion of data is to look to the first source of data to acquire it in digital form (e.g., obtain soils layers from the Soil Conservation Service). Consequently, the development of standards and procedures for cooperative development, exchange, and maintenance of data over time, should be a consideration.

- There is a recognized need for some data layers to extend beyond Region II borders. The logical extension may be a joint project area, hydrologic unit, or specified distance (e.g., 10 miles) beyond the Region's borders.

- The Region's selected map projection is Universal Transverse Mercator (UTM), Zone 18 (New York and New Jersey), and Zone 20 (Puerto Rico and Virgin Islands).

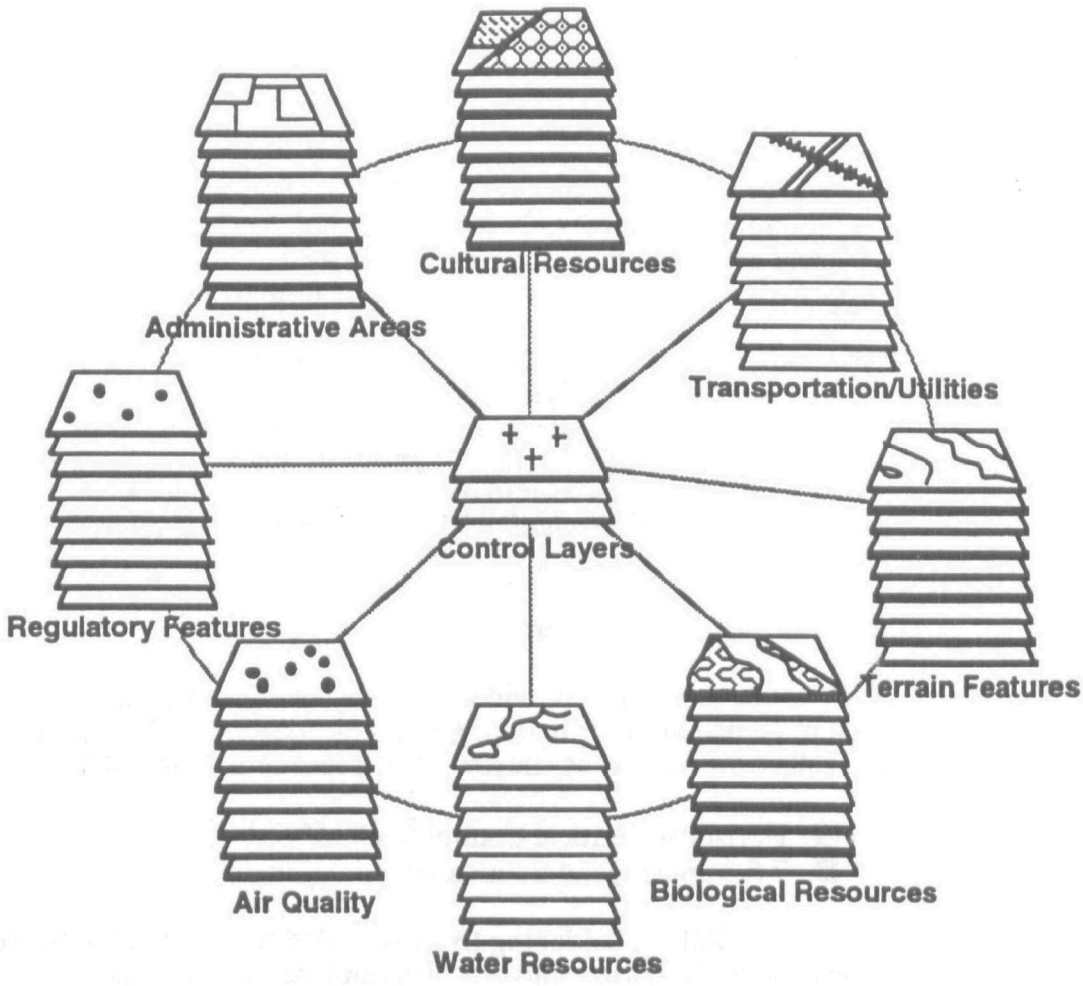
2.2 Conceptual Data Model

The Region II GIS database concept is derived from an integrated geographic database model for environmental protection and natural resource management functions. The model, as shown in **Figure 2-1**, and further discussed in **Appendix A**, is a database design tool that provides a conceptual framework and logical structure for organizing geographic data. The database structure evolves from arranging data efficiently and nonredundantly to support operational, analytical and management functions. The model assembles geographic data into nine categories, as listed below. Each category includes multiple map layers and associated attributes in feature attribute tables (FAT) and related attribute tables (RAT). These concepts are explained in **Appendix A.**

- Control (2 layers)
- Administrative Boundaries (9 layers)
- Cultural Resources (10 layers)
- Transportation/Utilities (8 layers)
- Terrain Features (5 layers)
- Biological Resources (4 layers)
- Water Resources (8 layers)
- Air Quality (5 layers)
- Regulatory Features (18 layers)

Following is an overview of the nine data model components. Details of the map layers included in each component, and related attribute files are provided in **Appendix B, Figures B-1 to B-71.** A diagram is provided for each map layer

Figure 2-1
Region II Data Model



illustrating the layer, its type (point, line, polygon), feature attribute tables and related attribute tables, and primary and foreign keys for related tables. (Example file names are given that may not fit the Region's naming convention.)

Examples of the types or groups of attributes are provided to give the reader a concept of how the layer should be arranged. ***In a conceptual database design, these attributes are not intended to be exact or all-inclusive.*** For example, the attribute "address" refers to a series of items including street address, city, state, and ZIP Code. The attribute "lat/long" refers to a series of items required by EPA's locational data policy including latitude, longitude, method of obtaining coordinates, description of the entity to which the coordinates refer, and estimate of accuracy. In the next step of the GIS development process, the physical database design, each item to be included in the database is listed in its proper file and is described in terms of its format, length, and so forth.

Also, provided in **Appendix B** are the potential data sources for each layer; data preparation, automation/conversion, and quality control methods; linkages/ dependencies on other layers; and maintenance considerations. This information is summarized in **Table B-1** in **Appendix B.** Data source numbers referenced in the table and diagrams refer to data source sheets contained in Appendix C of the *Data Inventory and Evaluation Working Paper*. These reference sheets provide additional detail on each data source.

2.2.1 Control Layers

The control component provides geodetic control and on-line access to commonly used reference lines for finding geographic locations. This data category includes the following layers, as illustrated in **Figures B-1** and **B-2.**

- Horizontal/Vertical Control Stations
- 7.5-Minute Quad Boundaries

The use of Global Positioning Systems (GPS) technology by the Region may contribute to the horizontal/vertical control stations data layer. GPS is a satellite-based radio navigation system that is capable of providing accurate locational (latitude, longitude, and elevation) data for any point on the earth's surface. A GPS receiver uses time and distance measurements from satellites and base stations to determine exact position on the ground. The Region's GPS base stations (two currently exist in New Jersey and Puerto Rico, and one is anticipated in New York) should be included in the horizontal/vertical control stations layer.

2.2.2 Administrative/Management Areas

The administrative areas component provides boundaries of political/administrative jurisdictions such as counties and congressional districts, management areas, and project areas, such as Environmental Impact Statement (EIS) and 404 project areas. In most cases, boundaries are dependent on natural and man-made features found in other data layers, such as coastline and roads. For the most part, administrative

area data are available in GIS format from state, federal, or commercial sources, and may require restructuring/reformatting for the Region's GIS. This data category includes the following polygon layers, as illustrated in **Figures B-3** to **B-11:**

- ZIP Code Boundaries
- Zoning District Boundaries
- EIS and Project Review Areas
- Municipal Boundaries
- County Boundaries
- Region/State Boundaries
- 404 Permit Areas
- Coastal Zones
- Congressional Districts

2.2.3 Cultural Resources

The cultural resources component includes a variety of layers related to human activities and characteristics that may be affected by environmental factors, or that are factors to be considered in environmental decision making. Development of this data component may require significant effort on the part of the Region, as the majority of these data currently do not exist in GIS format, or exist in large national data sets requiring filtering and reduction. This data category includes the following point and polygon layers, as illustrated in **Figures B-12** to **B-21.**

- Archaeological/Historic Sites
- Census Tracts/Blocks
- Dun & Bradstreet Facilities
- Emergency Response Facilities
- Land Ownership
- Land Use/Land Cover
- Parks and Recreational Areas
- Population Estimates and Projections
- Population Health/Risk Factors
- Sensitive Populations

2.2.4 Transportation/Utilities

The transportation/utilities component consists of transportation features such as roads, railroads, airports, and navigation channels, as well as public utilities such as water and sewer networks. Transportation features are generally available in GIS format from federal and state sources, but may require some enhancement by the Region (e.g., to serve address-matching functions). Utility networks are beginning to be automated by local sources but may not be available as Region-wide coverage for some time. This data category includes the following line and polygon layers, as illustrated in **Figures B-22** to **B-29:**

- Air/Water Transportation Facilities
- Pipelines and Transmission Lines
- Railroads
- Roads
- Sewer Lines
- Sewer Service Areas
- Water Lines
- Water Service Areas

2.2.5 Terrain Features

The terrain features component consists of layers related to land morphology and composition.

It includes the following layers, as illustrated in **Figures B-30** to **B-34.**

- Elevation (Hypsography/Bathymetry)
- Geology
- Shoreline
- Soil/Sediment Sample Sites
- Soils

2.2.6 Biological Resources

The biological resources component includes sensitive terrestrial and aquatic species and habitats that may be affected by environmental decision making. For the most part, data in this category have yet to be converted to GIS format, and may require significant effort on the part of the Region to assemble and develop. This data category includes the following layers, as illustrated in **Figures B-35** to **B-37:**

- Significant/Sensitive Habitats
- Significant/Sensitive Species
- Biological Monitoring Sites

In addition, two layers, Land Cover (vegetation) and Ecoregions (available from EPA–EMAP), will be needed to provide background on baseline biology/habitat to use in conjunction with sensitive areas/species.

2.2.7 Water Resources

The water resources component addresses the morphology and ambient water quality characteristics of subsurface and surface waters including groundwater,

streams, lakes, estuaries, and coastal waters. Efforts to automate several water resources data layers are underway by state and federal entities, and are in various stages of completion. This data category includes the following layers, as illustrated in **Figures B-38** to **B-45.**

- Aquifer Boundaries
- Floodplain Boundaries
- Hydrography
- Hydrologic Unit Boundaries
- Surface Water Quality/Quantity Monitoring Sites
- Wellhead Protection Zones
- Wells (drinking water, monitoring, and underground injection)
- Wetlands

2.2.8 Air Quality

The air quality component addresses the spatial distribution of ambient air quality characteristics and factors. It includes the following layers, as illustrated in **Figures B-46** to **B-50.**

- Area/Mobile Source Emission
- Ambient Air Quality Monitoring Sites
- Air Quality Attainment Status
- Climate Zones
- Weather Stations

2.2.9 Regulatory Features

The regulatory features component includes those sites and facilities currently or potentially subject to EPA regulatory requirements, and information about their compliance status. For the most part, these layers may be generated from the locational data (latitude/longitude or address) contained in Regional and national EPA databases. A unique identifier in each database, such as the National Pollutant Discharge Elimination System (NPDES) permit number, provides the linkage from the GIS to the EPA database, allowing access to facility, monitoring, and enforcement data contained in the EPA database. A Facility Index layer, based on the EPA FINDS database, provides a facility location point and cross-index of IDs for the various media/databases affecting the facility. The regulatory features data category includes the following point layers, as illustrated in **Figures B-51** to **B-68.**

- Air Permitted Facilities
- Chemical Storage Sites
- Discharge Points/Outfalls
- Facility Index
- FIFRA/TSCA Facilities

- Potential Pollution Sources
- NPDES Facilities
- Ocean Disposal Areas
- PCS Facilities
- Public Water Supply Facilities
- Radiation Sites
- RCRA Facilities
- Solid Waste Sites
- Spill Locations
- Superfund Sites
- TRI Sites
- UIC Sites
- Underground Storage Tanks

2.2.10 Aerial Photography, Satellite Imagery, Scanned Images, and CAD Drawings

Aerial photography may be used as a background display for referencing geographic features or for on-screen digitizing. Ideally, it would be incorporated into the database as ortho-photography, with distortion removed. This may be accomplished in one of two ways: by optical-mechanical rectification or digital-differential rectification. In optical-mechanical rectification, photo control points are needed to register the photo onto the optical-mechanical rectifier or ortho-photo producer. Rectification is performed on the aerial photography to remove the feature positional errors caused by ground feature height differences and the tilt of the camera lens. The rectified photo can then be scanned and incorporated into the GIS database as a raster image layer.

In digital-differential rectification, oblique aerial photography with photo control points are scanned. A rectangular digital elevation model and camera calibration parameters are used to perform aero-triangulation and digital-differential rectification. This process results in every pixel of the digital photography having reference to true ground position represented by previously defined ground coordinates. This digital file can then be incorporated into the GIS database as a raster image layer, as shown in **Figure B-69.**

Other types of data to be incorporated into the GIS include satellite imagery, scanned images, and CAD drawings. Satellite imagery, like ortho-photography, may be used as a background display for referencing geographic features. It may also be interpreted to derive other data layers such as land cover, vegetation health, and geology. Scanned images may be referenced to a particular point or polygon in a data layer to provide visual or large-scale detail (e.g., site layout for an RCRA site). Likewise, CAD drawings may be stored for reference or may be converted to GIS format if needed for modeling applications, for example.

2.2.11 Lookup Tables and Bibliographic/Source Reference Tables

Many data layers include attributes that are described by standard codes. For example, the state and county Federal Information Processing Standard (FIPS) code appears in many of the EPA databases that are linked to GIS layers. As shown in **Figure B-70,** a lookup table can be devised for standard code descriptions.

To track the origin and quality of features in each layer, a geobibliographic reference file is recommended, such as the one shown in **Figure B-71.** This file would be particularly useful for layers that are assembled from a variety of sources, such as the Significant/Sensitive Species layer. The reference number in the feature attribute table would allow a feature-by-feature accounting of data origin and quality, thereby allowing the user to establish a confidence level for the data. A similar file may also be established to provide a bibliographic reference of reports that may be available for further examination.

2.3 The Relational Database Environment

As described in **Appendix A,** the GIS database design consists of data layer components (lines, points, polygons), feature attribute tables (polygon, arc, or point attribute tables), and related tables.

Feature attribute tables (FATs) must be in INFO format, and contain a mandatory set of items required by ARC/INFO® software. A key ID in the FAT provides the link to related attribute tables. Other attributes may be added to the FAT, but this is generally only done for simple data layers with few attributes. Most attributes are stored in related tables, since the software works faster on small FATs. Related attribute tables may be in INFO files or external Database Management System (DBMS) files. *Most of the Region's related tables should be stored in ORACLE, with the exception of lookup tables designed to support text and symbol commands in ARCPLOT™ software; these should be stored in INFO for performance reasons.* **Figures in Appendix B** show feature and related attribute tables symbolized by DBMS type (INFO or ORACLE). Text and symbol lookup tables are not included in the conceptual database design.

To speed up data access, ORACLE table columns should be indexed, including both the relate column and the query column. Indexes are also required for native-mode selection. Native-mode selection is a form of attribute query that submits a native-mode SQL expression to an external DBMS table to create an ARC/INFO-selected set of coverage features. The FAT (INFO) relate item must be indexed to perform native-mode selection, and speed will be improved if the relate column and query columns are indexed in ORACLE. Native-mode selection also supports one-to-many relationships between records stored in INFO files and ORACLE tables. While indexes speed up selection speed, the INFO indexes must be maintained and

can slow down the update process. When a row is updated or rows are inserted, these changes must be reflected in the index.

2.4 Priority Data Layers

With nearly seventy data layers identified as useful to the Region, means should be sought by which to set priorities for data layer development. Two criteria available for such a purpose from the previous user needs assessment and data inventory/evaluation activities are (1) data demand and (2) ease of acquisition. Data demand, or the need for various geographic and environmental data elements to support Branch functions, was compiled from Branch interviews. A matrix was developed (pp. 3-3 to 3-5 of the *User Needs Assessment Working Paper*) to show required data elements and those Division/Branches reporting a need for the elements. Data requirements were listed as stated by interviewees, with a few exceptions where assumptions were made about detail when only general information was given in the interview. For example, data needs were inferred in cases where the use or need for U.S. Geological Survey (USGS) topographic quads was mentioned without reference to specific map features. In such cases, all feature types on the quads were assumed to be needed. The data elements listed in the matrix were then logically restructured into a series of GIS data layers and attributes. In some cases there exists a one-to-one correspondence between data elements and GIS layers; in others, data elements may be split or combined into GIS layers. **Table 2-1** shows GIS layers ordered by the number of potential user Branches. Highest priority layers (top 25 percent) by this order include the following:

- Hydrography
- RCRA Facilities
- Census Tracts/Blocks
- Population Estimates and Projections
- Roads
- NPDES Facilities
- Superfund Sites
- Wells
- Elevation (Hypsography/Bathymetry)
- Wetlands
- County Boundaries
- Air Permitted Facilities
- Facility Index
- Municipal Boundaries
- Significant/Sensitive Habitats
- Soil/Sediment Sample Sites
- Surface Water Quality/Quantity Monitoring Sites

A second factor in priority setting is ease of data acquisition. The *Data Inventory/ Evaluation Working Paper* provides information to make this assessment, as shown

in summary fashion in **Table 2-1.** Ease of acquisition is summarized by the following three categories:

A (Accessible)—Data are currently accessible in GIS format and little/some processing is required.

M (Moderately Accessible)—Data are currently accessible in digital format and data reduction and/or moderate processing is required.

D (Difficult Access)—Data are not automated or in mixed digital/nondigital format, are not known to be available, or require considerable data organization/collection/processing.

Highest use priority layers can generally be classified as accessible or moderately accessible. The Region already has developed several as ARC/INFO coverages (Hydrography, Census Blocks, Roads, Superfund Sites, County Boundaries, Surface Water Monitoring Sites), some of which may need to be expanded or modified to include related attributes. Two high-priority layers which may be difficult to acquire in a timely fashion are Wetlands and Significant/Sensitive Habitats, which require fairly extensive automation and/or data organization to provide complete coverage of the Region.

Table 2-1
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
RCRA Facilities	21	M—Attributes currently accessible in digital format.	RA CFO OPM/PEB OPM/PAB OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB EPD/PAB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/MWPB WMD/NFPO AWMD/APB AWMD/HWPB AWMD/HWCB AWMD/HWFB
Hydrography	21	A—Basic hydrography completely accessible in digital format.	CFO OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/DGWPB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Hydrography (continued)			WMD/MWPB WMD/NY&NJMPB WMD/NFPO WMD/SWQB WMD/WPCB AWMD/RB AWMD/HWPB AWMD/HWCB AWMD/HWFB
Roads	20	A—Region II road coverages exist.	CFO OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB EPD/PAB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/DGWPB WMD/MWPB WMD/NFPO WMD/SWQB AWMD/RB AWMD/APB AWMD/ACB AWMD/HWPB AWMD/HWCB
Census Tracts/ Blocks	20	M—Region II census block coverage exists; attributes currently accessible in digital format.	CFO OPM/PEB OPM/PAB OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Census Tracts/Blocks (continued)			EPD/PAB ESD/PTSB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/DGWPB WMD/MWPB WMD/NFPO AWMD/RB AWMD/APB AWMD/ACB AWMD/HWCB AWMD/HWFB
Population Estimates and Projections	20	M—Data will be available after the Region has fully processed the Census files.	CFO OPM/PEB OPM/PAB OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB EPD/PAB ESD/PTSB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/DGWPB WMD/MWPB WMD/NFPO AWMD/RB AWMD/APB AWMD/ACB AWMD/HWCB AWMD/HWFB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Superfund Sites	19	M—Region II CERCLIS coverage exists. Attributes currently accessible in digital format.	RA CFO OPM/PEB OPM/PAB OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB ORC ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/MWPB WMD/NFPO WMD/SWQB AWMD/APB AWMD/HWCB
NPDES Facilities	19	M—Attributes currently accessible in digital format.	RA CFO OPM/PEB OPM/PAB OPM/EIB OPM/PPIB EPD/PAB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/MWPB WMD/NY&NJMPB WMD/NFPO WMD/SWQB WMD/WPCB AWMD/HWCB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Wells	19	M—Data currently accessible in digital format.	CFO OPM/PEB OPM/PAB OPM/EIB OPM/PPIB OPM/ISB ORC ESD/PTSB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/NFPO WMD/SWQB AWMD/HWPB AWMD/HWCB AWMD/HWFB
Wetlands	18	D—Partial data available in digital (map and attribute) format. Partial data currently accessible only in hard-copy format.	RA CFO OPM/PEB OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB ESD/PTSB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/MWPB WMD/NY&NJMPB WMD/SWQB WMD/WPCB AWMD/HWCB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Elevation (Hypsography/ Bathymetry)	18	A/D—Small-scale data currently accessible in digital format; larger scale data not completely available yet.	CFO OPM/EIB OPM/PPIB OPM/ISB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/DGWPB WMD/MWPB WMD/NFPO WMD/SWQB AWMD/RB AWMD/APB AWMD/HWPB AWMD/HWCB AWMD/HWFB
County Boundaries	17	A—Region II library currently established along county boundary lines.	RA OPM/PAB OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB EPD/PAB ESD/PTSB ESD/MMB WMD/DGWPB WMD/NFPO WMD/WPCB AWMD/RB AWMD/APB AWMD/ACB AWMD/HWPB AWMD/HWFB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Air Permitted Facilities	16	M—Attributes currently accessible in digital format.	RA CFO OPM/PEB OPM/PAB OPM/EIB OPM/PPIB EPD/CIRB EPD/PAB ESD/PTSB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB AWMD/APB AWMD/ACB
Facility Index	16	M—Attributes currently accessible in digital format.	OPM/PAB OPM/EIB OPM/PPIB OPM/ISB ORC ESD/PTSB ESD/MMB ESD/SMB ERRD/PSB WMD/DGWPB WMD/MWPB WMD/NY&NJMPB WMD/WPCB AWMD/APB AWMD/HWCB AWMD/HWFB
Significant/ Sensitive Habitats	15	D—Some data accessible in digital form; most available in hard-copy only.	CFO OPM/EIB OPM/PPIB OPM/ISB ESD/PTSB ESD/MMB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Significant/ Sensitive Habitats (continued)	15		ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/MWPB WMD/SWQB AWMD/HWCB AWMD/HWFB
Municipal Boundaries	15	A—Data currently available in digital form.	CFO OPM/PAB OPM/EIB OPM/PPIB EPD/CIRB EPD/PAB WMD/MWPB WMD/NFPO WMD/SWQB WMD/WPCB AWMD/RB AWMD/APB AWMD/ACB AWMD/HWPB AWMD/HWCB
Surface Water Quality/Quantity Monitoring Sites	15	M—A Region II coverage exists; Attributes currently accessible in digital format.	CFO OPM/EIB ESD/PTSB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/MWPB WMD/NFPO WMD/SWQB WMD/WPCB AWMD/HWCB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Soil/Sediment Sample Sites	15	M—Attributes currently accessible in digital format; geographic coordinates may not be present.	CFO OPM/EIB OPM/PPIB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/DGWPB WMD/MWPB WMD/NFPO AWMD/APB AWMD/ACB AWMD/HWCB AWMD/HWFB
Region/State Boundaries	14	A—Data currently accessible in digital format.	RA OPM/PAB OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB EPD/PAB ESD/PTSB WMD/DGWPB WMD/MWPB AWMD/APB AWMD/ACB AWMD/HWPB AWMD/HWFB
Weather Stations	13	M—Data available in digital form; will require reduction of large data sets.	CFO OPM/PPIB ESD/PTSB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/SWQB AWMD/APB AWMD/ACB AWMD/HWCB AWMD/HWFB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Soils	13	A/D—Regional scale data available currently; detailed soils in hard-copy only, except in New Jersey and Puerto Rico, where data are partially available in digital form.	OPM/EIB OPM/PPIB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/DGWPB WMD/MWPB WMD/NFPO AWMD/RB AWMD/APB AWMD/HWCB
Land Use/Land Cover	13	A/D—Small-scale, old data available in digital form; larger scale data available mostly in hard-copy only, except in New Jersey and Puerto Rico, where data are partially available in digital form.	OPM/EIB OPM/PPIB OPM/ISB ESD/PTSB ESD/MMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/MWPB WMD/NFPO WMD/SWQB AWMD/APB
Aquifer Boundaries	13	A/D—Boundary layers completed by states; others not available yet.	CFO OPM/PEB ESD/PTSB ESD/MMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/NFPO AWMD/RB AWMD/HWPB AWMD/HWCB AWMD/HWFB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
UIC Sites	12	M—Attributes currently available in digital form.	RA OPM/PEB OPM/PAB OPM/EIB OPM/PPIB OPM/ISB EPD/CIRB ERRD/PSB WMD/DGWPB WMD/NFPO WMD/SWQB AWMD/HWCB
Significant/ Sensitive Species	12	D—Most data only available in hard-copy form.	RA CFO OPM/PEB OPM/EIB OPM/PPIB ESD/PTSB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/MWPB AWMD/HWPB
Railroads	12	A/D—Region II currently has small-scale coverage; large-scale partially in digital form, partially in hard-copy only.	CFO OPM/EIB OPM/ISB EPD/CIRB ERRD/RPB WMD/DGWPB WMD/MWPB WMD/NFPO WMD/SWQB AWMD/APB AWMD/HWPB AWMD/HWCB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Discharge Points/ Outfalls	12	M—Attributes currently available in digital form.	CFO ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/NY&NJMPB WMD/NFPO WMD/SWQB WMD/WPCB AWMD/HWCB
Public Water Supply Facilities	11	M—Attributes currently available in digital form.	CFO OPM/PEB OPM/EIB OPM/PPIB OPM/ISB ESD/MMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB AWMD/HWPB
TRI Sites	11	M—Attributes currently available in digital form.	CFO OPM/EIB OPM/PPIB OPM/ISB ESD/PTSB ERRD/PSB WMD/MWPB WMD/NFPO AWMD/APB AWMD/ACB AWMD/HWFB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Geology	11	A—Small-scale coverages available from the states.	OPM/PPIB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB WMD/DGWPB WMD/NFPO AWMD/RB AWMD/HWPB AWMD/HWCB AWMD/HWFB
Underground Storage Tanks	10	M—Attributes currently available in digital form.	CFO OPM/PPIB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB WMD/MWPB WMD/NFPO AWMD/HWPB AWMD/HWCB
Sensitive Populations	10	D—Attributes may be in mixed digital/ hard-copy form.	RA CFO EPD/CIRB ESD/PTSBERRD/NY &CSB ERRD/NJSB ERRD/RPB WMD/DGWPB WMD/NFPO AWMD/APB AWMD/HWCB
Ambient Air Quality Monitoring Sites	10	M—Attributes currently available in digital form.	CFO OPM/EIB ESD/PTSB ESD/MMB ERRD/NY&CSB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Ambient Air Quality Monitoring Sites (continued)			ERRD/NJSB ERRD/PSB AWMD/APB AWMD/ACB AWMD/HWCB
Pipelines and Transmission Lines	10	A/D—Small-scale data available; large-scale partially in digital form, partially in hard-copy only.	CFO OPM/EIB ESD/SMB ERRD/RAB ERRD/RPB WMD/DGWPB WMD/MWPB WMD/NFPO WMD/SWQB AWMD/RB
7.5-Minute Quad Boundaries	10	A—Currently available in digital format.	CFO OPM/EIB ESD/SMB ERRD/RAB ERRD/RPB WMD/DGWPB WMD/MWPB WMD/NFPO WMD/SWQB AWMD/RB
Land Ownership	9	D—Data not known to be readily available.	CFO EPD/PAB ORC ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/DGWPB AWMD/RB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Potential Pollution Sources	9	D—Data not known to be readily available.	CFO ESD/MMB ERRD/NY&CSB ERRD/NJSB WMD/DGWPB WMD/MWPB WMD/NFPO WMD/SWQB AWMD/APB
Shoreline	9	D—Data in hard-copy format only.	OPM/EIB ESD/PTSB ESD/MMB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB ERRD/RPB WMD/MWPB
Radiation Sites	8	M—Attributes currently accessible in digital format.	OPM/PPIB ERRD/NY&CSB ERRD/NJSB WMD/MWPB WMD/NFPO WMD/SWQB AWMD/RB AWMD/HWFB
FIFRA/TSCA Facilities	8	M—Attributes currently accessible in digital format.	OPM/EIB OPM/PPIB ESD/PTSB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/DGWPB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Dun & Bradstreet Facilities	7	M—Attributes currently accessible in digital format.	ESD/PTSB ERRD/NY&CSB ERRD/NJSB WMD/DGWPB AWMD/RB AWMD/APB AWMD/HWCB
Congressional Districts	7	A—Data currently available in digital form.	RA OPM/PAB OPM/EIB EPD/CIRB EPD/PAB WMD/DGWPB AWMD/HWFB
Population Health/Risk Factors	7	M—Attributes currently accessible in digital format; data reduction required.	CFO OPM/PPIB ESD/PTSB ERRD/PSB ERRD/NY&CSB ERRD/NJSB AWMD/RB
PCB Facilities	6	M—Attributes currently accessible in digital format.	OPM/EIB OPM/PPIB ESD/PTSB ESD/SMB ERRD/NY&CSB ERRD/NJSB ERRD/PSB
Climate Zones	6	D—Data not known to be in digital form.	CFO OPM/PPIB ESD/PTSB ERRD/NY&CSB ERRD/NJSB ERRD/PSB WMD/SWQB
Air Quality Attainment Status	6	D—Data not known to be in digital form.	OPM/PPIB EPD/PAB ESD/MMB WMD/NFPO AWMD/APB AWMD/ACB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Solid Waste Sites	5	D—Data not known to be in digital form.	OPM/PPIB ESD/SMB AWMD/APB AWMD/HWPB AWMD/HWFB
Hydrologic Unit Boundaries	5	D—Data not known to be in digital form.	ESD/PTSB WMD/DGWPB WMD/MWPB WMD/WPCB AWMD/HWCB
Coastal Zones	5	D—Data not known to be in digital form.	OPM/EIB ESD/SMB WMD/MWPB WMD/SWQB WMD/WPCB
Area/Mobile Source Emission	5	D—Data not known to be in digital form.	OPM/PPIB AWMD/APB AWMD/ACB AWMD/HWCB AWMD/HWFB
ZIP Code Boundaries	4	A—Data currently available in digital form.	OPM/EIB EPD/CIRB EPD/PAB AWMD/RB
Spill Locations	4	M—Attributes currently accessible in digital format.	CFO ERRD/RAB AWMD/HWPB AWMD/HWFB
Sewer Lines	4	D—Data not known to be in digital form.	ERRD/NY&CSB ERRD/NJSB WMD/NFPO WMD/WPCB
Floodplain Boundaries	4	D—Data not known to be in digital form.	OPM/EIB ERRD/PSB AWMD/HWCB AWMD/HWFB
Emergency Response Facilities	4	M—Attributes currently accessible in digital format.	ERRD/NY&CSB ERRD/NJSB ERRD/RPB AWMD/HWCB

Table 2-1, continued
Priority Data Layers

GIS Layer	No. of Branches	Acquisition Ease	Branches
Chemical Storage Sites	4	M—Attributes currently accessible in digital format.	ERRD/RPB WMD/DGWPB AWMD/APB AWMD/HWFB
Biological Monitoring Sites	4	M—Attributes currently accessible in digital format.	ESD/SMB ERRD/PSB WMD/MWPB WMD/NFPO
Air/Water Transportation Facilities	4	D—Data not known to be in digital form.	CFO OPM/EIB WMD/SWQB AWMD/APB
Zoning District Boundaries	3	D—Data not known to be in digital form.	AWMD/APB AWMD/HWCB AWMD/HWFB
Wellhead Protection Zones	3	D—Data not known to be in digital form.	ERRD/PSB WMD/DGWPB AWMD/HWPB
Water Lines	2	D—Data not known to be in digital form.	ERRD/NY&CSB ERRD/NJSB
Sewer Service Areas	2	D—Data not known to be in digital form.	WMD/DGWPB WMD/NFPO
Ocean Disposal Areas	2	D—Data not known to be in digital form.	ESD/SMB WMD/MWPB
EIS and Project Review Areas	2	D—Data not known to be in digital form.	CFO OPM/EIB
404 Permit Areas	2	D—Data not known to be in digital form.	CFO WMD/MWPB
Water Service Areas	1	D—Data not known to be in digital form.	WMD/DGWPB
Parks and Recreational Areas	1	D—Data not known to be in digital form.	OPM/EIB AWMD/APB
Archaeological/ Historic Sites	1	D—Data not known to be in digital form.	OPM/EIB
Horizontal/ Vertical Control Stations	0	M—Attributes currently accessible in digital format.	

Section 3

Database Development and Maintenance Considerations

3.1 GIS Linkage to EPA Databases

3.1.1 Downloading Process

As shown in the database design, many GIS data layers directly correspond to EPA databases. In some cases this is a one-to-one correspondence, as in the Underground Storage Tank (UST) layer to the UST database. In other cases, it may be a one-to-many correspondence, as in the Aerometric Information Retrieval System (AIRS) database to three GIS layers: Area/Mobil Source Emissions, Ambient Air Quality Monitoring Sites, and Air Permitted Facilities. Where this correspondence occurs, GIS point layers will be created from EPA databases, using the geographic coordinates or address contained in the database to generate and locate the point. A unique feature identifier, in most cases a site ID, is assigned to the point. Through that feature ID, data in the EPA database are accessible to the GIS. This arrangement requires periodically downloading EPA mainframe databases to the GIS.

Conceptually, the process for downloading databases with geographic coordinates might involve the following steps:

- Download Regional data from the database into a flat file;
- Create a geographic coordinate file;
- Use the geographic coordinate file to generate a point layer;
- Restructure the flat file into series of related tables, if possible; and
- Associate the related tables to the layer through the feature ID.

Similarly, the process for downloading databases with addresses might involve the following steps:

- Download Regional data from the database into a flat file;
- Create an address file;
- Use the address file to address match to road layer with address ranges assigned;
- Create a point layer;
- Process the mismatches;
- Restructure the flat file into a series of related tables, if possible; and
- Associate the related tables to the layer through the feature ID.

Prime considerations in this process are the frequency and content of downloading. These have implications for processing requirements, storage requirements, and access/retrieval time. Frequent downloads may require a significant increase in workload. Selection of specific fields for downloading may decrease storage and processing requirements. An alternative strategy to performing complete downloads is to identify changes to the database since the last update—records added, deleted, or changed—and only download these changes. This would eliminate the need to regenerate the GIS layer with each download, but would require care to maintain the integrity between GIS features and attributes. The Region's expressed need to access historic data for trend analysis may require downloading five or more years of data, thus significantly increasing local GIS storage requirements.

Other databases maintained locally within the Region, as they migrate toward a standard RDBMS, may be linked with GIS layers via a key identifier. As these databases are established in ORACLE, they may be maintained by the user Branches with transactional updates. Care must be taken, however, to maintain integrity between the database and GIS features.

3.1.2 Use of Geographic Coordinates

The use of geographic coordinates in the GIS will occur within the framework of the EPA's Locational Data Policy (LDP). The purpose of the Locational Data Policy is to collect and document latitude/longitude coordinates for facilities, sites, and monitoring points that are regulated or tracked by EPA programs. The intent is to integrate data based on location, promoting cross-media analysis and decision making. A goal of 25-meter accuracy has been established. Use of GPS is

encouraged to collect latitude/longitude data of the highest possible accuracy. Latitude/longitude must be documented in the following format:

- Latitude +/-DD MM SS.SSSS
- Longitude +/-DD MM SS.SSSS
- Method Specific method used to determine coordinates (e.g., GPS, map interpolation)
- Description Textual description of the entity to which the coordinates apply (e.g., pipe discharge point)
- Accuracy Estimated accuracy in terms of the most precise units of measurement used

The current quality of geographic coordinates in EPA databases is variable and/or unknown. Latitude/Longitude data often do not exist in databases. In many cases where they do exist, this information has been supplied by entities other than EPA, such as the permit applicant or local/state agency. Generally, little information is available regarding the method, description, and accuracy of the coordinates. These limitations provide considerable challenge for the generation and maintenance of GIS layers that depend on these coordinates.

Similar kinds of constraints exist for those databases which identify sites by means of address. Addresses may not have been accurately entered, may be missing, or they may identify a location other than the site (e.g., the nearest post office or a post office box). For some EPA databases, addresses are/have been verified; others have not. Also, large sites may be in rural or industrial areas where addresses are ill-defined, or sites may span several locations but be listed under one address. In addition, addresses as listed in the databases may not exactly match street names in the address range street layer, thus increasing time required to process mismatches. The quality of the address range street layer is also a factor to be considered. Topology of the line work may be incorrect or incomplete, and address ranges may not exist for rural areas. It is possible that commercially available products from private vendors may provide more complete street and address data than existing TIGER files. While GIS point layers may be created by address matching and then latitude/longitude coordinates derived from these points, it should be recognized that points created through this process are based on an interpolation performed by the software which assumes uniform address assignment along a street segment. In reality, address assignment is often not uniform or regularly spaced.

Despite the potential limitations of deriving geographic coordinates from address matching, this method may prove more effective than others in initially addressing the Agency's second and third priorities for historical data (i.e., latitude/longitude data with missing qualifiers and no latitude/longitude data). A centralized approach may be used to convert all needed locational data at once. Once decisions have been made regarding which databases are to receive high priority for conversion,

acceptable latitude/longitude data (i.e., with proper qualifier information) may be extracted from the priority databases and set aside. The remainder of the data could be addressed matched to the TIGER address coverage. Where address matching fails, other methods such as map interpolation or photo interpretation may be used.

Once coordinates have been established, they can be improved incrementally. The Region's use of GPS to establish accurate latitude/longitude coordinates for existing and future facilities and monitoring sites will considerably improve, over time, the quality of locational data in existing databases. Priorities should be established and a strategy developed to accomplish this. GPS-derived coordinates measured during routine inspections and surveys may be used in an incremental approach to replace less accurate latitude/longitude information. A key element in both the centralized and incremental approach to improving locational data is to ensure that updates become a permanent part of the database, not to be overwritten by less accurate information. A Regional backup file of improved coordinates that have been submitted to the national databases may be kept for this purpose—to perform automated checking against future downloads from the national systems.

3.1.3 High-Priority EPA Databases and Fields for GIS

Table 3-1 summarizes the EPA database to GIS relationship. It shows the EPA database in priority order by number of Branches using them, by high-frequency-use data fields, and by the relationship to GIS data layers. The source of this information is the database use survey conducted in conjunction with the user needs assessment, as documented in Appendix D of the *Data Inventory/Evaluation Working Paper.*

The first column of **Table 3-1** provides a reference to the Data Source Number as shown in Appendix C of the *Data Inventory/Evaluation Working Paper,* along with a page number. Additional information about the EPA database, such as its availability, currency, geographic coverage, and quality, may be found there.

The second column of **Table 3-1** provides the database name or the acronym commonly used to refer to it. See **Appendix D** for the complete database name. The total number of Branches reporting use of the database is shown in parentheses.

The third column of **Table 3-1** provides the level of current use as reported by Branches in the database use survey (documented in Appendix D of the *Data Inventory/Evaluation Working Paper).* Use level is classified as high, medium, low, varied, or not reported. A high level of use (H) indicates that the Branch reported using *all fields* in the database at high frequency. A medium level of use (M) indicates that the Branch reported using *all fields* in the database at medium frequency. A low level of use (L) indicates that the Branch reported using *all fields* in the database at low frequency. (See Appendix D, page D-1, of the *Data Inventory/Evaluation Working Paper* for the criteria used to estimate frequency of use by a Branch.) A varied level of use (V) indicates that the Branch reported using

Table 3-1
EPA Databases: GIS Priorities and Relationship

Data Source No./ Page	EPA Database Name (Total Number of User Branches)	Level of Use Reported by Branches Using Database	Branches Using Fields at High Frequency	Total High-Freq. Use Fields/ Total Database Fields	GIS Layer Created and/or Receiving Data (Priority Use Ranking)	GIS Database Update Frequency	Comments
143/ C-57	FINDS (16)	*H*-OPM/PPIB *M*-ERRD/PSB *L*-WMD/DGWPB *L*-WMD/WPCB *L*-AWMD/APB *L*-AWMD/HWFB *V*-OPM/PAB *V*-ESD/MMB *N*-OPM/EIB *N*-OPM/ISB *N*-ORC *N*-ESD/PTSB *N*-ESD/SMB *N*-WMD/MWPB *N*-WMD/NY&NJMPB *N*-AWMD/HWCB	OPM/PAB OPM/PPIB	43/43	•Facility Index (16)	Weekly	This layer should be as current as the most frequently updated database it indexes. Care should be taken to maintain concurrence in facility IDs and locational data between this layer and all other regulated facilities layers.
148/ C-75	CERCLIS (13)	*H*-ERRD/NY&CSB *H*-ERRD/NJSB *H*-ERRD/PSB *L*-AWMD/HWFB *V*-OPM/PPIB *V*-WMD/NFPO *N*-OPM/EIB *N*-OPM/ISB *N*-ESD/MMB *N*-ERRD/RAB *N*-ERRD/RPB *N*-WMD/DGWPB *N*-AWMD/HWPB	ERRD/NY&CSB ERRD/NJSB ERRD/PSB	600/600	•Superfund Sites (19)	Weekly	

Data Source No./ Page	EPA Database Name (Total Number of User Branches)	Level of Use Reported by Branches Using Database	Branches Using Fields at High Frequency	Total High-Freq. Use Fields/ Total Database Fields	GIS Layer Created and/or Receiving Data (Priority Use Ranking)	GIS Database Update Frequency	Comments
151/ C-77	PCS (12)	*L*-WMD/DGWPB *V*-OPM/PAB *V*-ESD/MMB *V*-WMD/WPCB *N*-ESD/SMB *N*-WMD/NFPO *N*-OPM/ISB *N*-CFO *N*-OPM/EIB *N*-WMD/MWPB *N*-WMD/NY&NJMPB *N*-WMD/SWQB	OPM/PAB WMD/WPCB	202/650	•Discharge Points/ Outfalls (12) •NPDES Facilities (19)	Monthly	
284/ C-1	US CENSUS (12)	*M*-AWMD/APB *L*-AWMD/ACB *L*-AWMD/HWFB *N*-CFO *N*-OPM/PPIB *N*-OPM/ISB *N*-ERRD/NY&CSB *N*-ERRD/NJSB *N*-ERRD/RAB *N*-ERRD/RPB *N*-WMD/NFPO *N*-AWMD/HWCB	OPM/PPIB	27/27	•Census Tracts/Blocks (20)	Yearly	
147/ C-74	RCRIS (11)	*V*-AWMD/HWFB *V*-OPM/PAB *V*-OPM/EIB *V*-OPM/PPIB *N*-CFO *N*-OPM/ISB *N*-ESD/SMB *N*-WMD/DGWPB *N*-WMD/NFPO *N*-AWMD/HWPB *N*-AWMD/HWCB	OPM/PAB AWMD/HWFB	98/424	•RCRA Facilities (21)	Monthly	

Data Source No./ Page	Database Name (Total Number of User Branches)	Level of Use Reported by Branches Using Database	Branches Using Fields at High Frequency	Freq. Use Fields/ Total Database Fields	GIS Layer Created and/or Receiving Data (Priority Use Ranking)	GIS Database Update Frequency	Comments
153/ C-84	STORET (10)	*L*-ERRD/PSB *L*-WMD/WPCB *V*-OPM/PPIB *V*-ESD/MMB *V*-WMD/DGWPB *V*-WMD/NFPO *N*-OPM/ISB *N*-ESD/SMB *N*-WMD/MWPB *N*-WMD/SWQB	WMD/DGWPB WMD/NFPO	23/145	•Biological Monitoring Sites (4) •Surface Water Qual/Quan Sampling Sites (15)	Monthly	
149/ C-76	TRI (10)	*M*-WMD/DGWPB *L*-AWMD/HWFB *V*-OPM/EIB *V*-AWMD/APB *N*-CFO *N*-OPM/PPIB *N*-OPM/ISB *N*-ESD/PTSB *N*-WMD/NFPO *N*-AWMD/HWCB	OPM/PPIB	50/64	•TRI Sites (11)	Monthly	
138/ C-72	AIRS (9)	*L*-ERRD/PSB *V*-OPM/PAB *V*-OPM/PPIB *V*-ESD/MMB *V*-AWMD/APB *V*-AWMD/ACB *N*-CFO *N*-OPM/EIB *N*-OPM/ISB	OPM/PAB AWMD/APB AWMD/ACB	374/411 (AFS only)	•Air Permitted Facilities (16) •Area/Mobile Source Emissions (5) •Ambient Air Quality Monitoring Sites (10)	Monthly	
172/ C-133	IRIS (6)	*H*-ERRD/PSB *M*-OPM/PPIB *N*-CFO *N*-OPM/EIB *N*-ESD/PTSB *N*-WMD/SWQB	ERRD/PSB	All fields high priority	•Any layer with CAS No. as an attribute	Monthly	This file provides useful information to augment any layer that uses CAS No. It cannot be considered, however, as a layer or coverage in itself.

