APPENDIX B. DATA SOURCES

The data sources and information on the sources provided in this appendix are current as of August 1996. Availability of the data should be investigated prior to development of a project data collection plan.

1. STORAGE AND RETRIEVAL (STORET) SYSTEM — USEPA/OWOW

The Storage and Retrieval (STORET) System is one of the oldest and largest water information systems currently in use. STORET stores information on ambient, intensive-survey effluent, and biological water quality monitoring information. Although most STORET information has been added since 1975, records go back to 1899. STORET has four information areas:

- Water Quality System: WQS, the main component of STORET, contains chemical and physical information obtained during monitoring of waterways within and contiguous to the United States. This includes information for estuaries, streams, lakes, rivers, ground water, canals, and coastal and international waters.

- Biological System Field Survey File: BIOS contains information on the distribution, abundance, and physical condition of aquatic organisms in waters within and contiguous to the United States, as well as descriptions of their habitats. BIOS provides a central repository for biological information and analytical tools for data analyses.

- Daily Flow File: DFF contains daily observations of stream flow and miscellaneous water quality parameters collected at gaging stations belonging to the U.S. Geological Survey's (USGS's) national network. The DFS contains essentially the same information as the USGS Daily Values File; the DFS provides an alternative source for the information and simplifies linkages to other, non-USGS water databases.

- Fish Kill File: The Fish Kill File tracks fish kills caused by pollution that have occurred throughout the United States. The kills are a result of a variety of industrial, municipal, agricultural, and transportation-related operations.

Currently about 800 organizations have submitted information to STORET. There are over 735,000 sampling stations in STORET and more than 180 million parametric observations covering some 12,000 water quality parameters.

Many organizations, including federal, state, interstate, and international agencies, submit information to STORET. Users submit new information in the appropriate format daily. STORET data files are updated weekly. Each organization is responsible for the information it submits to STORET; STORET is a user-owned system. States submitting information follow quality assurance and control procedures. All STORET data are checked for invalid data ranges or missing mandatory fields before they are added to the system. Although STORET software edits incoming data for errors and inconsistencies, the owners of the data have the primary responsibility for its content.

Contact:

Office of Wetlands, Oceans, and Watersheds
USEPA Fairchild Building (4503F)
499 South Capitol Street, SW
Washington, DC 20024
Phone: 202-260-7166

2. WATER QUALITY ANALYSIS SYSTEM (WQAS) — *USEPA/OWOW*

The EPA Water Quality Analysis Branch has developed several databases and procedures that operate under the umbrella of the Water Quality Analysis System (WQAS). WQAS databases are available on the same mainframe as the STORET files, and many procedures intrinsic to one system access and manipulate data from the other. WQAS includes many databases; the following are a sample of those which would be most useful in a nonpoint source monitoring and evaluation study.

- Association of State and Interstate Water Pollution Control Administrators (ASIWPCA): Data covering water quality impairments for 1972, 1982, and 1984.
- CITY: Data on 53,000 cities in the United States and its territories.
- GAGE: Data on 36,000 stream gaging locations across the United States.
- Reach File (RF): Data on stream reaches across the United States. Information on RF3 streams is limited; 100 percent of all RF1 and RF2 streams are included.

Contact:

Office of Wetlands, Oceans, and Watersheds
USEPA Fairchild Building (4503F)
499 South Capitol Street, SW
Washington, DC 20024
Phone: 202-260-7166

3. NATIONAL WATER INFORMATION SYSTEM (NWIS) — *USDOI/USGS*

USGS is in the process of designing and developing a new National Water Information System (NWIS). The goal of the NWIS effort is to develop and implement a highly flexible hydrologic data management and processing system—one that can be easily changed and expanded in a rapidly changing technological environment. The NWIS will replace the following two systems:

- National Water Data Storage and Retrieval System (WATSTORE): WATSTORE consists of several files in which data are grouped and stored by common characteristics and data collection frequencies. The system also is designed to allow for the inclusion of additional data files as needed. Currently, files are maintained for the storage of (1) surface water, quality-of-water, and ground water data measured on a daily or continuous basis; (2) annual peak values for stream flow stations: (3) chemical analyses for surface and ground water sites; (4) water data parameters measured more frequently than daily; (5) geologic and inventory data for ground water sites; and (6) summary data on water use. In addition, an index file of sites for which data are stored in the system is maintained.

- National Water Data Exchange System (NAWDEX): NAWDEX is a national confederation of water-oriented organizations working together to improve access to water data. Its primary objective is to assist users of water data in the identification, location, and acquisition of needed data. NAWDEX consists of member organizations from the water data community. The members are linked so that their water data holdings can be readily exchanged for maximum use. It encompasses four major areas of operation: (1) maintaining an internal data center, including access to automated data processing facilities for maintenance and use of its information files; (2) indexing water data held by participating organizations; (3) providing facilities and personnel for responding to requests for water data; and (4) formulating recommended water data handling and exchange standards.

NWIS will be a single integrated system that will have the functionality of current data systems as well as expanded capability for processing and managing additional chemical constituent, sediment, biological, and spatial data.

Contact:
National Water Information System
U.S. Geological Survey
National Center, MS 437
12201 Sunrise Valley Drive
Reston, VA 22092
Phone: 703-648-5659

4. NATIONAL STREAM QUALITY ACCOUNTING NETWORK (NASQAN) USDOI/USGS

The National Stream Quality Accounting Network (NASQAN) program, started in 1972, provides a nationally uniform basis for assessing large-scale and long-term trends in the physical, chemical, and biological characteristics of the Nation's surface waters. Water quality monitoring is carried out at stations that are generally located on major rivers at the downstream end of the accounting unit.

NASQAN was redesigned in 1995 to focus on four of the largest river basins in the Nation—the Mississippi, the Columbia, the Colorado, and the Rio Grande. Monitoring stations are located at the confluence of major rivers within these basins and at the mouths of the rivers. Coastal stations are operated at a few additional large rivers (the St. Lawrence, Susquehanna, Alabama, Tombigbee, and Yukon) to more fully describe the export of chemicals from the continent to the ocean. NASQAN complements the other national water quality monitoring and assessment programs operated by the USGS by providing information on very large rivers.

