The Long Island Breast Cancer Study Project

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GEOGRAPHIC INFORMATION SYSTEM FOR LONG ISLAND

An Epidemiologic Systems Approach to Identify Environmental Breast Cancer Risks on Long Island

Phase I: Closeout Report Expanded Technical Version

July 1995

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Summary

BNL is developing and implementing a Geographic Information System (GIS) for Nassau and Suffolk Counties on Long Island to address the relationship of environmental and occupational exposures to breast cancer incidence and outcome. This report summarizes the work completed in the four month Phase I project "Feasibility of a Geographic Information System for Long Island", which was completed in November 1994 and certain ongoing work conducted since then. In addition, it contains selected information from other documents about this GIS project previously submitted to NCI.

The BNL GIS is expected to become an important resource for identifying environmental/occupational exposures which may contribute to breast cancer occurrence. It is designed to provide breadth (and some depth) which can allow investigators to design more specific and focused studies for spatial and temporal analysis using GIS methodologies. The GIS will enable investigators to address spatial/temporal issues at the parcel/street address level of detail, not previously available, for this well-defined region with a population approaching 4 million. The overall planning strategy is characterized by: (1) a data driven, open-ended and iterative approach; (2) the combination of GIS visual display and analytic methodologies with exploratory, surveillance and descriptive epidemiologic methodologies; (3) utilization of the first year of Phase II to further develop, test, prioritize and finalize the databases and GIS technologies to be selected for implementation; and (4) implementation and completion of the GIS in the second through fourth years of Phase II. The project is divided into three separate parts: (1) creation of the environmental-exposure GIS per se, which is the major focus of Phase II; (2) development of retrospective environmental exposure and breast cancer risk profiles using the GIS and New York State Cancer Registry breast cancer incidence and mortality data; and (3) provision of direct support for the LIBCSP case-control study.

In Phase I, over 400 databases from federal, state and local entities have been identified, described and inventoried. These databases contain environmental (and occupational) exposure and demographic information relevant to Nassau and Suffolk Counties. They are available in computerized-digitized, computerized-nondigitized and/or hard copy formats. Some hard copy data have been collected since the turn of the century (e.g., weather and agricultural). Since the late 1970s, a number of databases have been computerized including those which can enable spatial and temporal residence location matching with past breast cancer cases. The inventory of databases was established to determine the feasibility of developing an environmental exposure GIS. It identified: (1) available GIS tools, including GIS systems software, state of the art hardware, feature data and parcel level base maps of Nassau and Suffolk Counties; and (2) available environmental exposure data of potential relevance, including many GIS overlays and coverages for the Counties, some time frames measured in decades, and various environmental pathways.

The BNL GIS can be successfully completed based on the documented available resources and the cooperation demonstrated by the various researchers, institutions, organizations and agencies who are already collaborating with BNL. When completed, the BNL GIS will have the capability to characterize and analyze complex environmental/occupational exposures and breast cancer risk patterns on Long Island both spatially and temporally. BNL anticipates that the GIS will become a significant resource for identifying and defining current and past environmental exposures, which in turn, may yield clues relevant to current breast cancer occurrence and may provide insights relevant to breast cancer prevention in the future.

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I. Background:

BNL is developing and implementing the project "Geographic Information System (GIS) for Long Island" to address the potential relationship of environmental and occupational exposures to breast cancer etiology on Long Island. The project is divided into two major phases: The four month feasibility project (Phase I), and the major development and implementation project (Phase II). This report summarizes the work completed in the four month Phase I Project, "Feasibility of a Geographic Information System for Long Island." It provides the baseline information needed to further define and prioritize the scope of work for subsequent tasks. Phase II will build upon this foundation to develop an operational GIS for the Long Island Breast Cancer Study Project (LIBCSP).

This report focuses on the "product" and "specific objectives" required for the completion of the four month Phase I project, as specified in the IAG. In addition, it responds to the subsequent request for additional information, including activities being conducted in the transition period between Phases I and II, tasks and Tables 1-3 in the Phase II Program Plan, and tasks scheduled for initiation, continuation or completion in Phase II, including the aforementioned tables. The designation of Tables 1-3 from the previously submitted Phase II Program Plan has been retained in this report, though they are not discussed in numerical order.

The BNL GIS is designed to enable the identification of environmental/occupational exposures that may be related to the high risk of breast cancer on Long Island. The GIS will depict the location of various point, line, or area data that have been collected either cross-sectionally or retrospectively. Completion of the GIS will allow further evaluation of environmental factors, such as: (1) spatial and/or temporal modeling of environmental factor concentrations or dispersions using spatial autocorrelation or regression techniques or other models; (2) relationships between or among the various environmental factors. This will enable first order estimates of individual exposures which can be developed for use in the GIS and for comparison with data from the LIBCSP case-control study, as well as with other retrospective breast cancer incidence and mortality data (e.g., the New York State Cancer Registry), other cancer incidence and mortality data and other health (non-cancer) data.

Most importantly, the BNL GIS will have the capability to characterize environmental/occupational exposures and breast cancer risk patterns both spatially and temporally. The environmental exposure patterns of the past, when reconstructed retrospectively, may yield clues relevant to current breast cancer occurrence which, in turn, can yield insights for preventing breast cancer in the future. When completed, the BNL GIS will be capable of identifying and analyzing "simple" associations as well as the more complex associations between environmental exposure and breast cancer occurrence.

The BNL GIS is based on the need to initiate descriptive epidemiologic and surveillance studies to identify and define current and historical environmental/occupational exposures by location and time in the LI region and to establish population representative databases which can be linked to exposure data. It is especially important to search for appropriate environmental/occupational exposure data from which hypotheses can be generated. This is necessary in preparation for identifying and defining relative and attributable risk factors both cross-sectionally and longitudinally. The GIS will be designed to utilize a dynamic rather than a static approach, namely, a GIS which contains current cross-sectional data and looks backward in time at the spatial patterns that existed 10-20 or more years ago. A key factor is to determine if quality, quantity and type of spatial data for the GIS is adequate to look back in time for a period of 10-20 years. Available regional data has been computerized, although not necessarily digitized, since the late 1970s, making the LIBCSP region ideal for retrospective 10-20 year analyses.

This data driven project is designed to incorporate scientific methodologies from GIS visual and spatial-temporal research/studies and from surveillance, cross-sectional and retrospective epidemiological research/studies. This approach prevents the historic pitfalls of predefining exposures and demographic factors which have been linked to adverse outcomes to the exclusion of other potentially important confounding or contributing factors.

For example, a study published by the New York State Department of Health examined the relationship of selected industrial and high traffic exposures to breast cancer risk (Melius, 1994). This study found an "association between living near chemical facilities and the risk of breast cancer in post-menopausal women". However, they found no association between a specific chemical site or industrial pollutant to breast cancer. It is important to note that no emission or individual exposure measurements were taken in this study to verify if specific sites were actually emitters. In addition, this study only looked at chemical and industrial plants with 20 or more employees. It did not take into account the numerous small industries in the region which employ fewer than 20 persons and represent over 2/3 of the private sector firms located in Nassau and Suffolk Counties. This study also used computer generated grids of one square kilometer to define industrial exposure clusters and 25 square kilometer grids for traffic exposure. Associations were defined by cases residing in a grid containing a chemical/ industrial/traffic site, rather than by specific residence location or individual exposure assessments.