Data Source No./ Page	EPA Database Name (Total Number of User Branches)	Level of Use Reported by Branches Using Database	Branches Using Fields at High Frequency	Total High-Freq. Use Fields/ Total Database Fields	GIS Layer Created and/or Receiving Data (Priority Use Ranking)	GIS Database Update Frequency	Comments
152/ C-86	RF3 (5)	*L*-WMD/NFPO *L*-WMD/WPCB *N*-ESD/SMB *N*-WMD/MWPB *N*-WMD/SWQB	WMD/NFPO	15/68	•Hydrography (21)	Monthly	This file could eventually be replaced with the hydrography layer and associated attributes.
139/ C-65	CAMEO (5)	*N*-CFO *N*-ERRD/NY&CSB *N*-ERRD/NJSB *N*-ERRD/RAB *N*-ERRD/RPB		No information provided	•Any layer with CAS No. and other key identifiers as attributes	No information provided	CAMEO is emergency response software with a database containing several key identifiers to enable linkage to any site with chemicals present.
163/ C-60	DOCKET (3)	*L*-WMD/WPCB *N*-ORC *N*-WMD/NY&NJMPB		0/75	•Any regulatory layer with a site or spill ID	No information provided	
140/ C-66	ERNS (3)	*L*-ERRD/RAB *L*-ERRD/RPB *N*-CFO		0/101	•Spill Locations (4)	No information provided	ERNS provides data on spills reported to the U.S. Coast Guard and EPA.
144/ C-68	CARD (3)	*N*-ESD/MMB *N*-ESD/SMB *N*-ERRD/PSB		?/657	•Surface Water Qual/Quan Sampling Sites (15) •Soil Sample Sites (15) •Wells (19)	No information provided	CARD samples identified only by facility location probably have a low level of utility for GIS. Samples with lat/long may be more useful.
150/ C-58	FRDS (3)	*L*-ERRD/PSB *V*-WMD/DGWPB *N*-CFO	WMD/DGWPB	10/171	•Public Water Supply Facilities (11) •Water Service Areas (1)	Monthly	
155/ C-85	WBS (3)	*L*-ESD/MMB *N*-WMD/MWPB *N*-WMD/SWQB		0/84	•Hydrography (21)	Yearly	
170/ C-64	UST-DMS (2)	*N*-WMD/DGWPB *N*-AWMD/HWPB		No information provided	•Underground Storage Tanks (10)	No information provided	
141/ C-56	SPCC (2)	*N*-ERRD/RAB *N*-ERRD/RPB		?/47	•Chemical Bulk Storage Sites (4)	No information	

Data Source No./ Page	BRA Database Name (Total Number of User Branches)	Level of Use Reported by Branches Using Database	Branches Using Fields at High Frequency	Total High-Freq. Use Fields/ Total Database Fields	GIS Layer Created and/or Receiving Data (Priority Use Ranking)	GIS Database Update Frequency	Comments
145/ C-83	LDMS (2)	*L*-ESD/MMB *N*-ESD/SMB		0/29	•Surface Water Qual/Quan Sampling Sites (15)	Yearly	Probably has a low level of utility for GIS.
168/ C-63	SESS (2)	*H*-ERRD/PSB *L*-ORC	ERRD/PSB	73/73	•Superfund Sites (19)	Monthly	
169/ C-87	ODES (2)	*N*-WMD/MWPB *N*-WMD/SWQB		No information provided	•Surface Water Qual/Quan Sampling Sites (15)	No information provided	
154/ C-67	UICS (2)	*V*-OPM/PPIB *V*-WMD/DGWPB	WMD/DGWPB	32/187	•UIC Sites (12)	Monthly	
146/ C-73	BRS (2)	AWMD/HWCB AWMD/HWFB		0/197	•RCRA Facilities (21)	Yearly	
171/ C-150	QTRACK (2)	*N*-ESD/MMB *N*-ESD/SMB		?/29	•EIS and Project Review Areas (2)	No information provided	
173/ C-163	NJCRTK (2)	*N*-ERRD/RAB *N*-ERRD/RPB		?/20			
164/ C-55	D&B (2)	*L*-WMD/WPCB *N*-ESD/PTSB		0/26	•Dun and Bradstreet Facilities (7) •PCB Facilities (6)	Yearly	
165/ C-61	FFIS (1)	*N*-OPM/EIB		?/22		No information provided	
166/ C-149	NCDB/FTTS (1)	*N*-ESD/PTSB		No information provided	•FIFRA/TSCA Facilities (8)	No information provided	
142/ C-71	FFTS (1)	*V*-OPM/EIB	OPM/EIB	22/86	•EIS and Project Review Areas (2)	Monthly	
167/ C-62	FACTS (1)	*M*-OPM/EIB		0/37	•EIS and Project Review Areas (2)	Monthly	
	HRS (1)	*N*-ERRD/PSB		No information provided		No information provided	Data from several GIS layers may be used in conjunction with the ranking software.

Data Source No./ Page	EPA Database Name (Total Number of User Branches)	Level of Use Reported by Branches Using Database	Branches Using Fields at High Frequency	Total High-Freq. Use Fields/ Total Database Fields	GIS Layer Created and/or Receiving Data (Priority Use Ranking)	GIS Database Update Frequency	Comments
174/ C-4	Risk*Assistant (1)	*L*-OPM/PPIB		0/18	•Any layer with CAS no. as an attribute	Monthly	Risk*Assistant is a risk modeling tool, with a database containing a key ID (Site ID) to link to any site with chemicals present. It can augment existing layers, but cannot be considered a layer in itself.

Other Databases

161/ C-82	ETS	ESD/PTSB		No information provided	•Dun and Bradstreet Facilities (7)	No information provided	
160/ C-81	RODS			No information provided	•Superfund Sites (19)	No information provided	RODS provides the text of each Record of Decision document for Superfund sites based on agreements between EPA and the Responsible Party.
158/ C-80	SLS			No information provided	•Superfund Sites (19)	No information provided	
157/ C-79	NEEDS			No information provided	•NPDES Facilities (19)	No information provided	
156/ C-78	GICS			No information provided		No information provided	
175/ C-70	PADS	ESD/PTSB		No information provided	•PCB Facilities (6)	No information provided	
159/ C-54	RSDB	AWMD/RB		No information provided	•Radiation Sites (8)	No information provided	
176/ C-164	BOID	CFO		No information provided	•NPDES Facilities (19)	No information provided	

Data Source No./ Page	EPA Database Name (Total Number of User Branches)	Level of Use Reported by Branches Using Database	Branches Using Fields at High Frequency	Total High-Freq. Use Fields/ Total Database Fields	GIS Layer Created and/or Receiving Data (Priority Use Ranking)	GIS Database Update Frequency	Comments
177/ C-165	PRASAD	CFO		No information provided	•NPDES Facilities (19)	No information provided	
178/ C-166	LRD	CFO		No information provided	•NPDES Facilities (19)	No information provided	
179/ C-167	PRPSD	CFO		No information provided		No information provided	

fields at varied frequencies that may range from not at all to high. (See Appendix D of the *Data Inventory/Evaluation Working Paper,* for the detailed listing of the use of each field as reported by each Branch.) In many cases, the level of use was simply not reported by the Branch, as represented by an "N" in the table.

The fourth and fifth columns of **Table 3-1** provide information about frequently used priority data. Those Branches that reported a current or desired use of one or more fields in the database at high frequency are shown, as well as the total number of most frequently used fields in the database.

The sixth column of **Table 3-1** indicates the relationship between the EPA database and the GIS (i.e., which GIS layers will be created or receive data from EPA databases). It also shows, in parentheses, the priority ranking for each receiving GIS data layer, based on the number of potential user Branches.

Based on the number of Branches reporting use, this table suggests the highest priority databases for linkage to the GIS are FINDS, CERCLIS, PCS, Census, RCRIS, STORET, TRI, and AIRS. These databases in turn provide data for potential high-priority GIS layers: Facility Index, Superfund Sites, NPDES Facilities, Census Tracts/Blocks, RCRA Facilities, Surface Water Quality/Quantity Sampling Sites, TRI Sites, and Air Permitted Facilities. Fields within these databases that were reported as current or desired high-frequency use are suggested to be high priority for the GIS. These fields are listed by database in **Appendix C.** For FINDS and CERCLIS, all data fields are used at high frequency, requiring a complete database download. For PCS, RCRIS, STORET, TRI, and AIRS, selected fields are used at high frequency.

The next "tier" of databases, IRIS (6), RF3 (5), and CAMEO (5), represent special cases of data. IRIS cannot be represented as a layer or coverage in itself, but rather provides risk information that may be used in conjunction with other data layers. RF3 may be used in creation and update of the hydrography layer, but may eventually be replaced by the hydrography layer and associated attributes, a more efficient way of storing and managing the RF3 data. CAMEO is emergency management software, with a database that may be linked to GIS layers by key identifiers such as site address or CAS number.

The lower intensity use databases with one, two, or three Branches reporting use include DOCKET, ERNS, CARD, FRDS, WBS, UST-DMS, SPCC, LDMS, SESS, ODES, UICS, BRS, QTRACK, D&B, FFIS, NCDB/FTTS, FFTS, FACTS, and Risk Assistant. These may not be high priority for GIS implementation, except in cases in which the databases are associated with potential high-priority-use layers. This occurs for the following databases: CARD, FRDS, WBS, UST-DMS, LDMS, SESS, ODES, UICS, BRS, D&B, and NCDB/FFTS. A high demand for the GIS layers associated with these databases may indicate the need to reevaluate the use of these databases and their priority for implementation within the GIS. In some cases, there may be a higher priority need for the database as well as the GIS layer than currently indicated, such as in the case of underground storage tanks where insufficient information was provided for the database use

survey. In other instances, there may be a legitimate need for the data layer, but few requirements for the attributes provided by the associated database. This appears to be the case for FRDS/Public Water Supply Facilities, for example. While many Branches seem to need to know the locations of these facilities, few appear to require the associated compliance details that FRDS provides.

Other databases mentioned in documentation provided by the Region or during the user needs assessment process are also shown in **Table 3-1,** along with their potential link to GIS layers. No use information was collected for these databases.

3.2 State/Federal Data Sharing

Automation and maintenance of nearly seventy corporate data layers and associated attribute tables is potentially an undertaking of considerable size. To the extent that this task coincides with that of state and federal agencies with similar GIS development requirements, consideration should be given to cooperative arrangements for data development and sharing. Layers that the states are currently developing, or for which they are the logical "first source" of data, include the following:

- Horizontal/Vertical Control Stations (state)
- Municipal/County/State Boundaries
- Coastal Zones
- Congressional Districts
- Archaeological/Historic Sites
- Emergency Response Facilities
- Sensitive Populations
- Sewer/Water Service Areas
- Geology
- Significant/Sensitive Habitats and Species
- Aquifer Boundaries
- Wellhead Protection Zones
- Wetlands (state designation)
- Potential Pollution Sources
- Solid Waste Sites

Following are layers for which data are available from federal agencies. The Region may consider cooperative development arrangements for these layers, which could also be shared with the states.

- Horizontal/Vertical Control
- Land Ownership
- Land Use/Land Cover
- Population Health/Risk Factors
- Pipelines and Transmission Lines

- Railroads
- Roads
- Elevation
- Shoreline
- Soils
- Floodplain Boundaries
- Hydrography
- Hydrologic Unit Boundaries
- Wetlands (NWI)

A complete listing and description of state GIS layers/data and federal data sources can be found in Appendix C of the *Data Inventory/Evaluation Working Paper.*

3.3 Data Standards Development

Digital data standards provide a structure for the creation and maintenance of an integrated, nonredundant, and accurate database. Standards ensure consistency, uniformity, and quality in data automation. They promote accurate transfer of data from both manual and digital sources. Standards also create a common understanding of the quality expectations for digital GIS data. The development of GIS data standards and procedures is not only important for guiding Regional database development efforts, but also in providing consistency in any cooperative data development efforts and data sharing with other agencies. Digital data standards should be established to address the following areas:

- Database Structure
- Automation Procedures
- Coding Conventions and Attribute File Standards
- Quality Assurance Procedures
- Documentation Policy
- Data Transmittal Policy

Database Structure standards relate to data sources, projections, accuracy and resolution, data consistency, and data completeness. Data sources address the types of map media and manuscripts to be used in database preparation. Selection of an appropriate map projection should be addressed. Requirements for positional accuracy of map features, accuracy of attributes in terms of currency and completeness, and appropriate resolution should be established. Standards for logical consistency (i.e., connectivity and coincidence of features) should be established to maintain logical relationships between features. Data completeness, in terms of aerial extent completeness, attribute completeness, classification scheme completeness, and field verification completeness should be addressed.

Automation Procedures relate to data preparation, loading/conversion, manipulation, and use. Standards should be established for data integration and preparation—preparation of simple and composite manuscripts and templates, for

example. Standards should be set for establishing correct topology (e.g., polygon closure, processing tolerances). Acceptable levels of error in data processing should be identified.

Coding Conventions and Attribute File Standards should be established. Guidelines should be presented for determining item definitions and normalizing data files. Acceptable code classification schemes should be identified.

Quality Assurance Procedures relate to checking for consistency of cartographic features, positional accuracy of line work, and accuracy of attribute information. Quality control procedures for the production process should be established.

Documentation Policy relates to complete documentation of data sources, automation methods, data file structure, and content. Proper documentation is essential to understanding the utility and limitations of data sets. Policy should address at least three areas: data source documentation, automation methods/ products documentation, and updates/enhancements documentation. Documentation policy is further discussed in **Section 3.4.**

Data Transmittal Policy relates to digital and hard-copy transmittal of GIS products. The process of data transmittal should be carefully performed and documented. Policy should be established for the following:

- Checking and certification of delivered media.
- Compatibility of data and delivery media with destination systems.
- Use of standard transmittal forms.
- Use of delivery documentation and supporting hard-copy listings.

3.4 Database Documentation

An increasingly important component of the the GIS database is documentation, including both on-line and hard-copy metadata describing the quality and utility of the data. Several levels of documentation are possible and may be required: feature/attribute level (e.g., the geobibliographic reference file shown on page B-71), layer level (e.g., the EPA Coverage Documentation Program), and the database level. A few programs and efforts that are currently underway to address and standardize metadata content and format may influence the Region's metadata development strategy. These include the federal Spatial Data Transfer Standard (SDTS), the Federal Geographic Data Committee's proposed metadata standards, and the EPA Coverage Documentation Program currently in use in the Region.

The Spatial Data Transfer Standard provides specifications for digital spatial data transfer, including the definition of spatial features and attributes and data transfer encoding. The standard, mandated for use beginning next year, is significant for database documentation in that it specifies the format and content of a data quality report to accompany digital spatial data. It requires a report on data lineage,

positional accuracy, attribute accuracy, logical consistency, and completeness to allow a user to evaluate the fitness of data for a particular use. SDTS also provides data dictionary standards related to data definition, domain, and schema, which could involve considerable documentation of data layers and attributes.

The Federal Geographic Data Committee, of which EPA is a member, has proposed content standards for spatial metadata. Draft data elements for metadata are as follows:

- Identification section, describing general data content, spatial extent, and use of data.
- Projection information, describing horizontal and vertical coordinate systems used.
- Data custodian information, providing point of contact for the data.
- Access information, providing details about the means and conditions of data access.
- Status information, describing the state of, maintenance cycles for, and policies on availability of data.
- Data dictionary/schema, describing thematic content of features and characteristics of features.
- Source information, describing documents used to compile the data.
- Processing steps, describing procedures and parameters used to convert source materials.
- Data quality, to assist users in determining suitability for a particular application.
- Metadata reference section, describing the currentness of and contacts for the metadata.

The EPA Coverage Documentation Program is used to create on-line and hard-copy documentation files for GIS data layers. These files, which follow the layer if it is copied, split, or joined, contain basic information such as data sources, extent, scale, projection, last modification date, and contact person. Attribute and lineage documentation programs are also available to document items in related attribute files (INFO and DBMS files).

While documentation is an essential component of the initial GIS database development process, it should also become an integral part of the update and maintenance cycle. The addition, deletion, or movement of features; the editing of

attributes; and the complete replacement of data sets requires careful tracking and reporting to provide the user a continued understanding of data currency, accuracy, completeness, and utility. Automated edit tracking routines may be devised to assist in the metadata update process.

3.5 Priority Data Layer Development

A recommended next step in the database creation process is to assemble a data development strategy that recognizes priority layers and provides a strategy and schedule for their completion. Factors to consider include the following:

- Data-to-data relationships—some data layers and attributes depend on the completion of others.
- Data availability—as identified herein, and in the *Data Inventory/Evaluation Working Paper.* The Region has already acquired and processed several available data sets, which make certain applications possible, including query and plotting.
- Most commonly needed data—as identified herein and in the *User Needs Assessment Working Paper,* tempered by Regional perspective and insight.
- Critical administrative requirements—certain data elements, although not widely needed, may support critical or priority programs.
- Technical database implementation issues (e.g., database structuring issues related to downloading data from the mainframe) and database structure issues related to hardware, software, and network communications.

Appendix A

GIS Database Design and Development Concepts

Appendix A

GIS Database Design and Development Concepts

1.0 Spatial Data Concepts

Spatial data communicate location, shape, and relationships among features on the earth's surface. Each map feature has a specific geographic location, defined in terms of x,y coordinates such as latitude/longitude or State Plane coordinates. (The State Plane coordinate system, commonly used by governmental agencies, is a coordinate system designed to provide a common reference system for surveyors and mappers for mapping the United States. Measurements are made in meters from a point of origin in the state.) A GIS data layer illustrates the location and shape of a set of related features on the surface of the earth, such as roads or wetlands.

Map features may be represented in vector format as a set or series of x,y Cartesian coordinates for points, lines, or areas, as shown in **Figure A-1.**

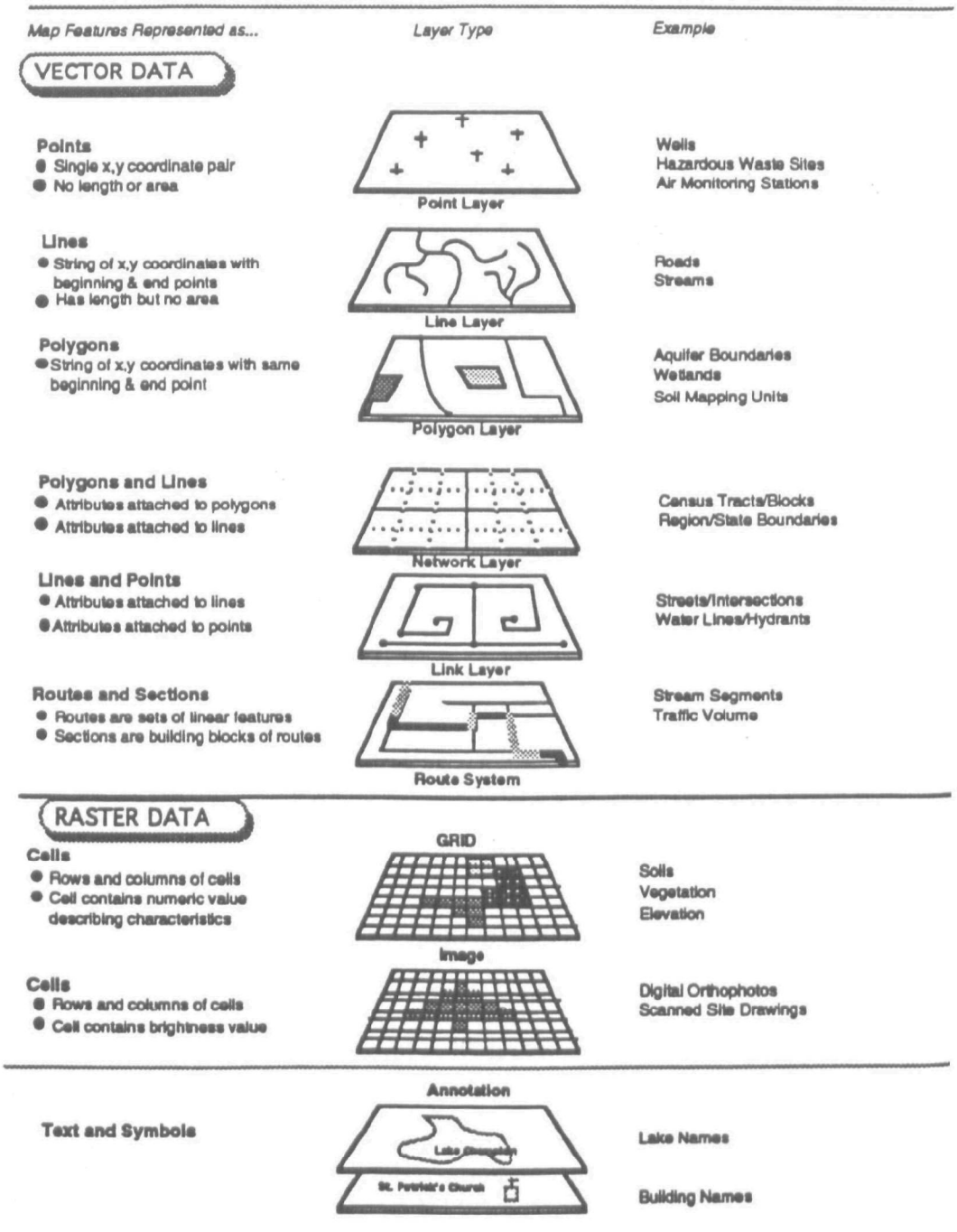
- A *point* is used to illustrate a feature whose shape is too small to be defined as an area on a map of a given scale. Examples are wells and monitoring stations.

- A *line* is used to illustrate the location of a map feature that is too narrow to be displayed as an area, such as a stream or pipeline. A line can also represent information with no physical shape, such as a contour line.

- A *polygon* is used to illustrate an area of homogeneous characteristics, such as a lake, land use area, municipal boundary, or soil mapping unit.

Map layers are typically organized so that each contains a single feature type: points, lines, or polygons. This is not always the case, however, as shown in **Figure A-1.** More complex types of map layers include network layers, link layers, and route systems. A *network layer* contains information about both polygons and lines. For example, a parcel map may be created as a network layer,

Figure A-1
GIS Data Types



in which information about the parcel areas as well as about the surveyed boundary lines is stored. A *link layer* contains information about both lines and points. For example, a GIS map of the water distribution system may be created as a link layer, in which information about the water mains is stored as lines, and hydrants as points. A *route system* is a collection of routes representing different instances of a logical collection of linear features, such as a stream network. The purposes of a route system are to provide accurate linear feature representation without having to modify the underlying topology (i.e., to avoid splitting arcs each time attribute values change) and to allow existing linear data that have been recorded as route-measures to be mapped and analyzed.

Certain types of geographic data and analysis may more appropriately use raster- or grid cell-based geoprocessing capabilities. A grid is based on a combined raster-based (grid cell) spatial model and a relational database that manages all attributes associated with cell values. A group of cells forms a feature. Grids are particularly useful in addressing locational problems where the location and its surroundings are as important, if not more important, than the feature makeup (e.g., modeling/ projecting noise impacts from proposed airport sites; determining population affected by a hazardous chemical spill where concentration diminishes with distance from the source).

A second type of raster data is imagery. This includes images that occupy a continuous geographic space of interest, such as aerial photography and satellite scenes. It also includes images associated with features in the geographic space of interest, such as a scanned engineering drawing of a road improvement represented as a linear feature, or a photograph of a building represented as a point feature in a map layer. The former may be registered to vector layers to provide background planimetric detail for display and update of vector layers, and the latter is more appropriately considered an attribute or descriptor of a map feature, as described below.

2.0 Descriptive (Attribute) Data Concepts

In a GIS database, descriptive information about map features is stored in related database files, called *attribute* files, or *feature attribute tables*. Descriptive information is typically derived from operational records of the Region, such as forms and tables (permit tracking databases), reports (remedial investigation report), and counts and measures (wildlife species counts). Descriptive information can take the form of words, numbers, alphanumeric characters, and text strings. Initially, attributes in the geographic database are likely to contain the descriptive data easily stored in tabular files (words, numbers, and alphanumeric characters), particularly the data stored in the major EPA databases such as CERCLIS, AIRS, PCS, RCRIS, TRI, and so forth. By using scanned image storage and retrieval, more complex forms of descriptive data such as reports or document images (deeds or floor plans) can also be displayed as attributes to map features.

Using GIS commands, descriptive information contained in attribute files can be automatically illustrated on a map by using colors or patterns to distinguish between characteristics. These are called *thematic maps*. For example, in a thematic map of land use, areas of different land use categories will be shaded with a different color or pattern. The land use category, and by extension the shade pattern to use, are determined by the land use code associated with each land use polygon in the GIS database.

Alternatively, or in addition, each land use area can be labeled with a piece of text that communicates the land use code for each land use polygon. Descriptive information may also be stored as a separate annotation layer, as shown in **Figure A-1**, which may be turned on or off in order to display layers with or without the identifying nomenclature. When displayed in annotation layers, the descriptive data are purely graphic features meant to provide the necessary text and symbols to visually identify map features. They are not directly connected to the "intelligence," or attributes, related to the map features.

3.0 Database Structure

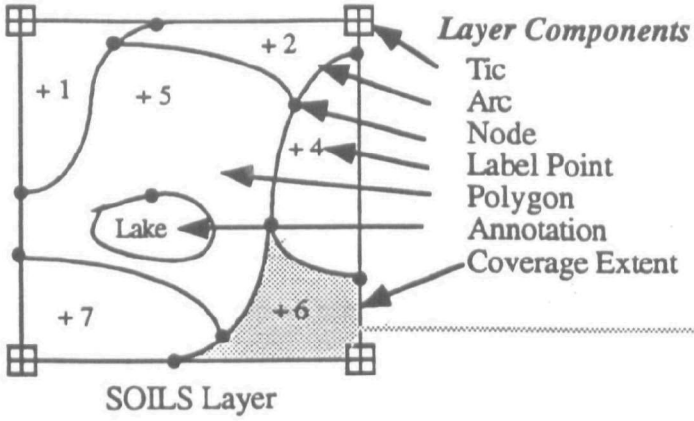
In the database model for vector data, each point, line, or area corresponds to a set of x,y coordinates, and the GIS software builds a topological structure that incorporates the following three concepts of topology:

- Lines connect to each other at nodes (connectivity)
- Lines connect to surround an area (area definition)
- Lines have direction and left and right sides (contiguity)

In a layer, map features are stored graphically while attributes about the layer features are stored in related tables. **Figure A-2** illustrates the structure and components of the graphic and tabular database.

Primary Layer Components. Lines (or arcs) represent line features such as streams and borders of area features. They can be topologically linked to their endpoints (nodes) or to areas (polygons) on each side of them. Nodes represent arc endpoints and intersections of line features. A node may be topologically linked to arcs that meet at the node. Polygons represent area features such as land use districts or parcels. They are defined topologically by the arcs that compose their borders and a label point inside the border. Label points are used to associate attributes with polygons.

Figure A-2
GIS Data Structure



Feature Attribute Table
SOILS.PAT

RECNO	AREA	PERIMETER	SOILS#	SOILS-ID	TYPE	RATING	SUITABILITY
1	-36.0	24.0	1	0	—	—	—
2	3.0	9.0	2	1	A3	113	HIGH
3	2.5	8.5	3	2	C6	95	LOW
4	15.0	15.0	4	3	B7	212	MODERATE
5	4.0	8.5	5	4	B13	201	MODERATE
6	2.0	4.5	6	5	Z22	86	LOW
7	5.5	12.0	7	6	A6	77	HIGH

Secondary Layer Components. Tics or registration points provide geographic control for a layer. Tics are used to register all layer features to a common coordinate system. The coverage extent is the rectangle that defines the coordinate limits of arcs and label points in a layer. Annotation is the text used to label layer features. Annotation is not topologically linked with other features. It is used for display purposes only and cannot be used in analytical processes. Annotation is defined by a text string, and one to four points specifying annotation type and location. It is stored in a file that stands alone under the layer directory, not intrinsically associated with any layer features.

Feature Attribute Tables. Attributes of graphic layer features are stored in feature attribute tables (FATs). The most commonly used FATs are as follows:

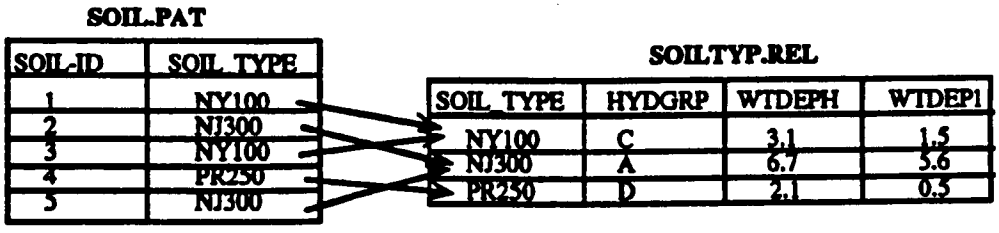
- ***Polygon Attribute Table (or PAT)***—Contains information stored for polygons (areas)
- ***Arc Attribute Table (or AAT)***—Contains information stored for arcs (lines)
- ***Point Attribute Table (or XAT)***—Contains information stored for points.

Different types of layer features can be combined in the same layer, such as lines and points in a network layer. Such layers have two FATs (e.g., a network layer has a PAT and AAT).

Related Tables. Attribute data for coverage features are not restricted to the FAT. Attributes can be stored in any number of tables and accessed or made available through a structure termed "relate." A relate structure takes advantage of the relational data model and establishes logical linkages between two tables or files, a *from*-table and a *to*-table. Relationships between two tables are established through a common data item in each table. The common item is called a key. Two types of keys exist—foreign and primary. A foreign key is an attribute value in one table that uniquely identifies a record in another table. An item value or key that uniquely identifies a record within the same table is called a primary key.

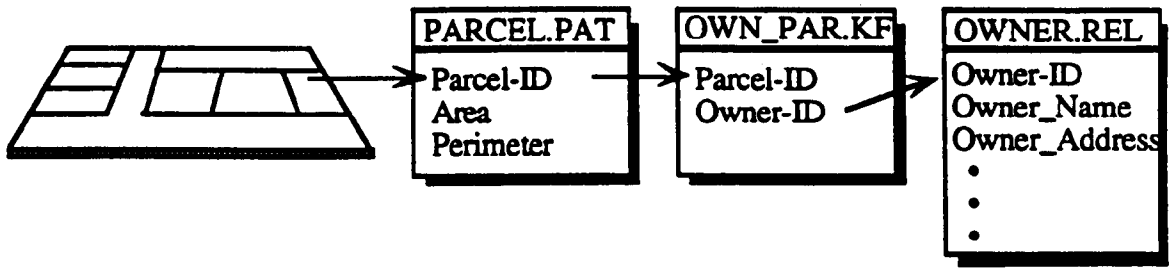
A relational database management structure that uses relates can be efficient for data storage and processing. Relates are used to model or store many-to-one and one-to-many relationships. For example, as shown in **Figure A-3**, a soils layer may have many soil polygons but only a few types of soils, thus exhibiting a many-soil-polygons-to-one-soil-type relationship. The SOIL-ID is the primary key of the SOIL.PAT. The item SOIL_TYPE is a foreign key because it uniquely identifies a record in the table SOILTYP.REL. Within the SOILTYP.REL table, however, the item SOIL_TYPE is the primary key. It provides access to soil attributes such as hydrologic group (HYDGRP) and depth to water table (WTDEPH, WTDEP1).

Figure A-3
Related Tables Structure



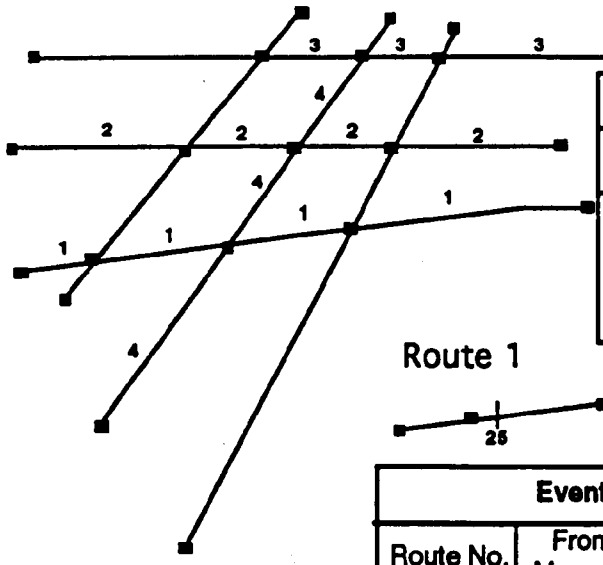
A key file may be used to support one-to-many and many-to-many relationships among tables. It serves as an intermediate link between the files of interest (typically a FAT and an associated REL file) and facilitates processing of complex relationships. The example key file shown in **Figure A-4** illustrates a situation in which many owners can own one parcel and many parcels can be owned by one owner.

Figure A-4
Key File Concept

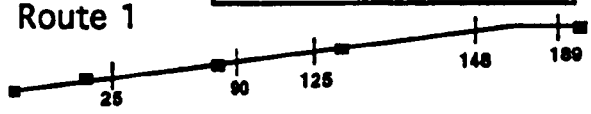


Dynamic Segmentation. This is a method of storing data that pertain to linear features such as roads, drainage networks, or utility lines. It allows the lines within a line layer to be "seen" and accessed many different ways. It is implemented through two basic tabular structures, the route table and the event table. The route table assigns a collection of lines within a line layer to one common route. In a line layer that represents city streets, many different lines make up a single route with a common street name. In the same layer, other lines compose a different street. In the route table these are defined as two routes. Once routes are defined for a given line layer, they can be referenced by events. Events reference a specific route, the route origin, and measurements along the route. Events may be pavement conditions along a street, for example, or water quality attainment status along a stream. **Figure A-5** illustrates the concepts of routes and events.

Figure A-5
Dynamic Segmentation



Route Table	
Route No.	Route Name
1	Main Street
2	Elm Street
3	A Street
4	Center Street



Event Table			
Route No.	From Measure	To Measure	Pavement Condition
1	0	25	Good
1	25	90	Medium
1	90	125	Poor
1	125	148	Good
1	148	189	Excellent

4.0 Shared Database Concept

One of the primary principles of the Region II GIS conceptual design is that of the *shared database*. The shared database implies that Divisions and Branches with different functions and responsibilities have common data needs. For example, most Branches require census tract and population data for spatial analysis. It is not necessary for each Branch to store, manage, and update this information independently when the opportunity exists for all to access the data electronically in a shared database, in which the data are updated periodically and their accuracy is maintained.

The GIS conceptual database design provides for sharing of commonly used map and attribute data among users. Much of the map and attribute data in the system will be accessed by more than one Division and are called *corporate* data. Corporate data may be created and maintained by a single Division or Branch but are available to all or to many. Such data are shared as a resource of the "corporation" (the Region). Most information in the Region's GIS database will be accessible to all regional users.

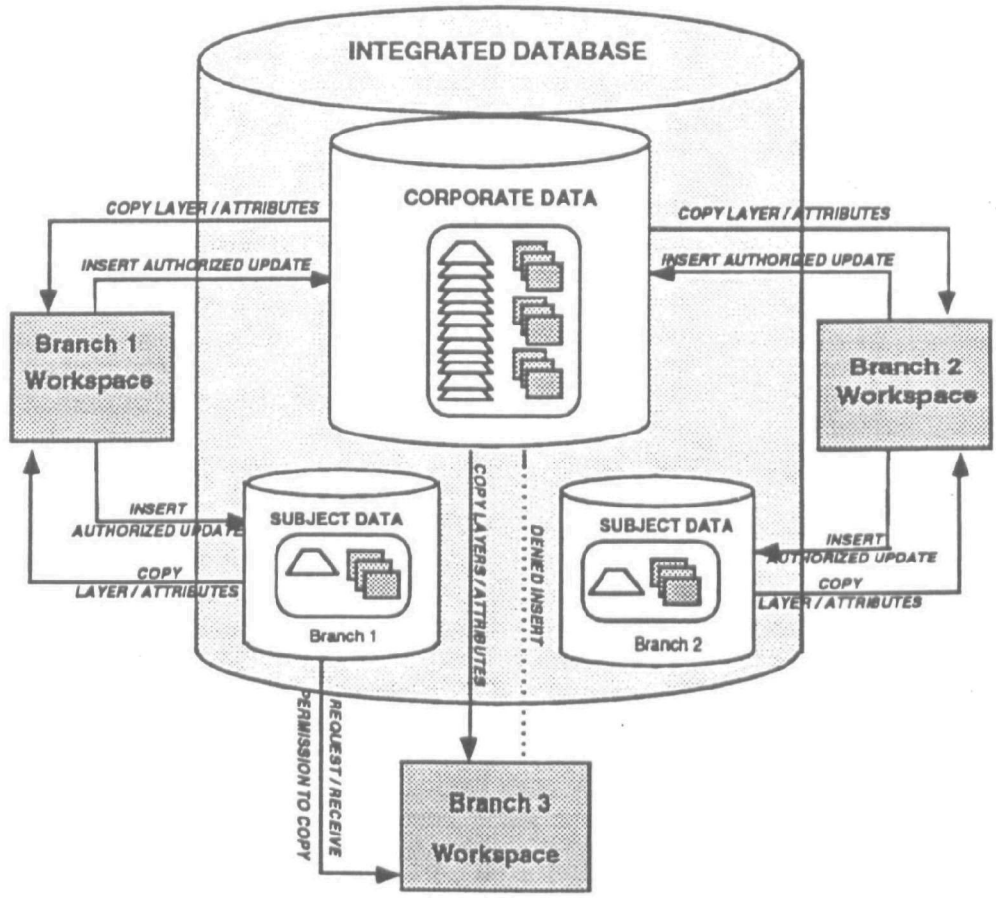
Those data that are used and maintained by only one Branch or Section are called *subject* data. Information may be stored as subject data when it is unique to one user's activities, when it is of no common interest or utility, or when it warrants special security arrangements. Subject databases may also be used to temporarily house data in progress of development until they are determined to be in accordance with corporate data quality standards. Some examples of subject data layers may be those of a sensitive or tentative nature, such as enforcement data, or those which are of interest only to a single user, such as specific results of detailed water quality tests.

Figure A-6 illustrates the relationship between corporate and subject data sets and how they affect methods of data exchange between user Branches and the Region's GIS database. Both corporate and subject databases are stored in the GIS database and are accessed using GIS tools. The difference between the two is that corporate data can be viewed and copied by any user into his or her computer workspace and manipulated as required, whereas subject data can only be viewed or copied by those who have obtained permission from the owner or custodian to do so.

Figure A-6 also shows how responsibility for long-term data maintenance may be shared by several Branches or users. For example, each data set may be assigned to one Branch or Section that will have responsibility and privileges to change and update the data. In this example, Branch 1 has the authority to update some data layers, Branch 2 has the authority to update other data layers, and Branch 3 has no privileges to update data. All three can view all data layers in the corporate database. Only in rare instances will more than one Branch have authority to update the same data layer, and in those instances, the updates should be coordinated through a central unit to maintain record keeping. When errors are discovered in the corporate database or a Branch has information to add to a particular layer, that information should be made known to the Branch with the designated authority for maintenance. A Branch without corporate maintenance authority can make a copy of the data set in question and modify it at will, but those modifications may not be returned to the corporate database except through the permission and action of the designated maintenance Branch. This procedure would ensure that the corporate database contains only information that is known to be correct and current, and that there is a single source to vouch for its accuracy at any time.

Users may have various degrees of access to subject data. In the illustration, Branches 1 and 2 each maintain their own subject data which are inaccessible to other users. Branch 3 does not maintain any subject data, but may request access for a particular purpose. For example, Branch 1 may maintain in a subject database the specific locations and details of archaeological and historic sites. These are maintained as proprietary and/or confidential information in order to protect the sites. A generalized location map with only selected attributes is available in the corporate database for general use. Branch 3 has a need for more specific information in order to evaluate a proposed wetlands action and requests the data from Branch 1. Branch 1 may respond by providing a temporary password allowing view access to the information, a copy of the data on tape, or a map product.

Figure A-6
Corporate and Subject Database Concept



5.0 Data Automation/Conversion Concepts

Many approaches are required to create the variety of layers identified in the database design to follow. Some layers require simple digitizing; others can be created from existing databases or documents with latitude/longitude or other coordinate systems; still others are best created by using address-matching techniques. A general overview of the most commonly used processes follows.

DLG, TIGER, and Other Conversion. Layers may be created by converting cartographic data from sources such as DLG, TIGER, and DXF files. USGS Digital Line Graph data may be used in the creation of several data layers. A GIS software routine can be used to convert these data from DLG format to a series of integrated line and polygon layers, which can then be reformatted into logical layers according to the design. Files will then require processing to create topology. Macros can be used to assist in layer and item restructuring. DLG data are generally of very good quality and should be used where available. During digitizing operations, data are required to fall within .127 mm of their correct position on stable copies of USGS originals.

Generate from Geographic Coordinates. Point layers may be generated from geographic coordinates. The first step in the process is to create a point generate file from the database of origin. The point generate file is an ASCII file with one record for each point. Each record consists of a point ID, x coordinate, and y coordinate. The point ID serves as the relate (join) key between the point layer and origin database. The GENERATE command is used on the point generate file to create the point layer. The point layer is then projected in geographic coordinates to the selected GIS projection. The layer is plotted to check for any obvious errors, and point IDs can be listed to find incorrect entries in the database of origin. After necessary corrections are made and all points are located satisfactorily, more attributes can be added to the feature attribute table from the database of origin.

Address Match. Point layers may be generated by matching digital attribute files containing street addresses to a road network layer containing address ranges for each road segment. This process, called address matching, compares two addresses to determine whether they are the same. If they are, a data relationship is established that permits geographic coordinates and attributes to be transferred from one address to another. Creation of an address coverage (layer) is the first step in the process of address matching. Using the ADDRESSCREATE command on TIGER files creates an address coverage with a special (ADD) file. Using the ADDRESSMATCH command, data files containing addresses may be matched to the address coverage. This creates a point layer with the geographic location of each address, all address attributes, and items needed to relate the point to other attributes. Addresses that are rejected because of mismatch problems are saved for further editing and processing.

Create from Hard Copy. The process of creating GIS data layers from hard-copy source documents or specially prepared manuscripts requires several steps.

This includes preparing data to be automated, map digitizing, processing of cartographic features, assigning and processing attributes, and final processing. A number of quality control (QC) checks throughout the production process are necessary to ensure data integrity.

Source data vary greatly in scale, format, resolution, projection, and classification. Steps that can be taken before automation begins to ease the production process include (1) recompilation of source documents onto manuscripts specially prepared for automation, and (2) preparation of source documents for direct automation. Recompilation of source documents may be done for a variety of purposes, including ensuring compliance with the database design; recompiling unclear, poorly scaled, or cluttered manuscripts; registering map layers to a common geodetic base; and clarifying coincidence of boundaries between data sets. Three types of manuscripts may be created for GIS layers: simple, composite, and integrated.

Simple manuscripts should be developed when source data have poor line quality, are distracting, or have extraneous data that make direct digitizing difficult. Data undergoing this process are typically lacking interrelationships to other database components, such as rainfall distribution.

Composite manuscripts should be created when several database elements share many common boundaries. The first step in their creation is to develop an individual compilation overlay for each data set in the manuscript. These are then laid on top of each other and the resulting set of features drafted. In situations where boundaries are not exactly coincident, informed decisions must be made as to which boundary is more appropriate for the application at hand. Composite manuscripts are recommended for data with discrete boundaries, such as administrative areas. This process will help eliminate the potential for elongated narrow "sliver" polygons to form. Sliver polygons result from poor coincidence of the same feature between two different sources (i.e., a county boundary line based on a road from one source and a census tract based on that same road from another source). If these two sources are digitized and processed separately, a sliver polygon may form in an overlay operation, which suggests a separate feature where none actually exists.

Integrated manuscripts are conceptually and mechanically the most complex to develop. Integration enhances relationships among data with boundaries that are often transitional in nature, such as soils and geology. Similar to composite manuscripts, the focus is to reconcile multiple sources into a single layer. Like composition, integration involves manually overlaying multiple source maps and identifying general coincidence of features. Unlike composition, it will be less clear how to integrate these transitional boundaries. Thus, it is important to assemble as much supporting data as possible when analyzing potential relationships between boundaries. Recent aerial photography is critical to this process. Integrated manuscripts often result in a map sheet with several thousand polygons and are good candidates for scanning.

GIS data sets can also be developed by digitizing features directly from the source document. This process can be made easier, resulting in better data, if a little time is spent "clarifying" the source maps. For example, NOAA charts contain much information that will not be needed in the GIS database. If desired features are highlighted with marking pens, digitizing will progress more quickly and accurately.

Data automation is the process of converting hard-copy map data into a digital format. Two primary methods exist to accomplish this: scanning and manual digitizing. Scanning involves a sophisticated instrument to digitally record line work on manuscripts, source documents, or separates. Scanning can reduce initial data entry from several days to only hours for complex data sets and often requires less time for subsequent processing. (To indicate the possibilities of using scanning in GIS, the Region funded a project to develop scanned images of New York State and is having similar coverages developed for other states.)

Manual digitizing is recommended for most layers to be created from hard-copy maps. This process involves mounting data to be digitized on a digitizing board and using a hand-held cursor to trace and record the x,y locations of map features. Lines are defined by a series of x,y pairs, and points by a single pair.

Basic feature processing is an iterative process of creating topology for the digitized lines and points and checking for errors. Error checking involves producing edit plots showing cartographic features and IDs, registration marks, and node and label errors generated by the software internal checks for inconsistencies in the topological structure. Advanced feature processing is an iterative process of edgematching and joining adjacent map sheets to form a continuous coverage, and checking and correcting errors using the edit plot process.

Attribute coding, or associating attributes with cartographic features, can be done in a number of ways. For layers with a single item, or simple codes, it may be advantageous to enter codes during digitizing. Features can be coded by selecting and coding them using a menu developed for each layer. Layers may also be coded by entering data into an ASCII or DBMS file, importing the file, and joining it with the feature attribute table.

A quality assurance plan is needed for successful database development. Types of quality control checks that may be necessary at stages in the production of data layers are as follows:

- Preautomation quality control
- Cartographic feature processing quality control
- Automated attribute quality control
- Attribute assignment quality control
- Verification plot quality control

Preautomation quality control is the review of source materials for problems of poor matching of lines or attributes between map sheets and unclear or ambiguous

features. Optimally, all such problems should be resolved prior to automating the data. Cartographic feature processing quality control is the iterative process of making edits and plotting out data as described above. Automated attribute quality control is the application of routines to flag or highlight invalid codes in the database. Attribute assignment quality control is the checking of attribute assignments to cartographic features. For line and point layers, this entails plotting features with associated attributes. For polygon layers, it is recommended that separate dissolved plots for each variable be produced. Like the cartographic feature processing quality control step, this should be performed repeatedly until all known errors have been resolved. The final quality check, verification plot quality control, is concerned with identifying errors that may have been introduced during final processing. These include undissolved former map sheet boundaries and node and label errors.