NASQAN seeks to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents including:

- Major ions (salts such as sodium, potassium, and sulfate)
- Nutrients (including various forms of nitrate and phosphate that contribute to eutrophication of lakes and rivers)
- Dissolved and sediment-bound heavy metals (such as lead, cadmium, and arsenic)
- Common pesticides that can dissolve in water (including herbicides such as atrazine)
- Inorganic and organic forms of carbon

This information will be used to describe the long-term trends and changes in the concentration and transport of these constituents within the four river basins (USGS, 1996a).

Contact:

Office of Water Quality
U.S. Geological Survey
National Center, MS 412
12201 Sunrise Valley Drive
Reston, VA 22092
Phone: 703-648-6861

5. NATIONAL WATER-QUALITY ASSESSMENT PROGRAM (NAWQA) USGS/OWQ

The National Water-Quality Assessment Program (NAWQA) is designed to assess historical, current, and future water quality conditions in representative river basins and aquifers nationwide. One of the primary objectives of the program is to describe relations between natural factors, human activities, and water quality conditions and to define those factors which most affect water quality in different parts of the Nation. Information from the NAWQA should be useful to water resource managers, planners, and policy makers, and for guiding research, monitoring, and regulatory activities in cost-effective ways.

When fully implemented in 1997, the NAWQA will provide consistent and comparable information on water resources in 60 important river basins and aquifers across the Nation, which combined account for 60 to 70 percent of the Nation's water use and population served by public water supplies and cover about one-half of the land area of the Nation. Each of these 60 river basins and aquifers is a study unit within NAWQA. One-third of the study units will be studied intensively at any given time, for a 3- to 5-year period, followed by a 5- to 6-year period of less intensive study and monitoring. Coinciding with the study unit investigations are national synthesis assessments. Two to four national synthesis topics will be studied at any given time. The first issues being studied—the occurrence of nutrients and pesticides in rivers and ground water—were chosen because of widespread environmental and public health concerns and because the information necessary for a national assessment of these topics is incomplete. The next topic for national synthesis will be the occurrence and distribution of volatile organic compounds (USGS, 1994).

At the study unit level, each investigation has a local liaison committee that consists of representatives with water resources responsibilities or interests from federal, state, and local agencies, universities, and the private sector. Each liaison committee is charged with the following:

- The exchange of information about water quality issues of regional and local interest.
- The identification of sources of data and information.
- Assistance in the design and scope of project products.
- The review of project planning documents and reports.

Contact:

NAWQA Program
U.S. Geological Survey
National Center, MS 413
12201 Sunrise Valley Drive
Reston, VA 22092
Phone: 703-648-

6. NATIONAL HYDROLOGIC BENCHMARK NETWORK (HBN) *USGS/OWQ*

USGS's National Hydrologic Benchmark Network (HBN) was established in 1964 as a unique network of stream discharge and water quality monitoring stations in basins that have little human influence on hydrologic characteristics. The program operated a fixed-station, fixed-interval network of 50 sites for water quality and quantity data collection. Drainage areas of the HBN basins range from 2 to 2,000 square miles, with a median basin size of 57 square miles. Elevations of the watersheds range from about 100 to 14,000 feet above sea level. Many of the stations are located in national parks, wilderness areas, state parks, national forests, and specially protected areas set aside for scientific investigations. Throughout the history of the network, sampling frequency has been monthly, bimonthly, or quarterly. In 1996, all stations are scheduled to be sampled twice a year.

Constituent coverage includes:

- Field parameters, including discharge
- Dissolved and total nutrients
- Dissolved inorganics, major ions, and trace elements
- Suspended sediment
- Bacteriology

Precipitation quantity has also been measured at many stations. Depth- and width-integrating sampling techniques are used.

The principal objectives of the network are as follows:

- To document natural changes in hydrologic characteristics.
- To provide a better understanding of the hydrologic structure of natural basins.
- To provide a comparative base for studying the effects of humans on the hydrologic environment.

Data from the network are used to detect water quality trends and to describe water quality conditions. Results from the HBN have both national and regional application for identifying natural hydrologic conditions. Each station represents an integration of upstream water quality conditions with generally minimal influence from land-use activities.

All data collected for the HBN are stored in USGS's WATSTORE and NWIS databases (see data source 3 in this appendix). On a monthly basis, the data are transferred from WATSTORE to STORET (see data source 1 in this appendix) and can be accessed through either system (USGS, 1996b).

5. NATIONAL SURFACE WATER SURVEY (NSWS) *USEPA/ERL*

The National Surface Water Survey (NSWS) consists of two parts: the National Lake Survey and the National Stream Survey. The purpose of the National Lake Survey is to quantify, with known statistical confidence, the current status, extent, and chemical and biological characteristics of lakes in regions of the United States that are potentially sensitive to acidic deposition.

The purpose of the National Stream Survey (NSS) is to determine the percentage, extent, and location of streams in the United States that are presently acidic or have low acid-neutralizing capacity and might therefore be susceptible to future acidification, as well as to identify streams that represent important classes in each region for possible use in more intensive studies or long-term monitoring. The NSS provides an overview of stream water chemistry in regions of the United States that are expected, on the basis of previous alkalinity data, to contain predominantly waters with a low acid-neutralizing capacity.

Variables monitored include acid neutralizing capacity, aluminum, base cations, conductance, major ions, metals, nitrate, organics, pH, and sulfate. A randomly selected subset of lakes was sampled using appropriate methods. The sample results were then weighted to estimate the chemical compositions of lake populations with known confidence. Uncertainties related to time of sampling, spatial variability, and population definition are included in specific research projects to improve confidence in estimates. The NSS employed a randomized, systematic sample of regional stream populations and used rigorous quality assurance protocols for field sampling and laboratory chemical analysis.