In another New York State study, ten year incidence of breast cancer (1978-1987) and its relationship to contaminated water wells and hazardous waste sites was examined. County census tracts were combined to approximate water districts within the two counties; however, census tracts in Suffolk County served by private wells were not assigned to a water district. Similar to the industrial facility/traffic study, water districts were defined as having contaminated wells if one or more wells within a water district had been closed or restricted for exceeding NYSDOH guidelines for organic chemicals or if they were voluntarily closed because they might exceed those guidelines. Water districts were also identified as having or not having a DEC-listed hazardous waste site within their boundaries. In both counties, age-adjusted

breast cancer incidence rates were slightly lower in the set of water districts with contaminated wells than in the set without contaminated wells, and rates were slightly lower in the set of water districts with hazardous waste sites than in the set without hazardous waste sites. The only other factor which was assessed was income, which showed a positive association with breast cancer incidence rates. The census tracts in Suffolk County which they excluded contained over 10% of the breast cancer incidence cases.

The NYS study described above delved into environmental factors using aggregations of census tracts to define community groups and water districts. It did not provide the detailed spatially located data to identify such critical environmental factors as residential locations (parcels) with potable water provided by private wells located on the property. In addition other potentially important factors such as water treatment modalities (e.g., pH controls, chlorination, fluoridation) were not considered.

The BNL GIS is being designed to eliminate the biases inherent in approaches, such as the ones discussed above, that only address selected exposures without addressing the various confounding factors that may also be associated with adverse outcomes. The design of the BNL GIS is in conformance with the recommendations made by the Epidemiology Work Group regarding information needs and procedures which would maximize the usefulness of existing databases (Matanoski, et. al. 1982). These include: expanding the role of exposure databases to address public health rather than only regulatory needs; including data from all levels of government and linking them based on geographic information; standardizing measurement, collection and data analysis; computerizing all data; providing feedback to involved agencies; communicating across disciplines, agencies, community organizations and political groups; making measurements that are useful for short and long term studies and for small and large populations; and making the exposure system useful for epidemiological purposes. The construction of the exposure GIS will not only provide measurements of different exposure parameters but will also address the issue of multiple exposure routes for the same exposure parameters (Akland, 1993).

Many of the databases which have been obtained were originally commissioned for regulatory purposes and were not designed for such public health and epidemiologic purposes as determining exposure at the individual level. Of more concern, relative to the objectives of the LIBCSP, these databases do not provide direct information on relevant measurements of individual dose (Hatch & Duncan, 1993). The proposed GIS, which will contain a parcel/residence spatial level of resolution when possible, will provide at least a first order estimate of individual exposure when linked to individuals by address matching with the case-control data or with retrospective incidence and mortality data from the NYS Cancer Registry. The GIS will also provide a basis for recommendations concerning future data needs and uses for research and surveillance purposes.

II. Feasibility of the LIBCSP Exposure GIS

Determining the feasibility of creating the exposure GIS for the LIBCSP relies upon a distinctly different process than that of other feasibility studies.

The feasibility of the GIS is based upon two factors: (1) can the project be completed successfully; and (2) can the project be completed in a timely and cost efficient manner.

The creation of the GIS is a multi-step process which depends on more than the usual number of factors required for verifying or creating a database. This involves not only identifying as many databases as possible which are potentially relevant to the determination of associations between environmental exposure and breast cancer, but evaluating them with respect to both data quality, usefulness and compatibility within a GIS framework. Therefore, more than a simple evaluation of exposure databases is required. In particular, the following prerequisites are needed for the GIS:

A. Base Map Development and Non-Exposure Data Assessment

Parcel level base maps for Nassau and Suffolk Counties must be obtained, linked and validated for the proposed GIS. Nassau and Suffolk County base maps based on TIGER files are readily available for major GIS software programs (e.g., ARC/INFO and MapInfo). However, they do not go down to the parcel level as is required for this project, and they contain some inaccuracies.

Nassau and Suffolk County agencies are currently making plans to finalize their base maps at the parcel level of detail which should have a high degree of accuracy after quality control procedures are completed. It is essential that these parcel overlays, as well as other feature and structure overlays, be accurate both as to content and geographic location.

It is expected that the Nassau and Suffolk structure level overlays will contain a high degree of accuracy with respect to location and address matching when completed; therefore, the vital cornerstone of the GIS is available for this project. Nassau County base maps have been completed based upon a 1993 flyover and an independent verification of addresses, but their quality control assessment still needs to be completed. Final locational accuracy of features for the Nassau County base maps has been projected as plus or minus 2.5 feet, with over 95% accuracy of addresses. Suffolk County base maps are expected to be completed by the end of calendar year 1995. Suffolk parcel maps are being produced using a different procedure than Nassau, but a similar level of relative accuracy is expected. BNL will work with the GIS coordinators in each County to link the two county base maps which will form the LIBCSP GIS.

Additional non-exposure (e.g., boundary, structure or topographic) databases which may be available and relevant to the LIBCSP GIS must also be identified and evaluated. These databases, which are available from a variety of third party sources (e.g., New York State DOT), will have to be evaluated for their potential relevance to the project, data quality and GIS compatibility. Criteria for assessing non-exposure data are the same as those for exposure data and are described below. In addition, it must be determined whether any inaccuracies identified are due to errors in the base maps or in the overlay files which are being linked. These inaccuracies may be due to such factors

as gross error within a database or file, or may be due to differences in scale. Spatial verification of these features will be conducted after linkage and verification of the County base maps.

In Phase I, non-exposure databases were screened and inventoried for possible inclusion in the GIS.

B. Exposure Data Assessment

In this project, the term "exposure data" is operationally defined as any data which will provide a qualitative or quantitative measure of concentration or dispersion of a substance which can then be used to obtain a first order estimate of individual exposure. Qualitative measures include such factors as private water well locations. Quantitative measures include measurements of substance levels, such as pesticide or other contaminant concentrations and additives (e.g., fluorine, chlorine) in drinking water wells.

It will be necessary to identify and validate the exposure data within as many exposure databases as possible which may have appropriate information for the project. This is the typical, and usually only, step which is taken when evaluating data for non-GIS projects. This process by itself consists of several iterative steps.

(1) The initial step includes determining whether an exposure database is relevant to the LIBCSP, based on the type and quality of data contained therein. For example, in the initial screen, databases which were described as having any measurements which might contain regional exposure data related to some chemical or substance, were kept for future consideration. Some examples include coverage, coordinate system, and time frame; the remaining evaluation criteria (e.g., data quality, validity) will be assessed after obtaining the data (or a sample thereof). The ranking system for this evaluation will be further developed and tested in Phase II. (2) This screening procedure is necessary, as it would not be cost efficient to obtain all of the databases which are available. Therefore, the initial screen consisted primarily of identifying whether the data pertain to some or all of the LIBCSP region (i.e., Nassau and Suffolk Counties) and whether any relevant exposure parameters were included in the database. Additional descriptive information about the databases may also be used for screening and evaluation purposes, depending upon the level of detail of the available information.