Appendix B

GIS Database Design

Appendix B

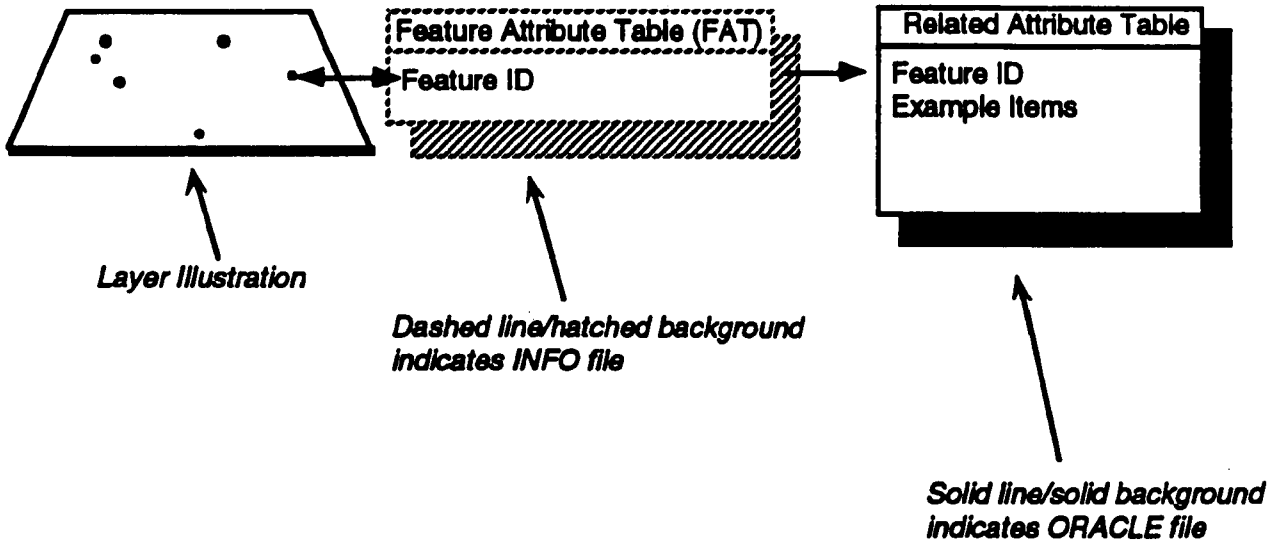
GIS Database Design

The Region's GIS database design is generally described in **Section 2.2** of the report. **Appendix B** illustrates and elaborates on this design. A data layer illustration sheet is included for each layer described in **Section 2.2.** The data layer illustration is composed of three sections. The first (top) section provides summary information, including layer name, category, type, key identifiers, and data sources. This is followed by a diagram of the layer with associated feature attribute table and related attribute table(s). The final (bottom) notes section provides a textual description of the layer, and adds pertinent details on data structure, sources, development methods, and update frequency. The explanation sheet on the following page shows the format and explains the content of the data layer illustration.

Database Design Format
Explanation Sheet

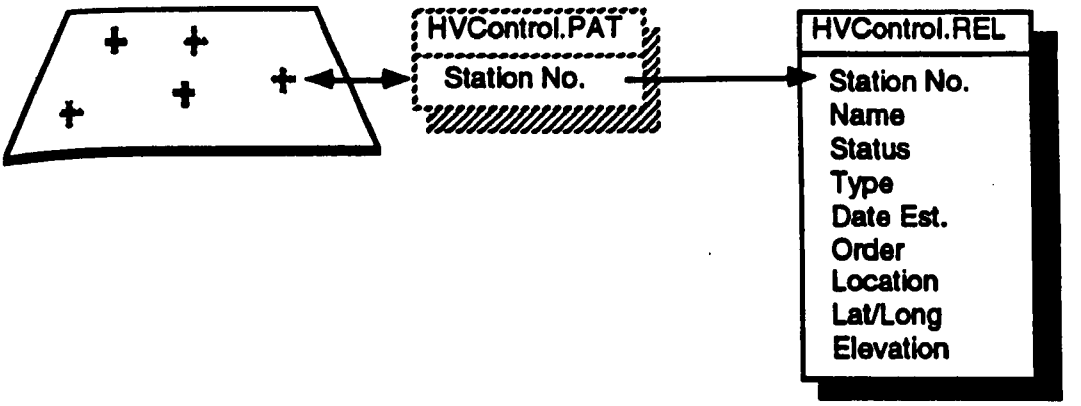
FIGURE: Figure Number
DATA CATEGORY: One of nine, see Section 2.2
DATA LAYER: Layer Name

LAYER TYPE: Point, line, or polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: See Appendix C of Data Inventory/Evaluation Working Paper



NOTES: Description of layer, detail on structure, data sources, and update method/frequency.

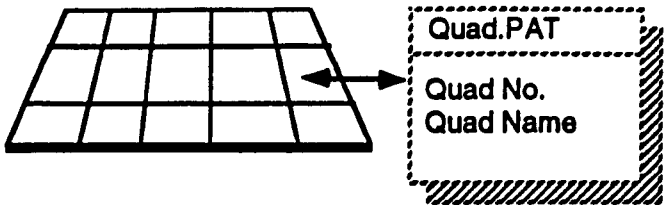
FIGURE: B-1
DATA CATEGORY: Control
DATA LAYER: Horizontal/Vertical Control Stations
LAYER TYPE: Point
KEY IDENTIFIERS: Station No.
DATA SOURCES: NGS and State Survey Records



NOTES: Horizontal/Vertical control stations from the National Geodetic Survey are contained in this layer, along with any available from state surveys. The points can be generated from State Plane coordinates or latitude/longitude provided in survey files. Attributes may include station name, status, type, and others as shown above. Additional points may be added by the Region over time from GPS locations. The Region's GPS base stations may be included as points in this layer. If information about the base stations is required beyond the items listed above, a related table can be established to include this information.

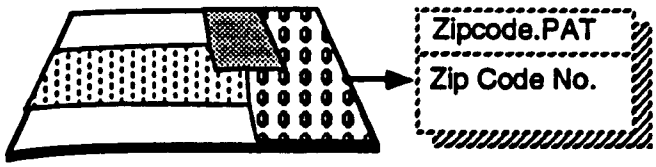
FIGURE: B-2
DATA CATEGORY: Control
DATA LAYER: 7.5-Minute Quad Boundaries

LAYER TYPE: Polygon
KEY IDENTIFIERS: Quad No.
DATA SOURCES: 307, 403, 404, 309



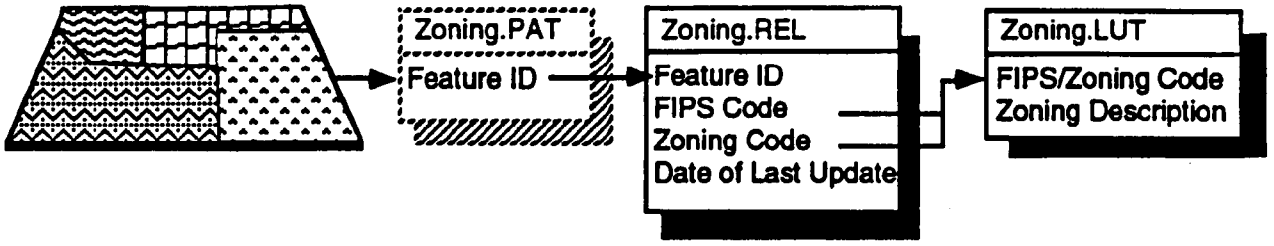
NOTES: A quad sheet boundary layer would serve as a visual reference/orientation for other layers. Grid lines may be generated from corner points of quads. Attributes of quad number and name may be obtained from GNIS files. Coverage for this layer would extend beyond the Region to include portions of Region I and Region III. Quad boundaries exist in GIS format for Region I but must be generated for Region III.

FIGURE: B-3 LAYER TYPE: Polygon
DATA CATEGORY: Administrative/Management Areas KEY IDENTIFIERS: ZIP Code Number
DATA LAYER: ZIP Code Boundaries DATA SOURCES: 285, 19



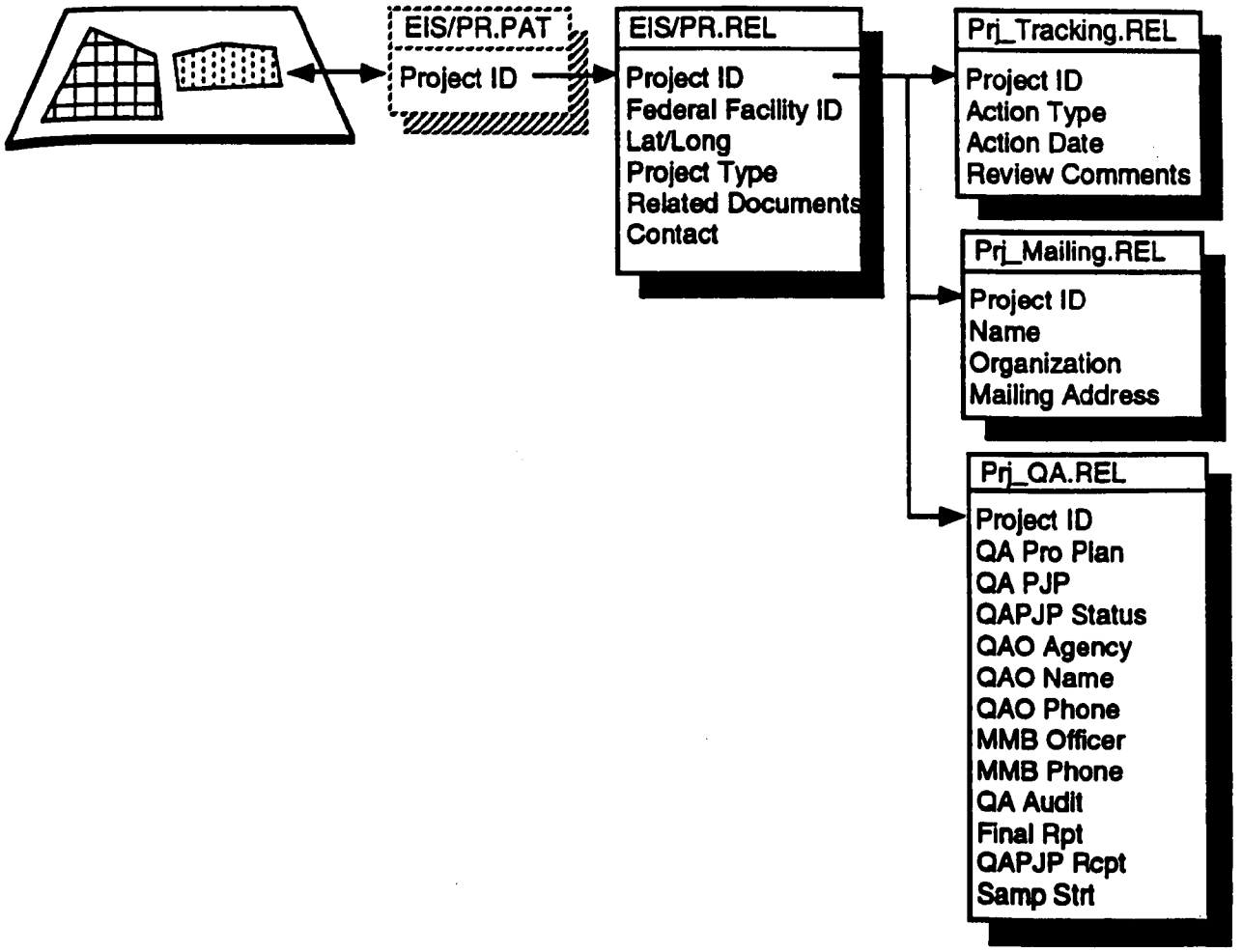
NOTES: This polygon layer would depict ZIP Code boundaries and numbers. Other related attributes may be added as needed in subject files. ZIP Code boundaries can be generated from TIGER files, or are commercially available from several database vendors. If these data are required beyond Region II borders, a ZIP Code boundary layer exists for Region III; however, none is available for Region I. This should be a relatively static layer once developed, requiring infrequent maintenance (once every few years).

FIGURE: B-4
DATA CATEGORY: Administrative/Management Areas
DATA LAYER: Zoning District Boundaries
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID, FIPS code, Zoning Code
DATA SOURCES: Local GIS Zoning Layers



NOTES: This layer would provide zone district boundaries and classifications for municipalities and counties in the Region. Since a zone code of A1 in one location may mean something entirely different than a zone code of A1 in another location, a combination of FIPS and zoning code is needed as a key to a related table describing each zoning classification. Complete coverage of the Region is not likely to occur for this layer, which contains detailed, ever-changing data. Instead, data for this layer should be sought from governmental units as those data become available in digital form, and inserted with minimal modification and considerable documentation of the source data.

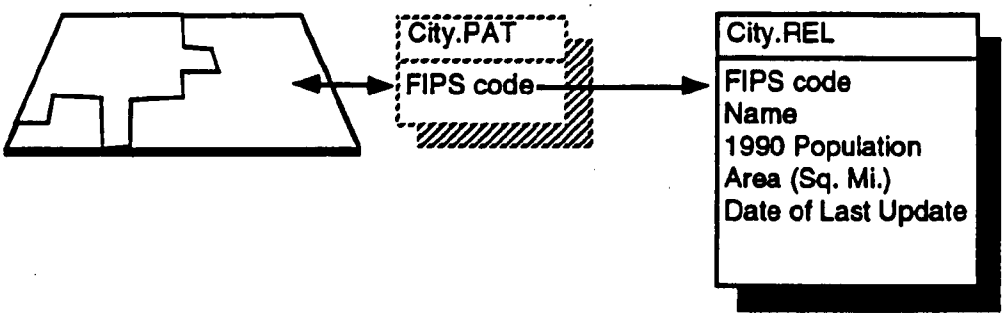
FIGURE: B-5
DATA CATEGORY: Administrative/Management Areas
DATA LAYER: EIS and Project Review Areas
LAYER TYPE: Polygon
KEY IDENTIFIERS: Project ID, Federal Facility ID
DATA SOURCES: 167, 171



NOTES: This data layer would provide project boundaries and tracking information for EIS and other Region II project review areas. The Project ID provides the key identifier and linkage to related attribute files. The layer will require automation; digital sources are not known to exist. Boundaries may be digitized on-screen from digital ortho-photos if available, using descriptive information from project files to locate boundaries. Alternately, boundaries may be drafted onto USGS quads and digitized. In some cases, digital boundaries may be available from a contractor and should be required to be produced according to Region II digital data standards. Project status and tracking data may be derived from Region II databases such as FACTS. The Qtrack database may be linked to provide quality assurance plan status information for sampling conducted within project boundaries. This layer will require monthly to quarterly update and maintenance by the Region.

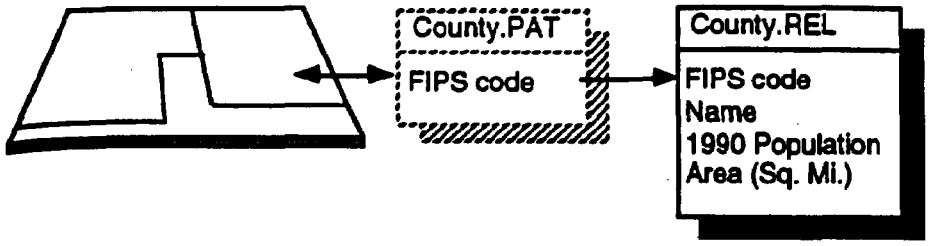
FIGURE: B-6
DATA CATEGORY: Administrative/Management Areas
DATA LAYER: Municipal Boundaries

LAYER TYPE: Polygon
KEY IDENTIFIERS: FIPS code
DATA SOURCES: 371, 54, 400, 403, 404, 353, 355, 356



NOTES: The FIPS code provides a unique and standard key identifier for the municipal boundaries layer. Attributes may be added, including municipal population and size, which may be obtained from Census data. Also, if known, the currency of boundaries should be added as an attribute, since lines may change periodically with annexation. Existing state-generated data layers at 1:24,000 may be combined to form the municipal boundaries layer. USGS 1:24,000 DLGs may be converted and processed for Puerto Rico and the Virgin Islands. Additional processing may be required to standardize attributes and edgematch along state lines and with other regional boundaries. This data layer will require periodic maintenance to stay current. Updates may be sought from the states on an annual or biannual basis. Where municipal boundaries coincide with county, state, or regional boundaries, data should be checked for exact overlay of lines.

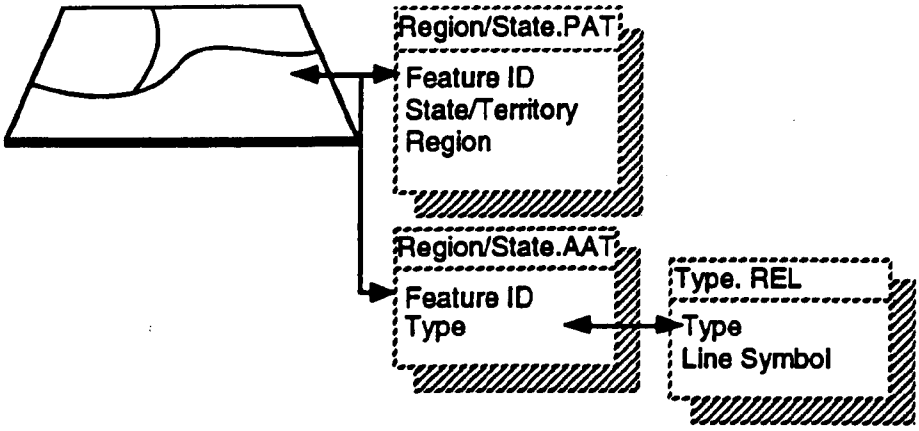
FIGURE: B-7 LAYER TYPE: Polygon
DATA CATEGORY: Administrative/Management Areas KEY IDENTIFIERS: FIPS code
DATA LAYER: County Boundaries DATA SOURCES: 87, 371, 400, 307, 349, 10



NOTES: The FIPS code provides a unique and standard key identifier for the county boundaries layer. Attributes may include county population and size. Existing state-generated data layers at 1:24,000 may be combined to form the county boundaries layer. Optionally, DLGs may be processed for New Jersey where coverage is complete. Attributes such as 1990 population and size may need to be added from Census sources. Additional processing may be required to standardize files and edgematch along state lines. Digital county boundary layers from Regions I and III may provide needed coverage beyond Region II borders, but are at 1:2 million scale and should be examined to determine processing requirements for compatibility with Regional data. This data layer, once established, should require little or no maintenance. Data should be checked for exact overlay of coincident state and municipal boundary features.

FIGURE: B-8
DATA CATEGORY: Administrative/Management Areas
DATA LAYER: Region/State Boundaries

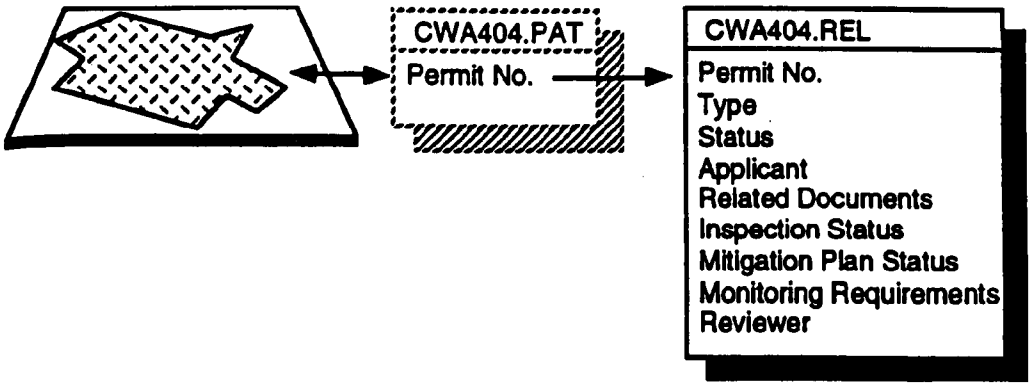
LAYER TYPE: Polygon/Line
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 91, 400, 403, 404, 307



NOTES: This layer may be created from existing state-generated state boundary layers. Polygon attributes include state and region identifiers, which may need to be added to existing data layers. A line attribute of type will allow display of region and state borders in different symbols. Edgematching between state layers is critical. For the Caribbean territory, 1:20,000 DLGs may be used to generate boundries. DLGs require conversion to ARC/INFO and quality control checking. 1:24,000 DLGs may provide an alternate source of state boundary data for New Jersey, where coverage is nearly complete. Regions I and III and their states should be added to this layer as digital data are made available. Once created, this layer is static and should be relatively maintenance free.

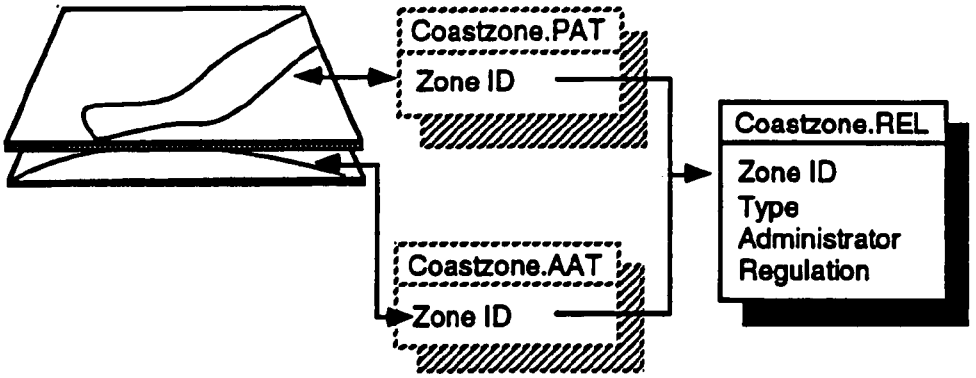
FIGURE: B-9
DATA CATEGORY: Administrative/Management Areas
DATA LAYER: 404 Permit Areas

LAYER TYPE: Polygon
KEY IDENTIFIERS: Permit No.
DATA SOURCES: 404 Permits



NOTES: This data layer would consist of boundaries of existing and proposed 404 permit areas. A 404 permit number would provide the key identifier linking the 404 boundary polygon features to related attribute tables, an example of which is shown above. Boundaries may be digitized on screen from a 1:24,000 digital ortho-photo, if available, using permit information which describes the site. Alternately, site boundaries may be drafted on a USGS 1:24,000 quad and digitized. Boundaries extending beyond the Region may also be digitized. If boundaries coincide with features from other layers, such as roads and streams, they may be copied from these layers and inserted into the 404 permit layer. Data sources may include the permit application and Corps of Engineers data. A Region II PC-based permit tracking system under development may provide the permit tracking attributes. Depending on the type and detail of these attributes, they may be normalized into a series of related tables. With 300 to 1,000 permits in process per year, this data layer would require weekly to monthly maintenance and update by the Region.

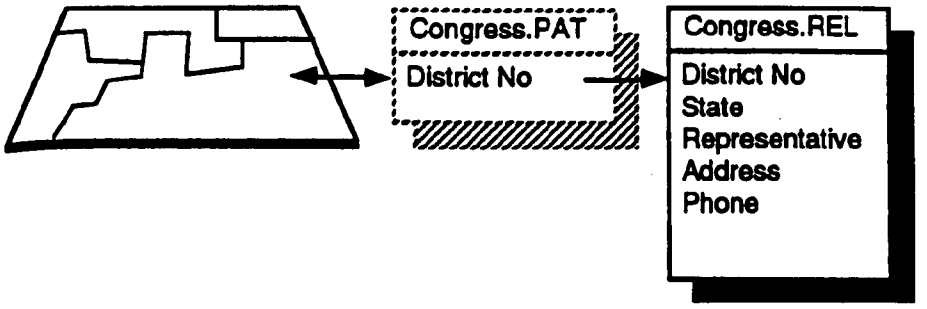
FIGURE: B-10 LAYER TYPE: Polygon, Line
DATA CATEGORY: Administrative/Management Areas KEY IDENTIFIERS: Zone ID
DATA LAYER: Coastal Zones DATA SOURCES: State Coastal Mgt. Programs



NOTES: This polygon or line layer would serve to identify coastal management jurisdictions and boundaries. Data would require automation from state coastal area maps compiled at 1:24,000. Assuming these boundaries are relatively stable, this layer should not require maintenance on the part of the Region.

FIGURE: B-11
DATA CATEGORY: Administrative/Management Areas
DATA LAYER: Congressional Districts

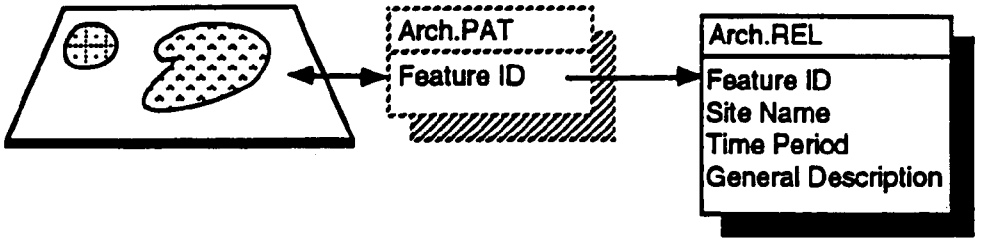
LAYER TYPE: Polygon
KEY IDENTIFIERS: District No.
DATA SOURCES: 371, 285

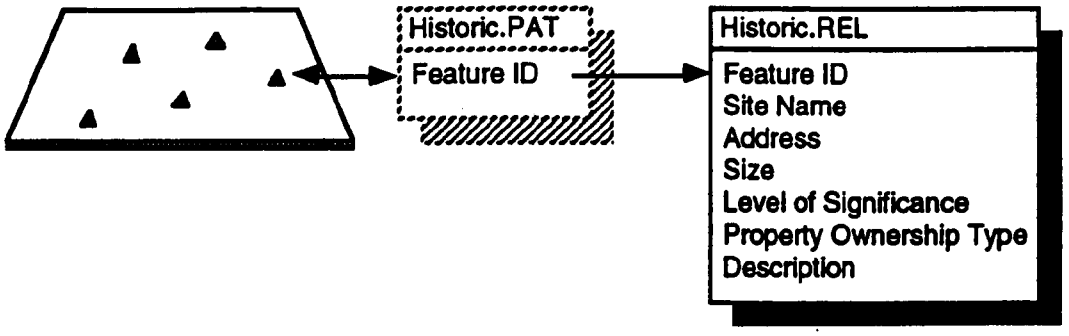


NOTES: This layer may be a composite of state-generated and -maintained data layers. District number provides the key identifier to link layer features to attributes. Existing state congressional district layers should be examined to determine their currency and compatibility. Additional processing may be required to add and standardize attributes and edgematch along state lines. Alternately, TIGER/Line files may be used to provide the underlying geometry for outlining congressional district boundaries, but should be checked against state redistricting results to update the boundaries. Ultimately, this layer should be 1:24,000 scale based, and congressional boundaries should coincide with existing features in other layers, such as roads, when the boundary is based on that feature. This is a fairly static layer requiring updates with election changes and redistricting. The states may be an update source.

FIGURE: B-12
DATA CATEGORY: Cultural Resources
DATA LAYER: Archaeological/Historic Sites

LAYER TYPE: Point and Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 110, 373

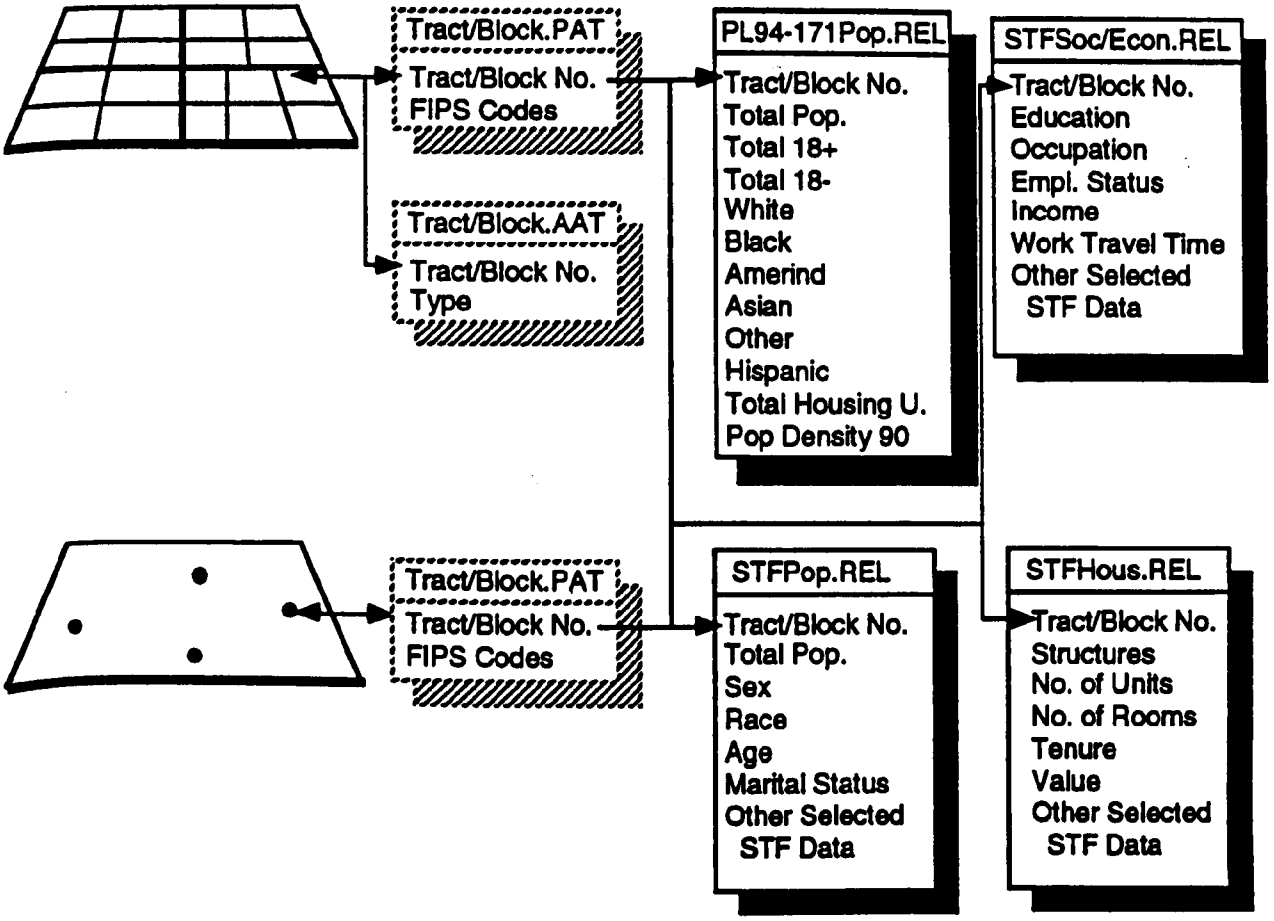




NOTES: Data would be separated into two layers, a polygon layer for generalized archaeological sites and a point layer for historic sites. Several archaeological sites may be represented by a generalized area, with site information provided in a related table. No sources of digital data for this layer are currently known to exist, although the state historic preservation offices are logical developers and custodians of this data layer. A historic sites point layer would provide attributes such as site name, address, and ownership type. The states' historic sites layers may provide a data source. Processing may be required to complete and standardize these layers. Alternately, depending on the quality of data in state historic site attribute files, the layer may be created through address matching. Again, the state historic preservation offices may be primary candidates for development and maintenance of this data layer.

FIGURE: B-13
DATA CATEGORY: Cultural Resources
DATA LAYER: Census Tracts/Blocks

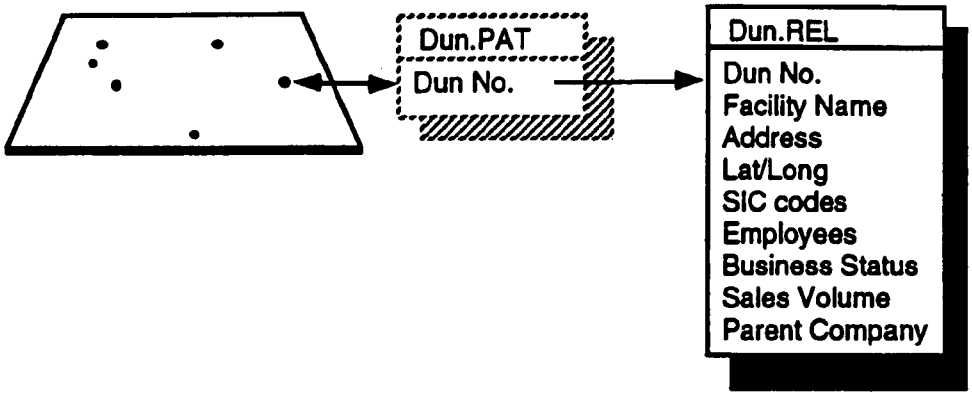
LAYER TYPE: Polygon/line, point
KEY IDENTIFIERS: Tract No., Block No.
DATA SOURCES: 285, 284, 380, 405



NOTES: The census data layers provide population, housing, and socioeconomic data by census block, block group, and tract. A polygon/line layer provides census data at the smallest unit (block) and allows aggregation to larger areas such as tracts and counties. A point layer provides the internal point for each block. The tract/block number provides the key link to general (PL 94-171) and detailed (STF) related 1990 census file data. The Region's current 1990 block layers (polygon and point with PL 94-171 attributes) are available for linkage of census STF files. Selected STF files may be maintained on-line if needed by several users; others may be stored and accessed as required for particular applications. Updates may be obtained after the decennial census.

FIGURE: B-14
DATA CATEGORY: Cultural Resources
DATA LAYER: Dun & Bradstreet Facilities

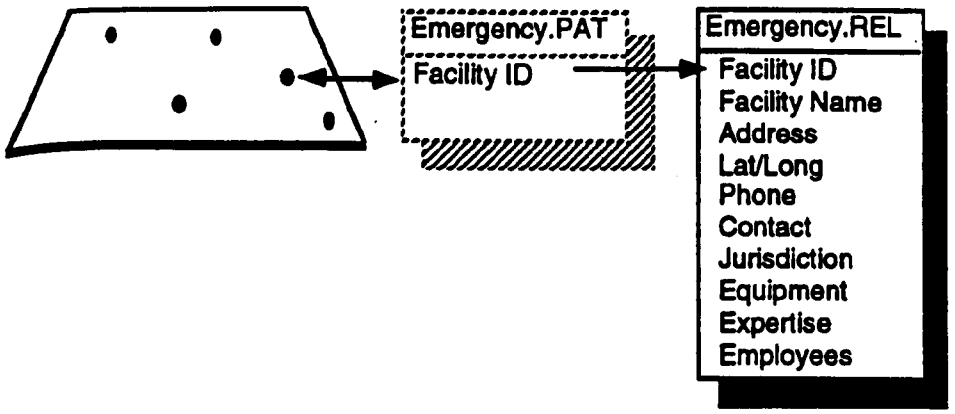
LAYER TYPE: Point
KEY IDENTIFIERS: Dun No.
DATA SOURCES: 164, 161



NOTES: This point layer of business locations is linked to Dun & Bradstreet data files by the Dun number. Its purpose is to provide up-to-date location and information on all business, EPA-regulated and not. Attributes may include business address, size, and type (by SIC code). Targeting databases, such as ETS, may be developed from this layer. This layer may be created through address matching the Dun file to the road layer containing address ranges. Annual updates would be necessary.

FIGURE: B-15
DATA CATEGORY: Cultural Resources
DATA LAYER: Emergency Response Facilities

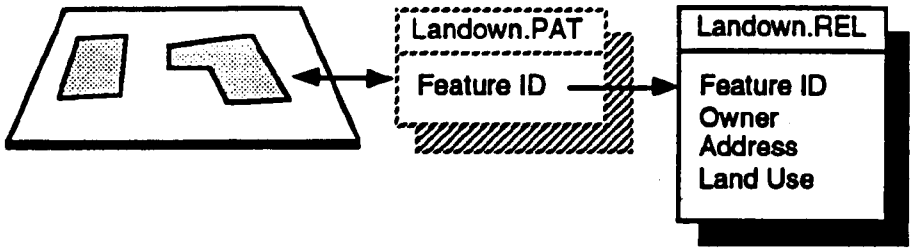
LAYER TYPE: Point
KEY IDENTIFIERS: Facility ID
DATA SOURCES: Various address-based files



NOTES: This point layer of emergency response facilities may be created by the Region from an automated list of facilities, such as the partial list found in the Region II Site Assessment Information Directory (SAID). Complete listings may be obtained from State Emergency Management Offices and address matched to the road layer containing address ranges. At minimum, these files should contain facility name, address, phone, and contact person. Information such as jurisdiction, equipment, areas of response expertise, staffing levels, and other attributes may be added to the layer as they are made available. This layer will require quarterly or annual update by the Region.

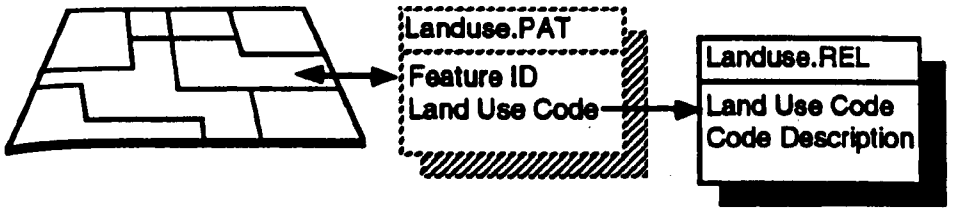
FIGURE: B-16
DATA CATEGORY: Cultural Resources
DATA LAYER: Land Ownership

LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 310



NOTES: The purpose of this data layer is to show land under state and federal ownership. The land use/land cover DLG data of USGS may initially be used to develop the land ownership layer for the Region and areas beyond. Over time, a more detailed layer may be developed at the 1:24,000 input scale. States may supply periodic updates for the state-owned land boundaries.

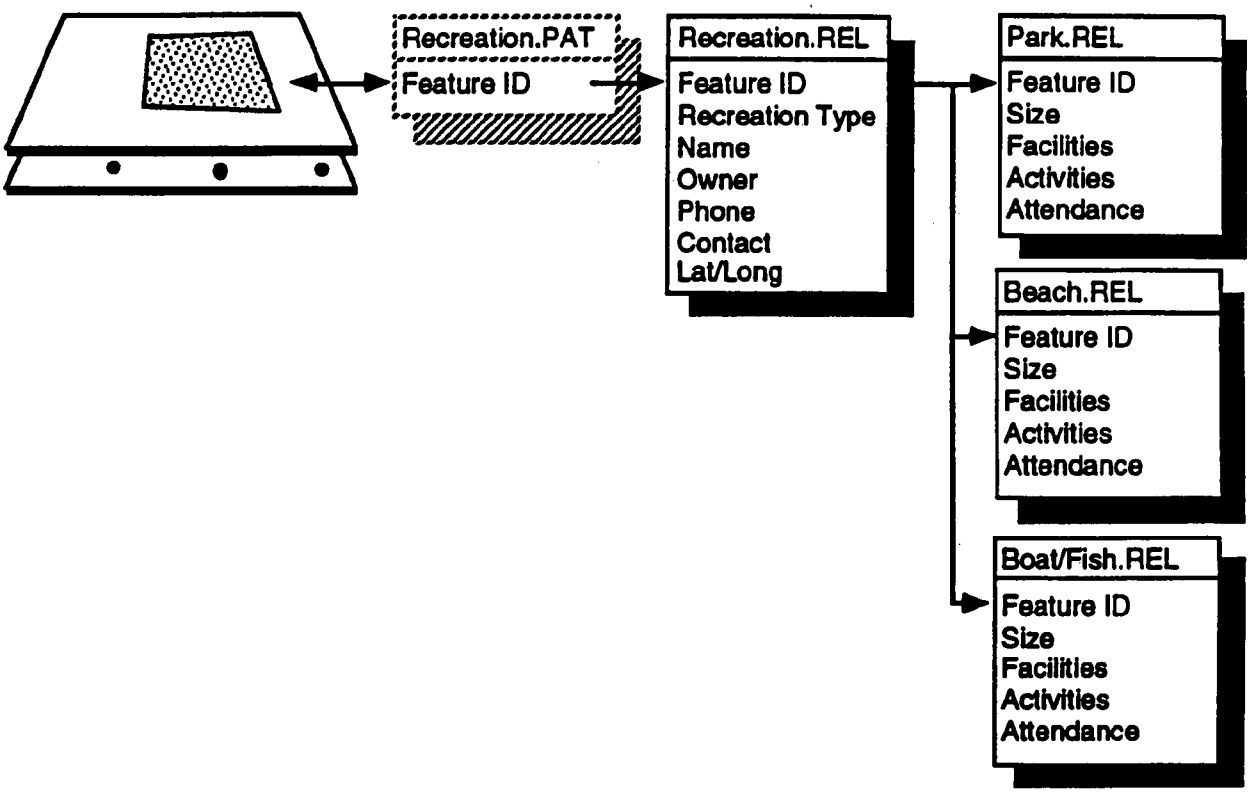
FIGURE: B-17
DATA CATEGORY: Cultural Resources
DATA LAYER: Land Use/Land Cover
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 310, 388, 40



NOTES: The land use/land cover layer(s) may initially be developed by converting small-scale GIRAS data, which provide complete and uniform general (Anderson Level II) land use data for the Region and areas beyond. An ortho-photo data layer may be used, if available, as background to visually supplement and provide additional detail to the GIRAS-derived data. Over time, more detailed land use and land cover layers may be developed at the 1:24,000 input scale, such as that underway in New Jersey. A detailed land cover layer would provide vegetation/habitat information to use in conjunction with sensitive areas/species layers.

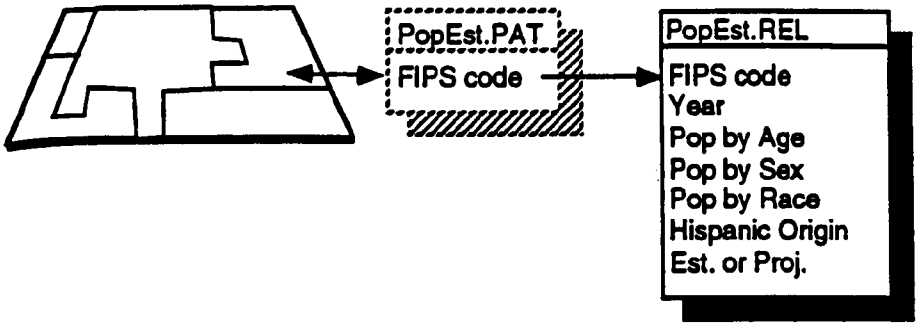
FIGURE: B-18
DATA CATEGORY: Cultural Resources
DATA LAYER: Parks and Recreational Areas

LAYER TYPE: Polygon, Point
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 372, 215, 190, 219, 401



NOTES: Recreational areas may be represented as points or polygons, depending on the extent of coverage. Recreational areas which may be included in these layers include beaches; sport fishing, boating, and diving areas; boat ramps; marinas; national, state, and local parks; wildlife management areas; and designated natural resource preservation areas. The Feature ID provides the link to related attribute tables, such as the examples shown above, which contain data on recreational facilities, activity patterns, and usage. These tables may be expanded as data become available. Data sources for this layer may be provided by the State Recreational offices, such as the park boundaries and resources layer of the New York State Office of Parks. NOAA ESI Atlases may provide coastal recreational features. Data compilation from available sources, rescaling, and mapping to a single manuscript may be required to assemble this data layer. Some existing attribute files may be linked to this layer via the Feature ID; other attributes may require key entry. Annual updates to attributes should provide sufficient data currency for the Region.

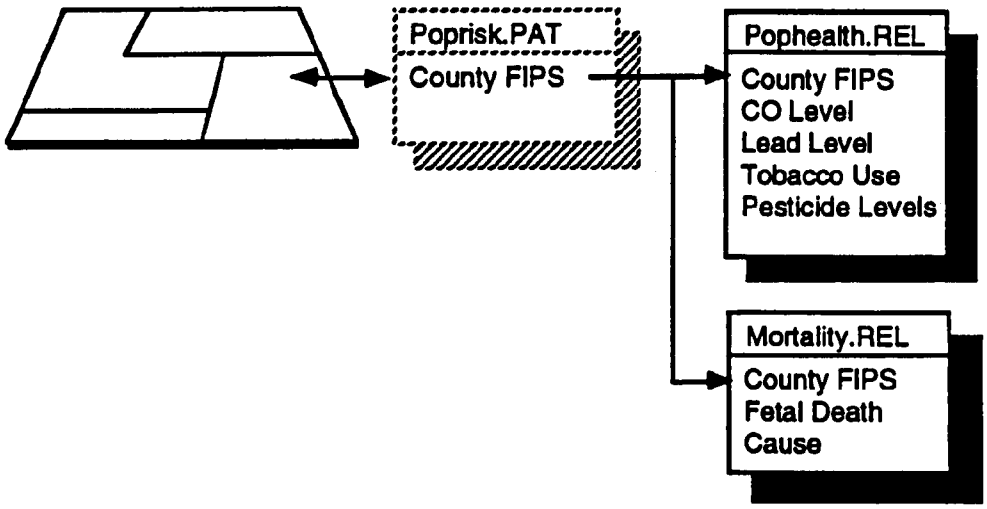
FIGURE: B-19
DATA CATEGORY: Cultural Resources
DATA LAYER: Population Estimates and Projections
LAYER TYPE: Polygon
KEY IDENTIFIERS: FIPS code
DATA SOURCES: 295



NOTES: This layer provides population estimates for in-between census years and projections for future years for states, counties, and municipalities. The FIPS code provides the key to link the graphic layer(s) to Census Bureau and state files of population estimates and projections. The state/region, county, and municipal boundaries layers created under the administrative areas category may be combined to form this layer, or each may be copied and maintained separately. If this is done, update will depend on boundary updates made in other layers. Annual maintenance of this layer will be required as new estimates and projections are made available. (Between the decennial censuses, the most detailed level of information available will be the county, not census tracts or blocks.) Alternately, this data layer need not be created; instead, population estimates and projections may be maintained as a related table in each of the region/state, county, and municipal layers.