Contact:
Environmental Research Laboratory
U.S. Environmental Protection Agency
200 SW 35th Street
Corvallis, OR 97333
Phone: 503-754-4423

6. NATIONAL COASTAL POLLUTANT DISCHARGE INVENTORY (NCPDI) *USDOC/NOAA*

The National Coastal Pollutant Discharge Inventory (NCPDI) Program is a series of database development and analytical activities within the National Oceanic and Atmospheric Administration's (NOAA) Strategic Assessment Program for coastal and estuarine areas. The cornerstone of the program is a comprehensive database and computational framework that has been developed over the last 9 years. The database contains pollutant loading estimates for all major categories of point, nonpoint, and riverine sources located in coastal counties of the 200-mile exclusive economic zone that discharge to the estuarine, coastal, and oceanic waters of the conterminous United States (excluding the Great Lakes). The pollutant discharge estimates in the NCPDI are made for each coastal component for the following base years:

- East coast - 1982
- West coast - 1984
- Gulf coast - 1987

The estimates can be considered to approximate pollutant discharge conditions for a 5-year period around the base year. Estimates are made for nine major source categories and 17 pollutants. Source categories include:

- Point sources
- Urban nonpoint sources
- Nonurban nonpoint sources
- Irrigation return flow
- Oil and gas operations
- Marine transportation operations
- Accidental spills
- Dredging operations

Pollutant estimates can be aggregated by county, USGS hydrologic cataloging unit, or estuarine watershed. Pollutant parameters include:

- Flow (wastewater flow or surface runoff)
- Biochemical oxygen demand
- Particulate matter
- Nutrients (total nitrogen and phosphorus)
- Metals (arsenic, cadmium, chromium, copper, iron, lead, mercury, and zinc)
- Petroleum hydrocarbons (oil and grease)
- Pesticides (35 compounds)
- Pathogens (fecal coliform bacteria)
- Wastewater treatment sludges

Estimates are based on a combination of computed methodologies and actual monitored observations. Estimates are seasonal (winter, spring, summer, fall) for a base year. Updated discharge estimates for 1987 for the coastal areas of the Gulf of Mexico and for 1989 for the east coast are being prepared.

Contact:

Pollutant Sources Characterization Branch
National Oceanic and Atmospheric Administration
6001 Executive Boulevard, Room 220
Rockville, MD 20852
Phone: 301-443-0454

7. OCEAN DATA EVALUATION SYSTEM (ODES) — *USEPA/OWOW*

The Ocean Data Evaluation System (ODES) is a menu-driven system for storing and analyzing water quality and biological data from marine, estuarine, and freshwater environments. The system supports federal, state, and local decision makers associated with marine monitoring programs. The system was designed to support managers and analysts in meeting regulatory objectives through the evaluation of marine monitoring information.

ODES contains over 2.5 million records of data from the National Estuary Program, the Great Lakes National Program Office, the Ocean Disposal Program, the 301(h) Sewage Discharge Program, the National Pollutant Discharge Elimination System (NPDES) Program, and the 403(c) Program.

Contact:

Office of Wetlands, Oceans, and Watersheds
USEPA Fairchild Building (4503F)
499 South Capitol Street, SW
Washington, DC 20024
Phone: 202-260-7028

8. WATERBODY SYSTEM (WBS) — *USEPA/OWOW*

The Waterbody System (WBS) is an automated database of state water quality assessment information. WBS facilitates collection, storage, retrieval, and analysis of water quality assessment information collected by the states to meet EPA's congressional reporting requirements under section 305(b) of the Clean Water Act.

The WBS contains information that helps program managers report accurately and quickly on the water quality status of a particular waterbody. It might also be used to target resource expenditures and to set surface water program priorities. Under the Clean Water Act, states submit information to EPA on several types of surface waters affected by point or nonpoint source pollution, lakes monitored under the Clean Lakes Program, and surface waters requiring the assigning of total maximum daily load limits to restore or maintain their water quality.

WBS serves as an inventory of each state's navigable waters that have been assessed for water quality and is used as the basis for the 305(b) report to Congress every 2 years. States assemble available monitoring information and make judgments on water quality before summary information can be entered into the system. WBS stores the components and the results of the assessment. The WBS is not designed to store, manipulate, or analyze raw monitoring data.

Participation in the WBS is voluntary. The database is currently used by approximately 40 states, territories, and river basin commissions. The database consists of assessments rather than monitoring data and includes many optional fields. The consistency of WBS information within a state is quite good. Those wishing to aggregate to a regional or national level should discuss data characteristics with the WBS coordinator.

Contact:

Office of Wetlands, Oceans, and Watersheds
USEPA Fairchild Building (4503F)
499 South Capitol Street, SW
Washington, DC 20024
Phone: 202-260-3667

9. PESTICIDE INFORMATION NETWORK (PIN) *USEPA/OPP*

The Pesticide Information Network (PIN), maintained by EPA's Office of Pesticide Programs, enables pesticide monitoring data generated by a variety of sources to be routinely identified, obtained, and used. PIN also provides federal, state, and local agencies with a means for sharing information and expertise on pesticides. In addition, information in PIN is used to enhance the accuracy of pesticide risk assessments and risk/benefit regulatory decisions regarding exposure and effects of pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). PIN is composed of three files:

- The Pesticide Monitoring Inventory (PMI) is a nationwide compilation of synopses of pesticide monitoring projects conducted by federal, state, and local governments as well as private groups. PMI includes the location of the monitoring project, the pesticides involved, an abstract of the project, and the name and address of a contact person. PMI does not contain hard data or results; these can be obtained from individual contact persons for each project.

- The Restricted Use Products (RUP) File is a regulatory file that serves as an information resource for states. Information provided includes pesticide active ingredients, dates of restriction, reasons for restriction, and all products that contain the restricted active ingredients.

- The Coordination File is a cross-referencing chemical index of all synonyms for the active ingredients listed in the PMI and RUP files.