Databases which pass the initial screen will be further evaluated for inclusion in the GIS. Priority will be assigned to databases containing information on the Congressionally mandated data categories: contaminated drinking water, indoor and ambient air pollution (including aircraft emissions), electromagnetic fields, pesticides and other toxic chemicals, hazardous and municipal wastes, and other factors determined to be appropriate by the Director of NCI. However, since this is a "data driven" project, additional exposure databases will be added as additional environmental/occupational exposure information is obtained. The Master List of Candidate Databases is available in previously submitted documents (Barancik, 1994; Barancik, et al., 1995). Evaluation will be based on a number of factors,

including (a) additional information obtained from the source agency about the data, database and GIS coverages for digitized databases; (b) database and GIS coverage documentation including user's manuals, data measurement and collection methodology instructions, written data entry procedures, and other text material which may be available; (c) evaluations and critiques of independent users of these databases and/or GIS coverages; and (d) direct evaluation of the database using either the full database or a sample of data obtained from the source agency or organization. Procedures used to conduct the direct evaluation of data will include statistical quality control methods, outlier detection procedures, and assessment of the nature and extent of missing data. Preliminary criteria for evaluating exposure databases are described below.

The tasks of first identifying and then initially screening exposure databases have been largely completed in Phase I; however, these tasks will continue in Phase II when and if any additional relevant databases are located. Further evaluation of those databases passing the initial screen has been initiated during the interim period between Phases I and II.

C. Exposure Database Assessment Priorities

Due to the large number of exposure databases which have potential relevance to the GIS (based on the initial screen), completion of the GIS in a timely and cost efficient manner will require an algorithm for determining the sequence of databases to be evaluated and (for those databases determined to be of sufficient relevance and quality) included in the GIS. This step is unique to this project simply due to the quantity of available databases and need to be inclusive and comprehensive because this GIS is being designed to serve as a resource for the LIBCSP, the scientific community in general and the public at large.

The guidelines which have been constructed for determining the order of databases to be evaluated are based on pragmatic issues. In particular, those databases which are already in GIS compatible format will be evaluated first, since these databases will not require digitizing. The second tier of databases which will be evaluated will be those which are computerized but not digitized. The third tier of databases will be those that are in hard copy format. Second and third tier databases will be evaluated for data quality and, if it is determined that they will be included in the GIS, may require significant resources to enter the exposure data and/or digitize into GIS format. If it is determined that a second or third tier database contains information that is essential for the exposure GIS and is not available in a tier one database (for example, if pesticide data were only available in hard copy format), priority commensurate with the importance of the data will be given to that database early in Phase II. In the event that a database is in more than one format (e.g., partially digitized and the remainder computerized/nondigitized) it will initially be given a level of priority commensurate with the highest level format.

The available format of all potential databases has been identified as part of the inventory, and has been recorded in the database descriptions produced in

Phase I. Categorization of databases based on these criteria has been completed.

Within the set of digitized databases, one or two will initially be selected from each generic category (Table A) so that the full range of categories mandated by Congress, as well as other potential risk factors, will be represented. Within each database a sentinel variable approach will be developed to identify preliminary GIS testing and usage. Operational definitions of sentinel variables and values will be established.

D. Spatial Verification of Exposure Data

Another requirement for completing the GIS, which is unique to GIS analysis, is the need for verifying the location of exposure sites containing concentration or dispersion measurements within the GIS maps. Similar to non-exposure data, the evaluation of location accuracy will still need to be completed for those databases which are already digitized. Other computerized and hard copy databases will need to be digitized and verified for accuracy. This process will require that the exposure data (after digitization, if necessary) be linked to the base maps and evaluated with respect to location. This evaluation will be conducted both visually (e.g., ascertaining that data points/lines/polygons are within the appropriate region and are not located, for example, off shore) and through address matching, if appropriate for the data. For example, coverage location accuracy will be established by adding layers onto the base map and comparing them with administrative jurisdictional boundaries, such as township, city, village or census tract boundaries, as appropriate.

This step in the GIS project may require a large manpower effort, depending upon the format of the data, as it pertains to location, evaluation and redigitization of data points. For example, in one Suffolk County township area, private and public potable water well locations were overlaid to available address-matched parcel base maps; this resulted in an initial address matching hit rate of approximately two-thirds; however, in a more recent update the hit rate was between 80% and 90%. Although potentially time and resource consuming, this process is relatively straightforward. Overlaying of this information cannot be completed until the base maps have been obtained, validated and incorporated into the GIS. It can begin before additional feature and topographic data have been linked and validated, as these are overlays which will not impact the location of exposure data.

In general, databases were not physically transferred to BNL as part of the Phase I activities. However, selected data or GIS coverages were electronically transferred to BNL for testing purposes. Spatial verification of exposure data will be conducted during Phase II when the exposure data becomes available.

III. Summary of Phase I Work Accomplished by Specific Objectives:

- A. An inventory of databases of potential environmental/occupational exposures and their identifiers for Nassau and Suffolk Counties and surrounding areas was created.

Candidate environmental/occupational exposure and GIS databases were identified and entered into a computerized inventory by BNL staff. The information includes findings from surveillance and research projects prepared at all levels of government (including minor civil divisions such as villages and townships) and selected private sector organizations such as utilities. In Phase I, 418 databases (computerized and hard copy) of potential relevance to the LIBCSP were identified. A database was determined to be potentially relevant if it contained data which are potential candidates for inclusion in the GIS. Characteristics needed to make these determinations are being obtained from database summaries, contacting the resource agency, and supporting literature. The primary determinants of database relevance are data measurement location and time frame. Data measured outside of the Nassau/Suffolk proper will generally not be relevant to the LIBCSP. Similarly, data collected more than 20-25 years ago are likely to be less usable than data collected more recently (because of such factors as missing data or lack of back up documentation) to breast cancer incidence and outcome studies. On the other hand, such databases must still be examined because they may provide valuable historical information and, therefore, may be worthy of digitizing. Such decisions will be made by the BNL team after review by the External Advisory Board (EAB).

Information about each database describing the exposure, feature and administrative parameters included therein has been computerized. The information defines: type of exposure data, database contents, geographic area covered, time frame in which the data were collected, organization/agency collecting the data, and contact person. Twenty three possible duplicate entries of databases which were found in more than one inventory reference source have been marked for deletion (Note: Since the completion of Phase I, 48 additional databases were identified, screened, and added to the inventory, resulting in the current inventory of 467 databases).

Since database ascertainment is considered an ongoing discovery process, additional databases are being added to the inventory as they are identified. Although sufficient data are available in the inventory to launch and virtually complete Phase II of this project, BNL anticipates continuing the database inventory process as long as potentially relevant information is uncovered which can enhance the GIS implementation process.