FIGURE: B-20
DATA CATEGORY: Cultural Resources
DATA LAYER: Population Health/Risk Factors

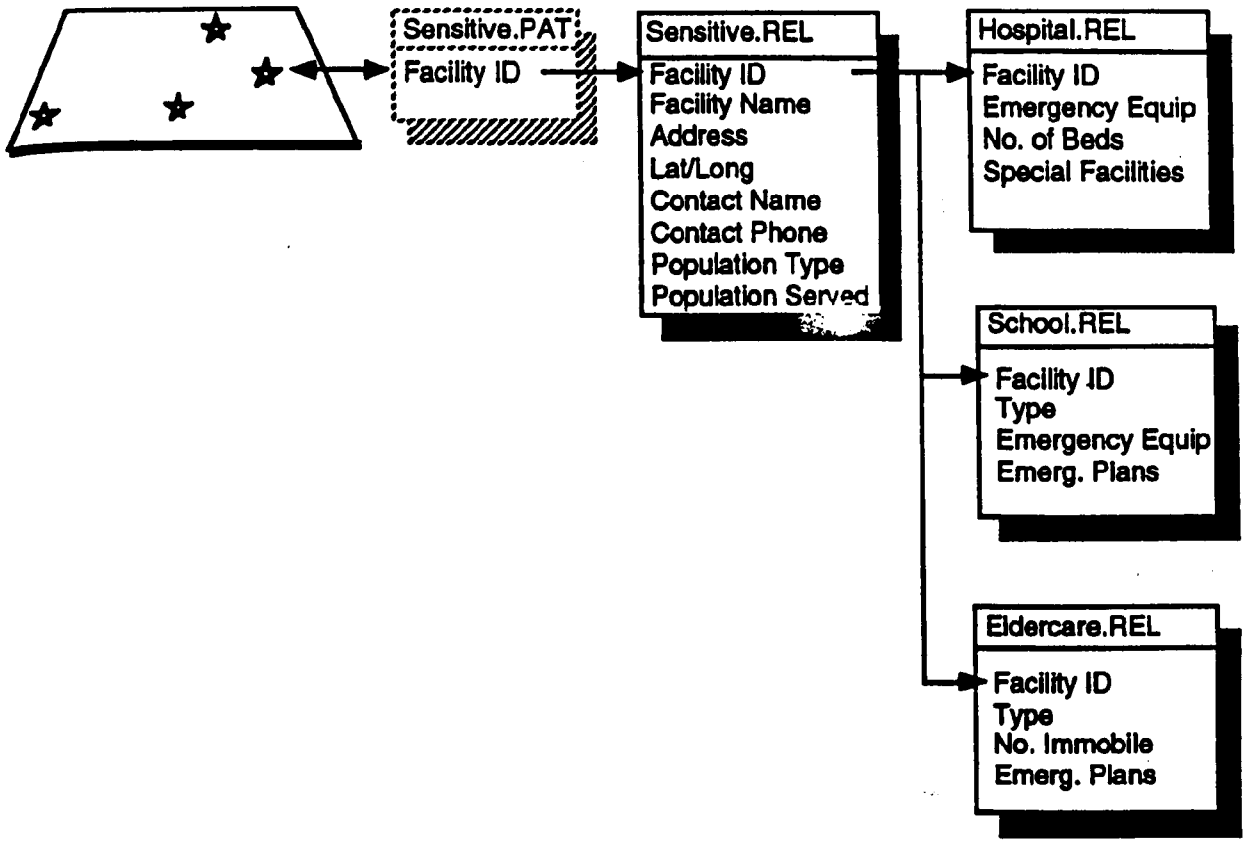
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 377, 378, 287, 288



NOTES: This layer is intended to provide information on health and risk factors in the general population. Initially, this layer may be derived from mortality, natality, disease, and health data contained in the Center for Disease Control and Prevention statistical and trend databases. Data may be presented by county and, in some cases, city boundaries. County and municipal boundary layers may be copied and attribute tables related to these layers by County FIPS code. A data compilation and reduction effort may be required to assemble attribute data in a format useful to the Region's risk assessment activities. Other potential data sources, such as state health departments, may be investigated. This layer may require annual update.

FIGURE: B-21
DATA CATEGORY: Cultural Resources
DATA LAYER: Sensitive Populations

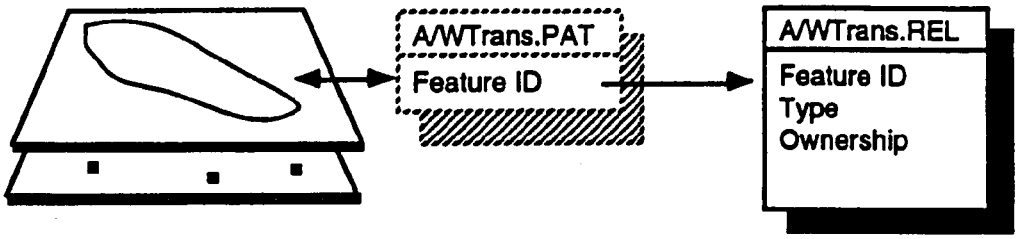
LAYER TYPE: Point
KEY IDENTIFIERS: Facility ID
DATA SOURCES: Various address-based files



NOTES: This layer would provide location and basic information about schools, hospitals, elder care facilities, and other sensitive populations. The layer may be generated from an automated file of facilities with addresses, such as the Region's Site Assessment Information Directory (SAID), or commercially available files such as the Hospital Phonebook. State Emergency Management Offices may also maintain these data. Files containing these data may be address matched to the road layer containing address ranges for the creation of points representing each facility. At minimum, attributes should include facility name, address, phone and contact, and the type and number of persons served. Related tables with facility-specific information may also be added as they are made available. Annual maintenance of this layer may be required.

FIGURE: B-22
DATA CATEGORY: Transportation/Utilities
DATA LAYER: Air/Water Transportation Facilities

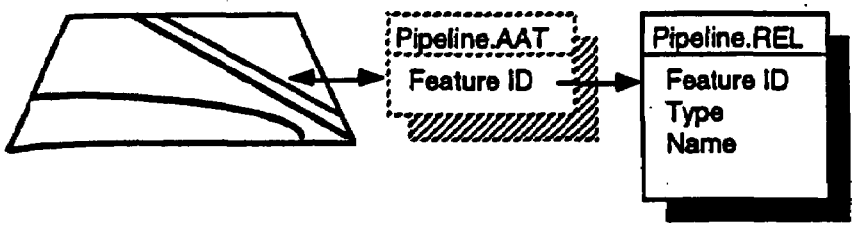
LAYER TYPE: Polygon and Point
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 320



NOTES: These data may be represented as point and polygon layers, depending on the level of detail required. They would include air transportation features such as airport runways, and water transportation features such as navigation channels and harbor structures. A unique feature identifier would be assigned to tie layer features to attribute tables. Several options exist for data automation/conversion. Data may be captured from digital ortho-photos, if available, with NOAA nautical charts and USGS quads used for feature reference. Alternately, sources may be recompiled to a single manuscript for digitizing and processing. State Department of Transportation files are another potential digital source for data conversion. This layer may require infrequent update, perhaps every few years.

FIGURE: B-23
DATA CATEGORY: Transportation/Utilities
DATA LAYER: Pipelines and Transmission Lines

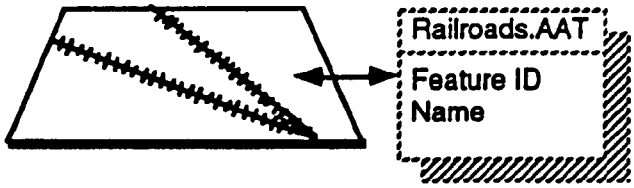
LAYER TYPE: Line
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 307, 308



NOTES: This layer would include major power and fuel lines as represented on USGS map series. Data may be converted from DLGs, initially at the 1:100,000 scale and over time at the 1:24,000 scale. This is a fairly static layer, requiring little maintenance (once every five to ten years).

FIGURE: B-24
DATA CATEGORY: Transportation/Utilities
DATA LAYER: Railroads

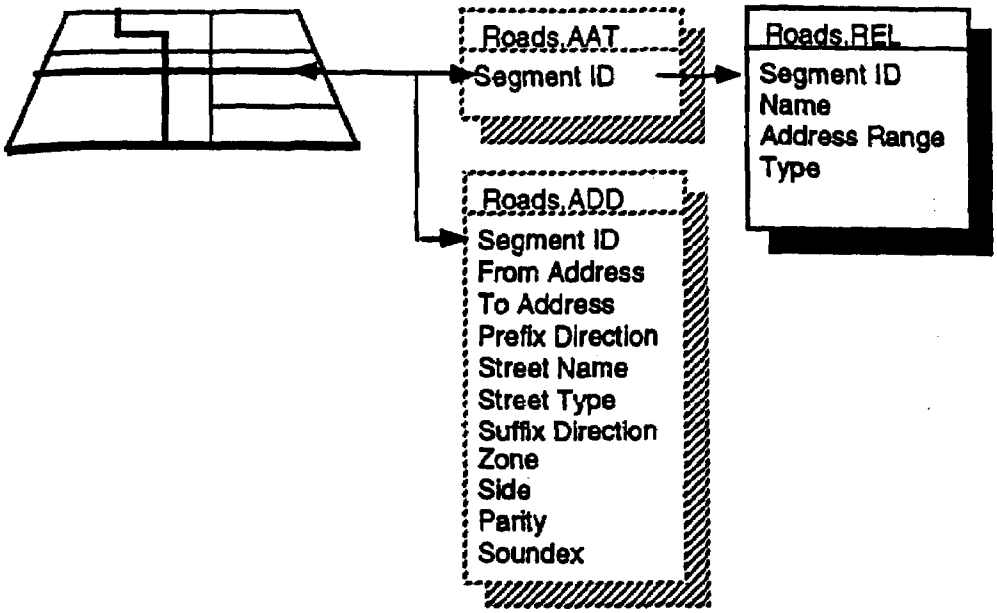
LAYER TYPE: Line
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 2, 344, 17, 307



NOTES: The Region currently maintains a railroad layer at the 1:100,000 scale, derived from TIGER files. If the need exists for this data layer to extend beyond the Region's borders, like layers from Region I and III currently exist and may be edgematched and clipped as necessary. As DLG data at the 1:24,000 scale expands to cover the Region, data can be converted for the larger scale railroad data layer. This should be a static layer, once developed, requiring little maintenance (once every five to ten years). Additional attributes may be added over time.

FIGURE: B-25
DATA CATEGORY: Transportation/Utilities
DATA LAYER: Roads

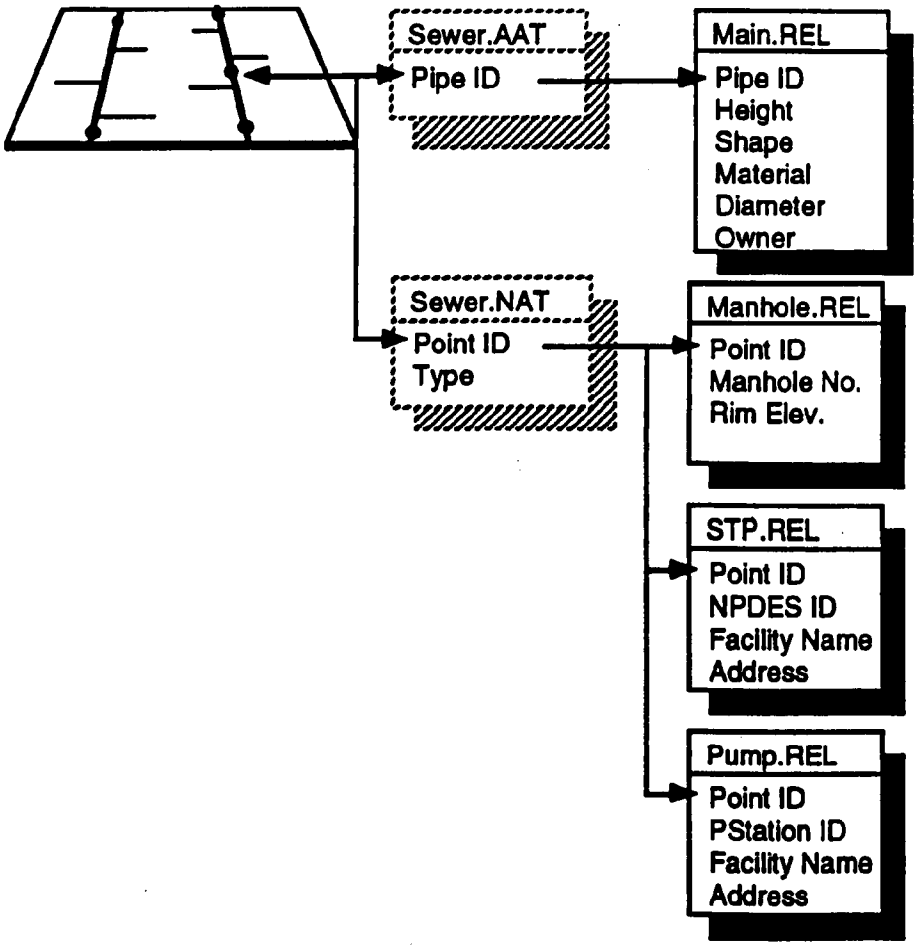
LAYER TYPE: Line
KEY IDENTIFIERS: Road Segment ID
DATA SOURCES: 3, 1, 345, 16



NOTES: The roads layer is a key reference layer. A unique road segment ID would provide the key link to associated attribute tables. A related attribute table would provide road name, indication of whether an address range is associated with the segment, and road type (e.g., arterial, collector). An address range may be associated with each segment. Address ranges provide the ability to create other point layers or features by matching a given address to its location along the road. The Region's current road and address layers have been developed from TIGER files. Similar data are available from Regions I and III, which may be edgematched and clipped to the Region's specifications to create the needed area beyond its boundaries. A 1:24,000-scale road layer may be developed from DLG data as it is completed, and procedures developed to add, verify, and transfer address ranges from the TIGER-based layer to the larger scale layer. Annual maintenance may be required for data currency.

FIGURE: B-26
DATA CATEGORY: Transportation/Utilities
DATA LAYER: Sewer Lines

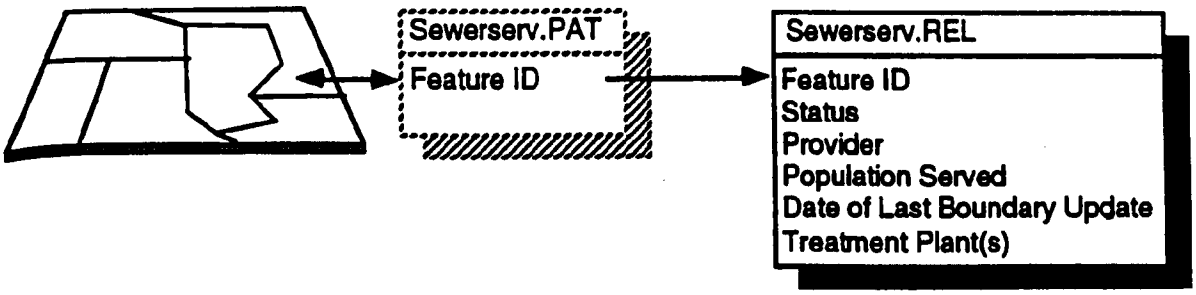
LAYER TYPE: Line/Point
KEY IDENTIFIERS: Pipe ID, Point ID
DATA SOURCES: Non-identified



NOTES: Sanitary sewer facilities may include both line and point features stored together in one layer. Sewer pipes are represented by lines and may include attributes such as pipe size and owner/maintainer, with additional pipe and ownership attributes stored in related tables. Other facilities in the network, such as manholes, pump stations, and treatment plants, are represented as line endpoints and stored in the node attribute table, and potentially also related external tables. Treatment facility points should be checked for coincidence with those in the NPDES layer. NPDES-related data could be accessed for the sewer line layer using NPDES ID. Automation of this layer may be capital and labor intensive, and no known digital sources were uncovered during the data source inventory. However, as these data begin to become available over time in digital format from communities, the Region's sewer data layer may be used as a repository for the data, which should be incorporated with minimal processing. Data incorporated in this manner should be well documented for the prospective user. Incomplete coverage of the Region for this layer is likely.

FIGURE: B-27
DATA CATEGORY: Transportation/Utilities
DATA LAYER: Sewer Service Areas

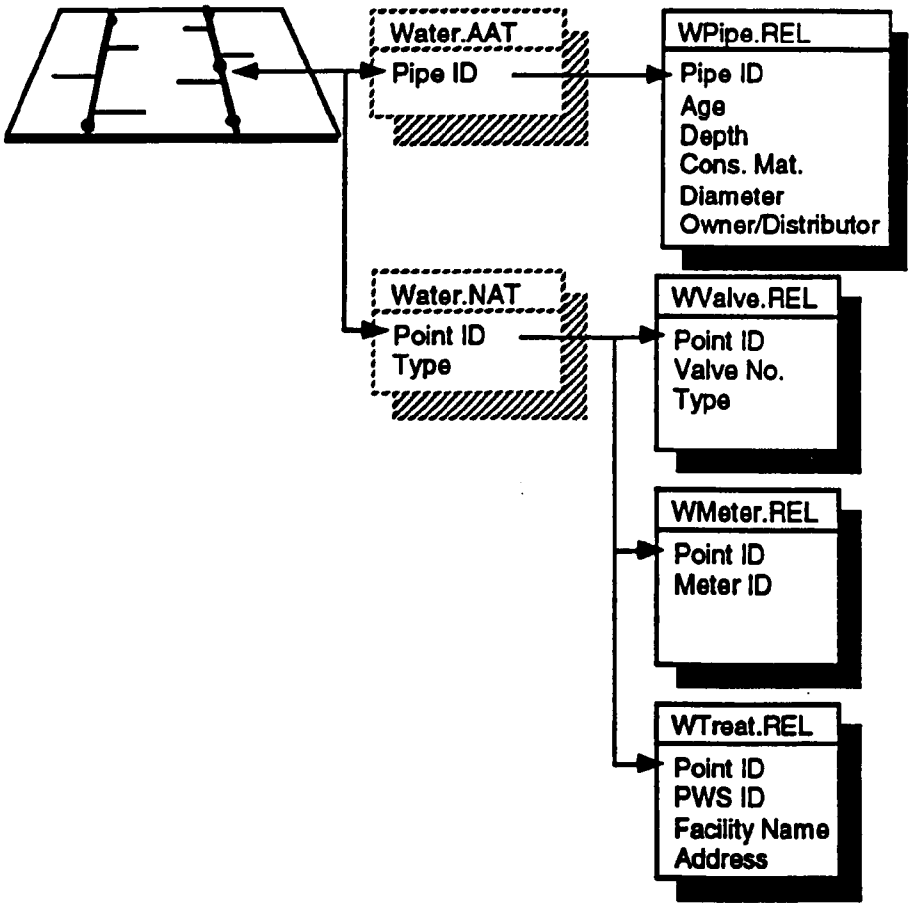
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 85



NOTES: This data layer would show existing and planned sewer service area boundaries and, by inference, nonsewered areas. Attribute items may include status (existing or planned), service provider name and address, population served, and recipient treatment plants. A date of last update will provide an indication of data currency and utility. The existing Sewers layer of NJDEPE should be evaluated to determine its potential for providing that state's portion of the Regional coverage. Data should be sought or generated in a similar format for the remainder of the Region. This data layer may require annual update and maintenance, which may be accomplished by receiving updates from the states.

FIGURE: B-28
DATA CATEGORY: Transportation/Utilities
DATA LAYER: Water Lines

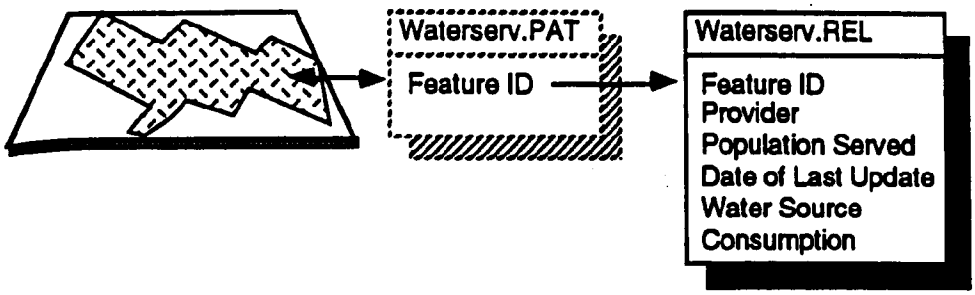
LAYER TYPE: Line
KEY IDENTIFIERS: Pipe ID, Point ID
DATA SOURCES: Not identified



NOTES: Water distribution facilities may include both line and point features stored together in one layer. Water pipes are represented by lines and may include attributes such as pipe size and owner/maintainer, with additional pipe and ownership attributes stored in related tables. Other facilities in the network, such as valves, storage facilities, and treatment plants, are represented as line endpoints and stored in the node attribute table, and potentially also related external tables. Treatment facility points should be checked for coincidence with those in the Public Water Supply Plant data layer. PWS compliance data in PCS could be accessed for this layer using the PWS ID. Automation of this layer may be capital and labor intensive, and no known digital sources were uncovered during the data source inventory. However, as these data begin to become available over time in digital format from communities, the Region's water data layer may be used as a repository for the data, which should be incorporated with minimal processing. Data incorporated in this manner should be well documented for the prospective user. Incomplete coverage of the Region for this layer is likely.

FIGURE: B-29
DATA CATEGORY: Transportation/Utilities
DATA LAYER: Water Service Areas

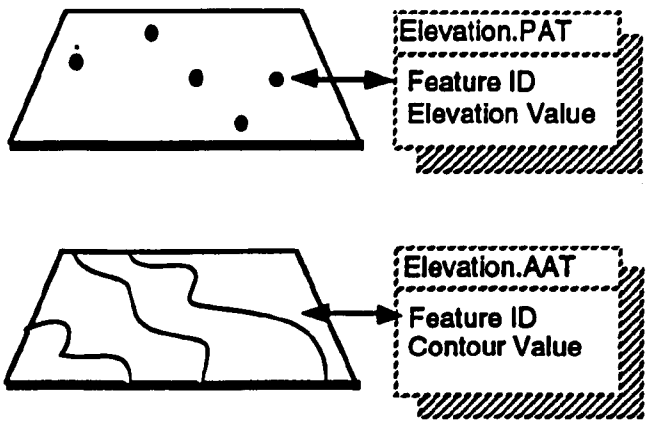
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 56, 150



NOTES: This data layer would show water service area boundaries. Attribute items may include service provider name and address, population served, consumption, and water source type. A date of last update will provide an indication of data currency and utility. The existing water service layer of NJDEPE should be evaluated to determine its potential for providing that state's portion of the Regional coverage. Data should be generated in a similar format for the remainder of the Region. EPA's public water supply database, FRDS, contains fields describing water service areas. These may be useful in generating this data layer, depending on the specificity, completeness, and accuracy of records in the database. This data layer would require annual update and maintenance which could be accomplished by the states providing updates.

FIGURE: B-30
DATA CATEGORY: Terrain Features
DATA LAYER: Elevation

LAYER TYPE: Point, Line
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 305, 306, 321

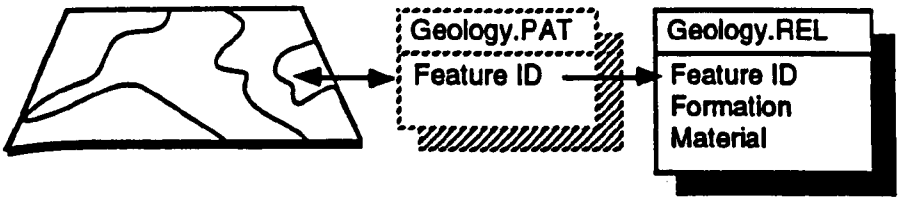


NOTES: These data layers contain both hypsographic and bathymetric data. A point layer would include elevation and depth data, and a line coverage would display land and underwater contours. A unique feature ID would link map features to associated attribute files. A potential bathymetric data source is the NOS Hydrographic Database, which would require selection of Region II data points from the global data set and some processing/reformatting.

A layer of regularly spaced elevation points, derived from Digital Elevation Model (DEM) files of USGS or from digital ortho-photos, provides the ability to generate other layers such as contours, slope, and aspect. Three-dimensional surface models can also be developed from DEMs, over which other data layers such as roads and streams may be draped. DEM data at 7-meter accuracy are available for about one-half of New Jersey 7.5-minute quads and about one-third of New York 7.5-minute quads. These data may be converted, as completed, by conversion of the DEM into a lattice, merging/clipping lattices, and generating contours (lines). Slope and aspect can also be generated and processed as polygon layers. Once generated, these layers would be fairly static, updated only as more accurate data become available.

FIGURE: B-31
DATA CATEGORY: Terrain Features
DATA LAYER: Geology

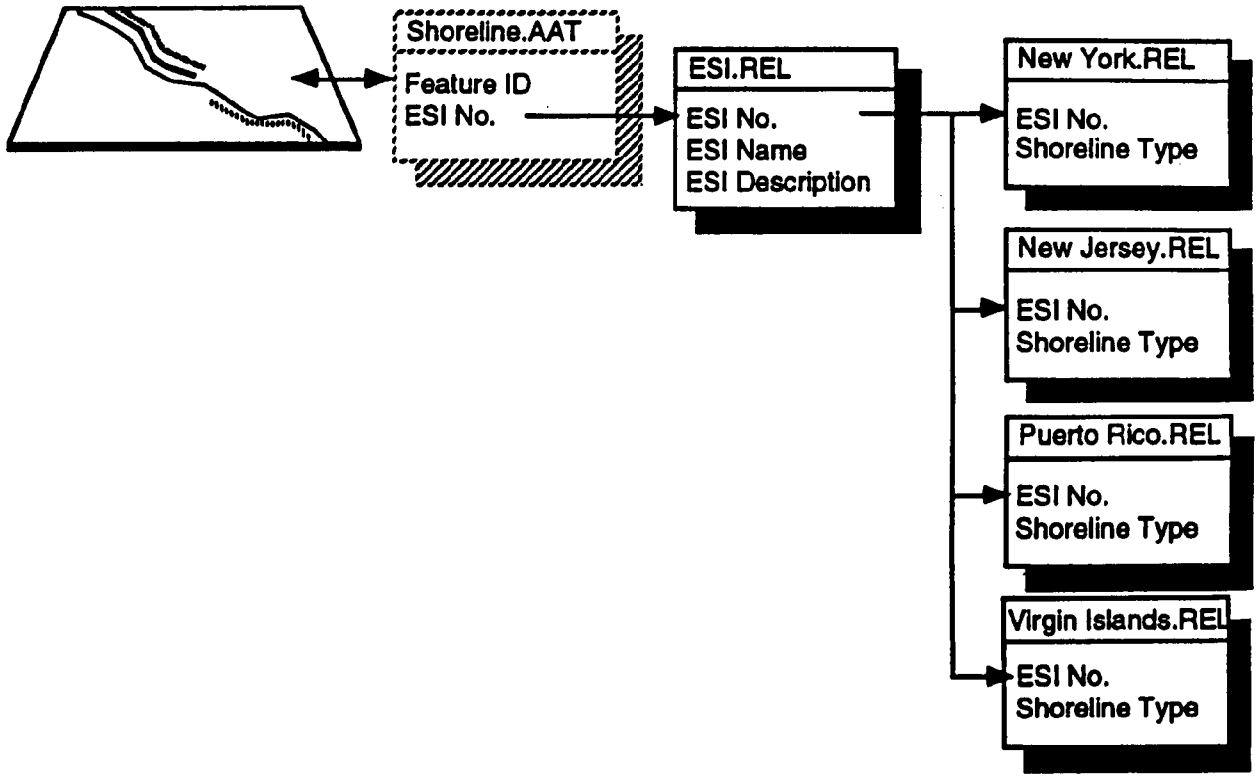
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 63, 376, 403



NOTES: A generalized geology layer provides geologic strata and materials information. No single data source exists for this layer to provide complete coverage of the Region. Statewide small-scale coverage is available for both New York and New Jersey. These digital sources may be updated on an area-by-area basis as more detailed data are generated for project areas. Large-scale DLG data are available for Puerto Rico. No digital source has been identified for the Virgin Islands.

FIGURE: B-32
DATA CATEGORY: Terrain Features
DATA LAYER: Shoreline

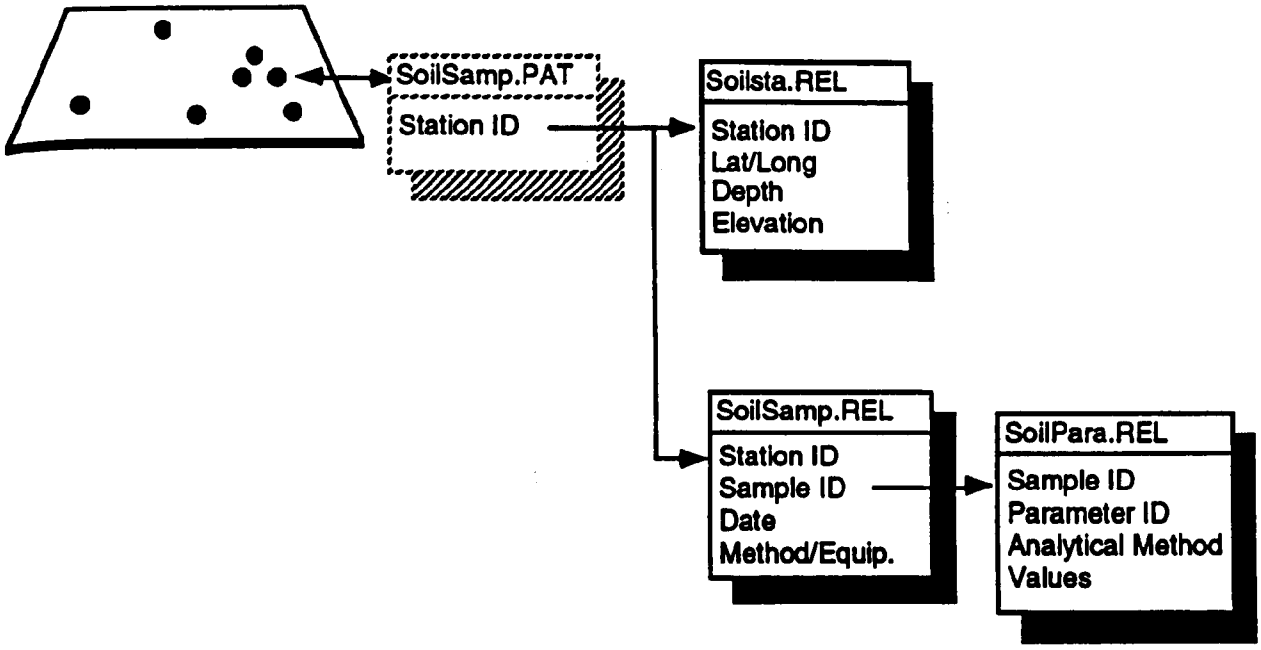
LAYER TYPE: Line
KEY IDENTIFIERS: Feature ID, ESI No.
DATA SOURCES: 302, 401, 307



NOTES: This layer depicts shoreline classified by its environmental sensitivity index. The index ranks shoreline intertidal areas based on relative exposure to tidal energy, slope, substrate type, and biological productivity and sensitivity. Shoreline type for ESI ranking varies by location, so related tables are included for each shoreline area. NOAA's large-scale digital shoreline data may provide the shoreline geometry to which ESI Atlas data may be added. Alternately, 1:24,000 DLG data may be used to generate the shoreline. Also, the NJDEPE 1:24,000 shoreline data layer may be used for the New Jersey portion of the Region. This layer should be relatively static, requiring checking every few years for currency.

FIGURE: B-33
DATA CATEGORY: Terrain Features
DATA LAYER: Soil Sample Sites

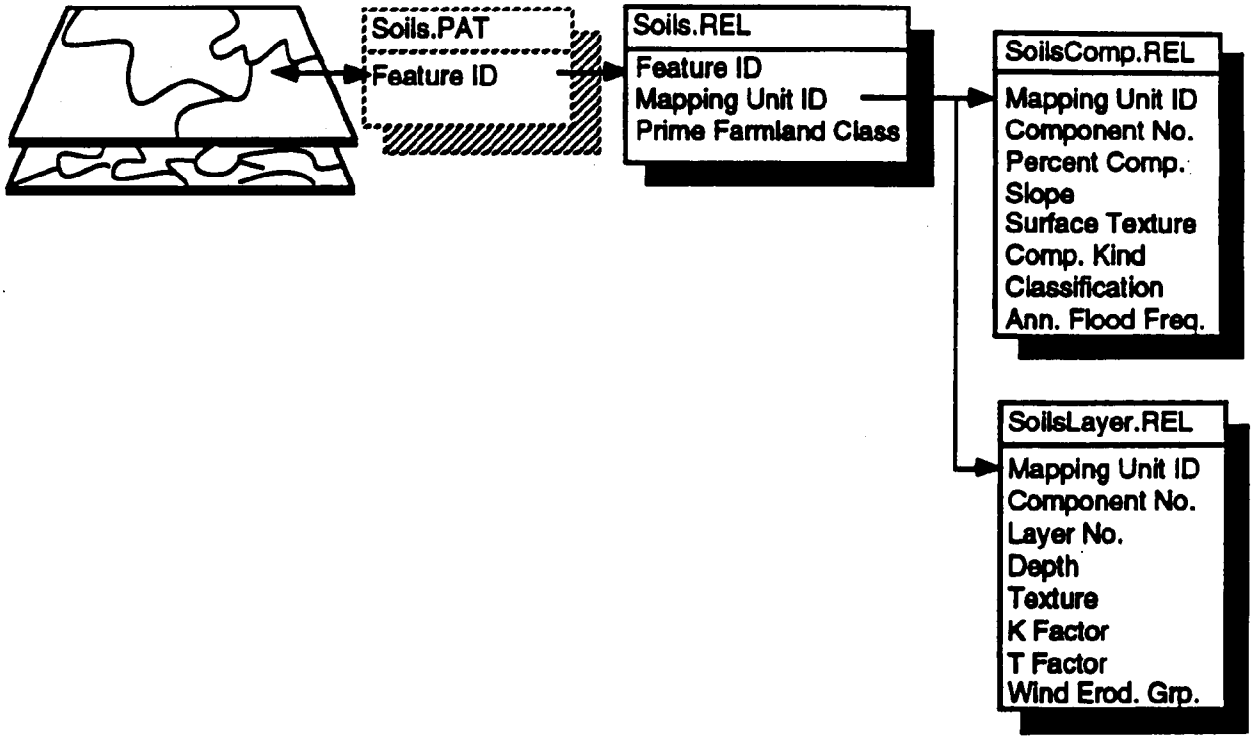
LAYER TYPE: Point
KEY IDENTIFIERS: Station ID
DATA SOURCES: 169, 144



NOTES: This point layer would include soil contaminant sample sites of Superfund and RCRA, as well as bottom sediment sample sites such as those contained in ODES. Sources of these data include Superfund RI/FS documents and sampling during cleanup, some of which may be contained in the CARD database. For those sites with geographic coordinates, a point layer may be generated. Geographic coordinates may not be readily available for CARD data. This layer would require monthly to quarterly maintenance by the Region.

FIGURE: B-34
DATA CATEGORY: Terrain Features
DATA LAYER: Soils

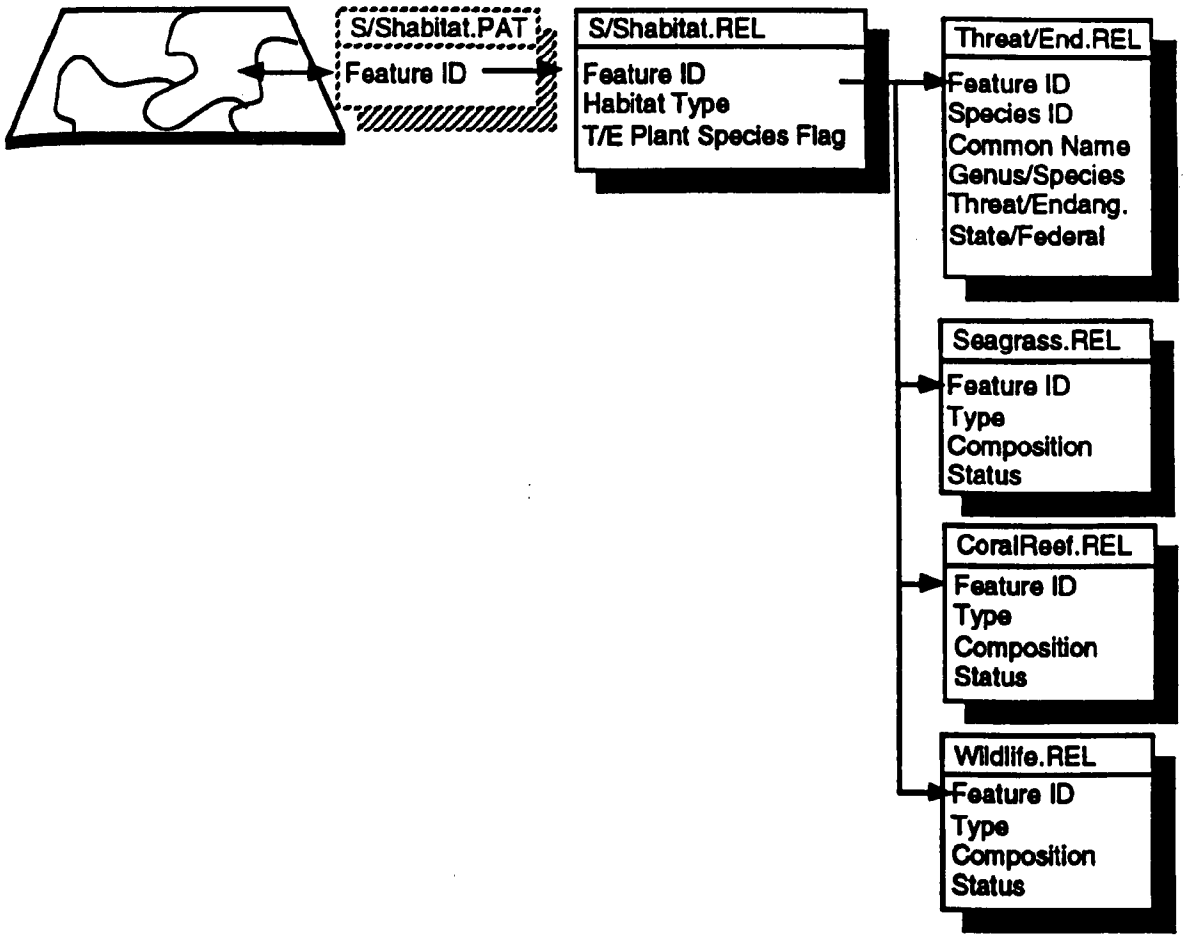
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID, Mapping Unit ID
DATA SOURCES: 280, 281, 303, 403



NOTES: The soils layer provides detail on soil types and properties. A unique feature identifier provides the key linking the polygons to associated attribute files. Two layers may be developed—one derived from the SCS state-level soils geographic database, and the other from the SCS county-level detailed soil survey. The state geographic database (STATSGO) is currently available for the Region, and would require conversion to ARC/INFO. STATSGO-related attributes, such as the component properties and layer properties shown above, are in a relational database format, and can easily be incorporated into the Region's GIS. The prime/important farmland classification may need to be added to the STATSGO-derived data layer. The detailed soil survey layer may be developed as SCS-certified (SSURGO) data become available on a county-by-county basis over time from cooperative federal/state/local digitizing efforts. Some quality control checks for edgematching over county boundaries may be required. These data layers, once developed, should be fairly static and maintenance-free. A large-scale soils layer is available in DLG format for Puerto Rico.

FIGURE: B-35
DATA CATEGORY: Biological Resources
DATA LAYER: Significant/Sensitive Habitat

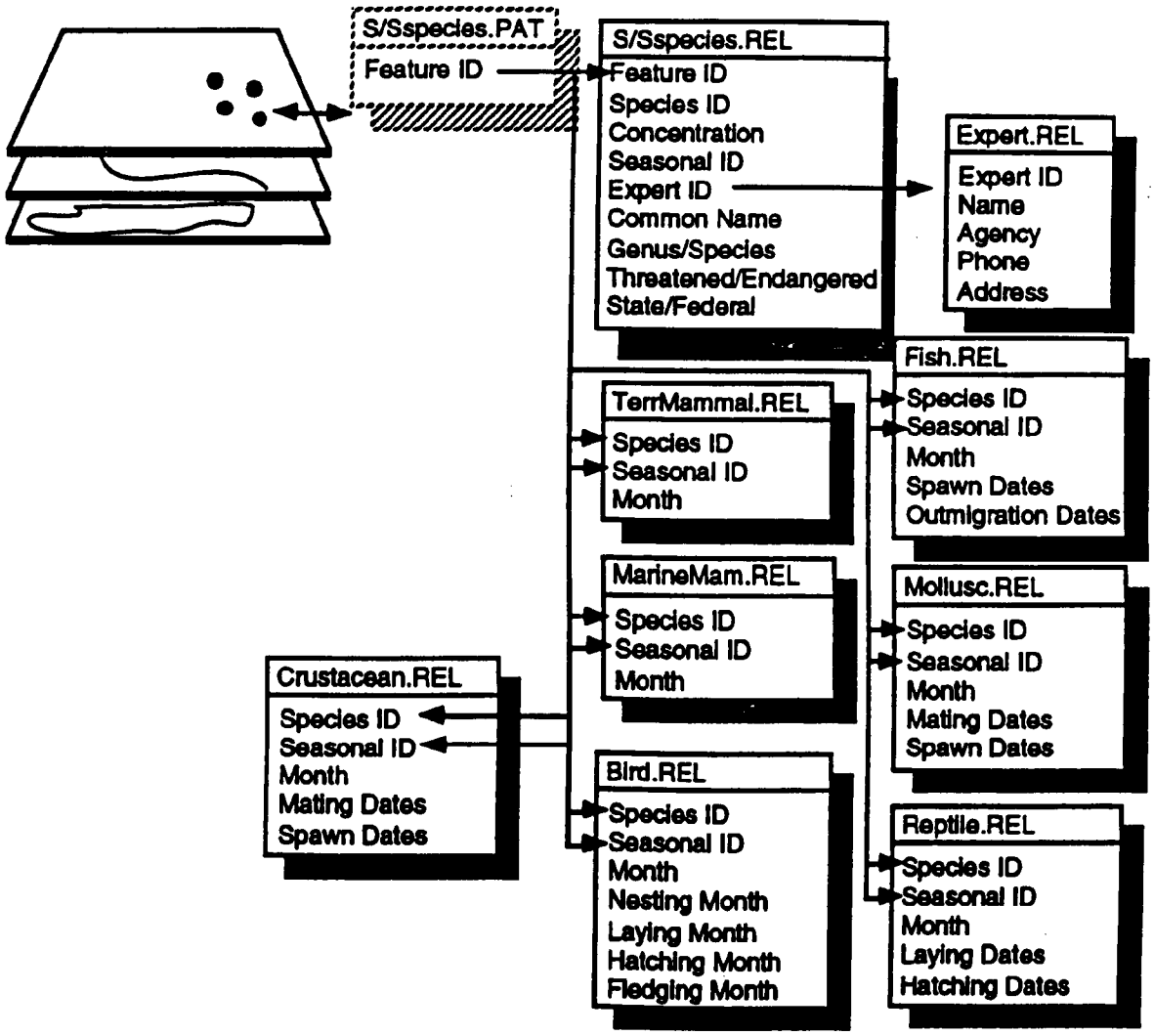
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 370, 348, 401, 304, 62, 76, 217, 386, 387, 187, 210



NOTES: This layer includes data on significant and sensitive habitats, both terrestrial and aquatic, such as eelgrass beds, coral reefs, submerged aquatic vegetation, pinelands, wildlife protection areas, and tidal wetlands. It also contains locations of threatened/endangered plant species. The Feature ID provides the unique identifier linkage to related data files. A threatened/endangered flag in the feature attribute table indicates the presence of the plant species, for which additional attributes are provided in a related table. Additional related tables may be constructed for each habitat type, depending on data availability. Numerous potential data sources exist for this layer. NOAA's Environmental Sensitivity Index (ESI) Atlases, currently in hard-copy form but soon to be digitized, provide a major source of data for this layer. For areas beyond the shoreline that are not covered by ESI data, the states maintain digital layers for rare and endangered species which should be examined to determine processing requirements for the Region's use. The Nature Conservancy Heritage Database is also a possible major information source. Other data sources should be assembled and compiled to a single manuscript for automation. Update and maintenance of this layer relies on the provision of data from outside sources, but should occur on an annual or biannual basis.