Contact:
Office of Pesticide Programs
USEPA Waterside Mall (H7507C)
401 M Street, SW
Washington, DC 20460
Phone: 202-557-5455

10. ENVIRONMENTAL CONTAMINANT DATA MANAGEMENT SYSTEM (ECDMS) *USDOI/USFWS*

The Environmental Contaminant Data Management System (ECDMS) is the cataloging, sample management, and data storage system for residue data from field studies conducted by the U.S. Fish and Wildlife Service (USFWS). Data are from sample matrices consisting of animal and plant tissues, sediments, soils, and water. The system contains data on pesticides, elements, PCBs, and other compounds.

The National Contaminant Biomonitoring Program (NCBP) is maintained by USFWS to document temporal and geographic trends in concentrations of persistent environmental contaminants that might threaten fish and wildlife. NCBP data are maintained by the ECDMS. The NCBP is the USFWS segment of the National Pesticide Monitoring Program, a multiagency monitoring effort by the member agencies of the Federal Committee on Pest Control. Since 1965, USFWS has periodically determined concentrations of potential toxic elements and selected organochlorine chemicals in fish and wildlife collected from a nationwide network of stations. The NCBP is being phased out with the implementation of the broader Biomonitoring of Environmental Status and Trends (BEST) Program.

In addition to organochlorine chemical residues, freshwater fish, starlings, and waterfowl samples are analyzed for arsenic, cadmium, copper, lead, mercury, selenium, and zinc. Composite samples of whole freshwater fish are collected in replicate from 112 stations in major rivers throughout the United States and in the Great Lakes. Starlings are collected in replicate from 139 terrestrial sites in the conterminous 48 states. Wings of mallards and black ducks shot by hunters in the continental United States are collected to assess body burden of organochlorine compounds in migratory birds. This monitoring program has continued at 2- to 4-year intervals since 1965.

Contact:

Division of Environmental Contaminants
U.S. Fish and Wildlife Service
4401 North Fairfax Drive
Suite 330
Arlington, VA 22203
Phone: 703-358-2148

11. NATIONAL SHELLFISH REGISTER (NSR) — *USDOC/NOAA*

Classified shellfishing waters are monitored as an indicator of bacterial water quality nationwide. Waters are classified for the commercial harvest of oysters, clams, and mussels based on the presence of actual or potential pollution sources and coliform bacteria levels in surface waters. Each shellfish-producing state classifies its waters in accordance with guidelines established by the national Shellfish Sanitation Program. Approximately 2,000 classified shellfishing areas are defined by:

- Name
- Location (nautical chart number, estuary, state, region)
- Classification (approved, prohibited, conditionally approved, restricted)
- Size
- Pollution sources (identified for all nonapproved areas)

Trends in classification by region from 1966 to 1990 and by selected estuaries in the Northeast, Southeast, Gulf of Mexico, and Pacific from 1971 to 1990 are available. Areas that were reclassified because of improved or diminished water quality are distinguished from those which were reclassified as a result of improved monitoring. Data also are collected on administration of state programs, including:

- Identification of state agencies responsible for monitoring waters, assigning classification, analyzing water samples, etc.
- Number of personnel
- Budgets
- Number of sampling stations
- Frequency of sampling
- Other factors that might influence classification

Data are collected by questionnaire, followed by interviews. Classifications are noted on 265 nautical charts. Data were compiled in 1966, 1971, 1974, 1980, 1985, 1990, and 1995.

Contact:
N/ORCA
National Oceanic and Atmospheric Administration
6001 Executive Boulevard
Rockville, MD 20852
Phone: 301-443-8843

12. NATIONAL STATUS AND TRENDS DATABASE (NST) *USDOC/NOAA*

Beginning in 1984, NOAA undertook the task of providing information on the status and trends of environmental quality in estuarine and coastal areas. The program defines the geographic distribution of contaminant concentrations in tissues of marine organisms and in sediments. Status and trend data are available from the Mussel Watch and Benthic Surveillance for 4 major elements, 12 trace elements, DDT and its metabolites, selected chlorinated pesticides, selected PCB congeners, approximately 22 polyaromatic hydrocarbons, and ancillary sediment and tissue parameters.

Samples have been collected since 1984 at about 50 Benthic Surveillance sites and since 1986 at about 150 Mussel Watch sites. Sediment samples are collected at all sites. At Benthic Surveillance sites, benthic fish are collected and their livers excised and stored for subsequent chemical analysis. At Mussel Watch sites, bivalve mollusks are collected for analysis. Data are collected annually.

Contact:
Ocean Assessments Division
National Oceanic and Atmospheric Administration
6001 Executive Boulevard
Rockville, MD 20852
Phone: 301-443-8655

13. NATIONAL CLIMATE DATA CENTER (NCDC) *USDOC/NOAA*

The National Climatic Data Center (NCDC) collects, processes, and archives meteorological and climatological data from a global network of stations. Records begin in the mid-19th century and continue to the present. Climatic variables (e.g., temperature, precipitation, solar radiation, storms, wind, and floods) are summarized for both short-term and long-term periods of record. Data are available in published form, on microfiche, or on magnetic tape. Derived values relating to growing season and heating and cooling degree days are also produced. Special statistical summaries of actual and derived values of meteorological elements over the world's oceans, as well as summaries used in the study of air pollution, are available.

For about four decades, NCDC has been receiving climatic data from across the United States and around the globe. Principal sources in the United States are the National Weather Service (NWS), the Federal Aviation Administration, the U.S. Air Force, the U.S. Navy, and the U.S. Coast Guard. The NWS's Cooperative Station Network is composed mainly of 10,000 volunteer observers and has been recording daily records since the 1800s. As aircraft began to fill the skies, information on the upper atmosphere

was needed. Balloon-borne instruments radioed data; radars began to probe the clouds; rockets reached the fringes of the atmosphere; weather satellites, both geo-stationary and polar orbiting, now continuously watch and record the weather. Technical advancements led NCDC to archive some of its data on CD-ROMs so that users could look at a large amount of climatic data at one time. NCDC plans to archive new data sets using the latest technical advances available. Observations are taken at varying intervals, from every 15 minutes to once per month. Collections are daily or monthly depending on type and source of information.