The U.S. Environmental Protection Agency (EPA) is a primary source of environmental exposure and related data available for Nassau and Suffolk Counties and surrounding areas. The EPA databases contain a broad range of information types, location identifiers, data collection frequencies, media, and specific parameters. The information type contained in each database includes one or more of the following: production volumes, emission inventories, environmental measurements, microenvironmental concentrations, personal monitoring, and human samples. Location identifiers include:

latitude/longitude, universal transmercator projection coordinates, street addresses, zip codes, census tracts, county, city/municipality/township, metropolitan statistical areas, states, hydraulic unit codes, river reach numbers, and congressional districts. Since a considerable degree of variation in data collection frequency exists within and among the EPA databases, parameters are specified as being collected by: year, quarter, month, week, day, irregular, mixed (varies by chemical), mixed (varies by facility), or by some other temporal factor. EPA data primarily contain information pertaining to the following: bulk chemicals, air, water, food, soil, human samples, and a category designated as "other". EPA data include 19 measured parameter groups: acids/aerosols, aeroallergens, aesthetic qualities (including physical and chemical indicators of water quality and ion concentrations), asbestos, bases, cigarette smoke, criteria pollutants, dioxins/furans, fluoride, inorganic compounds, microorganisms, particulates, radionuclides, semi-VOCs, trihalomethanes, VOCs, and other, unspecified parameters. These parameters served as a resource to BNL and helped guide the specification of exposure parameters cited in Table 3. The preceding list of parameters pertain to data generated from EPA research, surveillance or regulatory activities, as well as from digitized databases generated by other government agencies.

The BNL GIS will be compatible with the U.S. EPA classification schema. To date, BNL has both incorporated and expanded on EPA database assessment procedures. A general classification system for potential GIS databases and selected administrative and technical information concerning the databases, are provided in Table 2 of the Phase II Program Plan. In this table, the databases are categorized according the medium (media) which is being evaluated for an exposure parameter(s), e.g., water or air. These categories are not mutually exclusive, however, as a database can include measurements from more than one environmental medium. In addition, the time and geographic resolution are specified, as well as the database source and selected database characteristics.

In contrast to Table 2, in which databases are categorized by where exposures are being measured, Table 3 presents database categories of the parameters being measured. Table 3 includes exposure parameters of interest, listed in approximate order in which they appear in the Congressional mandate, and feature parameters which will be used to create base maps and locate geographic and structure features. As in Table 2, database classification is not limited to a single category.

Databases (exposure and non-exposure) were classified into selected categories based on available summary information in order to facilitate the prioritization process. The database categories include the six specific categories specified in the Congressional legislation: drinking water, sources of indoor and ambient air pollution, EMF, pesticides and other toxic chemicals, hazardous and municipal waste, and "other" exposures deemed appropriate by the Director of NCI. Those databases which contained information that did not fit into one of these Congressionally mandated groups were classified into one of twelve additional groups based on information received to date. The breakdown of the inventoried databases by the 18 specified categories is shown in Table A (code numbers were arbitrarily

assigned; databases which could not be classified based on available information were assigned the "unspecified" code of 99). Since the 18 categories (as with the mandated 6 categories) are not mutually exclusive, a database may be listed in more than one category. This information can be used to classify the databases into the more specific categories in Tables 2 and 3; however, since only summary information is currently available to perform the classification, the resulting Tables 2 and 3 may be incomplete because these tables are based only on information obtained to date.

With the exception of the asbestos databases, digitized data have been identified in all categories. Therefore, GIS development and implementation can proceed promptly in Phase II based on the prioritization procedure, since the digitized databases include critical baseline information on exposure, geographic, and demographic factors. BNL recognizes that further assessment and evaluation will be needed to verify GIS validity and reliability at the parcel, street, and census block level, as discussed elsewhere in this report.

- B. An initial set of criteria has been established for prioritizing databases by evaluating their completeness, validity, and historical accuracy. Preliminary database evaluation criteria were developed in preparation for Phase II.

A ranking system for determining the potential usefulness of environmental/occupational exposure and other databases for the GIS is being developed to determine the relative strengths and limitations of each database. Each database will be assigned a score based on a number of determinants, including coverage (geographic and time period), data quality, and accessibility. Databases meeting all of the criteria for the LIBCSP will receive the highest ranking and will be included in the initial comprehensive assessment. Databases which do not meet any of the criteria for inclusion will be excluded from further consideration at that time. Those that fall within the middle range will be put aside for later review if needed to supplement the initial set of databases chosen. This system is expected to increase efficiency, avoid unnecessary duplication, and minimize cost. Flexibility is being built into this ranking and evaluation procedure in order to accommodate necessary adjustments as additional data needs are defined. This will enable revisions as needed, since the evaluation will be an iterative, GIS-database driven process. Because these criteria were still in their developmental phase at the conclusion of Phase I, the relative importance of individual criteria and the determination of what combination of criteria indicate a 'good' versus a 'poor' database have not yet been fully defined.

Through this iterative process, an environmental/occupational GIS will be produced. BNL has already received and examined some electronic databases in order to determine the appropriate methodology for data transfer. There appears to be a wide range of quality, particularly in the databases that contain archival information. In Phase II we will contact independent database users in order to identify individual database idiosyncrasies, database strengths/limitations, and the frequency of missing data for each data element. It is at this time that initial criteria for databases that need periodic updating to maintain a dynamic system will be identified.

Provisions will be made so that updates are received in a timely manner, thus ensuring that the BNL GIS remains current.

Databases which will be examined for potential inclusion in the BNL GIS will be those which contain data of potential relevance to the LIBCSP, including exposure data and/or mapping features. The relevance of specific data parameters to the LIBCSP will be one of the overriding factors used to evaluate the utility of a particular database for the BNL GIS. In addition, specific objective criteria will be used to evaluate the databases, as summarized below. Table 1 of the Phase II Program Plan presents the preliminary criteria, as determined by BNL staff, which will be used to evaluate the utility of the individual databases for the purpose of the GIS. The choice of criteria were made based on a number of items: (1) the culmination of experience of the Epidemiology Program staff in developing and using large databases, either as obtained from an external source or created from raw data; (2) experience of the many GIS users at BNL; (3) LIBCSP project needs; (4) statistical quality control techniques developed by the Epidemiology Staff for industrial use; (5) classification and ranking procedures developed by the Epidemiology Program staff to determine severity and outcome parameters; and, (6) work conducted by BNL's Office of Environmental Restoration.

Although no specific ranking system has yet been developed for these criteria, they have been listed in four general categories ordered by approximate importance: Relevance, Data Quality, Availability/Accessibility, and Mapping Compatibility. It should be noted that these are preliminary criteria identified during Phase I, and are subject to possible revision. The preliminary criteria are operationally defined as follows:

1. Relevance:

- a. Coverage: Databases which are not relevant to Long Island (i.e., Nassau and Suffolk Counties) will be excluded from the GIS. Databases which include areas of Long Island will be evaluated with respect to the extent of Long Island coverage. A database which is based on the entire two-county area will, all else being equal, be of more value than one which contains data for a single township. The inventory of preliminary databases (Table B) is a listing which excludes those databases which did not pass the "coverage" criteria, based on summary information available at the time. Databases included in the inventory without specific coverage information based on those descriptions may be excluded in Phase II if it is ascertained from additional information that the coverage is not relevant to the LIBCSP.

Some features may be determined to be extraneous or irrelevant, e.g., churches as included in the USGS GNIS Names file.