FIGURE: B-36
DATA CATEGORY: Biological Resources
DATA LAYER: Significant/Sensitive Species

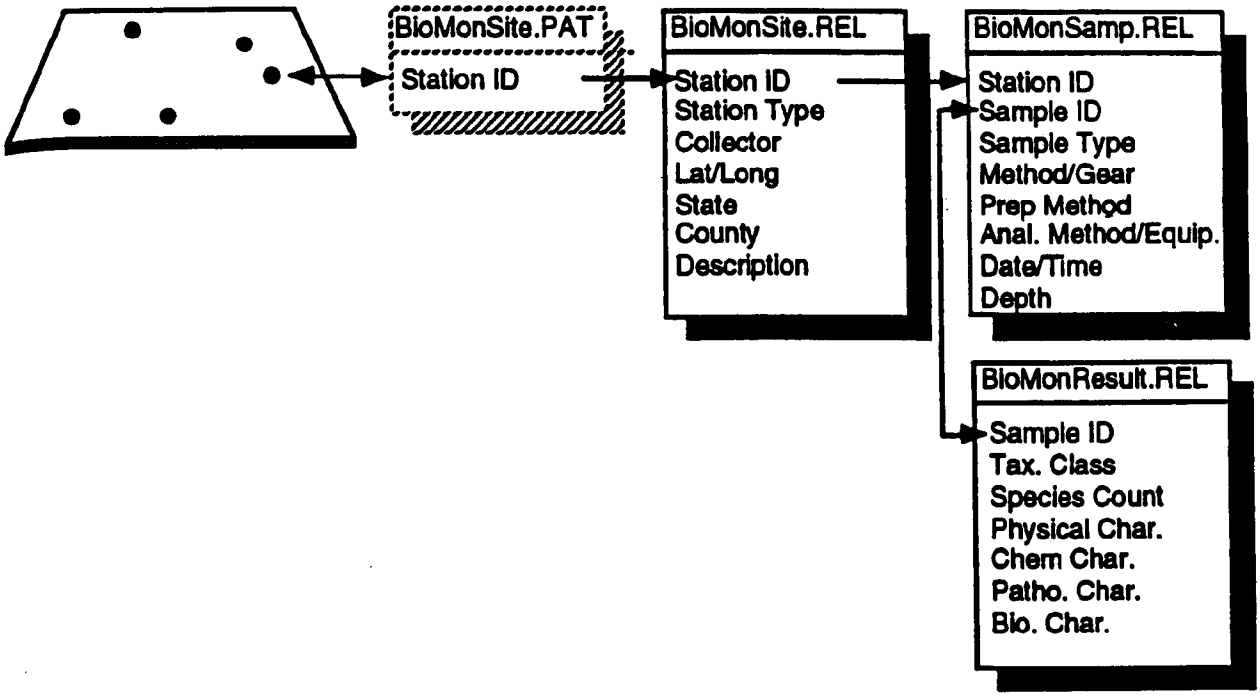
LAYER TYPE: Polygon, Line, Point
KEY IDENTIFIERS: Feature ID, Species ID, Seasonal ID
DATA SOURCES: 401, 62, 187, 194, 387



NOTES: Significant/Sensitive species, including those with rare/endangered status, may be represented in point, polygon, and/or line layers, depending on concentration and extent of coverage. The keys Species ID and Seasonal ID provide linkages to a series of related files, as represented above for animal species, that provide data on seasonal activities related to species sensitivity. A similar series of related tables for plant species would be established. NOAA's Environmental Sensitivity Index (ESI) Atlases, currently in hard-copy form but soon to be digitized, provide a major source of data for this layer. For areas beyond the shoreline that are not covered by ESI data, the states maintain digital layers for rare and endangered species which should be examined to determine processing requirements for the Region's use. The Nature Conservancy Heritage Database is also a possible major information source. Maintenance of this layer may depend on periodic updates provided by NOAA and the states, but should occur on an annual or biannual basis.

FIGURE: B-37
DATACATEGORY: Biological Resources
DATALAYER: Biological Monitoring Sites

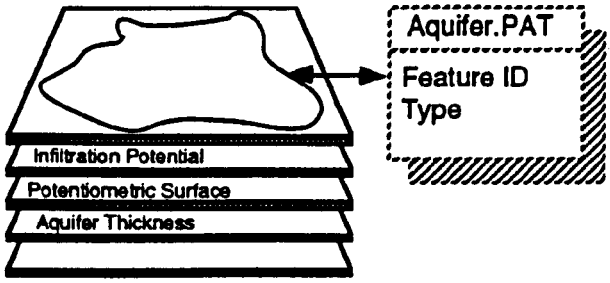
LAYER TYPE: Point
KEYIDENTIFIERS: Station ID
DATA SOURCES: 153, 293, 249



NOTES: This point layer provides locations of stream, lake, estuary, and ocean biological monitoring sites. The Station ID provides the key linkage to related attribute files. The source of attribute files may be STORET (BIOS), as well as other state and federal databases. The layer may be generated from latitude/longitude coordinates of station files, and will require monthly update by the Region.

FIGURE: B-38
DATA CATEGORY: Water Resources
DATA LAYER: Aquifer Boundaries

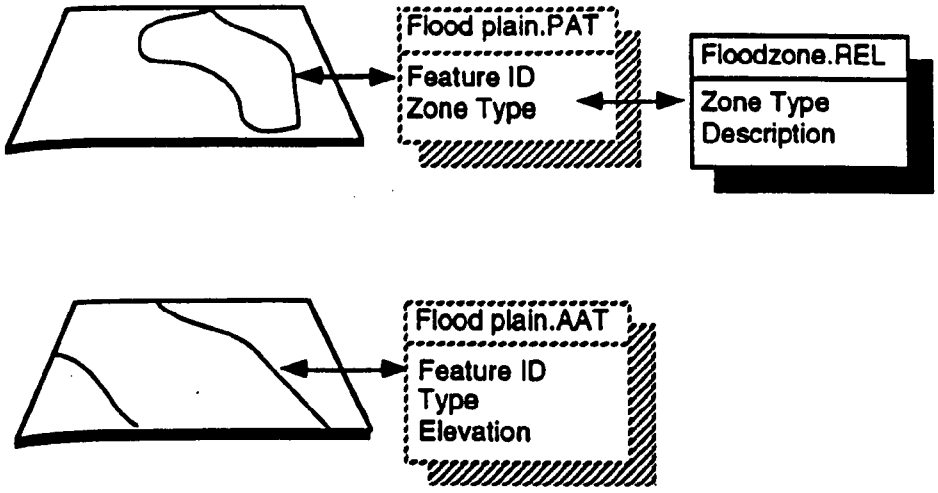
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 395, 103



NOTES: The aquifer boundaries layer would be comprised of polygons delineating the boundaries of sole source, primary, and principal aquifers. State digital layers may be candidates for initial development of this layer. Data should be checked for compatibility and consistency across the Region. A series of aquifer layers may be developed through modeling, such as water infiltration potential, potentiometric surface, and aquifer thickness (e.g., New Jersey is in the process of developing aquifer recharge layers). The Region's aquifer layers may be updated as these data become available.

FIGURE: B-39
DATA CATEGORY: Water Resources
DATA LAYER: Floodplain Boundaries

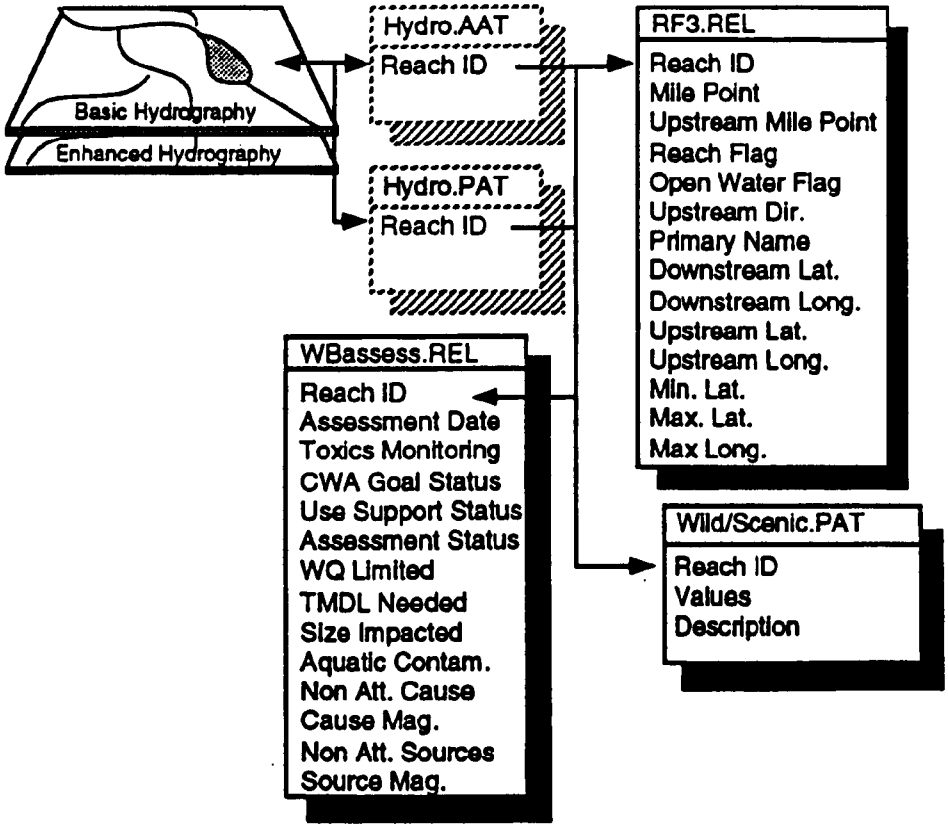
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 250, 40



NOTES: Two layers would be developed from flood insurance rate maps (FIRM). Flood zones would be contained in a polygon layer, with each zone type described in a related attribute table. Base Flood Elevation lines, 100- and 500-year flood boundaries, and associated elevations would be stored in a line layer. Source maps should be rescaled and rectified to USGS 1:24,000 quads before automation. Automation of this layer may constitute a substantial effort, and could be done through cooperative efforts with FEMA and the states. New Jersey's ITUM provides flood boundaries which may be substituted for FIRMS or used until the data are complete for the state. This should be a relatively static layer; periodic updates should be sought from FEMA.

FIGURE: B-40
DATA CATEGORY: Water Resources
DATA LAYER: Hydrography

LAYER TYPE: Line and Polygon
KEY IDENTIFIERS: Reach ID
DATA SOURCES: 152, 307, 155, 297

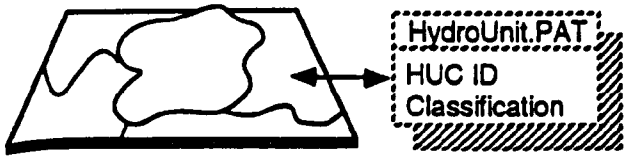


NOTES: Two data layers would be created to represent hydrography—basic and enhanced layers. Each would be comprised of lines and polygons. Polygons include lakes, reservoirs, estuaries, bays, tidal areas, harbors, and coastal waters. Lines include streams and rivers. The basic hydrography layer would be generated from Reach File 3 with 1:100,000-scale geometry. The enhanced layer would be enhancements made to the RF3 basic layer with 1:24,000 DLG file detail. The basic RF3 data layer is provided by EPA headquarters. The Region may develop an enhanced layer as time and resources permit. Once developed, it should be a relatively static layer, possibly requiring annual maintenance.

Waterbody assessment status data from WBS may be related to hydrographic features by the Reach ID. If numerous instances exist where status or assessment information change within a reach, consideration may be given to using dynamic segmentation tools to represent these instances. In that case, a stream would be represented as a route, and assessment/status information recorded as events along the route. Wild and scenic rivers may be automated as another route. These data should be updated on an annual basis.

FIGURE: B-41
DATACATEGORY: Water Resources
DATALAYER: Hydrologic Unit Boundaries

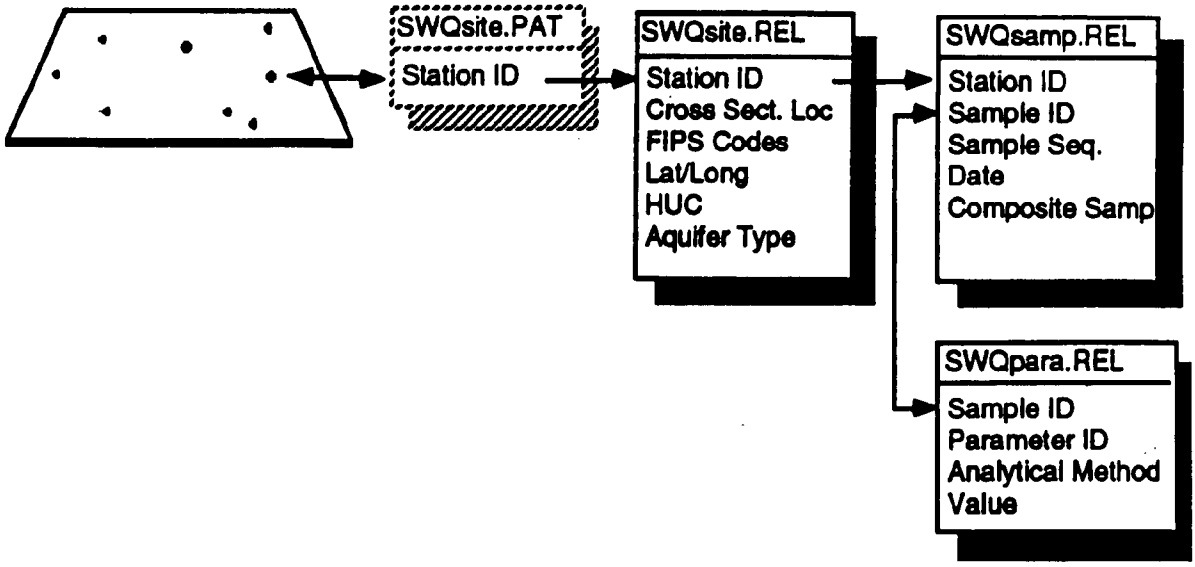
LAYER TYPE: Polygon
KEYIDENTIFIERS: Hydrologic Unit Code (HUC)
DATA SOURCES: 78, 58, 391, 310, 282



NOTES: This layer would include hydrologic unit boundaries of basins and sub-basins, identified by the unique USGS Hydrologic Unit Code (HUC). An initial layer may be developed from the USGS Land Cover/Land Use files, extending beyond the Region's borders as needed to complete hydrologic units and cover joint project areas. As cooperative arrangements between USGS, SCS, and the states are made to automate the HUCs at the 1:24,000 scale, a more detailed layer may be compiled from this data. A classification attribute may be added to designate the quality of the watersheds (i.e., receiving waters). Once developed, maintenance of the geometry should be minimal (check every few years). Additional attributes may be added as generated.

FIGURE: B-42
DATA CATEGORY: Water Resources
DATA LAYER: Surface Water Quan/Qual Sample Sites

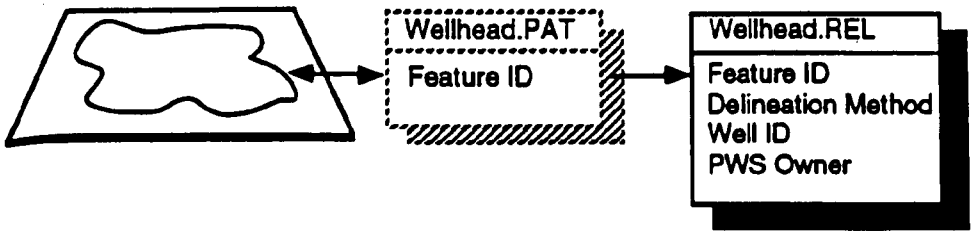
LAYER TYPE: Point
KEY IDENTIFIERS: Station ID
DATA SOURCES: 8, 153, 169, 293



NOTES: This point layer would contain surface water monitoring sites including streams, lakes, estuaries, and ocean water, primarily those sites reporting data to STORET. The feature attribute table would provide the station ID, and a related table would provide station descriptors. Related sampling tables would be linked by station ID and sample ID. The layer may be generated from geographic coordinates in STORET. The Region currently maintains a STORET point layer. Other potential data sources to add to this layer include ODES and NOAA's National Status and Trends. This layer would require monthly update by the Region.

FIGURE: B-43
DATA CATEGORY: Water Resources
DATA LAYER: Wellhead Protection Zones

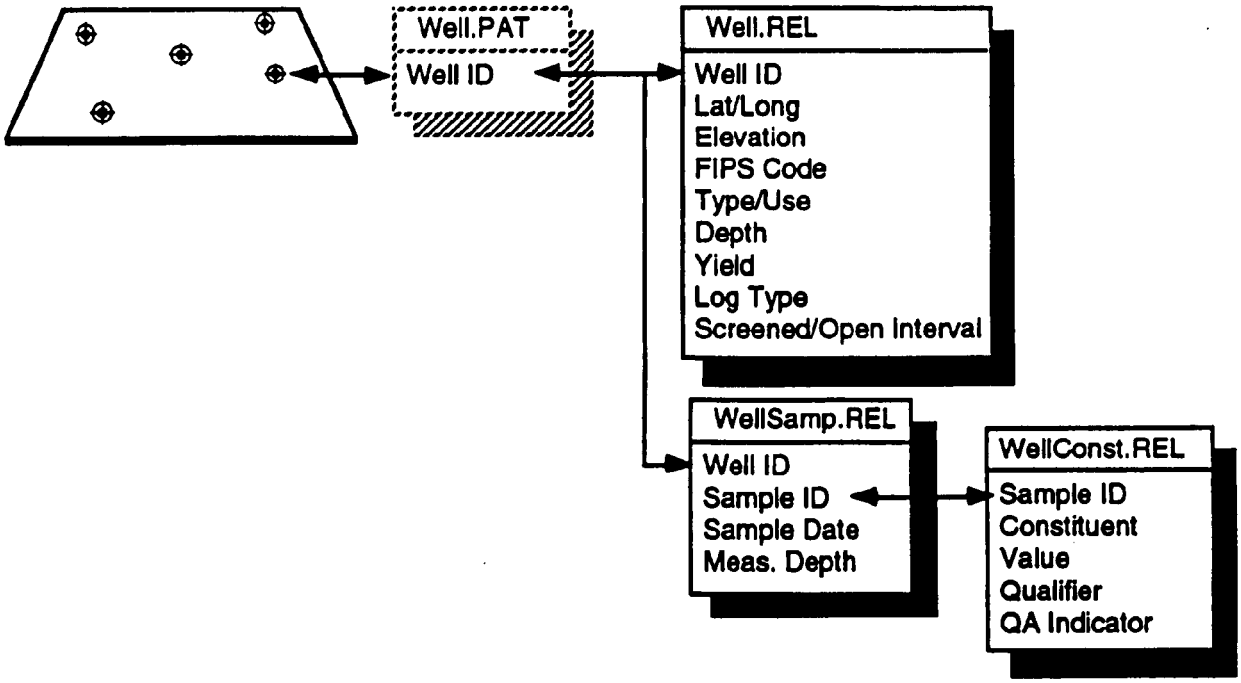
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID, Well ID
DATA SOURCES: Non-identified



NOTES: This polygon layer would depict wellhead protection boundaries for public water supplies. No sources of digital data are currently known to exist. As these areas are delineated, data may become available in digital form. A well ID would allow linkage to related tables from the well layer. This should be a fairly static layer once developed. Periodic updates may be provided by the states.

FIGURE: B-44
DATA CATEGORY: Water Resources
DATA LAYER: Wells

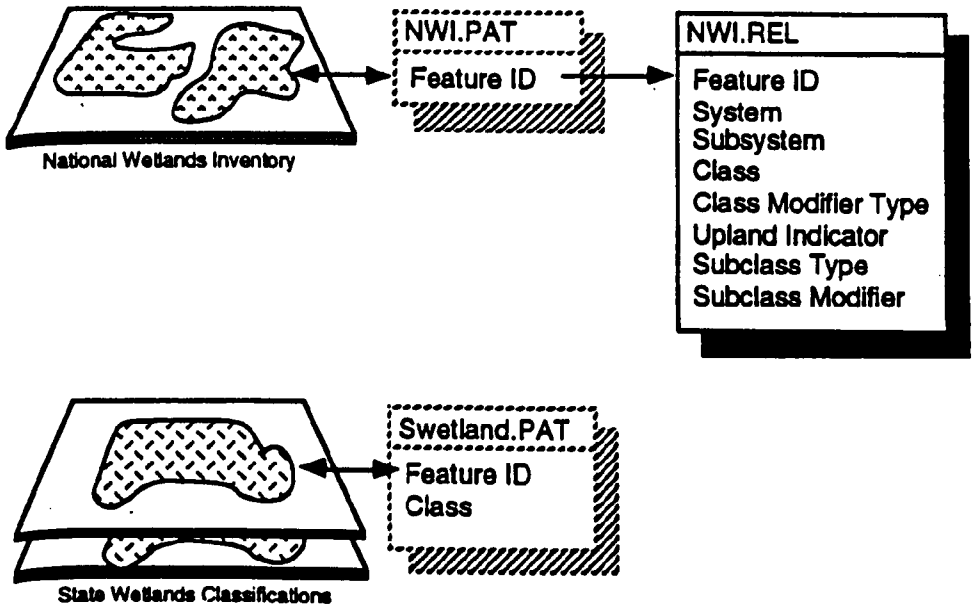
LAYER TYPE: Point
KEY IDENTIFIERS: Well ID
DATA SOURCES: 30, 91, 96, 236, 404



NOTES: This point layer of well locations would include water withdrawal wells, monitoring wells, disposal wells, and wells of unknown use. Regulatory data for disposal (injection) wells regulated by EPA would be maintained in a separate but related data layer (see UIC Sites layer). The well layer would require compilation of data from a number of sources, including existing well data layers for New Jersey, a groundwater well data layer in DLG format for the Virgin Islands, Groundwater Site Inventory records maintained by the states, and groundwater monitoring dat, such as those maintained in WATSTORE, STORET, and possibly CARD. Layers may be generated from existing attribute files containing geographic coordinates, and appended to form a single region-wide coverage. The well layer would require monthly update and maintenance by the Region.

FIGURE: B-45
DATA CATEGORY: Water Resources
DATA LAYER: Wetlands

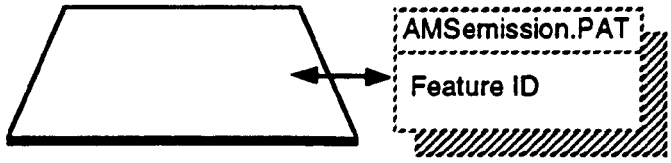
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 283, 47, 191, 300



NOTES: Wetlands may be represented as two distinct layers, one based on the National Wetlands Inventory classification, and another based on state classification. Virtually complete coverage of the National Wetlands Inventory is available for New Jersey in digital format; the remainder of the Region requires digitizing and processing in accordance with NWI procedures. The state wetlands data layers may include those portions of New Jersey (65 percent) and New York (3 counties) that are currently available in digital format, to be expanded as additional data are automated by the states. These layers would require periodic maintenance (every few years) to account for changes in land use/cover.

FIGURE: B-46
DATA CATEGORY: Air Quality
DATA LAYER: Area/Mobile Source Emissions

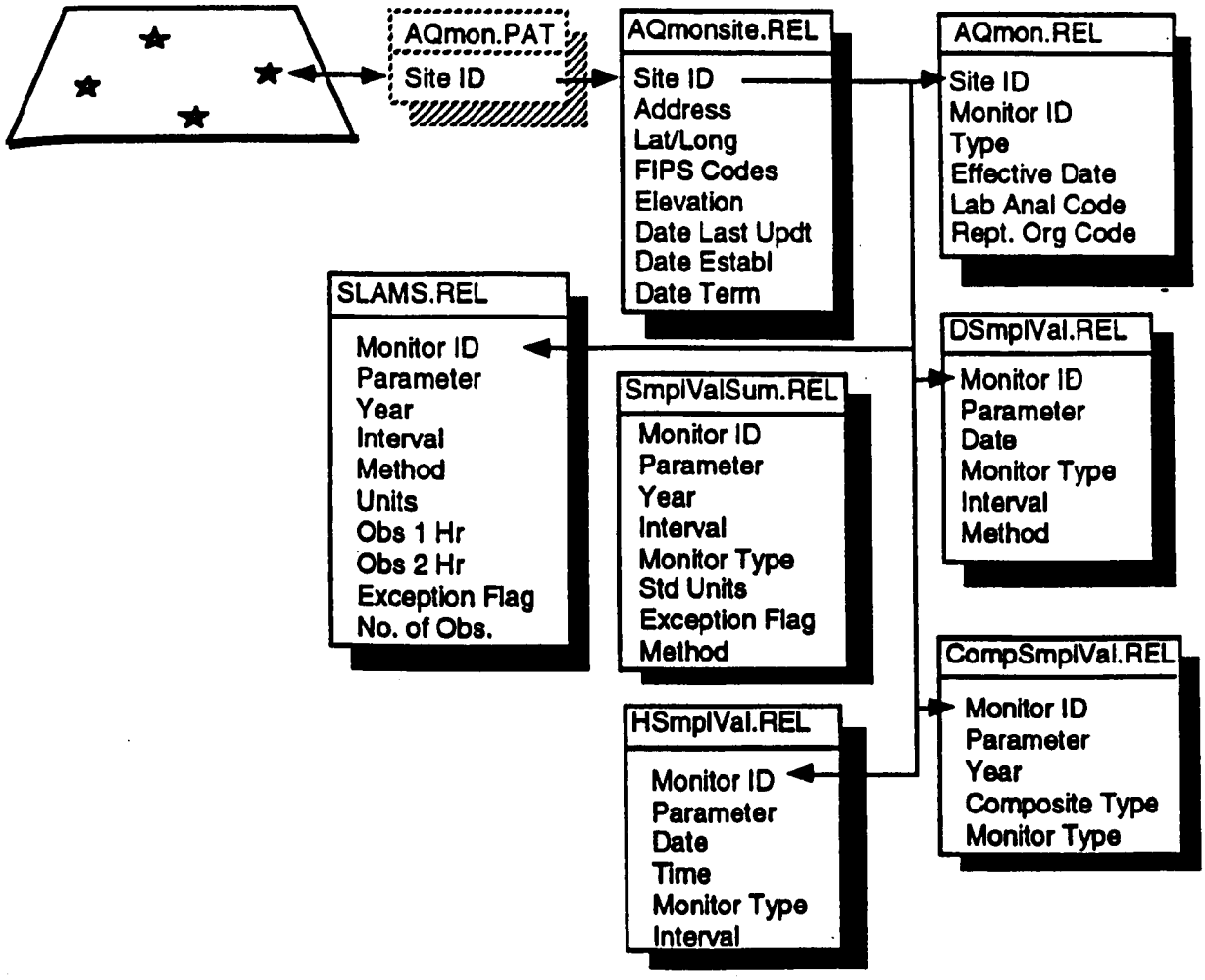
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 138



NOTES: This data layer is designed for air emission sources contained in the Area and Mobile Source Subsystem (AMS) of AIRS. Additional information is needed about this subsystem to determine the format and content of the data layer.

FIGURE: B-47
DATA CATEGORY: Air Quality
DATA LAYER: Ambient Air Quality Monitoring Sites

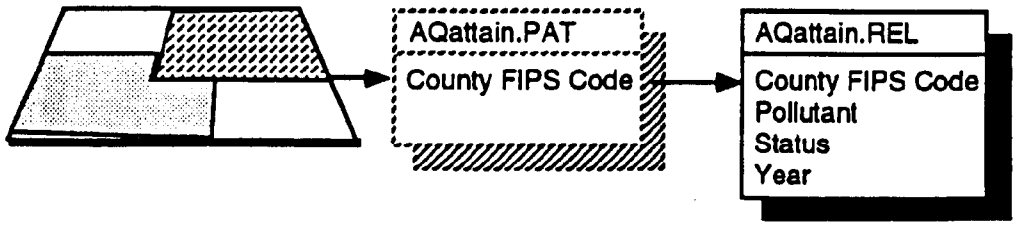
LAYER TYPE: Point
KEY IDENTIFIERS: Site ID
DATA SOURCES: 138



NOTES: This data layer provides point locations for ambient air quality monitoring sites. Site and monitor IDs provide the key to relate points to attribute files. Several related files may be established such as those shown here for station description, monitoring sites, various types of sample values (composite, hourly, etc.), and state/local air monitoring (SLAMS) data. The Air Quality Subsystem of AIRS would be the primary data source for this layer, from which the above example items have been taken. The point layer may be generated from latitude/longitude or UTM coordinates in AQS, and AQS data set up in related files. This layer would require monthly maintenance by the Region.

FIGURE: B-48
DATA CATEGORY: Air Quality
DATA LAYER: Air Quality Attainment Status

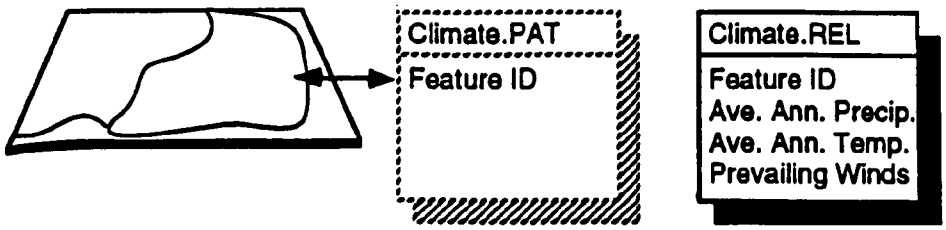
LAYER TYPE: Polygon
KEY IDENTIFIERS: FIPS code
DATA SOURCES: 138, SIP reporting



NOTES: This data layer would display air quality standard attainment status. It may be developed by copying the county boundaries layer using the County FIPS code as the key identifier, and adding related files containing attainment status attributes such as pollutant, status, and year. Data may be derived from State Implementation Plan (SIP) monitoring and reporting information. The layer would require annual update of attribute data by the Region.

FIGURE: B-49
DATA CATEGORY: Air Quality
DATA LAYER: Climate Zones

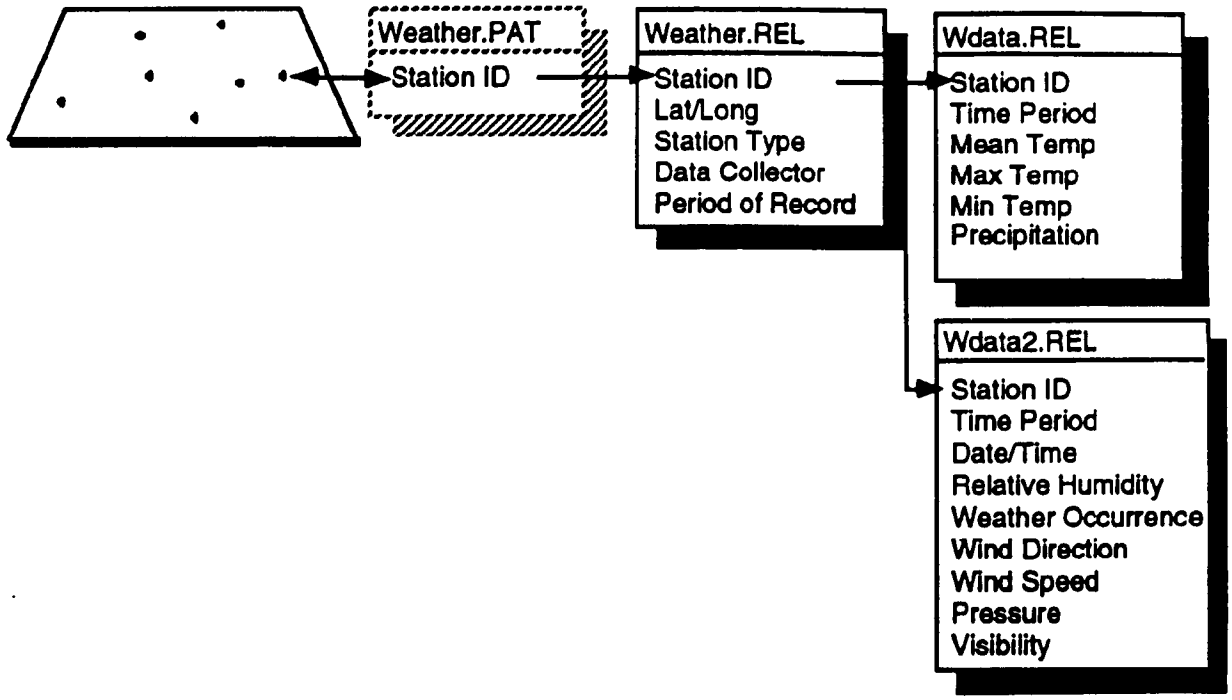
LAYER TYPE: Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 316, 374



NOTES: A climate zone layer may be automated from climate maps available through the National Climatic Data Center. A potential partial digital source is the climate layer under development for New York State. This is a relatively static layer that, once developed, would be relatively maintenance free.

FIGURE: B-50
DATA CATEGORY: Air Quality
DATA LAYER: Weather Stations

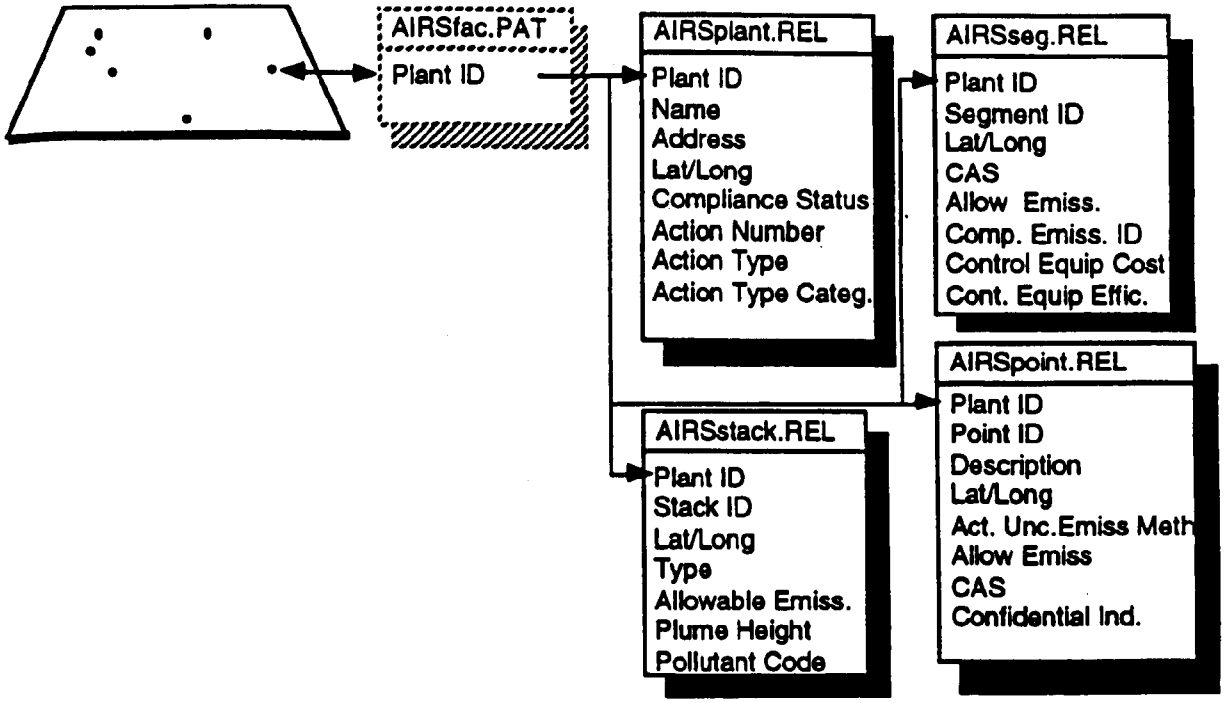
LAYER TYPE: Point
KEY IDENTIFIERS: Station ID
DATA SOURCES: 316



NOTES: The weather station data layer provides point locations for stations in the Region reporting climatological data to the National Climatological Data Center (NCDC). Station points may be generated from the latitude/longitude coordinates provided in station files. Basic attribute data sets may include a station data file and an average temperature and precipitation file, such as shown above. A large volume of climatological data organized into over 200 data sets is available through NCDC. Additional attribute files such as the one shown above may be developed on an as-needed basis from these data. Substantial filtering, reduction, and processing of these data may be required to develop meaningful data sets. Quarterly or annual updates would be required for this data layer.

FIGURE: B-51
DATA CATEGORY: Regulatory
DATA LAYER: Air Permitted Facilities

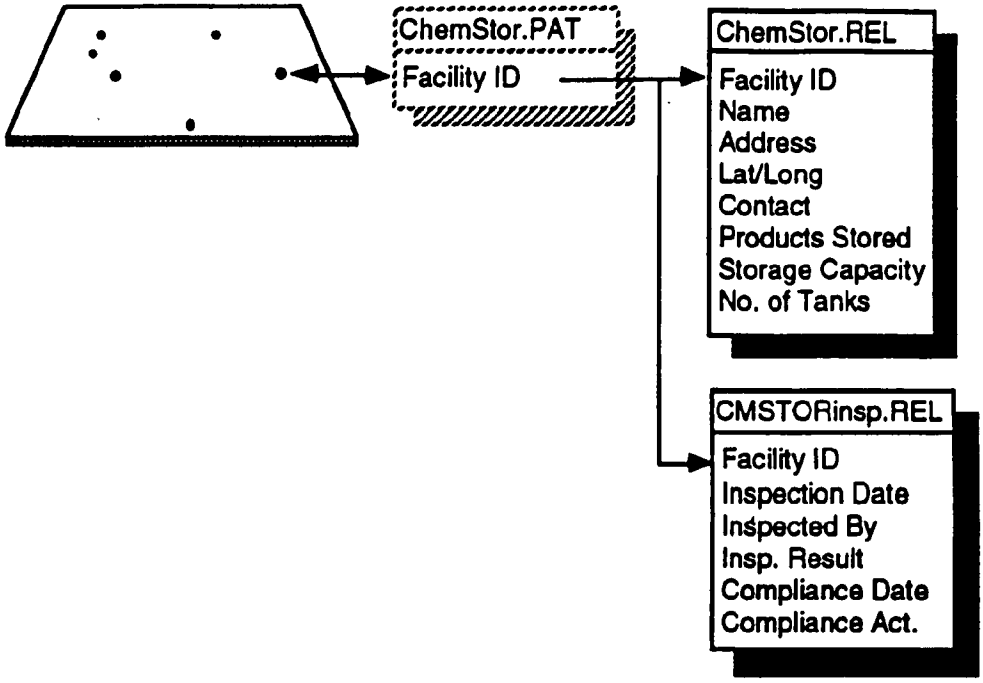
LAYER TYPE: Point
KEY IDENTIFIERS: Plant ID
DATA SOURCES: 138



NOTES: This data layer would provide regulatory tracking information for air emissions permitted facilities. Using the plant ID as the relate item, several related files may be established such as the ones shown above for facility data; violation, inspection, and compliance data; and stack, point, and segment emissions and monitoring data. The Air Facility Subsystem of AIRS would be the primary data source for this layer. Related files would be populated from AFS with high-priority AFS plant, stack, segment, and point data items (see Appendix C for complete listing of high-frequency use data items). The point layer may be generated from plant latitude/longitude data in AFS. The layer would require monthly update and maintenance by the Region.

FIGURE: B-52
DATA CATEGORY: Regulatory
DATA LAYER: Chemical Bulk Storage Sites

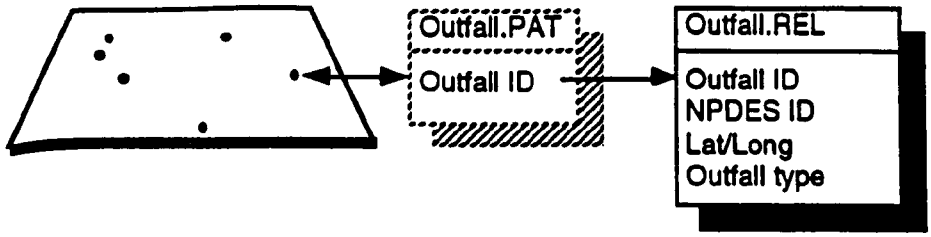
LAYER TYPE: Point
KEY IDENTIFIERS: Facility ID
DATA SOURCES: 141, 231, 139



NOTES: This data layer would contain information regarding chemical bulk storage sites. A related attribute table would provide facility site and storage data. Other related tables, such as the inspection table shown here, may provide additional data as they are generated. Data sources for this layer may initially be the NYSDEC chemical bulk storage database, and the Region's Spill Prevention Control and Countermeasures (SPCC) database for tracking inspection and compliance. The point layer may be created through matching facility addresses to the road layer which contains address ranges, and creating points for each address. Alternately, latitude/longitude may be used to generate points for major facilities. The layer would require annual maintenance and update by the Region.

FIGURE: B-53
DATA CATEGORY: Regulatory
DATA LAYER: Discharge Points/Outfalls

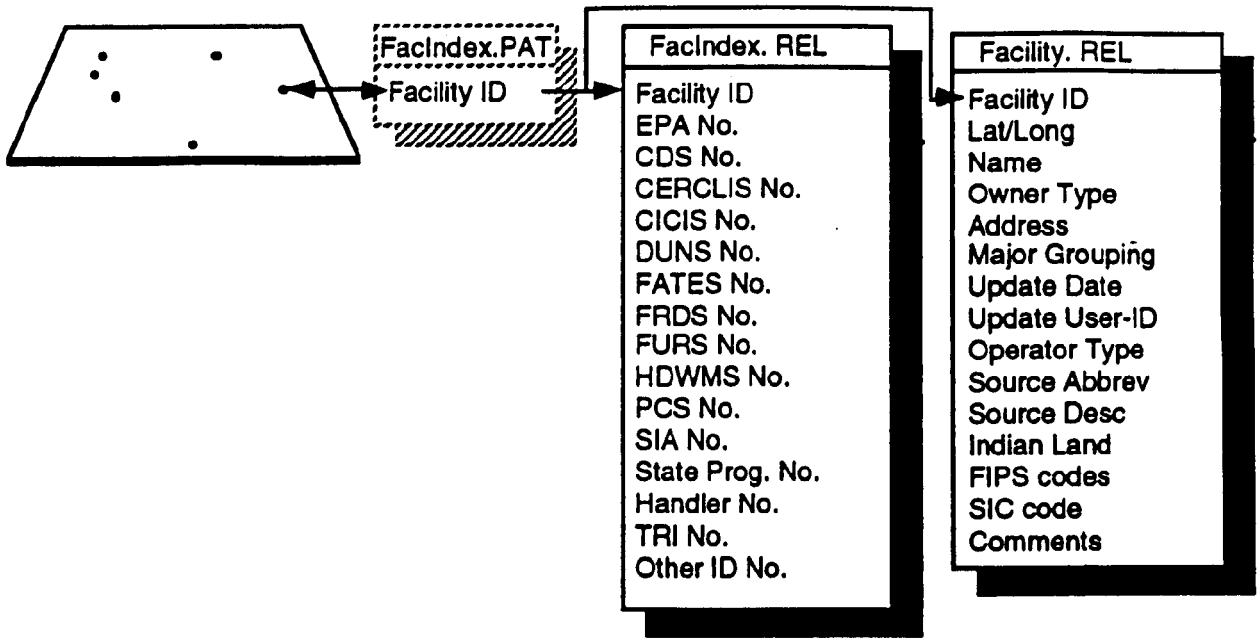
LAYER TYPE: Point
KEY IDENTIFIERS: Outfall ID, NPDES ID
DATA SOURCES: 151



NOTES: This data layer would contain the locations of all known water discharge points, including municipal, industrial, and privately treated wastewater, stormwater discharge points, coastal and ocean discharge points, and combined sewer overflow locations. NPDES-permitted discharge points would be generated from latitude/longitude data provided in PCS. Through the key identifiers of NPDES ID and Outfall ID, outfall and monitoring data tables related to the NPDES layer would also be accessible to the Discharge Points/Outfall layer. State and local mapping of storm, coastal, and combined sewer overflow points may contribute data to this layer. Related tables may be added to provide detail as it becomes available. This layer would require monthly update and maintenance by the Region.

FIGURE: B-54
DATA CATEGORY: Regulatory
DATA LAYER: Facility Index

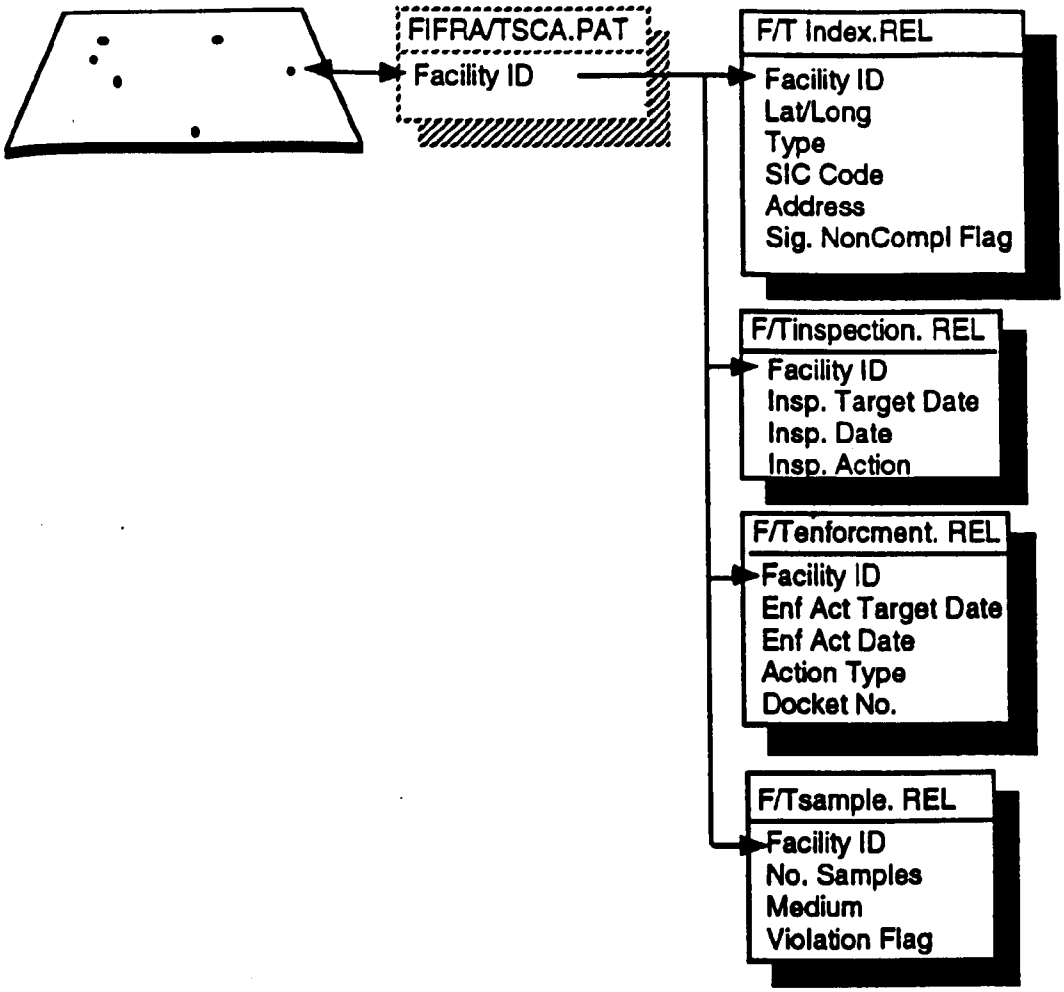
LAYER TYPE: Point
KEY IDENTIFIERS: Facility ID
DATA SOURCES: 143



NOTES: This data layer would provide a means to reconcile the various IDs that may be associated with a single facility or location. It would also provide for rapid query response when screening an area for regulated facilities. Relates may also be established between the FacIndex. REL table and other layers containing an ID, in effect providing linkages between EPA databases. The Facility Index System (FINDS) may initially provide the data for development of this layer, but over time additional IDs may be added by the Region. This layer would require careful maintenance, to ensure synchronous updates between the index and other EPA databases. Updates may be required on a monthly basis.