Contact:

Climate Services Division
NOAA/NESDIS E/CC3
Federal Building
Asheville, NC 28801-2696
Phone: 704-259-0682

14. SYNOPTIC RAINFALL DATA ANALYSIS PROGRAM (SYNOP) — *USEPA*

EPA maintains a Synoptic Rainfall Data Analysis Program (SYNOP) as a tool for summarizing and statistically characterizing rainfall records. SYNOP summarizes hourly rainfall data by storm events, calculating for each event the volume (inches), duration (hours), average intensity (inches per hour), maximum intensity (inches per hour), time since the previous storm (hours), and antecedent rainfall (inches); the hours of missing data; and the hours that the meter did not read. SYNOP then uses these storm event statistics to determine monthly and annual means and coefficients of variation for the various storm parameters.

Contact:

SYNOP
USEPA Waterside Mall (H7507C)
401 M Street, SW
Washington, DC 20460
Phone: 202-382-7112

15. ACID DEPOSITION SYSTEM (ADS) — *USDOI/USGS*

The National Acid Deposition Program/National Trends Network (NADP/NTN) was the first, and continues to be the only, U.S. network to monitor precipitation chemistry on a national scale. The current network consists of 196 sites in the conterminous United States, Hawaii, Puerto Rico, and American Samoa. Sites are located in predominantly rural areas to avoid the localized influences of large point sources and major urban centers. Nearly 14 years of continuous data are available from the sites with the greatest longevity; many of these sites are associated with the State Agricultural Experiment Stations.

The primary objective of the NADP/NTN is the determination of geographical patterns of temporal trends in chemical deposition. The program provides scientists, managers, and policy makers with weekly precipitation chemistry data and information on geographical patterns and temporal trends in concentrations and deposition of hydrogen, sulfate, nitrate, ammonium, calcium, magnesium, sodium, potassium and chloride, and ortho-phosphate ions in precipitation. Final quality-assured data are

available to a multitude of data users upon request, within 6 months of sample collection. Principal constituents monitored in precipitation and analyzed for trends are:

- pH
- Specific conductance
- Hydrogen ions
- Sulfate and nitrate ions
- Ammonium and calcium ions
- Chloride, magnesium, sodium, and potassium ions

The NADP/NTN monitoring program has developed criteria and protocols that ensure uniformity in siting, sampling methods, analytical techniques, data handling, and overall network operations. Precipitation is collected by wet/dry precipitation collectors and rain gages. Analytical methods for the chemical variables measured are:

- pH
- Field pH
- Laboratory conductivity
- Electronic detection of hydrogen (also reported as pH)
- Automated calorimetric detection of ammonium
- Atomic absorption spectrophotometric detection of calcium, magnesium, sodium, and potassium
- Ion chromatographic detection of sulfate, nitrate, and chloride

Samples are collected weekly. Data from some sites are available from 1979. The data are maintained on the Acid Deposition System (ADS).

Contact:
U.S. Geological Survey
National Center, MS 416
12201 Sunrise Valley Drive
Reston, VA 22092
Phone: 703-648-6875

16. MAJOR LAND USES IN THE UNITED STATES (MLU) *USDA/ERS*

For more than 50 years, Economic Research Services (ERS) and its predecessor agencies have estimated acreage and maintained an inventory of the major uses of land in the United States at intervals coinciding with the Census of Agriculture. Estimates are made for major land use classes:

- Cropland
- Grassland pasture and range
- Forest land
- Special use
- Unclassified use

Each major class is further classified by specified uses, and some are classified by ownership. Land uses are also designated as agricultural and nonagricultural. Agricultural land uses include:

- Cropland (cropland harvested, cropland failure, cultivate summer fallow, and idle cropland)
- Grazing lands (cropland pasture and permanent pasture and range)
- Grazed forest land
- Miscellaneous agricultural uses (farmsteads, farm roads, and farmlands)

Special uses include:

- Forest land not grazed
- Intensive uses (highways and roads, railroads, and airports)
- Extensive uses (national parks, state parks, wilderness areas, federal wildlife areas, state wildlife areas, national defense areas, and federal industrial facilities)

Other unclassified land uses include urban, special uses not inventoried, and other miscellaneous areas, such as marshes, open swamps, bare rock areas, deserts, and tundra. Data are analyzed for trends.

Data from the Bureau of the Census, agencies of the Department of Agriculture, public land management and conservation organizations, and other sources are assembled, analyzed, and synthesized to estimate state, regional, and national land use acreage. The major uses of land are inventoried every 5 years, coinciding with years in which the Census of Agriculture is completed. The inventories generally have been comparable in format and coverage since 1945. The series on "cropland used for crops" dates back to 1909.

Contact:
Economic Research Service
U.S. Department of Agriculture
1301 New York Avenue, NW, Room 408
Washington, DC 20005-4788
Phone: 202-219-0424

17. AGRICULTURAL CENSUS (AGCENSUS) *USDOC/BOC*

The Agricultural Census (AgCensus) database includes about 750 variables reported at the county level for 1978, 1982, and 1987. The census is scheduled for years ending in 2 and 7. AgCensus variables include simple statistics such as the number of farms, total acreage of farms, acreage of various major crops, and total number of various livestock. It also includes such data as the number and acreage of irrigated farms, the number and acreage of farms irrigated by various sources, the number and acreage of farms by farm size, commercial fertilizer and other agricultural chemical expenditures, the number of farms and livestock by herd size, the number and acreage of vegetable farms, and a subset of these statistics for farms with sales greater than $10,000.

AgCensus does not include pesticide application rates or even the acreage to which specific pesticides are applied. Fertilizer and manure application rates and acreage are also not reported. Irrigation rates and farm management practices are likewise not included in the database.