Features have changed markedly in some areas within the Nassau/Suffolk County region over the past 20 years. Residential, commercial/industrial construction techniques, materials and building codes, street construction, and land use changes have all been in flux. Current and past feature coverages will be documented and included where available in order to determine potential exposure locations retrospectively. Therefore, current as

well as historical or out-of-date feature coverages are relevant to the BNL exposure GIS.

2. Data Quality:

a. Reliability: Data reliability relates to the accuracy of the measurements in the databases. Data reliability will be assessed using a number of techniques including spot checking of observations (where feasible), comparison of independent databases (e.g., NYNEX and Tiger File addresses; two databases measuring the same water pollution parameters), evaluation of measurement techniques as described in the database documentation, and statistical methods (e.g., outlier detection procedures).

b. Validity: Data validity is the concern that the reported observations in a database are representative of what needs to be measured for the proposed work. In this project, the objective is to determine exposures over an extended period of time. Methods of data collection as reported in any accompanying documentation will be one method of ascertaining data validity, including reason for measurement (e.g., response to an acute situation vs. regular measurement schedule). A quality evaluation procedure related to frequency of missing data is the regularity of measurements, both in time and in space. Measurements which are not uniformly taken may also be indicative of selection bias. For example, measurements made only when suspected spills or leaks of a toxic substance occur will not be representative of the long term levels of that substance at the locations of measurement. In addition, measurements of acute occurrences will not be useful for determining interpolated exposures in areas outside of the release site.

c. Quality: In conjunction with data validity and reliability, data quality will be of primary concern. Data quality will be assessed in terms of methods of sampling and measurement as well as locational accuracy.

Quality will be measured in two ways. Since databases are obtained from a number of sources and in a number of formats, the feature data must be intrinsically accurate, but conversion accuracy must also be considered. For databases which are not in the selected BNL GIS format, evaluation of feature data accuracy will be conducted prior to conversion, if it is possible to obtain listings of the data using other available software (e.g., other GIS or database management software). For all feature data, accuracy will be evaluated with respect to location of features and frequency of missing data.

Evaluation of feature data accuracy will be accomplished using spot checks and cross-validation. For example, individual parcel addresses, streets, landmarks and other features can be spot checked by comparison with other maps or by site inspection visits. The use of Global Positioning System (GPS) equipment will be considered to establish latitude and longitude of selected locations during Year 01. Use of GPS equipment may entail a supplemental budget request for Years 02 and 03. Cross-validation evaluations can be accomplished by comparing multiple databases with similar information. For example, the Nassau/Suffolk County parcel maps, MapInfo or ARC/INFO street

maps, and NYNEX and LILCO address databases will be compared and assessed for accuracy of parcel addresses.

Databases which are converted to the selected GIS format, using a conversion or import program such as ArcLink, will be reevaluated for accuracy. Polygon closure and accuracy of feature locations with respect to the selected GIS software base map are two of the major concerns, which will be considered when converting data.

Also of particular interest in quality evaluation would be the identification of outlier values, which might indicate a number of possible quality problems. Outliers can stem from a variety of sources. Some of the most common sources are: (1) Purely by chance. In "well behaved" samples, about one out of every 20 observations can be expected to be greater than 2 standard deviations from the mean, about one in a hundred can be 2.5 standard deviations from the mean. Presence of an outlier does not necessarily mean that there is a problem; (2) Failure of the data generating process. In this instance, outlier identification may be of extreme importance in isolating a breakdown in the experimental process; (3) A location being measured may not be homogeneous with the other locations; (4) Failure of the measuring instrument, whether equipment, human or a combination; (5) Error in recording the measurement, for example, on the data sheet or log, or in computer entry. Outliers will be identified: (1) to screen the data for further analysis; (2) to flag problems in the data generation process; and (3) to identify extreme points, which may be the only points of real interest (David & Paulson, 1965).

If outliers exist, the reason(s) for being so extreme will be identified, if possible. When initially identifying an observation as an outlier, it is of the utmost importance that the data be checked as to their accuracy in recording and data entry. This is usually, but not always, the easiest data verification that can be made. If an identified outlier(s) has been caused by data recording error, the value will be corrected and analysis can proceed. If it is determined that the data have been recorded correctly, investigation into other reasons why an observation is extreme will be conducted, if possible. If the data have been investigated thoroughly and other sources of error have been identified, it may not be possible to recover the true data (e.g., a measurement device was found to be incorrectly calibrated). In this instance, the only alternative is to throw out the contaminated data. However, all data which have the same source of error also will be eliminated, not just the extreme values.

Subjective or ad hoc methods of outlier identification are often used, such as graphical analysis or standardized observations. For exploratory or descriptive analyses, these are usually sufficient. Histograms, stem-and-leaf plots, and box plots can be used to pinpoint extreme values. Under some distributional assumptions, probability plots can be used. Standard statistical process control methods such as CUSUM charts can be used to determine outliers over time. Mapping of the individual exposure variables on the GIS will also provide information on possible outliers or clusters of outlying values. Exploratory spatial analysis (Goodchild, 1995) is another method of outlier detection, which also takes into account spatial location of the data, and will be used in this project as appropriate.

Outlier tests are more formal procedures which have been developed for testing for outliers when there is reason to believe a 'contaminated' observation or 'slippage' has occurred. When two or more outliers occur in a data sample, a test for a single outlier may not detect one outlier since the other outliers inflate the variance of the sample, thereby 'masking' the detection of the largest outlier. For this reason, it is also necessary to consider testing for more than one outlier. On the other hand, if more than one outlier is tested for and there are less than the specified number of outliers, one of two outcomes can occur: (1) The test may reject the null hypothesis of no outliers because of a large influence the true outliers have on the test, thereby identifying more outliers than there really are. This is an effect known as "swamping". (2) The true extreme values may not have enough influence over the nonoutliers to attain a significant test statistic, so no outliers are identified.

In conjunction with the graphical procedures described above, formal tests for single and multiple outliers for single variables include Grubbs' test (Grubbs, 1950 & 1969; Tietjen & Moore, 1972), Dixon's test (Dixon, 1950; 1951) and the range test (David, et al., 1954). Resistant outlier labeling is an exploratory data analysis technique (Tukey, 1977) related to the description of data using box plots. Hoaglin, et al., (1986) discussed the use of box plots in identifying possible outliers. Outlier labeling is resistant to masking.

Tests for mixtures of two normal components have been used to detect a small number of outliers (Aitkin & Wilson, 1980), i.e., when the mixing proportion is small relative to the sample size. The test does not require a pre-specification of the number of outliers, and classification methods can be used to separate the outlier group from the remainder of the sample. Sequential methods for detecting single variable outliers include an extreme studentized deviate procedure (Jain, 1981), a studentized range procedure (Jain, 1981), a sequential kurtosis (KUR) procedure (Rosner, 1975; Jain, 1981), Grubbs'-type tests (Prescott, 1979; Rosner, 1975, 1977).