FIGURE: B-55
DATA CATEGORY: Regulatory
DATA LAYER: FIFRA/TSCA Facilities

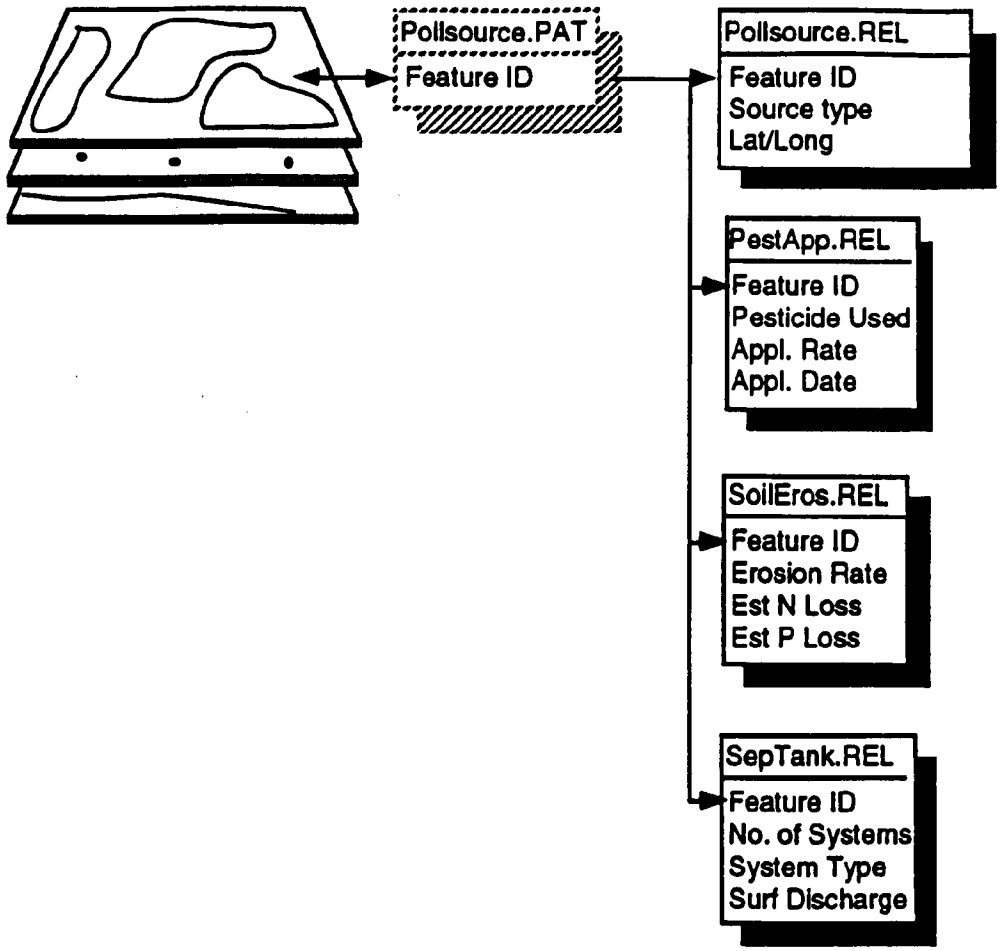
LAYER TYPE: Point
KEY IDENTIFIERS: Facility ID
DATA SOURCES: 166



NOTES: This data layer would provide regulatory tracking information for facilities regulated under FIFRA and TSCA. Since these data are currently maintained in a single database (FTTS at the Regional level), the data layer may encompass both types of facilities, with a type code to indicate the regulatory program. Several related files may be established from the FTTS database, such as the ones shown above for the facility, inspections, enforcement actions, and samples taken. The layer may be created through matching facility addresses to the road layer which contains address ranges, and creating points for each address. This layer would require monthly maintenance by the Region.

FIGURE: B-56
DATA CATEGORY: Regulatory
DATA LAYER: Potential Pollution Sources

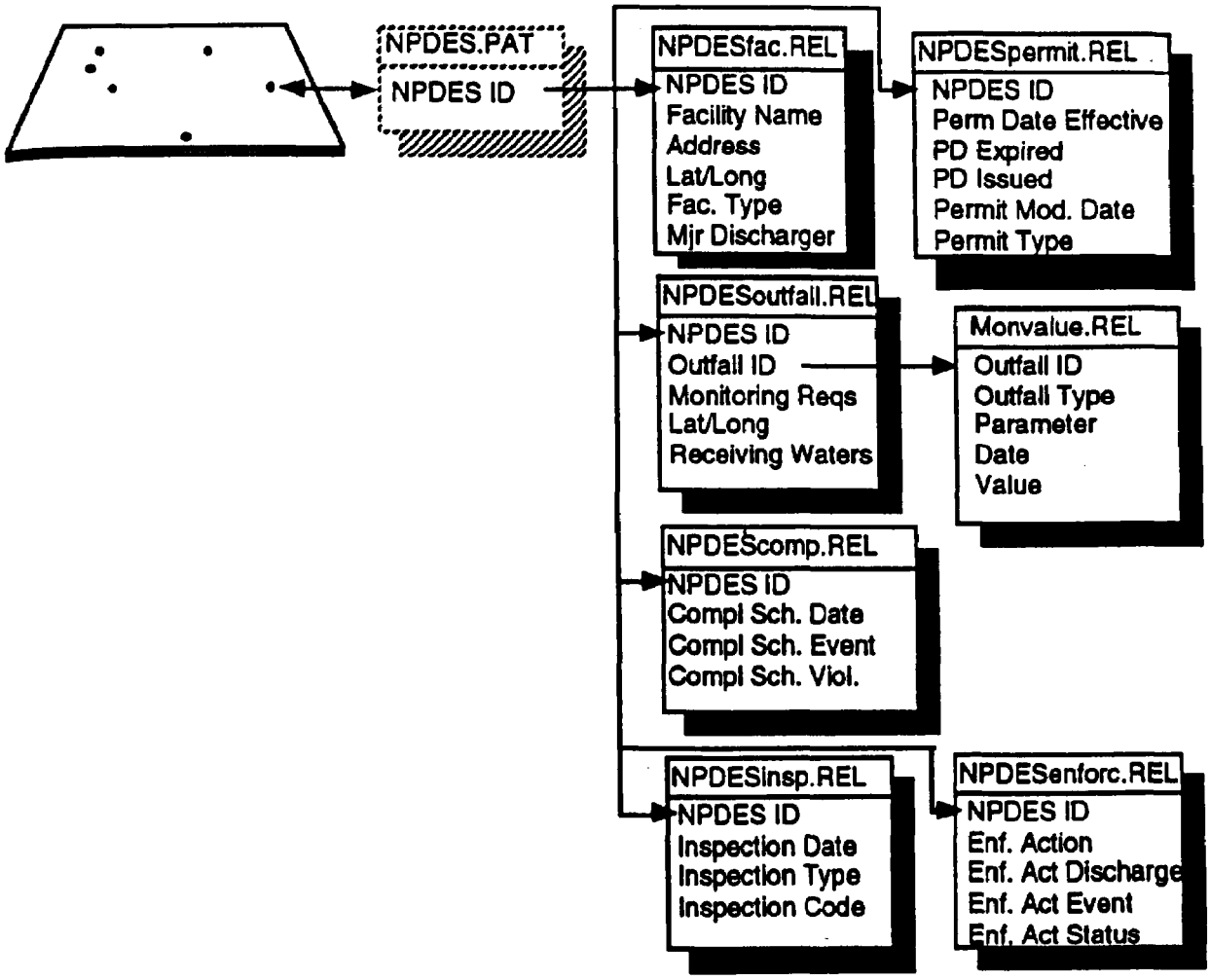
LAYER TYPE: Point, Line, Polygon
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 289, 200, 296



NOTES: This may be a single point layer or a series of point, line, and polygon layers depicting nonpoint sources of pollution and any other known potential non-EPA regulated sources. Nonpoint sources may include areas served by septic tanks, agricultural lands with pesticide application and soil erosion rates, urban stormwater runoff, and so forth. These may be represented as individual layers, or as related tables in a polygon layer as shown above. Although a few data sources have tentatively been identified for development of these layers (National Coastal Pollutant Discharge Inventory Program, pesticide usage surveys), they are not known to be in GIS format. Additional investigation is necessary to determine the extent and quality of available data, and the magnitude of effort required to acquire or assemble/automate the necessary layers.

FIGURE: B-57
DATACATEGORY: Regulatory
DATALAYER: NPDES Facilities

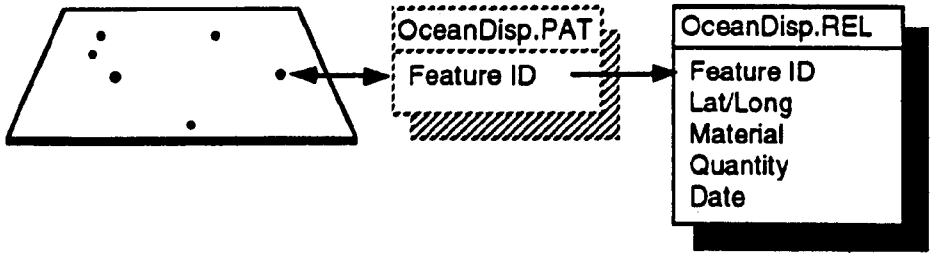
LAYER TYPE: Point
KEYIDENTIFIERS: NPDES ID
DATA SOURCES: 151, 157, 176, 178, 177



NOTES: This point layer would consist of facilities regulated under the National Pollutant Discharge Elimination System (NPDES). The NPDES permit number is the key identifier linking points to associated attribute data such as outfall, compliance, inspection, and enforcement files. Points for facility locations may be generated from latitude/longitude coordinates in PCS. PCS also provides the primary source of attributes, with the high-frequency data items shown in Appendix C providing the items for related tables, as shown in the examples above. The combined NPDES and Outfall IDs provide a link to the Discharge Points/Outfall layer. Other files containing the NPDES ID such as NEEDS and the Puerto Rico databases may be also related to this layer. The NPDES facilities layer would require monthly update and maintenance by the Region.

FIGURE: B-58
DATA CATEGORY: Regulatory
DATA LAYER: Ocean Disposal Areas

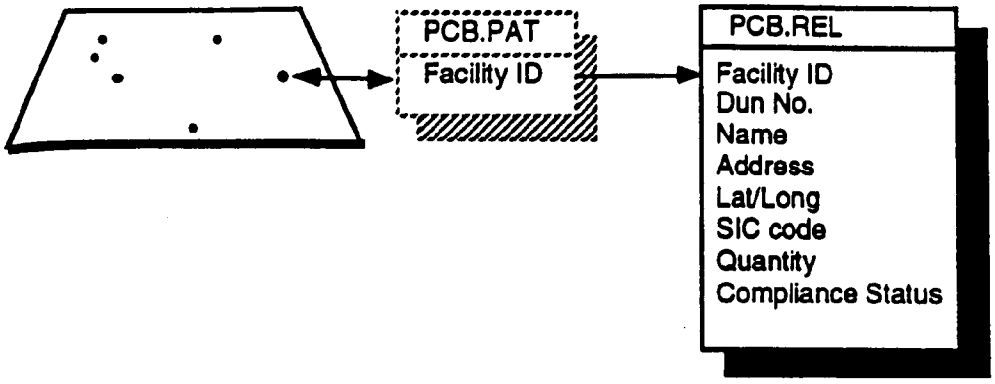
LAYER TYPE: Point
KEY IDENTIFIERS: Feature ID
DATA SOURCES: Not identified



NOTES: This data layer would display regulated and any known illegal ocean disposal sites. A related table may contain data such as disposal material, quantity, and dates. Specific data sources for this layer have yet to be identified.

FIGURE: B-59
DATA CATEGORY: Regulatory
DATA LAYER: PCB Facilities

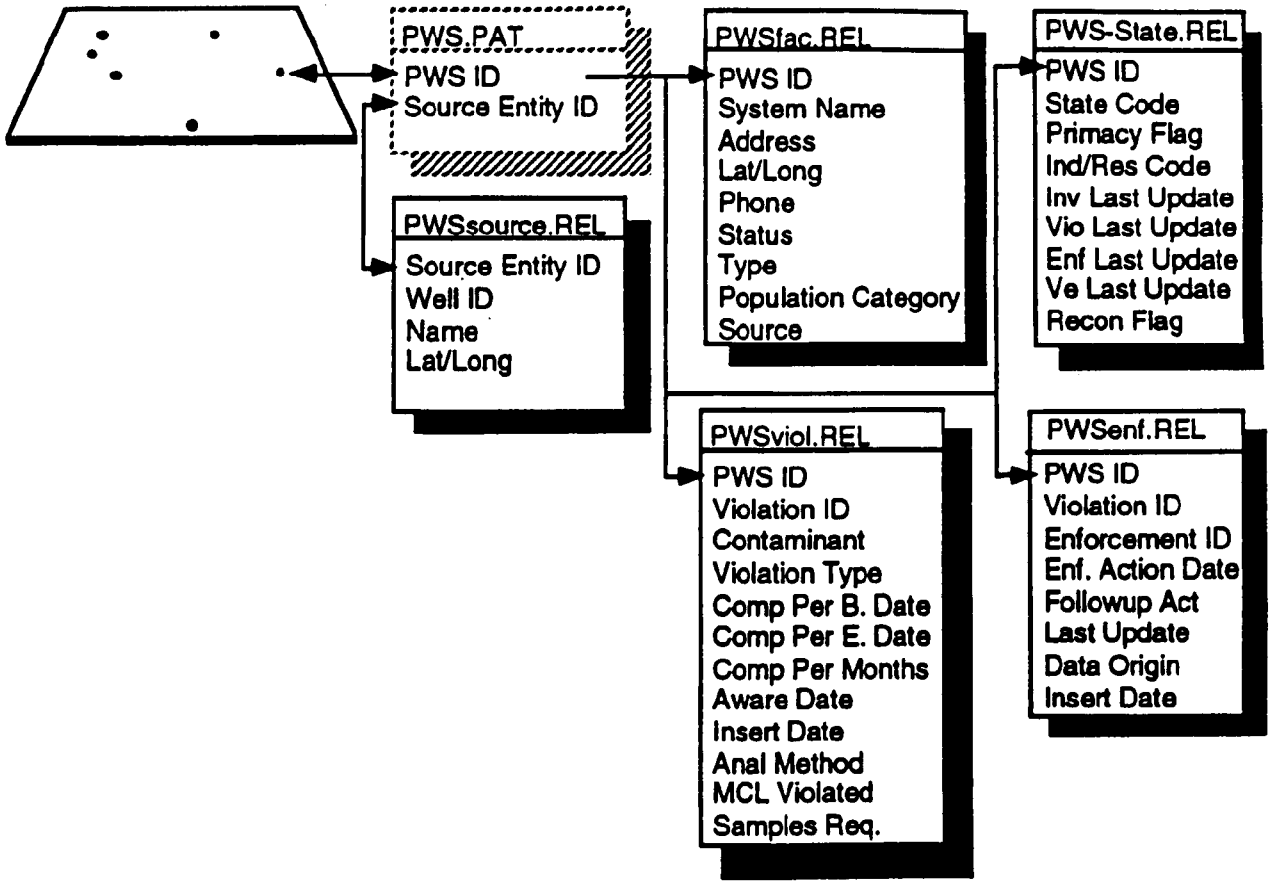
LAYER TYPE: Point
KEY IDENTIFIERS: Dun No.
DATA SOURCES: 164, 175



NOTES: This data layer would provide regulatory tracking information for facilities containing or producing PCBs. Related file(s) may be developed to contain information as needed on quantities produced/distributed, compliance status, and so on. The layer may be created as a subset of the Dun & Bradstreet layer, with the related PCB file generated from data in PADS. Quarterly or annual maintenance of this layer would be required by the Region.

FIGURE: B-60
DATA CATEGORY: Regulatory
DATA LAYER: Public Water Supply Facilities

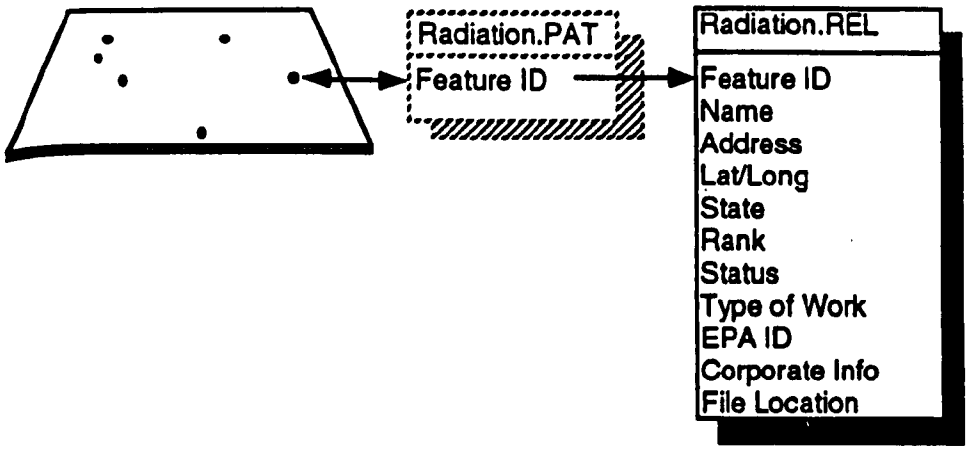
LAYER TYPE: Point
KEY IDENTIFIERS: PWS ID, Source Entity ID
DATA SOURCES: 150



NOTES: The purpose of this layer is to provide regulatory information related to public water supplies, including compliance, violation, and enforcement status. The PWS ID would be the key item to related tables on the facility, state records, noncompliance, and violation/ enforcement status. A point may be a public water supply facility, a source (intake point, well, treatment plant), or both. A well ID may be added to cross-reference this layer to the well layer. The public water supply layer would be generated from the Region's FRDS database. Sources may be generated from latitude/longitude coordinates; facility points may be created through matching address information to the road data layer which contains address ranges for road segments. This layer would require monthly update and maintenance by the Region.

FIGURE: B-61
DATA CATEGORY: Regulatory
DATA LAYER: Radiation Sites

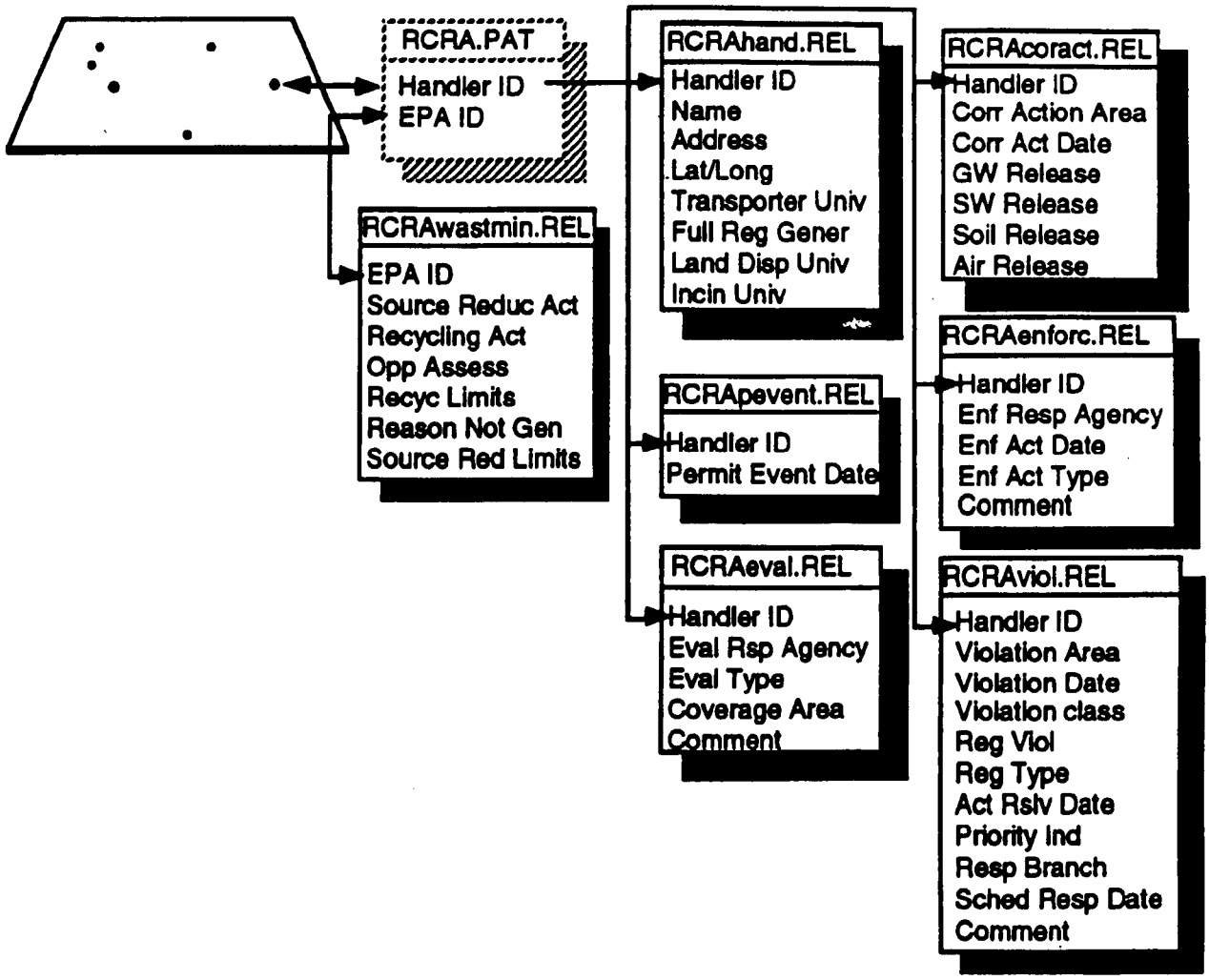
LAYER TYPE: Point
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 159



NOTES: This data layer would contain the location of radiation sites in the Region, as derived from the Radiation Sites Database. The layer may be created through matching radiation site addresses from the RSDB to the road layer which contains address ranges, and creating points for each address. An EPA ID provides a potential link to the CERCLIS layer. Documentation of the radiation sites layer should note the source and quality of address data, since the RSDB is a composite of state and EPA radiation site lists.

FIGURE: B-62
DATA CATEGORY: Regulatory
DATA LAYER: RCRA Facilities

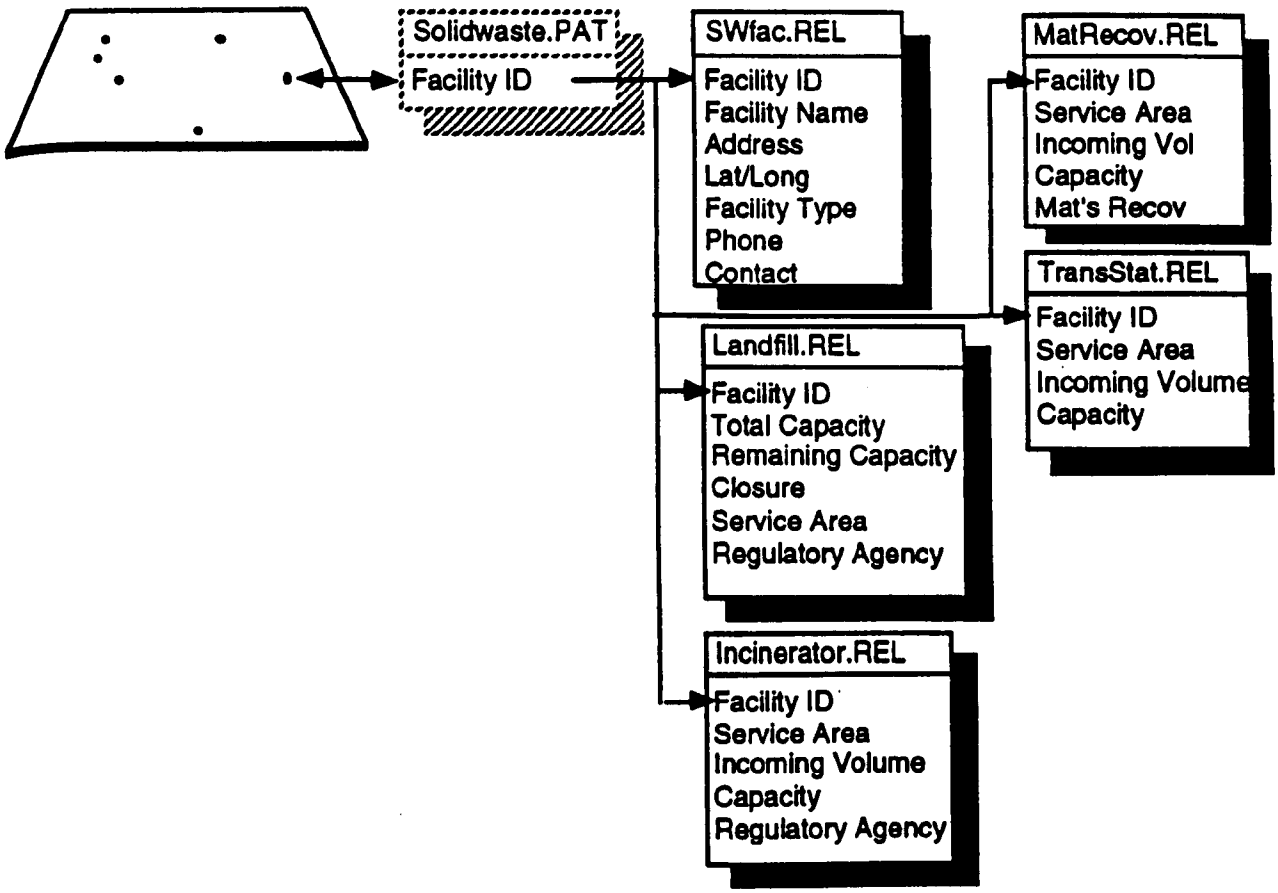
LAYER TYPE: Point
KEY IDENTIFIERS: Handler ID, EPA ID
DATA SOURCES: 147, 146, 24, 340, 342



NOTES: This data layer would provide regulatory tracking information for RCRA-regulated facilities. Several related files would be established such as the ones shown above for facility data, permitting events, evaluation data, violation occurrences, enforcement actions, and corrective action tracking. RCRIS would be the primary data source for this layer, particularly the high-frequency use fields shown in Appendix C and partially represented graphically above. A related waste reduction/minimization file may be derived from the BRS database. The point layer may be created through matching facility addresses in RCRIS to the road layer which contains address ranges, and creating points for each address. If needed beyond Region II borders, RCRA layers are available for Regions I and III. If latitude/longitude data are completed and verified in RCRIS over time, facility location points may be generated from these data, replacing the address-matched layer. The layer will require monthly update and maintenance by the Region.

FIGURE: B-63
DATA CATEGORY: Regulatory
DATA LAYER: Solid Waste Sites

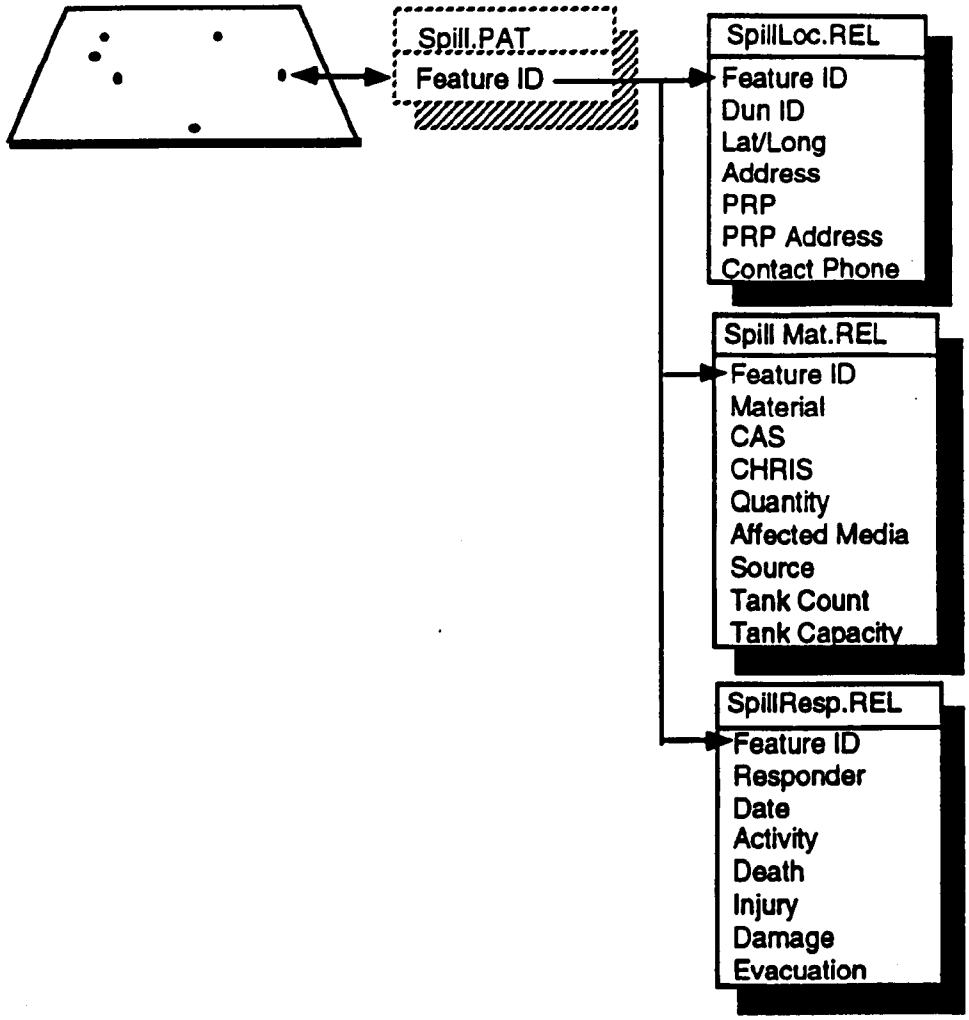
LAYER TYPE: Point
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 92, 223, 225, 226, 227



NOTES: This layer would include solid-waste-related facilities such as landfills, incinerators, transfer stations, and material recovery facilities. Related tables may be set up for each type of facility as shown above. Facility ID would be stored in the feature attribute table. A Solid Waste Facility-related table would provide address and contact information for each facility. Solid waste facility points may be generated from latitude/longitude coordinates if available, or from addresses matched from a file to the road layer which contains address ranges. Sources for this data layer exist in several automated and hard-copy files maintained by the states. A data compilation and standardization effort may be required before automation. The solid waste sites layer would require annual or biannual update.

FIGURE: B-64
DATACATEGORY: Regulatory
DATALAYER: Spill Locations

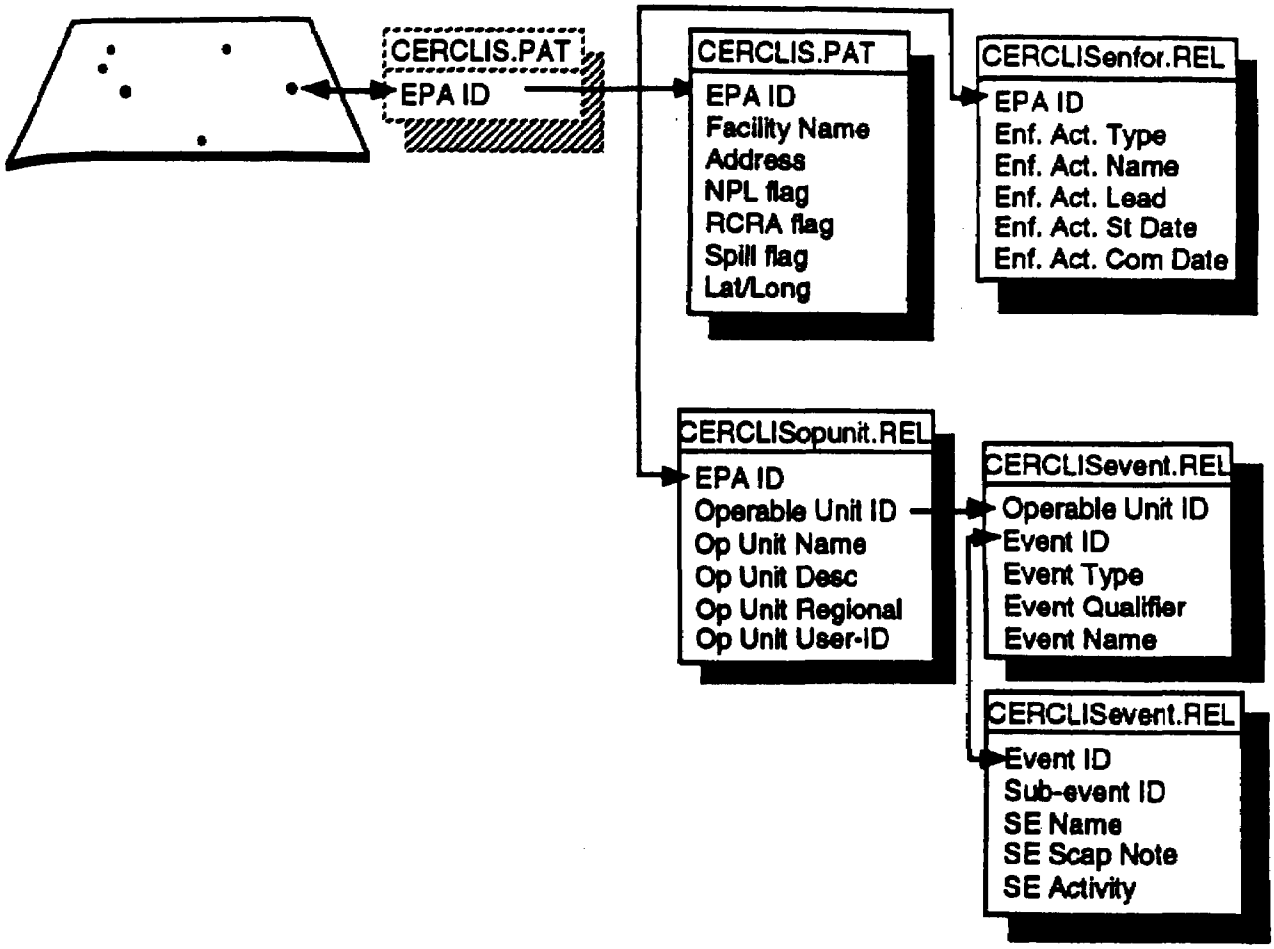
LAYER TYPE: Point
KEYIDENTIFIERS: Feature ID
DATA SOURCES: 140, 299



NOTES: This data layer would contain information regarding spills, mostly petrochemical, reported through ERNS. Several related files may be established such as the ones shown above for spill site/facility data, spill materials and effects, and response/cleanup actions tracking. ERNS or the Regional PC version of ERNS would be the primary data source for this layer. The point layer may be created through matching spill site addresses to the road layer which contains address ranges, and creating points for each address. Documentation of this layer should note which fields have been verified, since the database contains information reported by the public. The layer would require quarterly or annual update by the Region.

FIGURE: B-65
DATA CATEGORY: Regulatory
DATA LAYER: Superfund Sites

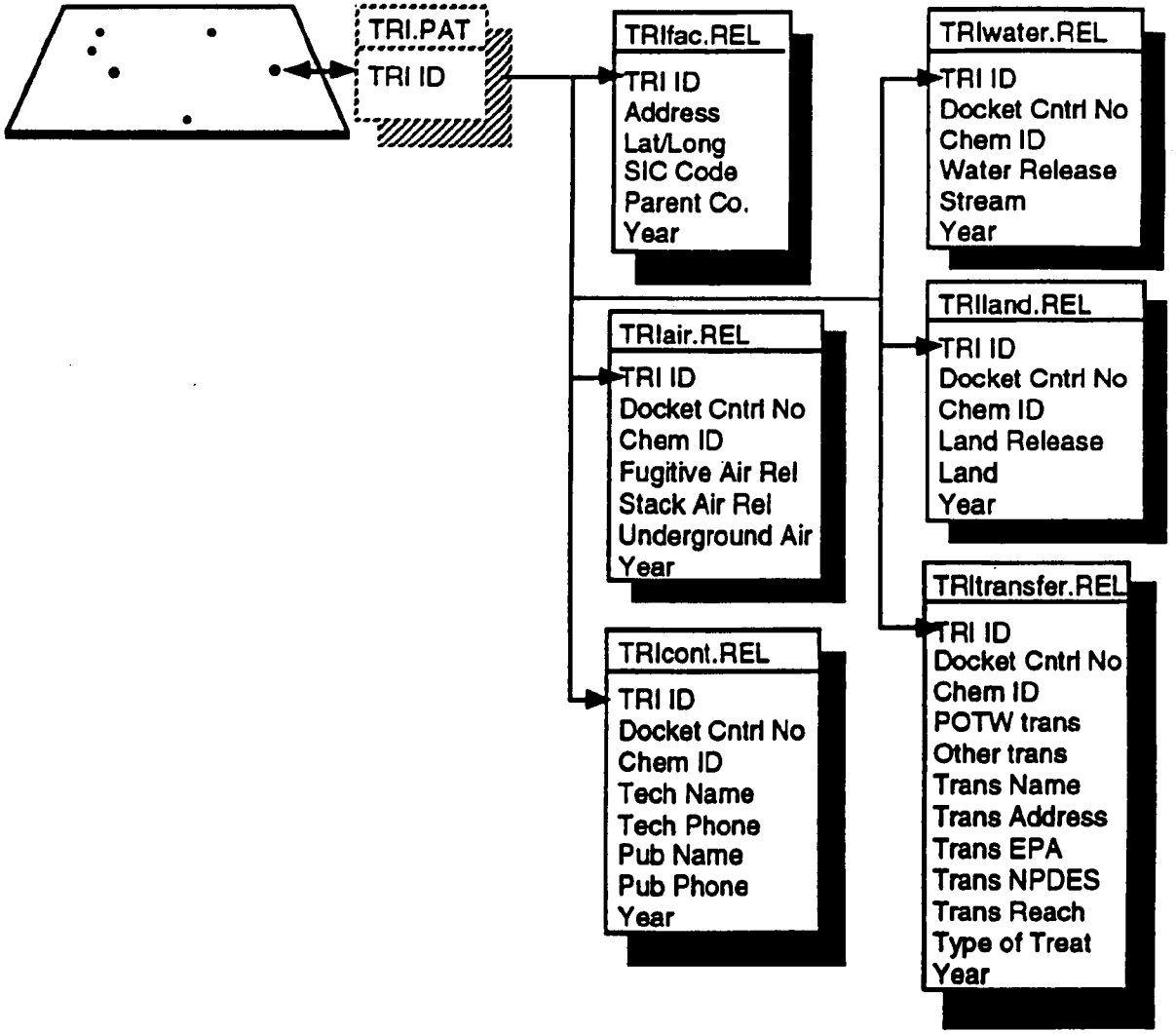
LAYER TYPE: Point
KEY IDENTIFIERS: Feature ID
DATA SOURCES: 148, 168, 158, 379



NOTES: This data layer would provide regulatory tracking information for Superfund facilities. Several related files would be established such as the ones shown above for facility data; enforcement actions, including remedies, milestones, financial data, and historic compliance; operable units of a Superfund site; and events and milestones related to these units. CERCLIS fields, as shown in Appendix C and partially represented above, would be the primary data source for this layer. Other Superfund databases such as SESS and SLS may also be linked to this layer. The Region's current CERCLIS facilities layer, generated from latitude/longitude data in CERCLIS, may be expanded to include other Superfund data such as the tables shown above. This data layer would require weekly update and maintenance by the Region.

FIGURE: B-66
DATA CATEGORY: Regulatory
DATA LAYER: TRI Sites

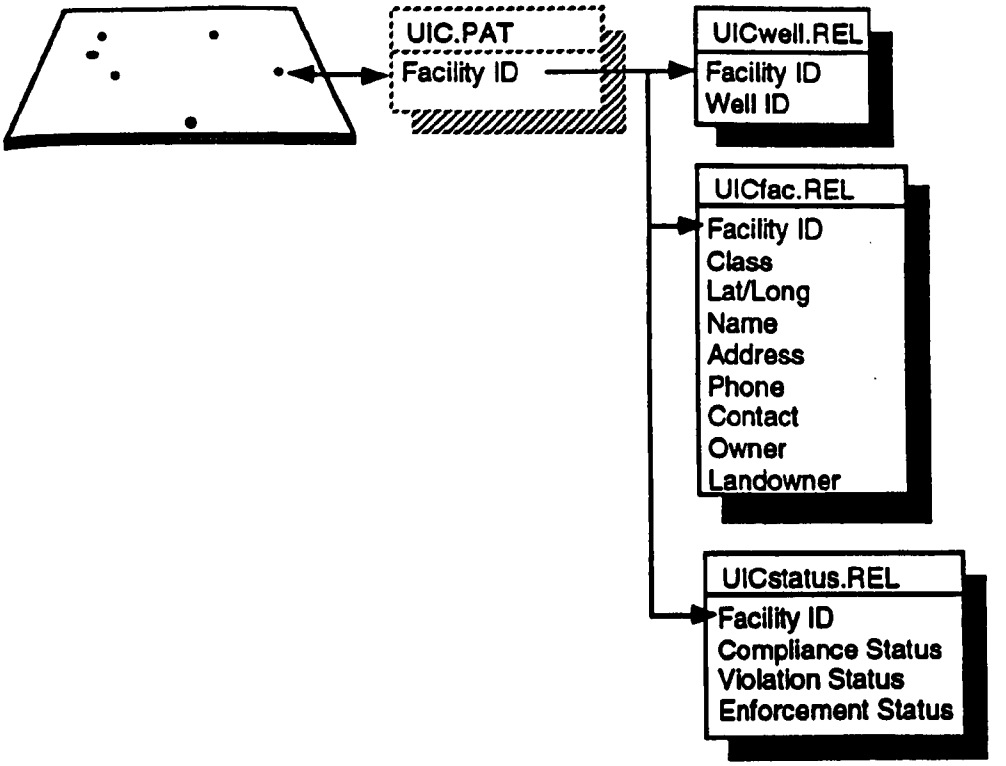
LAYER TYPE: Point
KEY IDENTIFIERS: TRI ID
DATA SOURCES: 149, 6, 7



NOTES: This layer would display facilities providing Toxic Release Inventory data to the Region. A TRI facility ID provides the key linkage for attribute files. Several related files may be established for TRI data, including a facility file, and files detailing air, water, and land releases and transfers. The Region currently maintains TRI 1989 and 1990 data layers and associated attributes. Point layers may be generated from latitude/longitude coordinates. This layer would require annual update by the Region.

FIGURE: B-67
DATA CATEGORY: Regulatory
DATA LAYER: UIC Sites

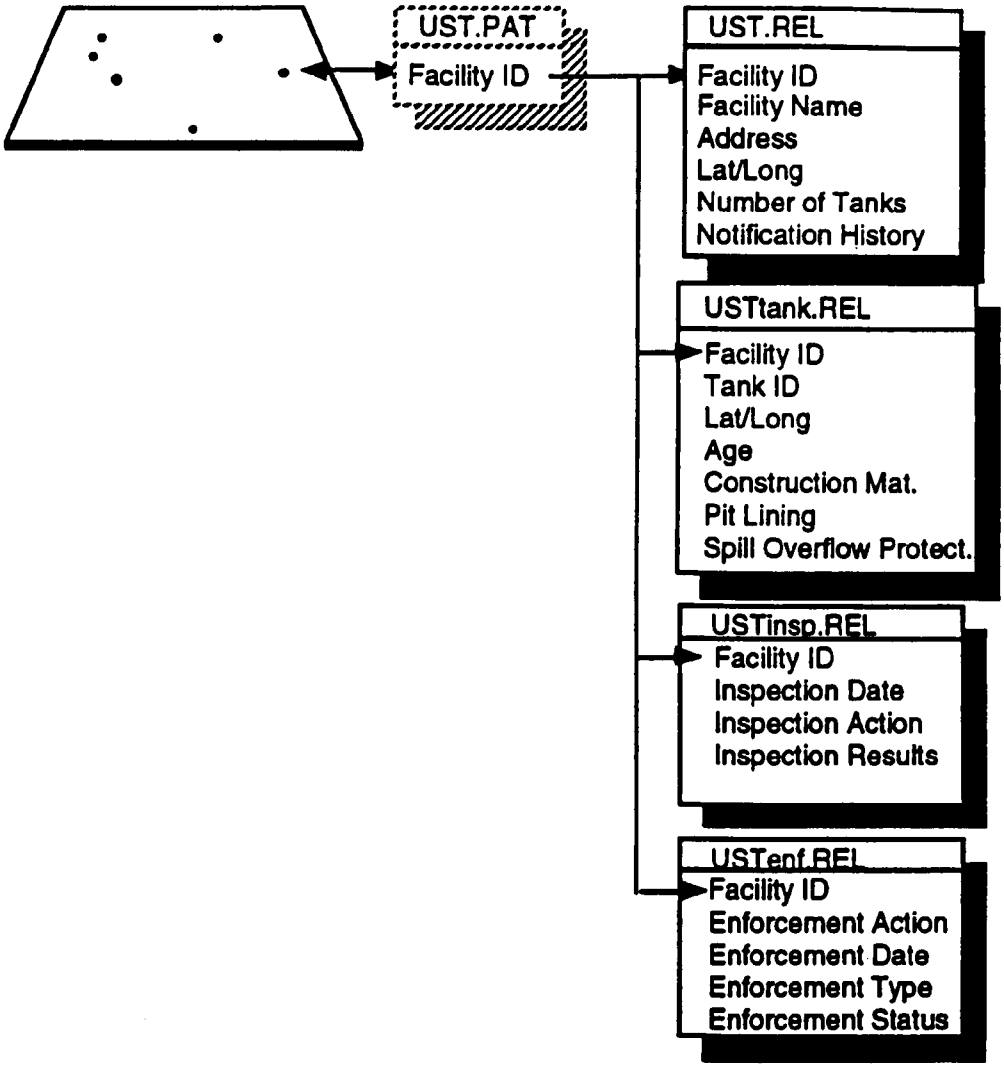
LAYER TYPE: Point
KEY IDENTIFIERS: Facility ID, Well ID
DATA SOURCES: 154



NOTES: This layer presents location and information about underground injection control sites under EPA regulation. It may be generated from latitude/longitude data provided in the Region's UIC database, currently under revision. Related tables may provide information on UIC wells, facilities, and compliance status. The well ID would provide a linkage to the Well layer. This layer would require monthly update by the Region.