Contact:
Agriculture Division
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233
Phone: 301-763-1113

18. FOREST SERVICE RANGE MANAGEMENT INFORMATION SYSTEM (FSRAMIS) USDA/USFS

The Forest Service Range Management Information System (FSRAMIS) collects and analyzes data on grazing in national forests and grasslands. FSRAMIS provides grazing use statistical data. Data on the number of grazing animals (cattle, horses and burros, sheep and goats), animal unit month, and number of permittees are reported at the national level and for each type of Forest Service land, region, and state. Other variables measured include:

- Allotment condition
- Improvement inventory and activity
- Grazing capacity
- Actual use
- Authorized use
- Unauthorized use

Data are analyzed for trends in ecological potential. Data on grazing on the National Forest System lands are extracted from the grazing permits. Data on free-roaming horse and burro populations are estimated by census. Data are collected on cycles ranging from annual to once every 3 to 5 years.

Contact:
Range Management Staff
U.S. Forest Service
Department of Agriculture
P.O. Box 96090
Washington, DC 20090-6090
Phone: 202-205-1460

19. FOREST INVENTORY AND ANALYSIS PROGRAM (FIA) USDA/USFS

The Forest Inventory and Analysis (FIA) program is responsible for making and keeping current a comprehensive inventory and analysis of the renewable forest and rangeland resources of the United States. Initial inventory efforts began in the West in 1930; by the 1960s, inventories had been completed for all of the 48 conterminous states and many of the important forested states had been reinventoried. The inventory data and analysis provide trend information on the extent, condition, ownership, and composition of the Nation's forests as well as information about wildlife habitat, forage production, and other resource characteristics needed for resource planning. At least 43 kinds of resource data are collected for sample plots during the inventory, including:

- Land use
- Land ownership
- Forest type
- Stand age
- Stand size and volume classes
- Harvest history
- Soils data
- Tree data (species, diameter at breast height, height, cull, etc.)
- Other vegetation data
- Non-timber data

These data are used to make estimates of forest land areas, species composition, timber volume, and net annual timber growth, removals, and mortality by forest type, state, region, ownership, softwood and hardwood sawtimber species, productivity class, diameter class, and other classifications. The volume of roundwood products harvested by material species group, region, and product is estimated. Estimates also are made of areas harvested or otherwise disturbed, regenerated to forest, or cleared for other uses. Additional estimates of recreation use, wildlife values, site productivity, physiographic characteristics, and other items are made. The data are maintained in three databases:

- National Resources Planning Act (RPA) Timber Database
- Eastwide Forest Inventory Database
- Forest Inventory and Analysis Database

Data are gathered using a two-phase sampling design, with the first phase involving ground measurements at sample plots, each covering an acre. Depending on the extent to which sensing is used, ground sample intensity ranges from one plot per 3,000 acres to one plot per 10,000 acres. Statewide timber inventory information has been collected continuously for about 50 years. In most regions of the United States, the third inventory cycle has been completed and some areas have been inventoried as many as five times. Each year, some 50 million acres are inventoried in the conterminous United States. Currently this rate of coverage translates into an inventory cycle of 12 years for the Nation.

Contact:

U.S. Department of Agriculture
Forest Service
P.O. Box 96090
Washington, DC 20090-6090
Phone: 202-205-1343

20. NATIONAL LAND USE AND LAND COVER MAPS — *USDOI/USGS*

As part of its National Mapping Program, the USGS produces and distributes land use and land cover maps and digitized data. Land use refers to human activities that are directly related to the land. Land cover describes the vegetation, water, natural surface, and artificial constructions at the land surface. Associated maps display information on political units, hydrologic units, census county subdivision, and, in some cases, federal land ownership. Land use and land cover areas are classified into nine major classes:

- Built-up land
- Agricultural land
- Rangeland
- Forest land
- Water areas
- Wetlands
- Barren land
- Tundra
- Perennial snow or ice

Each major class is subdivided into several minor classes, for 37 minor classes total. For example, forest lands are further classified as deciduous, evergreen, or mixed forest land, and water is further classified as streams and canals, lakes, reservoirs, or bays and estuaries. Remote sensing methods are used, including satellite imagery, high-altitude imagery, medium-altitude remote sensing, and low-altitude imagery. Data were collected in the late 1970s and early 1980s.

Contact:

Office of Geographic and Cartographic Research
U.S. Geological Survey
National Center, MS 590
12201 Sunrise Valley Drive
Reston, VA 22092
Phone: 703-648-5741

21. POPULATION CENSUS DATA (CENDATA) — *USDOC/BOC*

The decennial census provides a comprehensive set of population statistics for the United States. Basic demographic characteristics are collected on a 100-percent basis. Social and economic characteristics are collected from a large sample of all households and persons in group quarters. The decennial census provides demographic (e.g., age, race, sex, relationship), social (e.g., education, migration, ancestry, language), and economic (e.g., occupation, industry, income, place of work) characteristics of the population of the United States, Puerto Rico, the Virgin Islands, Guam, American Samoa, the Norther Marianas, and Palau. Trend data are available from previous decennial censuses. Basic demographic data are collected from 100 percent of the population. Social and economic characteristics are collected from a large sample, approximately one in six in 1980 and 1990.

Contact:

Population Division
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233
Phone: 301-763-7890

22. NATIONAL RESOURCES INVENTORY (NRI) *USDA/NRCS*

For 50 years, the Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS), has been conducting periodic inventories of the Nation's soil, water, and related resources. The National Resources Inventory (NRI), which is an extension and modification of earlier inventories, provides data on the status, condition, and trends of these resources on nonfederal land in the United States. The many types of data collected by the NRI process are organized into eight general categories:

- Soil characteristics and interpretations (including agricultural land capability)
- Land cover
- Land use (including irrigated and nonirrigated cropland, grazed and ungrazed forest land, prime farmland, etc.)
- Erosion (such as sheet and rill, wind, and ephemeral gullies)
- Land treatment (such as irrigation, tillage, and windbreaks)
- Conservation treatment needs
- Vegetative conditions (such as wetlands, rangeland condition and species, and pasture management)
- Potential for conversion to cropland

The NRI is a multiresource inventory based on soils and related resource data collected at scientifically selected random sample sites. The NRI sample design was developed by the Iowa State University Statistical Laboratory at Ames. It uses census area and point methods for data collection. Data collection involves both field investigation and remote sensing. Data are collected on a 5-year cycle. Recent surveys were conducted in 1977, 1982, and 1987.