In a univariate sample the definition of an outlier is obvious: an outlier is an observation which is separated from the remainder of the data. A plot of the data, whether a box plot, stem-and-leaf plot, histogram or probability plot, will show the outlier on one of the tails of the plot. For multivariate data, outliers can be more difficult to identify, since an outlier may not show in univariate plots of the marginal components. Similarly, an outlier may not show in bivariate or three dimensional plots, which reach the limit of our visualization (and plotting) capabilities in terms of the number of dimensions. Therefore, tests for multivariate outliers may need to incorporate multiple dimensions when used for this purpose. The nature of multivariate outliers is such that they may "outly" in one or more than one dimension; furthermore, an outlier could be greatly disparate in one dimension (or a small number of dimensions), or could be only slightly disparate in a number of directions. Because of the complex and multifaceted nature of multivariate outliers, most outlier detection procedures are somewhat informal.

As with any other type of analysis, examination of the data will begin with plots. Plots of the individual exposure variables will precede any more complex analysis. These will include univariate plots (e.g., histograms, probability plots or stem-and-leaf plots) of the individual components. Marginal plots also include bivariate scatterplots of all pairs of components, and three dimensional scatterplots of all triplets of components. Multivariate probability plots of the squared radii (Gnanadesikan, 1977) can also be used to detect outliers. Plotting the individual coverage layers on the GIS, as in the univariate case, also will be used to informally detect outliers. Additional types of multivariate plots useful for detecting outliers include principal components plots (Gnanadesikan and Kettenring, 1972), sample influence function plots (Devlin et al., 1975) and function plots (Andrews, 1972; Gnanadesikan, 1972).

The most well known formal test for multivariate outliers was developed by Wilks (1963), which is directly related to other multivariate measures used to detect outliers (e.g., squared radii, leverage values and Mahalanobis distance). Additional multivariate detection procedures include the sample influence function (Devlin, et al., 1975), a generalized gap test (Rohlf, 1975), the data matrix condition number (Hadi, 1987; Gillespie, 1993), robust methods (Rousseeuw & van Zomeren, 1990; Matthews, 1984; Campbell, 1980), a mean-slippage model (Schwager and Margolin, 1982), and a scale contaminated normal model (Berkane & Bentler, 1988).

Once a database has been evaluated and accepted for inclusion in the BNL exposure GIS, it may be necessary to evaluate updated data for the database which may be sent by the sponsoring agency/organization. Relevance of location and time and missing value concerns will be addressed for the updated data. Special outlier detection procedures for evaluating database updates will be used in the quality evaluation (Hawkins, 1984). In the event that more than a few outliers are detected in a database, it may be necessary to use techniques other than outlier detection methods to identify subsets of outliers, such as cluster analysis (Hartigan, 1975) or mixture models (Everitt and Hand, 1981). In this event, however, separated clusters of observations may be of interest in exposure or exposure/incidence-outcome analysis rather than exposure evaluation.

d. Completeness: Completeness includes the determination of the extent to which data are missing or imputed. Completeness will be evaluated in a number of ways, including determining the percent of measurements which are missing (as defined by a missing value indicator as defined in the database) and identifying time periods for which data are not available.

An initial quality evaluative procedure for a candidate exposure database will consist of determining the amount of missing data within the database. Within a database, missing data will generally be indicated by a missing value code or blank; missing data formats for individual databases will be identified from supporting documentation or from the resource agency contact person(s). The relative frequency of missing data within a database will be determined. For instance, a high relative frequency of missing data may be indicative of sampling bias.

e. Preliminary Data and Sample Analysis.

As an initial step prior to complete database ascertainment BNL has obtained the Toxic Release Inventory (TRI) database (NYSDEC, 1991). This was done in order to evaluate the data quality attributes and to enable ascertainment of the ease of conversion and use of a database prior to obtaining additional databases.

The TRI database, containing digital data layers, resulted from an application of the EPA Region II Geographic Information System (USEPA, 1994). The TRI System includes information on chemical releases, facility location, and medium to which the chemical is released. Facilities which manufacture, process, or use any of 345 designated chemicals in greater than specified amounts must report routine releases of these chemicals to EPA.

When viewed independently, the TRI database seems to effectively summarize the breadth of toxic dumping on Long Island and throughout the state. However, it merely scratches the surface. This is because the Superfund Amendments and Reauthorization Act (SARA) severely limits the inventory in several ways (Romalewski, 1992). One limitation has been inadequate enforcement due to the EPCRA failure to provide EPA with the authority to conduct on-site facility inspections; it has no explicit authority to fine for violations, but it has, "no explicit authority to inspect facilities for compliance." (Romalewski, 1992). Another limitation is that the wording permits many facilities, waste sites, chemicals, and release amounts to "fall through the cracks" and thus remain unreported. However, BNL researchers have already begun filling in the "cracks" by soliciting data from a diverse array of data resources.

A number of limitations have been identified to date in the TRI database: The TRI program only requires manufacturers to report the release of toxic chemicals. Therefore, many facilities which are releasing toxic chemicals are exempt from reporting to TRI because they are government supported (e.g., BNL) or small businesses (e.g., gas stations). Several additional sources of toxic pollution are not covered by TRI such as garbage and hazardous waste incinerators and landfills, urban, non-industrial stormwater runoff, hazardous materials spills, and pesticides on farms, golf courses, parks, and residential areas. Not all known toxic chemicals are covered by TRI. Other chemicals covered in one or more of the other federal regulatory programs are not included in the TRI reporting requirements. Lastly, TRI does not require the facilities to measure the actual releases or to separately report accidental or peak releases of chemicals; thus the data contained within are mostly estimates.

To address these limitations BNL has: (1) identified the TANKS database, maintained by the Suffolk County Office of Pollution Control, which pinpoints the location of all gas stations in the county; (2) identified over 80 databases which locate hazardous and municipal waste sites. In addition, hazardous materials spills will be covered in databases from: BNL, the NYS DEC, the U.S. Coast Guard, and the Suffolk County Water Authority as illustrated in the master list of candidate databases (Barancik, et al., 1995). Lastly, data on past pesticide use on farms has been uncovered back to the late 1800s at one data resource, and more than 50 other databases

containing data on pesticides on land and in water have been identified such as: Pesticide Applicators, Producers, and Sellers (NYSDEC), Agriculture Chemical Usage/Pesticide Use Surveys (USDA), Environmental Monitoring and Assessment Program (USEPA), and the National Human Adipose Tissue Survey (USEPA); (3) identified 97 other databases containing information on toxic chemicals other than pesticides; 35 of these are available in digital format. Some examples of the databases available in digital format are: Risk Assistant (USEPA), Industrial Chemical Surveys (NYDEC), Federal Reporting Data System (USEPA), and Integrated Risk Information System (USEPA); and (4) actively begun seeking other data sources in which amounts of chemical releases are provided, "accidental" or otherwise.

Fugitive emissions from the tanks can be treated as random events in order to determine if they are random or certain clusters of tanks are more likely to "fail", although depending on whether regular measurements are performed or are made only in response to complaints, the bias of such an analysis would have to be considered.

There are over 80,000 private potable water supply wells in Suffolk County, according to the Suffolk County Water Authority. Relative to the location of tanks, the location of the water wells could be added as an overlay, and the relative location of wells to tanks, their emission buffers and emissions could be estimated. This type of analysis would provide a measure of exposure to such toxics as gasoline/fuels at a parcel level which potentially can be used as a direct or surrogate measurement of individual exposure with far more locational specificity than can be obtained with non-GIS approaches.