FIGURE: B-68
DATA CATEGORY: Regulatory
DATA LAYER: Underground Storage Tanks

LAYER TYPE: Point
KEY IDENTIFIERS: Facility ID
DATA SOURCES: 170



NOTES: This data layer would provide regulatory tracking information for underground storage facilities. Related files would be established such as the ones shown above for the tank(s), inspection, and enforcement actions. Existing state UST databases and the planned Region II inspection/enforcement databases are potential data sources for this layer. Data will require standardizing and restructuring from sources. The point layer may be created through matching facility addresses to the road layer which contains address ranges, and creating points for each address. As geographic coordinates become available, these may be used to improve point location accuracy. This data layer requires monthly update and maintenance by the Region.

FIGURE: B-69
DATA CATEGORY: All
DATA LAYER: Digital Aerial Photography

LAYER TYPE: Raster Image
KEY IDENTIFIERS:
DATA SOURCES: Numerous; EPIC, States, etc.

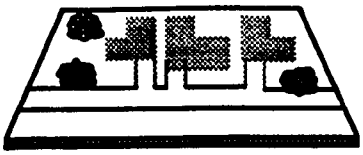
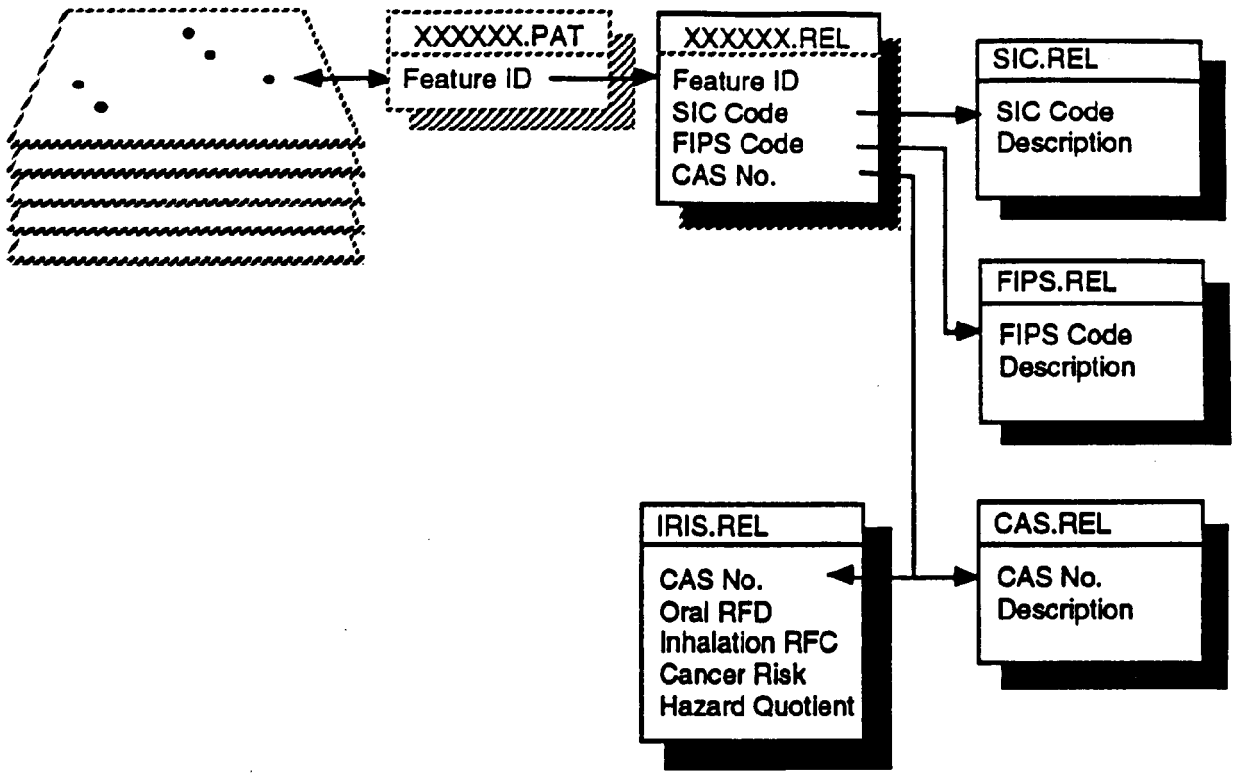


Image Catalog
Image
XMin
YMin
XMax
YMax

NOTES: As technology advances make the storage and retrieval of image data more cost-effective, consideration should be given to the development of an image catalog of aerial photography of the Region. Aerial photos would provide background visual reference and additional detail for other vector layers and assist in data analysis and presentation. If digital ortho-photography is developed, it may be used for on-screen digitizing/updating of features such as streams and roads. Numerous sources of aerial photography exist. No known single source, however, provides coverage of the entire Region.

FIGURE: B-70
DATA CATEGORY: Related (Lookup) Tables
DATA LAYER: Many

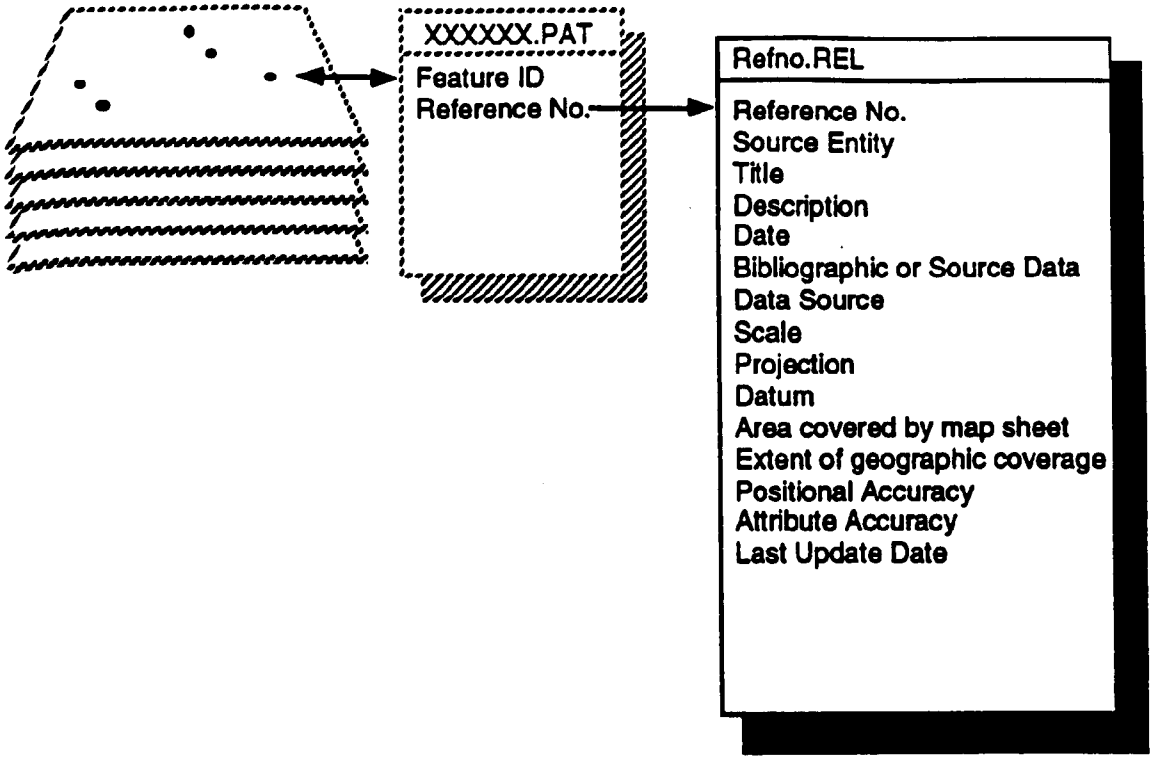
LAYER TYPE: All
KEY IDENTIFIERS: FIPS code, CAS #, SIC code
DATA SOURCES:



NOTES: Many data layers include attributes which are described by standard codes. Three such examples are the Standard Industrial Classification (SIC) code, Federal Information Processing Standards (FIPS), and Chemical Abstract Service (CAS) codes as shown here. In a relational database, a single lookup table can be devised for each, instead of repeating code descriptions throughout all tables. Some codes may relate to other tables, such as CAS number that may be related to the risk assessment data of IRIS, as shown above. IRIS updates should be provided monthly.

FIGURE: B-71
DATA CATEGORY: Geobibliographic/Source Tables
DATA LAYER: Many

LAYER TYPE: All
KEY IDENTIFIERS: Reference No.
DATA SOURCES:



NOTES: A reference number would be assigned to each feature in each data layer, to allow access to a related table listing source, currency, and accuracy information about that feature. A similar file would also be established for bibliographic reference of reports related to the feature.

Table B-1
GIS Data Sources and Conversion Methods

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
Control					
	Horizontal/Vertical Control Stations		National Geodetic Survey State Surveys	NGS States	Generate point layer from geographic coordinates. Add attributes.
10	7.5-Minute Quad Boundaries	307 403 404 309	Digital Line Graph (DLG3) Files (Large-Scale) (same) (same) Geographic Names Information System (GNIS)	USGS Region II—obtained from USGS	Generate point layer from geographic coordinates of quad corners. Add attributes from GNIS file.
Administrative Boundaries					
4	ZIP Code Boundaries	285 19	1990 Census TIGER/Line Files and Other TIGER Extract Products ZIP Code Boundaries	Bureau of Census EPA Region III	Convert TIGER files. Extract and process. Join Region III layer and clip. OR Purchase commercially available product.
3	Zoning District Boundaries		Local GIS Zoning Layers	Local units of government	Obtain local zoning data as they are automated. Standardize and join layers. Complete coverage of the Region will be difficult to achieve and keep current.

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
2	EIS and Project Review Areas	167	Federal Activities Computerized Tracking System (FACTS)	EPA Region II	Digitize boundaries from stable source manuscript, or from digital orthophotos, if available. Add attributes from project tracking databases.
		171	Quality Assurance Tracking System (QTRAK)		
15	Municipal Boundaries	371	Administrative Boundaries	NYS Division of Equalization and Assessment	Standardize, project, and join state layers. Append and clip Region I layers if necessary. Seek similar data from Region III. Convert DLGs for the Caribbean.
		54	Municipal Boundaries (STATEMUN)	NJDEPE	
		400	Political Boundaries	NYSDEC	
		403	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	
		404	(same)		
		353	Town Boundaries	EPA Region I	
		355	Town Boundaries	EPA Region I	
		356	Town Boundaries	EPA Region I	
17	County Boundaries	87	County Boundaries (STATECO)	NJDEPE	Standardize, project, and join state layers. Append and clip Region I and III layers.
		371	Administrative Boundaries	NYS Division of Equalization and Assessment	
		400	Political Boundaries	NYSDEC	
		307	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	
		349	County Boundaries	EPA Region I	
		10	State and County Boundaries	EPA Region III	

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
14	Region/State Boundaries	91	State Boundaries (STATEQ)	NJDEPE	Standardize, project, and join state layers.
		400	Political Boundaries	NYSDEC	
		403	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	
		404	(same)		
		307	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	
2	404 Permit Areas		404 Permits		Digitize boundaries from stable source manuscript or digital orthophotos, if available. Add attributes from permit tracking database.
5	Coastal Zones		State Coastal Mgt. Program		Digitize boundaries from stable source manuscripts. Key enter attributes.
7	Congressional Districts	371	Administrative Boundaries	NYS Division of Equalization and Assessment	Standardize, project, and join state layers. OR Process TIGER files.
		285	1990 Census TIGER/Line Files and Other TIGER Extract Products	Bureau of Census	

Cultural Resources

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
1	Archaeological/ Historic Sites	110 373	Historic Sites (ONJH) NYS National Register of Historic Places	NJDEPE New York State Parks Mgt. & Research Inst.	Obtain generalized archaeological sites layers from the states as they become available. Standardize, project, and append state historic site layers or address match from historic site files.
20	Census Tracts/Blocks	285 284 380 405	1990 Census TIGER/Line Files and Other TIGER Extract Products 1990 Census of Population and Housing Summary Tape Files (STF1-4) TIGER Census Blocks (TIGER_BLK) TIGER Census Points (TIGER_PTS)	Bureau of Census Bureau of Census EPA Region II —OPM/ISB EPA Region II —OPM/ISB	Select attributes from STF files. Download and prepare in relational database format. Add attributes to existing layers.
7	D&B Facilities	164 161	Dun & Bradstreet Emergency Planning and Community Right to Know Act (EPCRA) Section 313 Targeting System (ETS)	EPA Region II EPA Region II through NCC	Create through address matching. OR Purchase commercially available product.
4	Emergency Response Facilities		Various Address-Based Files	State Emergency Management Offices	Obtain address files and match to the road layer containing address ranges.
9	Land Ownership	310	Land Use and Land Cover	USGS	Convert DLGs.

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
13	Land Use/Land Cover	310	Land Use and Land Cover	USGS	Convert DLGs.
		388	GIRAS	NYSDEC	
		40	ITU ([county]ITUM)	NJDEPE	
1	Parks and Recreational Areas	372	State Park Boundaries and Resources	NYS Office of Parks, Rec. and Historic Pres.	Compile data to a stable source manuscript, digitize, and process. Add attributes from existing files or key enter.
		215	Marine Fishing Public Access Sites	NYSDEC	
		190	Freshwater Public Fishing Access	NYSDEC	
		219	Campgrounds and Day Use Areas	NYSDEC	
		401	Guidelines for Developing Digital Environmental Sensitivity Index Atlases and Databases	NOAA, HazMat Response and Assessment Division	
20	Population Estimates and Projections	295	Population Estimates and Projections	Bureau of Census	Select attributes from census files. Download and prepare in relational database format. Add attributes to state/ county/municipal boundary layer(s).

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
6	Population Health/Risk Factors	377	Fetal Death Databases	NCHS Mortality Statistics Branch	Copy County/Municipal boundary layer. Select attributes from NCHS files. Download and prepare in relational database format. Add attributes to layer.
		378	Mortality Databases	NCHS Mortality Statistics Branch	
		287	Natality Databases	NCHS Division of Vital Statistics	
		288	NHANES, HHANES	NCHS	
10	Sensitive Populations		Various Address-Based Files	State Emergency Management Offices	Obtain address-based data. Match to road layer to create points. Add attributes from automated files or key enter.

Transportation/Utilities

4	Air/Water Transportation Facilities	320	Conventional Nautical Charts	NOAA-NOS	Digitize from digital orthophotos, if available, or recompile to a stable source manuscript and digitize/ process.
10	Pipelines and Transmission Lines	307	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	Convert DLGs.
		308	Digital Line Graph (Intermediate Scale)	USGS	

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
12	Railroads	2	TIGER Railroads (TIGER_RRDS)	EPA Region II —OPM/ISB	Convert large-scale DLGs as they are completed. Append Region I and III layers and clip.
		344	Railroads	EPA Region I	
		17	Railroads	EPA Region III	
		307	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	
20	Roads	3	Address-Matched Roads (TIGER_ADR)	EPA Region II —OPM/ISB	Append Region I and III roads to Region II address-matched roads and clip.
		1	TIGER Roads	EPA Region II —OPM/ISB	
		345	Roads	EPA Region I	
		16	Roads	EPA Region III	
4	Sewer Lines		Non-identified		Obtain local sewer network data as they are automated. Complete coverage of the Region will be difficult to achieve and maintain.
2	Sewer Service Areas	85	Sewers (SEWERS)	NJDEPE	Obtain data from the states as they are automated.
2	Water Lines		Non-identified		Obtain local water network data as they are automated. Complete coverage of the Region will be difficult to achieve and maintain.
1	Water Service Areas	56	Water Service Management Areas (WSMA)	NJDEPE	Obtain data from the states as they are automated. Check FRDS for service area descriptions—may be useful in delineating boundaries.
		150	Federal Reporting Data System (FRDS)	EPA Region II	

Terrain Features

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
18	Elevation (Hypsography/ Bathymetry)	305	Digital Elevation Model (Large-Scale)	USGS	Convert DEMs to lattice, generate contours. Select data from NOS database, download, and generate point layer. Append to elevation point layer.
		306	Digital Elevation Model (Small-Scale)	USGS	
		321	NOS Hydrographic Database	NOAA-NOS	
11	Geology	63	Geology	NJDEPE	Standardize, project, and join state small-scale layers. Convert DLGs for Puerto Rico.
		376	(GEOATLAS) Surficial Geology	NYS Museum Biological Survey	
		403	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	
9	Shoreline	302	Digital Shoreline Data	NOAA—Coast and Geodetic Survey	Obtain digital shoreline data from NOAA. Add ESI ranking attributes from ESI maps. OR Obtain digital ESI layers from NOAA as they are made available.
		401	Guidelines for Developing Digital Environmental Sensitivity Index Atlases and Databases	NOAA, HazMat Response & Assessment Division	
		307	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
15	Soil/Sediment Sample Sites	169	Ocean Data Evaluation System (ODES)	EPA Region II through NCC and PC version	Compile sources of data. Develop geographic coordinates for sites as needed. Generate layer from coordinates. Add attributes from ODES, CARD, and other digital sources. Key enter attributes as necessary.
		144	Contract Laboratory Program Analytical Results Database (CARD)	EPA Region II —Contract Laboratory Program— through NCC	
13	Soils	280	General Soils Associations— STATSGO	Soil Conservation Service	Obtain general soils layers and convert. Obtain detailed soils layers as they are digitized and convert/join.
		281	Detailed Soils—Soil Survey Geographic Database (SSURGO)	Soil Conservation Service	
		303	County Prime and Important Farmlands Maps	Soil Conservation Service	
		403	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	
			NJDEPE Detailed Soils Data	NJDEPE	

Biological Resources

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
15	Significant/Sensitive Habitats	370	Rare and Endangered Species	EPA Region I	Compile data to a stable source manuscript. Digitize and process.
		348	Protected Areas	EPA Region I	
		401	Guidelines for Developing Digital Environmental Sensitivity Index Atlases and Databases	NOAA, HazMat Response & Assessment Division	
		304	Atlantic Coast Ecological Inventory	U.S. Fish and Wildlife Service	
		62	Endangered Species (ENDANGERED)	NJDEPE	
		76	Pine Areas (PINE AREAS)	NJDEPE	
		217	Tidal Wetlands	NYSDEC	
		386	Wildlife Management Units (WMU)	NYSDEC	
		387	Natural Heritage Program	NYSDEC	
		187	Endangered, Threatened, & Special Species	NYSDEC	
		210	State Forest Inventory	NYSDEC	

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
12	Significant/Sensitive Species	401	Guidelines for Developing Digital Environmental Sensitivity Index Atlases and Databases	NOAA, HazMat Response & Assessment Division	Compile data to a stable source manuscript. Digitize and process. OR Obtain ESI digital layers from NOAA as they are completed.
		62	Endangered Species (ENDANGERED)	NJDEPE	
		187	Endangered, Threatened, & Special Species	NYSDEC	
		194	Natural Heritage Program	NYSDEC	
		387	Natural Heritage Program	NYSDEC	
4	Biological Monitoring Sites	153	Storage and Retrieval of U.S. Waterways Parametric Data (STORET)	EPA Region II through NCC	Generate point layer from geographic coordinates. Select and download attributes and prepare in relational database format. Add attributes to layer.
		293	National Status and Trends Database	NOAA	
		249	Invertebrate Collection Information	NYSDEC	

Water Resources

13	Aquifer Boundaries	395	Primary Aquifers	NYSDEC	Standardize, project, and mapjoin state layers. Obtain additional layers as they become available.
		103	Sole Source Aquifer Directory (SOLESOURCE)	NJDEPE	
			USGS DLG Data for the Caribbean	USGS	
4	Floodplain Boundaries	250	National Flood Insurance Maps	Federal Emergency Management Agency	Compile to stable manuscript and digitize/process. OR Obtain digital layers from FEMA as they are digitized.
		40	ITU ([county]ITUM)	NJDEPE	

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
21	Hydrography	152	Reach File 3 (RF3) Reach File 1 (RF1)	EPA Region II through NCC	Generate layer from RF3. Enhance geometry of layer with DLG hydrography as it is made available. Select attributes from databases. Prepare in relational database format and add to layer.
		307	Digital Line Graph (DLG3) Files (Large-Scale)	USGS	
		155	Waterbody System (WBS)	EPA Region II through NCC	
		297	National Wild and Scenic River System Database	National Park Service	
5	Hydrologic Unit Boundaries	78	Primary Drainage Basins (PRIM-BASINS)	NJDEPE	Convert DLGs or standardize and join state layers. Obtain and append large-scale DLGs as they are made available.
		58	Basins (BASINS)	NJDEPE	
		391	Hydrologic Unit Code Boundaries (HUC)	NYSDEC	
		310	Land Use and Land Cover	USGS	
		282	Hydrologic Unit Boundaries	USGS & SCS	
15	Surface Water Quality/Quantity Monitoring Sites	8	STORET Monitoring Location (STORET_LOC)	EPA Region II —OPM/ISB	Select attributes from STORET and download. Prepare in relational database format and add to existing STORET layer. Generate point layers for ODES and NSTD databases and append to STORET layer. Select attributes, download, restructure, and add to layer.
		153	Storage and Retrieval of U.S. Waterways Parametric Data (STORET) Industrial Facilities Discharge (IFD)	EPA Region II through NCC	
		169	Ocean Data Evaluation System (ODES)	EPA Region II through NCC and PC version	
		293	National Status and Trends Database	NOAA	

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
3	Wellhead Protection Zones		Not identified		Obtain digital layers as they are made available through wellhead delineation efforts.
19	Wells	301 91 96 236 404	WATSTORE-NWIS State Boundaries (STATEQ) MSIS Wells (WELLMSIS) Groundwater Resources Digital Line Graph (DLG3) Files (Large-Scale)	USGS NJDEPE NJDEPE NYSDEC USGS	Generate point layers from geographic coordinates. Select attributes and download or key enter. Format attribute tables and add to layer.
18	Wetlands	283 47 191 300	National Wetlands Inventory Freshwater Wetlands (FWW) Freshwater Wetlands Wetlands Plant List Database	U.S. Fish and Wildlife Service NJDEPE NYSDEC U.S. Fish and Wildlife Service	Obtain remainder of NWI data as they are made available. Join layers. Obtain state layers as they are made available.

Air Quality

5	Area/Mobile Source Emission	138	Aerometric Information Retrieval System (AIRS)	EPA Region II through NCC	
10	Ambient Air Quality Monitoring Sites	138	Aerometric Information Retrieval System (AIRS)	EPA Region II through NCC	Generate layer from geographic coordinates. Select and download attribute data. Reformat attribute tables and add to layer.
6	Air Quality Attainment Status		State Implementation Plan data		Copy county boundaries layer. Key enter attributes from SIP monitoring data.

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
6	Climate Zones	316	Climatic Data	NOAA—NCDC	Obtain layer for New York when available.
		374	Climate	NYS Museum Biological Survey	Digitize/Process data for remainder of the Region from NOAA maps.
13	Weather Stations	316	Climatic Data	NOAA—NCDC	Generate point layer from geographic coordinates. Select attributes and download. Reformat attributes and add to layer.
Regulatory Features					
16	Air Permitted Facilities	138	Aerometric Information Retrieval System (AIRS)	EPA Region II through NCC	Generate point layer from geographic coordinates. Select attributes and download. Reformat attributes and add to layer.
4	Chemical Storage Sites	141	Spill Prevention, Control, and Countermeasures (SPCC)	EPA Region II	Address match data from databases to road layer. Create points. Select attributes, download, reformat, and add to layer.
		231	Chemical and Petroleum Bulk Storage	NYSDEC	
		139	Computer Aided Management of Emergency Operations (CAMEO)	EPA Region II	
12	Discharge Points/Outfalls	151	Permit Compliance System (PCS)	EPA Region II through NCC	Generate point layer from geographic coordinates. Select attributes and download. Reformat attributes and add to layer.

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
8	FIFRA/TSCA Facilities	166	National Compliance Database (NCDB) and FIFRA/TSCA Tracking System (FTTS)	EPA Region II	Address match data from database to road layer. Create points. Select attributes, download, reformat, and add to layer.
16	Facility Index	143	Facility Index System (FINDS)	EPA Region II through NCC	Generate point layer from geographic coordinates in FINDS. Download attributes. Reformat attributes and add to layer. Add other IDs not currently in FINDS.
9	Potential Pollution Sources	289	National Coastal Pollutant Discharge Inventory Program (NCPDI)	NOAA Strategic Environmental Assessments Division	Collect and compile data to stable source manuscripts. Digitize and process. Add attributes.
		200	Pesticide Applicators, Producers, & Sellers	NYSDEC	
		296	National Resources Inventory (NRI) Database	Soil Conservation Service	
19	NPDES Facilities	151	Permit Compliance System (PCS)	EPA Region II through NCC	Generate point layer from geographic coordinates in PCS. Select attributes from PCS and download. Reformat attributes and add to layer. Add subject databases to layer via NPDES ID.
		157	Needs Survey (NEEDS)	EPA Region II through NCC	
		176	Bypass Occurrence Incidence Database (BOID)	EPA Region II	
		178	Lab Results Database (LRD)	EPA Region II	
		177	Puerto Rico Aqueduct and Sewer Authority Database (PRASAD)	EPA Region II	
2	Ocean Disposal Areas		None identified		Identify data sources. Determine automation method.

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
6	PCB Facilities	164	Dun & Bradstreet	EPA Region II	Select features from D&B layer. Save as new layer. Add attributes.
		175	PCB Activities Database System (PADS)	EPA Region II from HQ	
11	Public Water Supply Facilities	150	Federal Reporting Data System (FRDS)	EPA Region II	Generate point layer from geographic coordinates. Select attributes and download. Reformat attributes and add to layer.
8	Radiation Sites	159	Radiation Sites Database (RSDB)	EPA Region II	Address match data from database to road layer. Create points. Add attributes to layer.
21	RCRA Facilities	147	Resource Conservation and Recovery Act Information System (RCRIS)	EPA Region II through NCC	Address match data from RCRA database to road layer. Create points. Select attributes, download, reformat, and add to layer.
		146	Biennial Reporting System (BRS)	EPA Region II through NCC	Append Region I and III layers and clip. BRS uses EPA ID which may not be present in RCRA file.
		24	RCRA Sites	EPA Region III	
		340	RCRA Generators	EPA Region I	
		342	RCRA Treatment Storage Disposal	EPA Region I	
5	Solid Waste Sites	92	Landfills (SWL)	NJDEPE	Compile data from sources to stable manuscript. Digitize and process. Add attributes from existing files or key enter.
		223	Landfills	NYSDEC	
		225	Recyclables Handling and Recovery Facilities	NYSDEC	
		226	Solid Waste Incinerators	NYSDEC	
		227	Transfer Stations (Solid Waste)	NYSDEC	

No. of Branches	GIS Layer	Data Source No.	Data Source Name	Data Holder/ Provider	Data Automation/Conversion Methods Overview
4	Spill Locations	140	Environmental Response Notification System (ERNS)	EPA Region II and also through the NCC	Address match data from ERNS database to road layer. Create points. Select attributes, download, reformat, and add to layer.
		299	Marine Pollution Retrieval System	U.S. Coast Guard	
19	Superfund Sites	148	Comprehensive Environmental Response, Compensation and Liability Act Information System (CERCLIS)	EPA Region II through NCC	Select attributes and download. Reformat attributes and add to existing layer.
		379	CERCLIS Facilities (CERCLIS_FAC)	EPA Region II —OPM/ISB	
11	TRI Sites	149	Toxic Chemical Release Inventory System (TRI)	EPA Office for Prevention, Pesticides, and Toxics	Generate point layer from geographic coordinates. Select attributes and download. Reformat attributes and add to layer.
		6	TRI 1989 Data (TRI89_FAC)	EPA Region II —OPM/ISB	
		7	TRI 1990 Data	EPA Region II —OPM/ISB	
12	UIC Sites	154	Underground Injection Control System (UICS)	EPA Region II and through NCC	Generate point layer from geographic coordinates. Select attributes, download, reformat, and add to layer.
10	Underground Storage Tanks	170	Underground Storage Tanks Data Management System (UST-DMS)	EPA Region II	Address match data from database to road layer. Create points. Select attributes, download, reformat, and add to layer.

Appendix C

High-Frequency Use Fields

Appendix C

High-Frequency Use Fields

FINDS—HIGH-FREQUENCY USE FIELDS

CDS Number Print
CERCLIS Number Print
CICIS Number Print
Comments
County Code
County Description

Docket Number Print
DUNS Number

Facility City
Facility Congressional District
Facility EPA Number
Facility Latitude
Facility Longitude
Facility Name
Facility Owner Type
Facility Source Identification Number
Facility Region
Facility Source Indicator
Facility State
Facility Street 1
Facility Street 2
Facility SIC Code
Facility SIC Code
Facility Update Date
Facility Update User-ID
Facility ZIP Code
FATES Number Print
Federal Facility Indicator
FRDS Number Print

FURS Number Print

HDWMS Number Print

Indian Land

Lat/Long Accuracy
Lat/Long Source

Major Grouping

Operator Type

PCS Number Print

Region–State Combo

SIA Number Print
Source Abbrev
Source Description
State Desc
State Program Number Print

CERCLIS—HIGH-FREQUENCY USE FIELDS

ENTRY-REGION
ENTRY-STATE
ENTRY-EPA-ID
ENTRY-NAME
ENTRY-STREET
ENTRY-CITY
ENTRY-ZIP
ENTRY-CNTY-NAME
ENTRY-CNTY-CODE
ENTRY-CONGRESSIONAL-DISTRICT
ENTRY-FEDERAL-FACILITY-FLAG
ENTRY-OWNERSHIP-INDICATOR
ENTRY-SITE-INCIDENT-CATEGORY
ENTRY-SMSA
ENTRY-DESCRIPTION
ENTRY-RPM-OSC-NAME
ENTRY-RPM-OSC-PHONE
ENTRY-REGIONAL-KONTACT-NAME
ENTRY-REGIONAL-KONTACT-PHONE
ENTRY-CLASSIFICATION
ENTRY-ORIGINAL-LOAD-DATE
ENTRY-LAST-UPDATE
ENTRY-NAME-SOURCE
ENTRY-FED-FACILITY-DOCKET-FLAG
ENTRY-STATUS
ENTRY-INCIDENT-TYPE
ENTRY-PROPOSED-NPL-UPDATE-NO
ENTRY-FINAL-NPL-UPDATE-NO
ENTRY-CNT-NOTIS
ENTRY-CNT-STS
ENTRY-CNT-HWDMS
ENTRY-CNT-COMP
ENTRY-CNT-OTHER
ENTRY-FMS-SS-ID
ENTRY-LATITUDE
ENTRY-LONGITUDE
ENTRY-LL-SOURCE
ENTRY-LL-ACCURACY
ENTRY-DIOXIN-TIER
ENTRY-USGS-HYDRO-UNIT
ENTRY-RCRA-FACILITY
ENTRY-AGGREGATE-CASE-BUDGET-OB
ENTRY-REGIONAL-FLD1
ENTRY-REGIONAL-FLD2
ENTRY-REGIONAL-FLD3
ENTRY-REGIONAL-FLD4
ENTRY-REGIONAL-FLD5
ENTRY-REGIONAL-FLD6
ENTRY-REGIONAL-FLD7
ENTRY-REGIONAL-FLD8
ENTRY-SEL-CRIT
ENTRY-DATE
ENTRY-TIME
ENTRY-USER-ID
ENTRY-USACE-FLAG
ENTRY-FEDERAL-AGENCY-PRP-FLAG
ENTRY-STATE-PRP-FLAG
ENTRY-MUNICIPAL-PRP-FLAG
ENTRY-HISTORICAL-INDICATOR
ENTRY-TOP-CHAIN
ENTRY-COST-RECOVERY-INDICATOR
ENTRY-SECTION-CODE

OPERABLE-UNIT-ID
OPERABLE-UNIT-ALIAS-LINK
OPERABLE-UNIT-CONCAT-KEY
OPERABLE-UNIT-NAME
OPERABLE-UNIT-DESCRIPTION
OPERABLE-UNIT-REGIONAL-FLD1
OPERABLE-UNIT-REGIONAL-FLD2
OPERABLE-UNIT-REGIONAL-FLD3
OPERABLE-UNIT-USER-ID
OPERABLE-UNIT-DATE
OPERABLE-UNIT-TIME
OPERABLE-UNIT-ENF-ACT-TYPE
OPERABLE-UNIT-ENF-ACT-CATKEY
OPERABLE-UNIT-ENF-REM-ACT
OPERABLE-UNIT-ENF-REM-CATKEY
OPERABLE-UNIT-USACE-FLAG
OPERABLE-UNIT-HISTORICAL-IND

EVENT-TYPE
EVENT-CONCAT-KEY
EVENT-QUALIFIER
EVENT-NAME
EVENT-SCAP-NOTE
EVENT-SHORT-NAME
EVENT-ACTIVITY-LINK
EVENT-TYPE-SORT
EVENT-REMOVAL-APPROVAL-AUTH
EVENT-PLANNING-STATUS
EVENT-GENERIC-TYPE
EVENT-STATE-PCT

CERCLIS—HIGH-FREQUENCY USE FIELDS (continued)

EVENT-TAKEOVER-FLAG
EVENT-FIRST-START-INDICATOR
EVENT-FIRST-COMPLET-INDICATOR
EVENT-LEAD
EVENT-CATEGORY
EVENT-ORIGINAL-PLAN-START
EVENT-ORIGINAL-PLAN-COMPLETION
EVENT-ORIGINAL-PLAN-START-FYQ
EVENT-ORIG-PLAN-COMPLETION-FYQ
EVENT-CURRENT-PLAN-START
EVENT-CURRENT-PLAN-COMPLETION
EVENT-CURRENT-PLAN-START-FYQ
EVENT-CURR-PLAN-COMPLETION-FYQ
EVENT-VAM-FLAG
EVENT-LINK-CHAIN
EVENT-HISTORICAL-INDICATOR
EVENT-ACTUAL-START
EVENT-ACTUAL-COMPLETION
EVENT-REGIONAL-KONTACT-NAME
EVENT-REGIONAL-KONTACT-PHONE
EVENT-COOP-AGREEMENT-NO
EVENT-COOP-AMENDMENT
EVENT-REGIONAL-FIELD1
EVENT-REGIONAL-FIELD2
EVENT-REGIONAL-FIELD3
EVENT-REGIONAL-FIELD4
EVENT-DUMMY-01
EVENT-DUMMY-02
EVENT-DUMMY-03
EVENT-DUMMY-04
EVENT-DATE
EVENT-TIME
EVENT-USER-ID
EVENT-IAG-NUMBER
EVENT-DUMMY-05
EVENT-CORPS-KONTACT-NAME
EVENT-CORPS-KONTACT-PHONE
EVENT-KONTRACTOR
EVENT-DUMMY-06
EVENT-DUMMY-07
EVENT-DUMMY-08
EVENT-DUMMY-09
EVENT-CORPS-DISTRICT-CODE
EVENT-CORPS-DISTRICT-NAME
EVENT-DUMMY-10
EVENT-ORIGINAL-PLAN-START-FY
EVENT-ORIG-PLAN-COMPLETION-FY
EVENT-CURRENT-PLAN-START-FY
EVENT-CURR-PLAN-COMPLETION-FY
EVENT-USACE-LEAD-QUAL-ASGN-TO
EVENT-USACE-LEAD-QUAL-ASGN-DT
EVENT-USACE-IAG-AMEND-NUMBER
EVENT-USACE-PROJECT-KEY
EVENT-USACE-PROJECT-TYPE
EVENT-USACE-LINE-ITEM-REVIEW
EVENT-IAG-FUNDING-LEVEL
EVENT-IAG-IN-HOUSE-EXPNDD-MON
EVENT-IAG-IN-HOUSE-EXPNDD-TOT
EVENT-IAG-IN-HOUSE-OBLIGATED
EVENT-IAG-CNTR-EXPNDD-PAST-MON
EVENT-IAG-CNTR-EXPNDD-TOTAL
EVENT-IAG-CNTR-OBLIGATED
EVENT-USACE-ESTIMATED-RA-COST
EVENT-USACE-O-M-KONTRACTOR
EVENT-USACE-PERFORMEDBY
EVENT-USACE-CNTR-KONTACT-NAME
EVENT-USACE-CNTR-KONTACT-PHONE
EVENT-USACE-ONSITE-ENGINEER
EVENT-USACE-ONSITE-ENGINEER-PH
EVENT-USACE-KONTRACTOR-CITY
EVENT-USACE-KONTRACTOR-STATE
EVENT-CONSTR-PCT-TO-DT-ACTUAL
EVENT-CONSTR-PCT-TO-DT-SCHD
EVENT-CONSTR-PCT-TO-DT-LAST-MO
EVENT-CONSTR-PCT-TO-DT-LAST-FY
EVENT-CONSTR-CLNDR-DAYS-ACT
EVENT-CONSTR-CLNDR-DAYS-CURR
EVENT-CONSTR-CLNDR-DAYS-PEND
EVENT-CONSTR-CLNDR-DAYS-ORIG
EVENT-USACE-DATE
EVENT-USACE-TIME
EVENT-USACE-FLAG
EVENT-EPA-PRIORITY

SUBEVENT-ID
SUBEVENT-CONCAT-KEY
SUBEVENT-NAME
SUBEVENT-SCAP-NOTE
SUBEVENT-SHORT-NAME
SUBEVENT-ACTIVITY-LINK
SUBEVENT-ID-SORT
SUBEVENT-GENERIC-TYPE
SUBEVENT-ORIGINAL-START

CERCLIS—HIGH-FREQUENCY USE FIELDS (continued)

SUBEVENT-ORIGINAL-COMPLETION
SUBEVENT-CURRENT-START
SUBEVENT-CURRENT-COMPLETION
SUBEVENT-ACTUAL-START
SUBEVENT-ACTUAL-COMPLETION
SUBEVENT-ORIGINAL-START-FYQ
SUBEVENT-ORIG-COMPLETION-FYQ
SUBEVENT-CURRENT-START-FYQ
SUBEVENT-CURR-COMPLETION-DATE-FYQ
SUBEVENT-REGIONAL-FIELD1
SUBEVENT-REGIONAL-FIELD2
SUBEVENT-REGIONAL-FIELD3
SUBEVENT-REGIONAL-FIELD4
SUBEVENT-ENF-ACT-TYPE
SUBEVENT-ENF-ACT-CATKEY
SUBEVENT-ENF-REM-ACT
SUBEVENT-ENF-REM-CATKEY
SUBEVENT-DATE
SUBEVENT-TIME
SUBEVENT-USER-ID
SUBEVENT-ORIGINAL-START-FY
SUBEVENT-ORIG-COMPLETION-FY
SUBEVENT-CURRENT-START-FY
SUBEVENT-CURR-COMPLETION-DATE-FY
SUBEVENT-OWNER
SUBEVENT-USACE-FLAG
SUBEVENT-HISTORICAL-INDICATOR

SUBEVENT-COMMENT-ID
SUBEVENT-COMMENT-CONCAT-KEY
SUBEVENT-COMMENT-DATE
SUBEVENT-COMMENT-TIME
SUBEVENT-COMMENT-TYPE-CODE
SUBEVENT-COMMENT-USER-ID

SUBEVENT-COMMENT-LINE-NO
SUBEVENT-COMMENT-LINE-CONCAT
SUBEVENT-COMMENT-LINE-TEXT
SUBEVENT-COMMENT-LINE-DATE
SUBEVENT-COMMENT-LINE-TIME
SUBEVENT-COMMENT-LINE-USER-ID

EVENT-VALID-FIN-ACCT-DCN
EVENT-VALID-FIN-DCN
EVENT-VALID-FIN-ACCOUNT
EVENT-VALID-FIN-DATE
EVENT-VALID-FIN-TIME
EVENT-VALID-FIN-USER-ID
EVENT-VALID-FIN-ACN-DCN-CONCAT

EVT-LINK-REC-IDENTIFIER
EVT-LINK-REC-CONCAT-KEY
EVT-LINK-CHAIN
EVT-LINK-TYPE
EVT-LINK-KEY
EVT-LINK-EPAID
EVT-LINK-OPU
EVT-LINK-EVENT
EVT-LINK-ACTIVITY
EVT-LINK-RECORD-TIME
EVT-LINK-RECORD-DATE
EVT-LINK-RECORD-USER

EVENT-COMMENT-ID
EVENT-COMMENT-CONCAT-KEY
EVENT-COMMENT-DATE
EVENT-COMMENT-TIME
EVENT-COMMENT-TYPE-CODE
EVENT-COMMENT-USER-ID

EVENT-COMMENT-LINE-NO
EVENT-COMMENT-LINE-CONCAT-KEY
EVENT-COMMENT-LINE-TEXT
EVENT-COMMENT-LINE-DATE
EVENT-COMMENT-LINE-TIME
EVENT-COMMENT-LINE-USER-ID

TECH-INFORMATION-TYPE
TECH-INFORMATION-QUALIFIER-1
TECH-INFORMATION-QUALIFIER-2
TECH-INFORMATION-QUALIFIER-3
TECH-INFORMATION-QUALIFIER-4
TECH-INFORMATION-QUALIFIER-5
TECH-INFORMATION-QUALIFIER-6
TECH-INFORMATION-QUALIFIER-7
TECH-INFORMATION-QUALIFIER-8
TECH-INFORMATION-QUALIFIER-9
TECH-INFORMATION-QUALIFIER-10
TECH-INFORMATION-TYPE-SUFFIX
TECH-INFORMATION-LOCATE-KEY

CERCLIS—HIGH-FREQUENCY USE FIELDS (continued)

TECHNICAL-CONCAT-KEY
TECHNICAL-DATE
TECHNICAL-TIME
TECHNICAL-INFORMATION-USER-ID
TECH-INFORMATION-HISTORICAL-IN

EVENT-CHEMICAL-CAS-NUMBER
EVENT-CHEMICAL-NAME
EVENT-CHEMICAL-COMMON-NAME
EVENT-CHEMICAL-DATE
EVENT-CHEMICAL-TIME
EVENT-CHEMICAL-CONCAT-KEY
EVENT-CHEMICAL-USER-ID
EVENT-CHEMICAL-HISTORICAL-IND

RCRA-OFFSITE-ID
RCRA-CONCAT-KEY
RCRA-DATE
RCRA-TIME
RCRA-USER-ID

OP-UNIT-COMMENT-ID
OP-UNIT-COMMENT-CONCAT-KEY
OP-UNIT-COMMENT-DATE
OP-UNIT-COMMENT-TIME
OP-UNIT-COMMENT-TYPE-CODE
OP-UNIT-COMMENT-USER-ID

OP-UNIT-COMMENT-LINE-NO
OP-UNIT-COMMENT-LINE-CONCAT
OP-UNIT-COMMENT-LINE-TEXT
OP-UNIT-COMMENT-LINE-DATE
OP-UNIT-COMMENT-LINE-TIME
OP-UNIT-COMMENT-LINE-USER-ID

ALIAS-ID
ALIAS-CONCAT-KEY
ALIAS-NAME
ALIAS-DATE
ALIAS-TIME
ALIAS-USER-ID
ALIAS-USACE-FLAG
ALIAS-HISTORICAL-INDICATOR

ALIAS-LOC-SEQ
ALIAS-LOC-CONCAT-KEY
ALIAS-STREET
ALIAS-CITY
ALIAS-ZIP
ALIAS-STATE
ALIAS-LATITUDE
ALIAS-LONGITUDE
ALIAS-DESCRIPTION
ALIAS-LOCATION-DATE
ALIAS-LOCATION-TIME
ALIAS-LOCATION-USER-ID

ENTRY-COMMENT-ID
ENTRY-COMMENT-CONCAT-KEY
ENTRY-COMMENT-DATE
ENTRY-COMMENT-TIME
ENTRY-COMMENT-TYPE-CODE
ENTRY-COMMENT-USER-ID

ENTRY-COMMENT-LINE-ID
ENTRY-COMMENT-LINE-CONCAT-KEY
ENTRY-COMMENT-LINE-TEXT
ENTRY-COMMENT-LINE-DATE
ENTRY-COMMENT-LINE-TIME
ENTRY-COMMENT-LINE-USER-ID

REGIONAL-UTILITY-CODE
REGIONAL-UTILITY-DESCRIPTION
REGIONAL-UTILITY-DATE1
REGIONAL-UTILITY-DATE2
REGIONAL-UTILITY-DATE3
REGIONAL-UTILITY-FREE-FIELD
REGIONAL-UTILITY-CONCAT-KEY
REGIONAL-UTILITY-LOCATE-KEY
REGIONAL-UTILITY-DATE
REGIONAL-UTILITY-TIME
REGIONAL-UTILITY-USER-ID
REGIONAL-UTILITY-HISTORICAL-IN

ENF-ACT-TYPE
ENF-ACT-CONCAT-KEY
ENF-ACT-SORT
ENF-ACT-ABBREV
ENF-ACT-ACTIVITY-LINK
ENF-ACT-NAME
ENF-ACT-LEAD
ENF-ACT-ORIG-PLN-START-DATE

CERCLIS—HIGH-FREQUENCY USE FIELDS (continued)