The 1987 NRI data were collected from nearly 300,000 sample sites from all counties of the United States, except those in Alaska, and in Puerto Rico and the Virgin Islands. Most of these samples were part of the 1982 NRI, which had nearly 1 million sample sites. The 1987 NRI data have a high degree of reliability at the state level, and the 1982 NRI date provide a high degree of reliability at the multicounty level. Data estimates can be made by Major Land Resource Areas (MLRA), NRCS Administrative Areas, Water Resources Council Aggregated Subareas, and other multicounty geographic subdivisions.

Contact:

Resources Inventory and Geographic Information Systems Division
U.S. Department of Agriculture
Natural Resources Conservation Service
P.O. Box 2890
South Agricultural Building, Room 6175
Washington, DC 20013
Phone: 202-720-4530

23. ECOREGION MAPS *USEPA/ERL*

Ecoregions are defined by EPA to be regions of relative homogeneity in ecological systems or in relationships between organisms and their environments. Ecoregions of the United States have been mapped to help water resource managers understand better the regional patterns of ecosystem quality and the relative importance of factors that might be determining this quality. Specifically, the ecoregion framework can establish a logical basis for characterizing ranges of ecosystem conditions or quality that are realistically attainable. A national ecoregion map has been prepared at a scale of 1:7,500,000 and regional maps are prepared at a scale of 1:2,500,000. The maps are available in an ARCINFO format for use by individual users.

Contact:
U.S. Environmental Protection Agency
Environmental Research Laboratory
200 SW 35th Street
Corvallis, OR 97333
Phone: 503-757-4601

24. NATIONAL WETLANDS INVENTORY (NWI) *USDOI/USFWS*

In 1975, the U.S. Fish and Wildlife Service (USFWS) established the National Wetlands Inventory (NWI) to develop technically sound and comprehensive information on the characteristics and extent of wetland resources in the United States. Status and trends information is available for selected wetland types including estuarine wetlands, palustrine wetlands, lacustrine wetlands, and deepwater habitats in the lower 48 states. In addition, statistical data are available for coastal waters and bay bottoms, coastal marshlands and mangroves, recent changes in inland vegetated wetlands, recent changes in lacustrine deepwater habitats, estimates of current annual wetland losses, estimates of wetland losses by flyways, states with significant changes in wetland resources, indicators of development pressures on wetland resources, and causes of wetland losses. The Emergency Wetlands Resources Act of 1986 requires that updates of the wetland status and trends be produced on 10-year cycle with reports due in 1990, 2000, 2010, etc. Data are collected continuously. The 1990 update provides trend data on wetlands losses and gains between the 1970s and the 1980s.

The wetland mapping phase of the project has produced map coverage for approximately 70 percent of the lower 48 states, 22 percent of Alaska, and all of Hawaii, Puerto Rico, and Guam. Wetland status and trends information is designed to provide statistical estimates on a national basis (lower 48 states). In addition, regional intensification studies are available for the Chesapeake Bay Region and the Central Valley of California. Other statewide status information is available for the states of Florida, Delaware, New Jersey, Illinois, Washington, Maryland, and Connecticut. Status reports covering the coastal wetlands of Alaska and the Prairie Pothole Region (North Dakota, South Dakota, Minnesota) are also available.

Contact:

National Wetlands Inventory
U.S. Fish and Wildlife Service
Suite 101 Monroe Building
9720 Executive Center Drive
St. Petersburg, FL 3702-2440
Phone: 813-893-3624

DATABASE	SUBDATABASES/ DATA TYPES	AVAILABILITY	NOTES
STORET	• Water Quality File • Biological System Field Survey File (BIOS) • Daily Flow File (DFF) • Fish Kill File (FK)	• USEPA mainframe • USGS NAWDEX	• A modernized STORET, with greater computing and data-handling capabilities, will be on-line in 1997.
NAWDEX	• Water Data Sources Directory: Information on organizations that collect water and water-related data • Master Water Data Index: Information on sites at which surface water, ground water, or water quality data are collected	USGS NAWDEX	• An interagency program to facilitate the exchange of water data and promote the improvement of water data handling • Provides access to WATSTORE and STORET
WBS	• Surface waters • Overall water quality, suitability for designated uses, causes and sources of water quality problems	USEPA mainframe	• Management tool to track state assessments of ambient water quality for surface waters • Source of 305(b) report information
NASQAN	• Concentration, mass transport • Major ions, nutrients, heavy metals, pesticides, inorganic and organic carbon	USGS NAWDEX	• Focuses on large river systems: Mississippi, Columbia, Colorado, Rio Grande, St. Lawrence, Susquehanna, Alabama, Tombigbee, Yukon
NWIS	• Spatial, chemistry, flow, biological • Surface water and ground water	USGS	• Replacing WATSTORE and NAWDEX • Designed to be a flexible hydrologic data management and processing system
PIS	• PMI (Pesticide Monitoring Inventory): synopses of pesticide monitoring projects; location, pesticides monitored, abstract, contact • RUP (Restricted Use Products file): Pesticide active ingredients, restriction dates and reasons, names of all products with restricted active ingredients • Chemical Index: Cross-references for synonyms for active ingredients listed in PMI and RUP	USEPA	• Contains up-to-date pesticide information