This analysis will not necessarily provide measures of exposure to specific toxics such as components of gasoline and other fuels, unless the components of the fuels can be determined. These components change over time and location (Akland, 1993), and it is not likely that detailed historic records of fuel makeup would be available. Waste fuel, oil and other substance (e.g., antifreeze) dumping by automobile repair shops which do not have underground tanks would also not be accounted for. In addition, other routes of gasoline/fuel exposure would still need to be evaluated.

3. Availability/Accessibility:

a. Availability: Databases which are not available (e.g., due to poor cooperation of database agency) or which will be difficult to access will be given a low priority. However, extensive efforts will be made to acquire all available relevant data.

b. Confidentiality: Some potentially relevant data may be confidential. Databases which contain confidential data will be obtained subject to limitations and agreements as put forth by the source agency.

c. Data Protection: Data protection and encryption schemes used to safeguard the data will be examined to determine the ease of access.

d. Source: The source is the agency or individual from which the database information was obtained. Source agency will be evaluated in terms of cooperation, history of data quality and quality control procedures.

e. Security: Some potentially relevant data may be proprietary. Databases which are proprietary will be obtained subject to limitations and agreements put forth by the source agency.

f. Media: This criterion relates to the equipment and media upon which the data are available for transfer to BNL. Equipment relates to computer type (PC compatible, MacIntosh compatible, Sun/UNIX workstations or mainframe), while media relates to data format (e.g., disk, 8mm or 4mm tape, nine track tape, electronic transfer, hard copy). Due to the extensive computer resources available at BNL and the dedicated hardware and software for this GIS, the media equipment criterion is not expected to impact heavily on database selection. Media will be used as one of the secondary screen/prioritization criteria.

g. Format: When the data are supplied in a specific hardware media, they will be arranged in a file format. This file format may only be accessible by specific software programs, or may be accessible to virtually all software programs. For example, PC based file formats which can be read by a wide variety of software (or easily converted to such a format), including those used for GIS, are DBase and ASCII. Due to the extensive computer resources available at BNL and the dedicated hardware and software for this GIS, the format criterion is not expected to impact heavily on database selection.

h. Size: The size limitation of a database will be determined by the size of the hardware storage equipment which will be available. Due to the extensive computer resources available at BNL and the dedicated hardware and software for this GIS, the size criterion is not expected to impact heavily on database selection.

4. GIS Compatibility:

a. Digitizing Status: The digitizing status of each database will be evaluated with respect to the ease of conversion to the chosen GIS format(s). Digitizing status will be used as one of the secondary screen/prioritization criteria.

b. Map Attributes: The relevance of map/GIS database attributes will be assessed with respect to potential exposure parameters.

c. Coordinate System: The incumbent coordinate system of each database will be evaluated with respect to the GIS software and the ease of conversion.

d. Map Sizing: For GIS databases, map sizing refers to the level of resolution of the attributes for the database. For the BNL GIS, the degree of map resolution will be at the parcel/structure level. Databases which are not structured to meet this level of detail may require additional modification.

e. Resolution: The resolution of the data measurements will be important in determining the validity of individual exposures. For example, a database which contains a single exposure measurement for each County (e.g., if there were a single air pollution monitoring station located in each County) would be less useful than a database containing measurements from a larger number of stations within each County. The resolution will depend upon the type of data. For example, weather need not be measured on as small a scale as ground water.

In order to increase efficiency and jump start the GIS, a prioritization of the databases will be used to determine which databases will be evaluated first. Databases which are already in digitized computer format will be selected for the first round of in depth evaluation, since these databases will be closest to completion in terms of linking to GIS software.

The preliminary set of criteria which will be used to establish database inclusion priorities for this project which include the following: (1) data are a complete or partial coverage of Long Island (i.e., Nassau/Suffolk Counties); (2) data are computerized and digitized; (3) documentation is available, including a data dictionary, data collection on input forms, and a description of quality control procedures for data collection and entry; (4) exposure parameters in a database are in the set specifically identified in the Congressional mandate; (5) highest level of specificity of the exposure parameter(s) is specified; and (6) resolution to the parcel level is indicated. It is expected that many of these databases will not meet all criteria; however, those databases which satisfy the most criteria will receive the highest priority for further evaluation, inclusion in the GIS, and subsequent analysis. Final decisions on priorities will be established in collaboration with the BNL External Advisory Board along with the LIBCSP committees and NCI/NIEHS staff.

Criterion (1) is an all-or-nothing criterion: databases which definitely do not provide coverage of Nassau/Suffolk have been and continue to be excluded. Criteria (2) and (3) relate to the accessibility and quality of the data and therefore to the quality and timeliness of the final GIS. These criteria will be weighted more heavily than criteria (4) through (6) on the initial screen. Criteria (4) through (6) relate to the type and level of exposure measurements, which are less important at the initial screen but will be more important during the evaluation phase of the project. Therefore, a screening priority score could be constructed, for example, which gives scores of 0 to 5 for accessibility and supporting documentation and 0 or 1 for each of criteria (4), (5) and (6).

C. Preliminary criteria and guidelines for new or improved surveillance databases have been developed, and initial criteria for databases that need periodic updating to maintain a dynamic system have been identified.

Due to the capability and need for periodic updating, the GIS also will have the potential to provide an ongoing surveillance function by the end of Phase II, should that need be deemed appropriate. Phase II also will provide baseline GIS data essential for determining future exposure data needs and for

making recommendations for additional exposure measurements and databases. One difficulty may arise with data for which only hard copy is available. If the hard copy information is relevant to the GIS and is not available in any other format, the information will be abstracted and entered into databases created for this purpose. However, it is currently not known what level of effort will be needed for this initiative. For example, since November we have identified additional potential resources on environmental exposure information. Among these are the Nassau County Poison Control Center and the Suffolk County Cooperative Extension (Cornell). Poison Control has been maintaining a computerized database on reported pesticide exposures since 1991. They will be making this database available to us. The Suffolk County Cooperative Extension has been publishing articles, newsletters, and pamphlets related to crop and land use since the turn of the century. To date, over 1,000 documents potentially relevant to environmental exposures over time have been identified. An inventory of these documents (some of which contain recommendations published weekly since May 1917 for pesticide and herbicide application) is nearing completion. This inventory database is extremely important to the project because it provides information specific to Suffolk County which is not routinely available. It enables a more complete and comprehensive history to be developed of land contamination by toxic chemical compounds during periods when land use was mainly for agricultural purposes. It also allows chemical exposures through various land use patterns such as from agricultural to residential subdivisions to be traced. The inventory categorizes the type of document and briefly describes the information covered in each. However, to obtain the level of detail needed to replicate exposures over time, extensive review of documents, which contain information deemed useful for GIS purposes, will be required to enable abstracting, evaluating and computerizing relevant data.

D. Contacts with Federal, State, and local agencies and private sector organizations to participate in the GIS development process.

Contacts have been established with public and private entities collecting environmental, occupational, GIS, demographic, and other relevant data for Nassau and Suffolk Counties. All those contacted have agreed to share their data with BNL. These include Federal, State and local agencies.