ENF-ACT-ORIG-PLN-START-FYQ
ENF-ACT-ORIG-PLN-CMPLT-DATE
ENF-ACT-ORIG-PLN-CMPLT-FYQ
ENF-ACT-CUR-PLN-START-DATE
ENF-ACT-CUR-PLN-START-FYQ
ENF-ACT-CUR-PLN-CMPLT-DATE
ENF-ACT-CUR-PLN-CMPLT-FYQ
ENF-ACT-ACTUAL-START-DATE
ENF-ACT-ACTUAL-CMPLT-DATE
ENF-ACT-JUDICIAL-CIVIL-TYPE
ENF-ACT-NEG-LIT-OUTCOME
ENF-ACT-NUMBER-RP-DEFENDANTS
ENF-ACT-FULL-PART-SETTLEMENT
ENF-ACT-SCAP-NOTE
ENF-ACT-KONTACT-NAME
ENF-ACT-KONTACT-PHONE
ENF-ACT-PLANNING-STATUS
ENF-ACT-COMP-STATUS
ENF-ACT-COMP-CHG-DATE
ENF-ACT-DATE
ENF-ACT-TIME
ENF-ACT-ENF-ACT-TYPE
ENF-ACT-ENF-ACT-CATKEY
ENF-ACT-GENERIC-TYPE
ENF-ACT-USER-ID
ENF-ACT-LINK-CHAIN
ENF-ACT-HISTORICAL-INDICATOR
ENF-ACT-REGIONAL-FIELD1
ENF-ACT-REGIONAL-FIELD2
ENF-ACT-REGIONAL-FIELD3
ENF-ACT-REGIONAL-FIELD4
ENF-ACT-ORIG-PLN-START-FY
ENF-ACT-ORIG-PLN-CMPLT-FY
ENF-ACT-CUR-PLN-START-FY
ENF-ACT-CUR-PLN-CMPLT-FY
ENF-ACT-OECM-CASE-NAME
ENF-ACT-OECM-CASE-NUMBER
ENF-ACT-DOJ-CASE-NAME
ENF-ACT-DOJ-CASE-NUMBER
ENF-ACT-OUTCOME-SHORT-NAME
ENF-ACT-VAM-FLAG

ENF-ACT-COMPL-STATUS
ENF-ACT-COMPL-STATUS-CHG-DATE
ENF-ACT-COMPL-STAT-SEQ-NBR
ENF-ACT-COMPL-STAT-CONCAT-KEY
ENF-ACT-COMPL-DATE
ENF-ACT-COMPL-TIME
ENF-ACT-COMPL-USER-ID

ENF-REM-REMEDY-ACTION
ENF-REM-CONCAT-KEY
ENF-REM-OPU-INDICATOR
ENF-REM-QUALIFIER-1
ENF-REM-QUALIFIER-2
ENF-REM-QUALIFIER-3
ENF-REM-QUALIFIER-4
ENF-REM-QUALIFIER-5
ENF-REM-QUALIFIER-6
ENF-REM-QUALIFIER-7
ENF-REM-QUALIFIER-8
ENF-REM-QUALIFIER-9
ENF-REM-QUALIFIER-10
ENF-REM-DATE
ENF-REM-TIME
ENF-REM-USER-ID
ENF-REM-FIELD1
ENF-REM-FIELD2
ENF-REM-FIELD3
ENF-REM-FIELD4
ENF-REM-OPU-CKEY
ENF-REM-SPECIAL
ENF-REM-REMEDY-SHORT-NAME
ENF-REM-EVENT-CONCAT-KEY
ENF-REM-HISTORICAL-INDICATOR
ENF-REM-QUALIFIER-SHORT-NAME1
ENF-REM-QUALIFIER-SHORT-NAME2
ENF-REM-QUALIFIER-SHORT-NAME3
ENF-REM-QUALIFIER-SHORT-NAME4
ENF-REM-QUALIFIER-SHORT-NAME5
ENF-REM-QUALIFIER-SHORT-NAME6
ENF-REM-QUALIFIER-SHORT-NAME7
ENF-REM-QUALIFIER-SHORT-NAME8
ENF-REM-QUALIFIER-SHORT-NAME9
ENF-REM-QUALIFIER-SHORT-NAME10

ENF-STAT-STATUTE
ENF-STAT-CONCAT-KEY
ENF-STAT-DATE
ENF-STAT-TIME
ENF-STAT-USER-ID
ENF-STAT-HISTORICAL-INDICATOR

CERCLIS—HIGH-FREQUENCY USE FIELDS (continued)

ENF-MS-MILESTONE
ENF-MS-CONCAT-KEY
ENF-MS-ABBREV
ENF-MS-NAME
ENF-MS-PLN-DATE
ENF-MS-PLN-FYQ
ENF-MS-ACTUAL-DATE
ENF-MS-SCAP-NOTE
ENF-MS-ORIG-PLN-DATE
ENF-MS-ORIG-PLN-FYQ
ENF-MS-SPMS-TARGET-STATUS
ENF-MS-ACTIVITY-LINK
ENF-MS-SORT
ENF-MS-REGIONAL-FIELD1
ENF-MS-REGIONAL-FIELD2
ENF-MS-REGIONAL-FIELD3
ENF-MS-REGIONAL-FIELD4
ENF-MS-DATE
ENF-MS-TIME
ENF-MS-USER-ID
ENF-MS-GENERIC-TYPE
ENF-MS-PLN-FY
ENF-MS-ORIG-PLN-FY
ENF-MS-HISTORICAL-INDICATOR

ENF-MS-COMMENT-ID
ENF-MS-COMMENT-CONCAT-KEY
ENF-MS-COMMENT-DATE
ENF-MS-COMMENT-TIME
ENF-MS-COMMENT-TYPE-CODE
ENF-MS-COMMENT-USER-ID

ENF-MS-COMMENT-LINE-NO
ENF-MS-COMMENT-LINE-CONCAT-KEY
ENF-MS-COMMENT-LINE-TEXT
ENF-MS-COMMENT-LINE-DATE
ENF-MS-COMMENT-LINE-TIME
ENF-MS-COMMENT-LINE-USER-ID

ENF-FMS-VALID-FIN-CONCAT-KEY
ENF-FMS-VALID-FIN-DCN
ENF-FMS-VALID-FIN-ACCOUNT
ENF-FMS-VALID-FIN-DATE
ENF-FMS-VALID-FIN-TIME
ENF-FMS-VALID-FIN-USER-ID
ENF-FMS-VALID-FIN-ACN-DCN

ENF-FIN-ID
ENF-FIN-CONCAT-KEY
ENF-FIN-TYPE
ENF-FIN-PLN-DATE
ENF-FIN-PLN-FYQ
ENF-FIN-RECORD-DATE
ENF-FIN-AMOUNT
ENF-FIN-CONTRACT-VEHICLE
ENF-FIN-FUNDING-STATUS
ENF-FIN-NOTE
ENF-FIN-DATE
ENF-FIN-TIME
ENF-FIN-USER-ID
ENF-FIN-REGIONAL-FIELD1
ENF-FIN-REGIONAL-FIELD2
ENF-FIN-REGIONAL-FIELD3
ENF-FIN-REGIONAL-FIELD4
ENF-FIN-BUDGET-SOURCE
ENF-FIN-WORK-ASGN-IAG-NBR
ENF-FIN-VEHICLE-ABBREVIATION
ENF-FIN-PLN-FY
ENF-FIN-WORK-ASGN-AMEND-NBR
ENF-FIN-HISTORICAL-INDICATOR

ENF-FIN-COMMENT-ID
ENF-FIN-COMMENT-CONCAT-KEY
ENF-FIN-COMMENT-DATE
ENF-FIN-COMMENT-TIME
ENF-FIN-COMMENT-TYPE-CODE
ENF-FIN-COMMENT-USER-ID
ENF-FIN-COMMENT-LINE-NO
ENF-FIN-COMMENT-LINE-CONCAT-KEY
ENF-FIN-COMMENT-LINE-TEXT
ENF-FIN-COMMENT-LINE-DATE
ENF-FIN-COMMENT-LINE-TIME
ENF-FIN-COMMENT-LINE-USER-ID

ENF-LINK-REC-IDENTIFIER
ENF-LINK-REC-CONCAT-KEY
ENF-LINK-CHAIN
ENF-LINK-TYPE
ENF-LINK-KEY
ENF-LINK-EPAID
ENF-LINK-OPU
ENF-LINK-EVENT

CERCLIS—HIGH-FREQUENCY USE FIELDS (continued)

ENF-LINK-ACTIVITY
ENF-LINK-RECORD-TIME
ENF-LINK-RECORD-DATE
ENF-LINK-RECORD-USER

ENF-FMS-ID
ENF-FMS-TYPE
ENF-FMS-DCN
ENF-FMS-ACCOUNT
ENF-FMS-CONCAT-KEY
ENF-FMS-FMS-FLAG
ENF-FMS-OBLIGATING-DOC-NR
ENF-FMS-SUBOBJECT-CLASS
ENF-FMS-PLANNED-OBL-FYQ
ENF-FMS-DATE
ENF-FMS-FUND-PRIORITY-STATUS
ENF-FMS-WORK-ASGN-IAG-NBR
ENF-FMS-EVENT-BUDGET-SOURCE
ENF-FMS-AMOUNT
ENF-FMS-VEHICLE-ABBREVIATION
ENF-FMS-VEHICLE
ENF-FMS-FY
ENF-FMS-KONTRACTOR-NAME
ENF-FMS-NOTE
ENF-FMS-REGIONAL-FIELD1
ENF-FMS-REGIONAL-FIELD2
ENF-FMS-REGIONAL-FIELD3
ENF-FMS-REGIONAL-FIELD4
ENF-FMS-UPDATE-DATE
ENF-FMS-UPDATE-TIME
ENF-FMS-USER-ID
ENF-FMS-FMS-OPEN-COMMITMENT
ENF-FMS-TOT-OPEN-COMMITMENT
ENF-FMS-FMS-FINAL-OBLIGATION
ENF-FMS-ACN-DCN-CONCAT-KEY
ENF-FMS-WORK-ASGN-AMEND-NBR
ENF-FMS-HISTORICAL-INDICATOR

ENF-FMS-COMMENT-ID
ENF-FMS-COMMENT-CONCAT-KEY
ENF-FMS-COMMENT-DATE
ENF-FMS-COMMENT-TIME
ENF-FMS-COMMENT-TYPE-CODE
ENF-FMS-COMMENT-USER-ID
ENF-FMS-COMMENT-LINE-NO
ENF-FMS-COMMENT-LINE-CONCAT
ENF-FMS-COMMENT-LINE-TEXT
ENF-FMS-COMMENT-LINE-DATE
ENF-FMS-COMMENT-LINE-TIME
ENF-FMS-COMMENT-LINE-USER-ID

ENF-ACT-COMMENT-ID
ENF-ACT-COMMENT-CONCAT-KEY
ENF-ACT-COMMENT-DATE
ENF-ACT-COMMENT-TIME
ENF-ACT-COMMENT-TYPE-CODE
ENF-ACT-COMMENT-USER-ID

ENF-ACT-COMMENT-LINE-NO
ENF-ACT-COMMENT-LINE-CONCAT-KEY
ENF-ACT-COMMENT-LINE-TEXT
ENF-ACT-COMMENT-LINE-DATE
ENF-ACT-COMMENT-LINE-TIME
ENF-ACT-COMMENT-LINE-USER-ID

PRP-AGENCY-CODE
PRP-AGENCY-CONCAT-KEY
PRP-AGENCY-DATE
PRP-AGENCY-TIME
PRP-AGENCY-USER
PRP-AGENCY-HISTORICAL-IND

TALLY
TALWH1
TALWH2
TALWH3
TALWH4
EVT-FM-ACT
EVT-FM-REM
REM-FM-EVT
ACT-FM-EVT
PSNF
POSTSARA

PCS—HIGH-FREQUENCY USE FIELDS

Agency Code
Application Complete Date
Application Received Date

Change of Limits Status
City Code
City Name
City Name Short
Class I or II
Cognizant Official
Cognizant Official Telephone
Compliance Schedule Actual Date
Compliance Schedule Actual Month
Compliance Schedule Actual Month/Year
Compliance Schedule Actual Year
Compliance Schedule Data—Month
Compliance Schedule Data—Month/Year
Compliance Schedule Data—Year
Compliance Schedule Data Source Code
Compliance Schedule Date
Compliance Schedule Event Code
Compliance Schedule File Number
Compliance Schedule Number
Compliance Schedule Violation—Date Resolved
Compliance Schedule Violation Code
CONC AVG
CONC MAX
CONC MIN
Concentration Average Limit
Concentration Maximum Limit
Concentration Minimum Limit
Concentration Unit Code
Contested Parameter Indicator
County Code
County Name

Date Public Notice Issued
Date Respondent Requests Hearing
Discharge Number
Discharge Number/Report Designator
DMR Forecasting Submission Date—EPA
DMR Form Comments
DMR Form Comments—Part 1
DMR Form Comments—Part 2
DMR Form Comments—Part 3
DMR Form Comments—Part 4
DMR Form Comments—Part 5
DMR Form Comments—Part 6
DMR Form Comments—Part 7
DMR Form Comments—Part 8
DMR Form Comments—Part 9
DMR Late Indicator
DMR Mailing City
DMR Mailing Information
DMR Mailing Name
DMR Mailing State
DMR Mailing Street (Line 1 of 2)
DMR Mailing ZIP Code
DMR Monitoring Period End Date
DMR Received Date
Draft Permit/Public Notification Date

Enforcement Action Code
Enforcement Action Code—Violation Key
Enforcement Action Compliance Schedule Number
Enforcement Action Compliance Schedule Violation Code
Enforcement Action Compliance Schedule Violation Date
Enforcement Action Data Source Code
Enforcement Action Date
Enforcement Action Discharge Number
Enforcement Action Event Code
Enforcement Action File Number
Enforcement Action NPDES Number—CV Key
Enforcement Action NPDES Number—MV Key
Enforcement Action NPDES Number—SV Key
Enforcement Action Regional Field 1
Enforcement Action Single Event Violation Code
Enforcement Action Status Code
Enforcement Action Status Date
Evidentiary Hearing Docket Number

Facility Inactive Code
Facility Inactive Date
Facility Inactive Date—Month
Facility Inactive Date—Month/Year

PCS—HIGH-FREQUENCY USE FIELDS (continued)

Facility Inactive Date—Year
Facility Location City
Facility Location Information
Facility Location ZIP Code
Facility Name
Facility Name—Part 1
Facility Name Short
Facility Type Indicator
Federal Grant Indicator
Final Limits End Date
Final Limits Indicator
Final Limits Start Date
Frequency of Analysis

Hearing Requested

Industry Classification
Inspected Facility Type
Inspection Date
Inspection Report Received Date
Inspection Type
Inspector Code
Interim Limits End Date
Interim Limits Start Date

Latitude
Latitude/Longitude Code of Accuracy
Limit Discharge Number
Limit Discharge Number/Report Designator
Longitude

Major Discharge Indicator
Major Rating Code
Measurement/Violation Code
Measurement/Violation Concentration Average
Measurement/Violation Concentration Maximum
Measurement/Violation Concentration Minimum
Measurement/Violation Discharge Number
Measurement/Violation Discharge/Report Designator
Measurement/Violation Enforcement Action Indicator
Measurement/Violation Indicator
Measurement/Violation Limit Type
Measurement/Violation Modification Number
Measurement/Violation Monitoring Location
Measurement/Violation Monitoring Period End Date
Measurement/Violation Parameter
Measurement/Violation Percent—All
Measurement/Violation Percent—Concentration Average
Measurement/Violation Percent—Concentration Maximum
Measurement/Violation Percent—Concentration Minimum
Measurement/Violation Percent—Quantity Average
Measurement/Violation Percent—Quantity Maximum
Measurement/Violation Percent—Worst Case
Measurement/Violation Quantity Average
Measurement/Violation Quantity Maximum
Measurement/Violation Report Designator Monitoring Location

NMP Final Schedule
NMP Financial Status
NMP Schedule Quarter
No Data Indicator
NPDES Number—For General Permits
NPDES Number—For Permitted NPDES Facilities
Number of Units in Report Period

Outfall Type Code

Parameter Code
Parameter Description Short
Permit Date Effective
Permit Date Expired
Permit Date Issued
Permit Modification Date
Permit Tracking Actual Date
Permit Tracking Event Code
Permit Type Indicator
Pipe Description
Pipe Inactive Code
Pipe Latitude
Pipe Longitude

PCS—HIGH-FREQUENCY USE FIELDS (continued)

Primary Mailing City
Primary Mailing Information
Primary Mailing Name
Primary Mailing State
Primary Mailing Street (Line 1 of 2)
Primary Mailing ZIP Code
Public Comments Received

QA Data-Based Inspection
QNCR Compliance Schedule Violation Detection Code
QNCR Compliance Schedule Violation Resolution Date
QNCR Measurement/Violation Detection Date
QNCR Measurement/Violation Resolution Code
QNCR Measurement/Violation Resolution Date
QNCR Single Event Violation RNC Detection Code
QNCR Single Event Violation RNC Detection Date
QNCR Single Event Violation RNC Resolution Code
QNCR Single Event Violation RNC Resolution Date
"QNCR Status Code, Current Year (Automatic)"
"QNCR Status Code, Current Year (Manual)"
"QNCR Status Code, Previous Year (Automatic)"
"QNCR Status Code, Previous Year (Manual)"
Quan Avg
Quan Max
Quantity Average Limit
Quantity Maximum Limit
Quantity Unit Code

Receiving Waters
Region Code
Regional Priority Permit Indicator
Reissuance Control Indicator
Reissued Number
Report Designator
Reported Concentration Unit
Reported Frequency of Analysis
Reported Number of Excursions
Reported Quantity Unit
Reported Sample Type
Reporting Units
River Basin
River Basin Code (Major)
River Basin Code (Major/Minor)
River Basin Code (Segment)
River Reach Number

Sample Type
SIC Code—1987 Facility Description
SIC Code—Group (Positions 1–2)
Single Event Violation Code
Single Event Violation Date
State Code
Statistical Base Code

Type of Application

RCRIS—HIGH-FREQUENCY USE FIELDS

Actual Date of Event
Actual Resolved Date
Agency Code
Agency Description
Air Release Indicator
Area of Event
Area of Violation

Burner/Blender Indicator
Burner/Blender RCRA Regulatory Status

Class of Violation
Commitment or Projection Identifier
Commitment or Projection Type
Commitment Type Description
Constituent Code
Corrective Action Area Description
Corrective Action Area Key
Corrective Action Area Sequence Number
County Name
Coverage Area of Evaluation

Date of Enforcement Action
Date of Payment
Date Violation Determined

Enforcement Comment 1
Enforcement Comment 2
Enforcement Flag
Enforcement Responsible Agency
Evaluation Comment 1
Evaluation Responsible Agency
Event Code
Event Description
Event Module
Event Name
Event Number
Event Type

Fully Regulated Generators

Generator Indicator
Generator RCRA Regulatory Status
Groundwater Release Indicator

Handler ID Number
Handler Identification Number
Handler Name

Incinerator Universe

Land Disposal Universe
Last Event Number Used
Location City
Location State
Location Street 1
Location Street 2
Location ZIP Code

Merge Send Flag
Module/Event

Payment Amount
Penalty Assessed
Priority Indicator

Receipt Date
Region Code
Regulation Support
Regulation Type
Regulation Type Code
Regulation Type Description
Regulation Violated
Responsible Agency for Commitment or Projection
Responsible Branch
Responsible Person

Scheduled Response Date
Settlement Amount
Site Latitude
Site Longitude
Small Quantity Generators
Soil Release Indicator
Source of Information
Storage/Treatment Universe
Surface Water Release Indicator

Transporter RCRA Regulatory Status
Transporter Universe
Transportor Indicator
TSD Indicator
TSD RCRA Regulatory Status

RCRIS—HIGH-FREQUENCY USE FIELDS (continued)

Type of Enforcement Action
Type of Evaluation

Violation Comment

Waste Code

STORET—HIGH-FREQUENCY USE FIELDS

Aquifer Type

Composite Sample
Cross Section Location

FIPS County Code
FIPS Hydrologic Unit Code
FIPS State Code

Hydrological Unit Code

Lat/Long Precision (est)
Latitude
Latitude (N)
Longitude
Longitude (W)

Major, Minor, Subbasin Codes

Parameter Code

Sample Date
Sample Sequence Within Station
Sampling Depth
Site Code
Station Location or Local Well Number
Station Number
STORET Agency Code
STORET Station Identifier

Well Depth (hundredths of a foot)

TRI—HIGH-FREQUENCY USE FIELDS

TRI-FACILITY-ID
FACIL-LATITUDE
FACIL-LONGITUDE
STATE-COUNTY-FIPS-CODE
HIST-FACIL-REGION
HIST-FACIL-NAME
HASH FOR FACILITY NAME
HIST-FACIL-STREET
HIST-FACIL-CITY
HIST-FACIL-COUNTY
HIST-FACIL-ZIP-1-5
HIST-FACIL-ZIP-6-9
SIC-CODE
ACTIVITY-USE-CODE
REPORTING-YR
REPORTING-FOR-ENTIRE-FACIL
MAX-AMT-CODE
TRI-CHEMICAL-ID
CHEM-NAME
WASTE-MIN-INDEX
WASTE-MIN-INDEX-NA
WASTE-MIN-ACTION-CODE
MIXTURE-COMP-ID
WASTE-MIN-CODE
WASTE-MIN-CURRENT-YR-QTY
WASTE-MIN-CURRENT-YR-QTY-NA
WASTE-MIN-PRIOR-YR-QTY
WASTE-MIN-PRIOR-YR-QTY-NA
WASTE-MIN-PCT-CHANGE
WASTE-MIN-PCT-CHANGE-NA
TOTAL-RELEASE-ESTIMATE
SEQUENCE-NUM
RELEASE-MEDIUM
TRANSF-EPA-ID-NUM
TRANSF-SITE-CODE
CONTROLLED-BY-FACIL-IND
REL-EMISS-RANGE-CODE
REL-EST
STORMWATER-PCT-NA
STREAM-CODE
LAND-DISPOSAL-CODE
TYPE-OF-TREATMENT
REL-TRANSF-RECORD-STATUS
WASTE-TREATMENT-METHOD
WASTESTREAM-CODE
WASTE-INFLUENT-CONC-CODE
WASTE-SEQ-TREATMENT-IND
OPERATING-DATA-IND
TREATMENT-RECORD-STATUS

AIRS-AFS—HIGH-FREQUENCY USE FIELDS

Action Description
Action Number
Action Type
Action Type Category
Actual Uncontrolled Emissions
Actual Uncontrolled Emissions Decimal
Actual Uncontrolled Emissions Method Code
Actual Uncontrolled Emissions Units
Air Program Code
Air Program Status
Allowable Emissions
Allowable Emissions Decimal
Allowable Emissions Units
Ambient Monitoring Information
Asbestos Removed–Cubic Feet
Asbestos Removed–Linear Feet
Asbestos Removed–Square Feet
Ash Content
Ash Sulfur Origin
Ash Sulfur Source
Ash/Sulfur/Trace Code

Building Owner City
Building Owner State
Building Owner Street Address
Building Owner ZIP Code
Building Owner–Operator
Burner Installation Date
Burner Type—Make
Burner Type—Model

Calibration
CDS Plant ID
CEM Enforcement Agency
Certification Date
Channel Number
Chemical Abstract Service (CAS) Number
Chemical Density
Chemical Density Decimal
Chemical Weight Percent
City Code
Cleaning Soot Blowing
Comment
Comment Identifier
Comment Number
Compliance Emission Identifier
Confidential Indicator
Contact Person Compliance
Contact Person Emissions
Continuous Emissions Indicator
Contractor Certification
Contractor City
Contractor County Code
Contractor Decertification
Contractor Delisting
Contractor Dun & Bradstreet Number
Contractor Identification Number
Contractor Listing
Contractor Name
Contractor Owner–Operator
Contractor State
Contractor Street Address
Contractor ZIP Code
Control Equipment Cost
Control Equipment Efficiency
Control Equipment Efficiency Method
Control Equipment Failure
Control Equipment Installation Date
Control Equipment Malfunction Unacceptable
Control Regulation
County Code

Date Achieved
Date Plant Information Last Updated
Date Scheduled
Decimal Position
Design Capacity
Design Capacity Units
Disposal Site Unknown
Draft Control Location
Draft Control Type
Draft Type

Emergency Control Plan
Emission Factor
Emission Factor Origin
Emission Factor Source
EPA Attainment/Non-Attainment Indicator
EPA Classification Code
EPA Compliance Status
EPA Pollutant Classification
EPA Pollutant Compliance Status
Estimated Emissions

AIRS-AFS—HIGH-FREQUENCY USE FIELDS (continued)

Estimated Emissions Decimal
Estimated Emissions Method Code
Estimated Emissions Units

Facility Capacity
Facility Capacity Units
Fee Billing Amount
Fee Billing Date
Fee Certification Date
Fee Classification Code
Fee Classification Reason—1
Fee Classification Reason—2
Fee Payment Check Number
Fee Penalty Amount
Fee Penalty Date
Fee Received Date
Fee Status
Fee Status Change Date
Fee Voucher Number
Fuel Material Supplier
Fuel Problems

Governmental Facility Code

Heat Content
Historical Compliance Date

Incidents of Excess Emissions
Incidents of Monitor Downtime
Inspection Frequency
Inspector

Landfill City
Landfill EPA ID
Landfill Name
Landfill State
Landfill Street Address
Landfill ZIP Code
Last EPA Inspection Date
Last EPA Inspection Type
Last State Inspection Date
Last State Inspection Type
Latitude Coordinate
Loading Derivation Code
Local Control Region
Longitude Coordinate

Mailing City
Mailing Label Code
Mailing Plant Name
Mailing Street Address
Mailing ZIP Code
Material Safety Data Sheet
Measured Emissions
Measured Emissions Decimal
Measured Emissions Method Code
Measured Emissions Units
Method of National Contractor ID
Methods of Asbestos Removal
Methods of Asbestos Removal Description
Monitor Equipment Malfunctions
Monitor Installation Date
Monitor Manufacturer
Monitor Model Number
Monitor Requirement Code
Monitor Serial Number
Month or Quarter

National-Contractor-ID
NEDS Plant ID
Non-Monitor Equipment Malfunctions
Normal Operating Days Per Week
Normal Operating Hours Per Day
Normal Operating Hours Per Year
Number of Employees
Number of Fail
Number of Pass

Operating Restriction
Operating Status
Other Known Excess Emissions
Other Known Monitor Downtime

Penalty Amount
Percentage Annual Thruput—1
Percentage Annual Thruput—2
Percentage Annual Thruput—3
Percentage Annual Thruput—4
Performance Specification Test Date
Performance Specification Test Status
Permissible Emission Limit
Plant City

AIRS-AFS—HIGH-FREQUENCY USE FIELDS (continued)

Plant Description
Plant Name
Plant Street Address
Plant UTM Horizontal Coordinate
Plant UTM Vertical Coordinate
Plume Height
Point Air Program Status
Point Description
Point Number
Pollutant Code
Potential Controlled Emissions
Potential Controlled Emissions Decimal
Potential Controlled Emissions Units
Potential Uncontrolled Emissions
Potential Uncontrolled Emissions Decimal
Potential Uncontrolled Emissions Units
Primary Control Equipment
Primary Industrial Classification Code
Principal Product
Priority Code
Process Problems
Process Problems Unacceptable
Property Area

Regional Data Element 1
Regional Data Element 2
Regional Data Element 3
Regional Data Element 4
Regional Data Element 5
Regional Data Element 6
Regional Data Element 7
Regional Data Element 8
Regional Data Element 9
Regional Data Element 10
Regional Data Element 11
Regional Data Element 12
Regional Data Element 13
Regional Data Element 14
Regional Data Element 15
Regional Planning Agency
Regulated Source Classification Code
Repeat Violation Date
Repeating Violator Flag
Report Quarter
Reporting Requirements to Region
Results Code

Secondary Control Equipment
Secondary Industrial Classification Code
Segment Number
Significant Violator Flag—1
Significant Violator Flag—2
Significant Violator Flag—3
Significant Violator Flag—4
Solvent Quantity Purchased
Solvent Quantity Reprocessed
Soot Blowing AM or PM
Soot Blowing Indicator
Soot Blowing Times Per Day
Soot Blowing Times Per Week
Source Classification Code
Source Monitoring Information
Space Heat
Stack Number
Staff Code
Start-up Shutdown
State Attainment/Non-Attainment Indicator
State Classification Code
State Code
State Compliance Status
State-Defined Emissions
State-Defined Emissions Decimal
State-Defined Emissions Units
State Emissions Data Element 1
State Emissions Data Element 2
State Emissions Data Element 3
State Emissions Data Element 4
State Emissions Data Element 5
State Emissions Data Element 6
State Emissions Data Element 7
State Emissions Data Element 8
State Implementation Plan
State Pollutant Classification
State Pollutant Compliance Status
State Registration Number
Sulfur Content

Tank Age
Tank Average Vapor Space Height
Tank Average Wind Speed
Tank Color
Tank Construction Type

AIRS-AFS—HIGH-FREQUENCY USE FIELDS (continued)

Tank Deck Construction Type
Tank Dimensions Diameter
Tank Dimensions Height
Tank Diurnal Temperature Change
Tank Loading Type
Tank Paint Condition
Tank Roof Paint Color
Tank Seal Type
Tank Shell Condition
Tank Shell Paint Color
Tank Support Type
Tank Vapor Molecular Weight
Tank Vapor Pressure
Telephone Area Code—Compliance
Telephone Area Code—Emissions
Telephone Number—Compliance
Telephone Number—Emissions
Tertiary Industrial Classification Code
Time Period Code
Total Source Operating Time
Toxicity Level
Trace Element Method Code
Trace Element Percent
Turnover Compliance Flag

Unknown Excess Emissions
Unknown Monitor Downtime
User Point ID
UTM Zone

Year of Emissions Inventory
Year of Inspection Frequency

ZIP Code

RF3—HIGH-FREQUENCY USE FIELDS

Catalog Unit
Segment Number
Mile Point (MI)
Upstream Mile Point
Reach Flag (0,1)
Upstream Direction
Primary Name
Downstream Latitude
Downstream Longitude
Upstream Latitude
Upstream Longitude
Minimum Latitude
Maximum Latitude
Maximum Longitude
Reach Number (RN)

FRDS—HIGH-FREQUENCY USE FIELDS

ST-REGION-CODE
ST-STATE-CODE
ST-VIO-LAST-UPDATE
PWS-ID
PWS-STATUS
PWS-TYPE
PWS-POP-CATEGORY
PWS-SYSTEM-NAME
PWS-SYSTEM-CITY
PWS-SYSTEM-STATE

FFTS—HIGH-FREQUENCY USE FIELDS

Federal Facility Identification Number
Facility Name
RCRA Indicator
NPDES Indicator
AIR Indicator
State
Program Identifier
Facility Name
Inspection Type

FFTS—HIGH-FREQUENCY USE FIELDS (continued)

Inspection Date
Inspecting Agency
Violation Found
Media Identifier
Facility Name
Type of Action
Date of Action
Action Status
Enforcement Agency
Est. Compliance Date
Comments
COR_COMMENTS
STATUS_DATE
STATUS_CODE
STATUS_COMM

UICS—HIGH-FREQUENCY USE FIELDS

FACILITY_NO
FAC_NAME
FAC_ADDRESS
FAC_CITY
FAC_STATE
FAC_COUNTY
OWN_NAME
OWN_ADD
OWN_CITY
OWN_STATE
OWN_ZIP
OPER_NAME
OPER_TELNO
LND_OWN_NAME
LND_OWN_ADD
LND_OWN_TEL
FAC_NAME
FAC_ADDRESS1
FAC_ADDRESS2
FAC_CITY
FAC_STATE
FAC_ZIP
FAC_PHONE
FAC_INSPECT
FAC_STATUS
CORRES_TYPE
DATE_MAILED
RESPNS_DDATE
DATE_RECVD

Appendix D

List of Acronyms

Appendix D

List of Acronyms

AAT	Arc Attribute Table
AC	Air Compliance Branch in the Air and Waste Management Division
ADP	Automated Data Processing
AFS	Air Facilities Subsystem (subsystem of AIRS)
AIRS	Aerometric Information Retrieval System
AML	ARC Macro Language
AMSS	Area Mobile Source Subsystem (subsystem of AIRS)
AO	Administrative Orders
AP	Air Programs Branch in the Air and Waste Management Division
APEDS	Air Pollutant Elimination and Discharge System
AQS	Air Quality Subsystem (subsystem of AIRS)
ARA	Assistant Regional Administrator
ARC/INFO	Computer software package developed by Environmental Systems Research Institute, Inc., in Redlands, California, for geographic analysis
ASCII	American Standard Code for Information Interchange
ATSDR	Agency for Toxic Substances and Disease Registry
AVID	Advanced Identification
AWM	Air and Waste Management Division
BIOS	Drinking Water, Gage, Biological Data System (subsystem of STORET)
BOID	Bypass Occurrence Incidence Database
BRS	Biennial Reporting System
C&GS	Coast and Geodetic Survey
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAD	Computer-Aided Design
CADRE	Computer-Assisted Data Review and Evaluation
CAMEO	Computer-Aided Management of Emergency Operations
CARD	Contract Laboratory Program Analytical Results Database
CARS	Corrective Action Reporting System (now called RCRIS)
CAS#	Chemical Abstract Service Number

LIST OF ACRONYMS, Continued

CBS	Chemical Bulk Storage
CDM	Camp, Dresser, and McKee, Inc.
CDS	Compliance Data System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Act Information System
CFO	Caribbean Field Office
CFR	Code of Federal Regulations
CGP	Construction Grants Program
CGSPS	Construction Grants/SRF Policy Section in the Water Management Division
CICS	Chemicals in Commerce Information System
CLP	Contract Laboratory Program
CME	Compliance, Monitoring, and Enforcement (subsystem of HWDMS)
CO	Carbon monoxide
CO_2	Carbon dioxide
COE	Corps of Engineers
CPRS	Coastal Profile Reporting System
CRTN	Community Right to Know
CSC	Computer Sciences Corporation
CWA	Clean Water Act
DBMS	Database Management System
DEM	Digital Elevation Model
DFS	Daily Flow System (subsystem of STORET)
DGWPB	Drinking/Ground Water Protection Branch in the Water Management Division
DIGIT	Latitude/Longitude Digitizing Program
DIME	Dual Independent Map Encoding
DLG	Digital Line Graph
DLG3	Digital Line Graph 3
DMA	Defense Mapping Agency
DMR	Discharge Monitoring Reporting
DOCKET	Enforcement Docket System
DOE	U.S. Department of Energy
DOJ	U.S. Department of Justice
DOT	U.S. Department of Transportation
DRA	Deputy Regional Administrator
DUNS	Dun & Bradstreet Identification Number
DWR	Division of Water Resources
EDSS	Effluent Data Statistics System
EIB	Environmental Impacts Branch in the Office of Policy and Management

LIST OF ACRONYMS, Continued

EIS	Environmental Impact Statement
EMAP	Environmental Mapping System
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
EPD	External Programs Division
EPIC	Environmental Photographic Interpretation Center
ERNS	Emergency Response Notification System
ERNS	Environmental Response Notification System
ERRD	Emergency and Remedial Response Division
ESD	Environmental Services Division
ESI	Environmental Sensitivity Index
ETAK	Etak, Inc.
ETS	Emergency Planning and Community Right to Know Act (EPCRA) Section 313 Targeting System
FAA	Federal Aviation Administration
FACTS	Federal Activities Computerized Tracking System
FAT	Feature attribute table (ARC/INFO)
FATES	FIFRA and TSCA Enforcement System (now know as Section Seven Tracking System)
FCC	Federal Commerce Commission
FEMA	Federal Emergency Management Agency
FFIS	Federal Facilities Inventory System
FFTS	Federal Facility Tracking System
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FINDS	Facility Index System
FIPS	Federal Information Processing Standards
FIT	Field Investigation Team
FK	Parameter, City, County, and Fish Kills (subsystem of STORET)
FMB	Financial and Administrative Management Branch in the Office of Policy and Management
FOIA	Freedom of Information Act
FRDS	Federal Reporting Data System
FTTS	FIFRA/TSCA Tracking System
FWS	Fish and Wildlife Service
GAB	Grants Administrative Branch in the Office of Policy and Management
GCS	Geo-Common Subsystem (subsystem of AIRS)
GDT	Geographic Data Technology, Inc.
GEMS	Geographical Exposure Modeling System (also PC version)
GICS	Grants Information Control System
GIRAS	Geographic Information Retrieval and Analysis System
GIS	Geographic information system
GLNPO	Great Lakes National Program Office
GNIS	Geographic Names Information System (U.S. Geological Survey)

LIST OF ACRONYMS, Continued

GPS	Global positioning system
GRASS	Geographic Resource Analysis Support System
GRIDS	Geographic Resources Information and Data System
GS	U.S. Geological Survey
GWMS	Groundwater Management Section in the Water Management Division
HAP	Hazardous air pollutant
HHANES	Hispanic Health And Nutrition Examination Survey
HRB	Human Resources Branch
HRS	Hazard Ranking System
HSWA	Hazardous and Solid Waste Amendments
HWCB	Hazardous Waste Compliance Branch in the Air and Waste Management Division
HWDMS	Hazardous Waste Data Management System
HWFB	Hazardous Waste Facilities Branch in the Air and Waste Management Division
HWPB	Hazardous Waste Programs Branch in the Air and Waste Management Division
IAMS	Interagency Agreement Management System
IDEAS	Integrated Data for Enforcement Analysis System
IFD	Industrial Facility Discharge File (subsystem of STORET)
IMSL	International Mathematical and Statistical Library
IRIS	Integrated Risk Information System
IRM	Information Resources Management
ISB	Information Systems Branch in the Office of Policy and Management
ISC	Interstate Sanitation Commission
ITU	Integrated Terrain Unit
ITUM	Integrated Terrain Unit Mapping
LAT/LONG	Latitude/longitude
LDMS	Laboratory Data Management System
LDP	Locational Data Policy
LRD	Lab Results Database
LUST	Leaking Underground Storage Tanks
MLRA	Major Land Resource Area
MMB	Monitoring and Management Branch in the Environmental Services Division
MOU	Memorandum of understanding
MPRS	Marine Pollution Retrieval System
MWPB	Marine and Wetlands Protection Branch in the Water Management Division

LIST OF ACRONYMS, Continued

NAMS	National Ambient Monitoring Systems
NATICH	National Air Toxics Information Clearinghouse
NCC	National Computer Center (Research Triangle Park, North Carolina)
NCDB/FTTS	National Compliance Database and FIFRA/TSCA Tracking System
NCDC	National Climatic Data Center
NCHS	National Center for Health Statistics
NCP	National Contingency Plan
NCSS	National Cooperative Soil Survey
NDPD	National Data Processing Division (Research Triangle Park, North Carolina)
NEDS	National Emissions Data System
NEEDS	Needs Survey
NEIC	National Enforcement Investigations Center
NEPA	National Environmental Protection Act
NFA	No further action
NFPO	Niagara Frontier Program Office
NHANES	National Health and Nutrition Examination Survey
NIMS	National Pollutant Discharge Elimination System Information Management System
NJCRTK	New Jersey Community Right to Know Database
NJDEPE	New Jersey Department of Environmental Protection and Energy
NJPDES	New Jersey Pollutant Discharge Elimination System
NMAS	National Map Accuracy Standards
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NPS	Nonpoint Source
NTIS	National Technical Information System (703) 487-4650
NWI	National Wetlands Inventory
NWIS	National Water Information System
NY/NJMPB	New York/New Jersey Municipal Program Branch in the Water Management Division
NYS	New York Section in the Water Management Division
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OAQPS	Office of Air Quality, Planning and Standards
OAR	Office of Air and Radiation
OARM	Office of Administration and Resources Management
ODES	Ocean Data Evaluation System
OIRM	Office of Information and Resources Management
OPM	Office of Policy and Management
ORC	Office of Regional Counsel
OSC	On-Scene Coordinators
OSCAR	Official Sample Control and Repository

LIST OF ACRONYMS, Continued

P&E	Planning and Evaluation Branch in the Office of Policy and Management
PA	Preliminary Assessment
PAB	Permits Administration Branch in the Office of Policy and Management
PADS	PCB Activities Database System
PAT	Polygon attribute table
PAT	Point Attribute Table
PC	Personal computer
PCB	Polychlorinated Biphenyls
PCS	Permit Compliance System
PM_{10}	Particulate matter less than 10 microns in size
POTW	Publicly Owned Wastewater Treatment Works
PPIB	Policy and Program Integration Branch in the Office of Policy and Management
PRASA	Puerto Rico Aqueduct and Sewer Authority
PRASAD	Puerto Rico Aqueduct and Sewer Authority Database
PRDOH	Puerto Rico Department of Health
PREQB	Puerto Rico Environmental Quality Board
PRP	Principal Responsible Party
PRPSD	Puerto Rico Pump Station Database
PSB	Program Support Branch in the Emergency and Remedial Response Division
PSD/NSR	Prevention of Significant Deterioration/New Source Review
PTSB	Pesticides and Toxic Substances Branch in the Environmental Services Division
PWS	Public Water System Supplies
QA/QC	Quality Assurance/Quality Control
QAPjPS	Quality Assurance Project Plans
QAPP	Quality Action Program Plan
QTRACK	Quality Assurance Tracking Database
RA	Regional Administrator
RAB	Removal Action Branch in the Emergency and Remedial Response Division
RAD	Radiation Branch in the Air and Waste Management Division
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Act Information System
RDBMS	Relational Database Management System
RF3	Reach File 3
RFP	Request for Proposal
RI/FS	Remedial Investigation/Feasibility Studies
ROD	Record of Decision (under CERCLA)
RODS	Record of Decision Database System

LIST OF ACRONYMS, Continued

RPB	Response and Prevention Branch in the Emergency and Remedial Response Division
RPM	Remedial Project Manager
RSDB	Radiation Sites Database
RUQUS	Review, Update, and Query System
SARA	Superfund Amendments and Reauthorization Act
SAS	Statistical Analysis System
SCS	Soil Conservation Service
SDWA	Safe Drinking Water Act
SEDM	State EPA/Data Management
SESS	Superfund Enforcement Support System
SIC	Standard Industrial Classification Code
SIP	State Implementation Plans
SLAMS	State/Local Air Monitoring System
SLS	Superfund Litigation System
SM	Surveillance and Monitoring Branch in the Environmental Services Branch
SMWU	Solid Waste Management Unit
SNAP	Significant Noncompliance Action Program
SO_2	Sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasures
SPDES	State Pollution Discharge Elimination System
SQL	Standard Query Language
SRF	State Revolving Fund (information available through the Grants Information Control System)
SSURGO	Soil Survey Geographic Database
STARS	Strategic Targeting Activities Reporting System
STATSGO	State Soil Geographic Database
STORET	Storage and Retrieval of U.S. Waterways Parametric Data
SUNY	State University of New York
SWDA	Solid Waste Disposal Act
SWIS	Surface Water Information System
SWQB	Surface Water Quality Branch in the Water Management Division
TIGER	Topologically Integrated Geographic Encoding and Referencing System
TIN	Triangulated Irregular Network
TOXNET	National Library of Medicine's Toxicology Network
TRI	Toxic Chemical Release Inventory System
TSB	Technical Support Branch in the Emergency and Remedial Response Division
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, Disposal
TSO	Time Sharing Option

LIST OF ACRONYMS, Continued

UIC	Underground Injection Control
UIC	Underground Injection Control Section in the Water Management Division
UICS	Underground Injection Control System
UST	Underground Storage Tank
UST-DMS	Underground Storage Tanks Data Management System
UTM	Universal Transverse Mercator
VIDPNR	Virgin Island's Department of Planning and Natural Resources
VOCs	Volatile Organic Compounds
WBS	Waterbody System
WMD	Water Management Division
WPCB	Water Permits and Compliance Branch in the Water Management Division
WPS	Wetlands Protection Section in the Water Management Division
WQAS	Water Quality Analysis System (subsystem of STORET)
WRD	Water Resources Division of USGS
WSMA	Water Service Management Area
WSVAGS	Water Supply Violation Assessment Graphics System

Region II Divisions/Branches

AWMD/APB	Air and Waste Management Division/Air Programs Branch
AWMD/ACB	Air and Waste Management Division/Air Compliance Branch
AWMD/HWPB	Air and Waste Management Division/Hazardous Waste Programs Branch
AWMD/HWCB	Air and Waste Management Division/Hazardous Waste Compliance Branch
AWMD/HWFB	Air and Waste Management Division/Hazardous Waste Facilities Branch
AWMD/RB	Air and Waste Management Division/ Radiation Branch
CFO	Caribbean Field Office
EPD/CIRB	External Programs Division/Congressional and Intergovernmental Relations Branch
EPD/CRB	External Programs Division/Community Relations Branch
EPD/PAB	External Programs Division/Public Affairs Branch
ERRD/NJSB	Emergency and Remedial Response Division/New Jersey Superfund Branch I/II
ERRD/NY&CSB	Emergency and Remedial Response Division/New York/Caribbean Superfund Branch I/II
ERRD/PSB	Emergency and Remedial Response Division/Program Support Branch
ERRD/RAB	Emergency and Remedial Response Division/Removal Action Branch
ERRD/RPB	Emergency and Remedial Response Division/Response and Prevention Branch
ESD/MMB	Environmental Services Division/Monitoring Management Branch
ESD/PTSB	Environmental Services Division/Pesticides and Toxic Substances Branch
ESD/SMB	Environmental Services Division/Surveillance and Monitoring Branch
ESD/TSB	Environmental Services Division/Technical Support Branch
OPM/EIB	Office of Policy and Management/Environmental Impacts Branch
OPM/ISB	Office of Policy and Management/Information Systems Branch
OPM/PAB	Office of Policy and Management/Permits Administration Branch
OPM/PEB	Office of Policy and Management/Planning and Evaluation Branch

LIST OF ACRONYMS, Continued

OPM/PPIB	Office of Policy and Management/Policy and Program Integration Branch
ORC	Office of Regional Counsel
RA	Office of Regional Administrator
WMD/DGWPB	Water Management Division/Drinking and Ground Water Protection Branch
WMD/MWPB	Water Management Division/Marine and Wetlands Protection Branch
WMD/NFPO	Water Management Division/Niagara Frontier Program Office
WMD/NY&NJMPB	Water Management Division/New York/New Jersey Municipal Programs Branch
WMD/SWQB	Water Management Division/Surface Water Quality Branch
WMD/WPCB	Water Management Division/Water Permits and Compliance Branch