DATABASE	SUBDATABASES/ DATA TYPES	AVAILABILITY	NOTES
ODES	• Ocean outfall data (301(h), 403(c)) • NPDES discharge permit data • Ocean dumping data • National Estuary Program data • GLNPO data	USEPA	• For storing and analyzing marine environmental data • Contains statistical, graphical, and modeling tools
WQAS	• ASIWPCA: water quality impairments • CITY: data on U.S. cities • GAGE: stream gaging data • REACH FILE: stream reach data	USEPA mainframe	
HBN	• Stream discharge • Nutrients • Inorganics, major ions, trace elements • Suspended sediment • Bacteriology	• USGS WATSTORE • USEPA STORET	• 50 monitoring sites in basins with little human influence on hydrologic characteristics
NAWQA	• Water quality • Sediment	USGS	• Designed to assess historical, current, and future water quality conditions in representative river basins and aquifers • Covers 60 river basins and aquifers that account for 60%-70% of U.S. water use and 1/2 of U.S. land area
NSWS	• NSS (National Stream Survey): stream acidity, stream chemistry, acid neutralizing capacity aluminum, base cations, conductance, major ions, metals, nitrate, organics, pH, sulfate • NLS (National Lake Survey): lake chemistry	USEPA/ERL, Corvallis, OR	• NSS's purpose is to determine percentage, extent, and location of streams with low acid-neutralizing capacity
NCPDI	• Pollutant loading estimates for all major categories of point, nonpoint, and riverine sources in coastal counties. • Flow, particulates, BOD, nutrients, metals, petroleum hydrocarbons, pesticides, pathogens	NOAA	• Baseline years: 1982 - east coast; 1984 - west coast; 1987 - Gulf coast
ECDMS	• Residue data from USFWS field studies • Animal and plant tissues, sediments, soils, water • Pesticides, elements, PCBs, other compounds • NCBP (National Contaminant Biomonitoring Program): USFWS segment of National Pesticide Monitoring Program; temporal and geographic trends in concentrations of persistent environmental contaminants	USFWS	• NCBP being phased out with implementation of BEST Program

DATABASE	SUBDATABASES/ DATA TYPES	AVAILABILITY	NOTES
NSR	• Classified shellfishing waters; name, location, NSSP classification, size, pollution sources • State program administration information	NOAA	• Trends in classifications are available
NST	• Estuarine and coastal waters • Geographic distribution of contaminant concentrations in tissues of organisms and sediments • 4 major elements, 12 trace elements, DDT and metabolites, chlorinated pesticides, PCB congeners, 22 polyaromatic hydrocarbons, sediments, tissues	NOAA	• Data from Benthic Surveillance sites and Mussel Watch sites
NCDC	• Temperature, precipitation, solar radiation, storms, floods, wind • Derived values for growing season, heating and cooling degree days • Statistical summaries of meteorological elements over the oceans • Air pollution summaries	NOAA	• Available as published, microfiche, or magnetic tape
SYNOP	• Hourly rainfall data summarized by storm event for volume, duration, average intensity, maximum intensity, time since previous storm, antecedent rainfall, hours of missing data, hours not read • Monthly and annual means, coefficients of variation for storm parameters	USEPA	• Tool for summarizing and statistically characterizing rainfall records
ADS	• Specific conductance, pH, hydrogen ions, sulfate and nitrate, ammonium, calcium chloride, magnesium, sodium, potassium	USGS	• Only national network to monitor precipitation chemistry • Monitoring sites are predominantly rural
MLU	• Cropland, grassland pasture and range, forest land, special uses, unclassified uses • Subclassified by specific use, ownership	USDA	• Special uses: intensive (roads, airports, railroads), extensive (parks etc., defense, federal industrial)
National Land Use and Land Cover Maps	• Human land use activities • Land cover by vegetation, water, natural surface, artificial construction • Political unit, hydrologic unit, census county subdivision, federal land ownership	USGS	• Data for maps were collected from the mid-1970s to early 1980s
CENDATA	• Population, demographic, social, economic	USDOC, Bureau of the Census	• Updated every 10 years

DATABASE	SUBDATABASES/ DATA TYPES	AVAILABILITY	NOTES
AgCensus	• Total acreage of farms, acreage of major crops, total number of livestock, number and acreage of irrigated farms, number and acreage of farms irrigated by various sources, number and acreage of farms by size, commercial fertilizer and other agricultural chemical expenditures, number of farms and livestock by herd size, number and acreage of vegetable farms, statistics for farms with sales > $10,000.	USDOC, Bureau of the Census	• County-level data
FSRAMIS	• Grazing activity on national forests and grasslands; cattle, horses, burros, sheep, goats • Number of grazing animals, animal unit month, number of permittees • National level, region, state, type of forest service land • Allotment condition, improvement inventory and activity, grazing capacity, actual use, authorized use, unauthorized use	USDA, USFS	• Data are analyzed for trends in ecological potential
FIA	• RPA Timber Database • Eastwide Forest Inventory Database • Forest Inventory and Analysis Database • Land use, land ownership, forest type, stand age, stand size and volume class, harvest history, soils, trees, other vegetation, non-timber • Forest land area; species composition; timber volume; net annual timber growth, removals, mortality.; area harvested; area regenerated; area converted to non-forest use • Recreation use, wildlife value, site productivity, physiographic characteristics	USDA, USFS	• Comprehensive inventory and analysis of forest land and rangeland
NRI	• Soil characteristics, land cover, land use, erosion, land treatment, conservation treatment needs, vegetative condition, potential for conversion to cropland	USDA, NRCS	• Information on non-federal lands • Data collected at 5-year intervals
Ecoregion Maps	• Ecoregions of the U.S. • National (1:7,500,000), regional (1:2,500,000)	USEPA/ERL, Corvallis, OR	• Intended for water resource management • Available in ARCINFO format

DATABASE	SUBDATABASES/ DATA TYPES	AVAILABILITY	NOTES
NWI	• Estuarine, palustrine, lacustrine, deepwater wetlands • Coastal waters, bay bottoms, coastal marshlands, mangroves • Changes in inland vegetated wetlands, changes in lacustrine deepwater habitats • Current annual wetland loss, wetland loss by flyway, states with significant changes in wetland resources, causes of wetland loss	USDOI, USFWS	• Updated every 10 years • Regional intensive data available for Chesapeake Bay, Central Valley (CA) • Statewide information for FL, DE, NJ, IL, WA, MD, CT • Status reports for Coastal AK, Prairie Pothole Region (ND, SD, MN)