Meetings have been held with representatives from various agencies and organizations who are potential data providers. These meetings were conducted to meet four objectives: to meet with the data manager and examine digitized/computerized data on their computers or review hard copy data in storage; to determine if non-digitized but computerized databases can be converted to GIS format; to develop the background file containing the data dictionary (if available) and data input forms (e.g., questionnaires, surveillance instruments and other related documents); and to locate previously unidentified databases and to develop new contacts for data acquisition. This procedure is especially important for identifying hard copy databases and data files for periods prior to the 1980s when conversion to machine readable format was far less prevalent than it has been in the last 10-15 years. For this retrospective project, some of the potentially important local databases for Nassau and Suffolk Counties are in hard copy,

such as the agriculturally related databases which contain recommendations on pesticide and herbicide use since 1917.

Following is a summary of the meetings with the various contacts and data resource providers:

1. National Cancer Institute (NCI). Regular communications have been maintained between BNL and the NCI LIBCSP Director and staff, as well as with the EPA liaison to the LIBCSP. These contacts have included meetings held at BNL, elsewhere on LI, NYC, and NCI in Rockville, Maryland. BNL anticipates participating actively in a number of LIBCSP committees to achieve the Specific Aims of this GIS project.

2. EPA Region II Office. The Epidemiology Program staff and representatives from NCI met with the EPA Region II GIS Coordinator to describe the BNL GIS and to obtain relevant exposure GIS information from EPA. The GIS work completed to date by EPA was reviewed and a GIS software demonstration was given by EPA staff. Since then, EPA staff and BNL have actively collaborated and have begun transferring digitized data from EPA computers to BNL computers. The most recent database acquisition has been from the Regulatory Features category of the EPA Region II GIS Library of Data Layers (USEPA, 1994). The library contains 10 categories of GIS data layers which, in addition to Regulatory Features, includes: Control, Administrative Area, Cultural Resource, Transportation/Utility, Terrain Feature, Biological Resource, Water Resource, Air Quality, and Image and CAD data layers. In a BNL-EPA transfer test, the EPA Toxic Release Inventory (TRI) database has been installed and validated on BNL computers using ARC/INFO. Therefore, no technical difficulties are anticipated in transferring the EPA Region II data to BNL.

More recently, EPA's Environmental Services Division, is attempting to combine TRI facility data with population demographic information to identify geographic areas which may be affected. This is an example of the benefits obtained from application of GIS technology to environmental exposure identification, location, and isolation as needed for this GIS.

3. Nassau (NCHD) and Suffolk (SCHD) County Health Departments. Regular meetings and ongoing phone conversations have been held with staff members of both health departments to identify the nature and characterization of their relevant databases, including the data formats (e.g., machine readable, hard copy, both). Both health departments are providing BNL with their full cooperation in obtaining environmental/ occupational exposure and GIS data relevant to the LIBCSP.

Data available from the NCHD include information on toxic and waste storage sites (including underground tanks) and groundwater testing. Most of these data are spatial, and no attempts have been made to incorporate temporal information. However, there is hard copy documentation in NCHD files on various exposures that date back to the 1970s, including industrial permits. At this point in time data which is available solely in hard copy is being identified for BNL.

SCHD primarily collects water quality data. Water testing data for public and commercial wells are available since the 1960s, much of which has been converted to electronic format. Water is tested regularly by SCHD for pathogens, organics, metals and pesticides. Organics testing began in 1978 and pesticide testing in the early 1980s. However, the list has expanded over time and many compounds presently being tested were not included initially. Therefore, it may be necessary to go back to hard copy records to determine specific historic contaminants and time frames.

One of the comprehensive and important databases maintained by SCHD is the TANKS Database. This database identifies and locates all known underground storage tanks, including those containing oil and gasoline by capacity, content, age and material of container, leakage data, and location which can be defined by latitude and longitude. SCHD also conducts testing related to superfund sites and spills. However, spill testing is conducted only when a problem is reported.

4. GIS Units of County Government. Nassau County has digitized every residential and commercial parcel in the County. They are currently going through quality control procedures to verify the accuracy of the GIS digitized data, such as determining that all parcel polygons are closed, in preparation for developing a county GIS base map containing parcel location, street addresses and all structures. The Suffolk County GIS base map is being developed by digitizing mylar maps for each town. However, the Suffolk County maps are "parcel" based and do not yet include addresses. It is expected that addresses will be included by the end of CY 1995 or early CY 1996. Both base maps are expected to be available in preliminary usable form by FY 1996, although the GIS base map for smaller areas (such as selected townships) will be available earlier. The county timetables for completing the base maps represent their best estimates at this time and are subject to change.

5. NY State Department of Environmental Conservation (DEC). The New York State DEC maintains multiple exposure databases which address specific areas of public concern such as water quality at public wells, reported toxic waste and spills, air pollution related to industrial emissions, pesticide records for companies or individual applicators, coliform bacteria contamination of marine and shellfish, and freshwater fish sampling (e.g., carp, perch, goldfish, eel), which are regularly sampled for heavy metals and pesticides (e.g., chlordane, DDT, PCBs).

Communications have been ongoing with various staff members at the regional DEC office. DEC staff have submitted lists of their databases and variables contained in each to BNL. In addition they are sending copies of abstracting forms, lists of data available in hard copy format, and inclusive time frames for electronic and hard copy data.

6. Suffolk County Water Authority (SCWA). The SCWA GIS contains most of the tax parcel mapping for Suffolk County Townships. SCWA will provide BNL with their water testing data and base maps. They are coordinating their activities through the Suffolk County GIS coordinator and Department of Health Services. BNL and SCWA have had an ongoing collaborative relationship to develop components of a Suffolk County GIS for a number of years.

7. Long Island Lighting Company (LILCO). Meetings have been held with LILCO Research and Development Division staff to present the BNL GIS project and to invite their participation in its development. More specifically, LILCO was asked to share with BNL selected data from their customer database(s) that identify and link service locations to street addresses and names. LILCO data has the capability to identify virtually every residential dwelling (individual and multiple units) and commercial, industrial, and public buildings, as well as other structures. It is anticipated that the LILCO database will be used in conjunction with GIS databases obtained from Nassau and Suffolk counties, as well as databases from NYNEX, the U.S. Census and Post Office, and other sources, for cross validation purposes and for location of dwellings and other structure addresses not identified through other sources. For example, LILCO data could be used to assist in the identification of dwellings and length of residence by dwelling locations. LILCO officials have expressed considerable interest in participating in GIS development. Confidentiality agreements between BNL and LILCO are being negotiated between the legal staff at each organization in order to assure complete protection of their proprietary database(s).

8. NYNEX. Meetings have been held with NYNEX staff to identify their telephone database(s) best suited for assisting BNL in searching for dwelling unit addresses and for cross validation purposes. More specifically, NYNEX databases will be important for identifying individual apartment units within multiple unit buildings where Lilco has a single service feed. NYNEX understands the importance of cross validation and address searching from multiple databases. Confidentiality agreements are being reviewed by the BNL and NYNEX legal departments to assure the protection of their proprietary database(s). Some historical data will be available only in hard copy format, such as telephone/street directories or their microfilm/microfiche equivalents, possibly through NYNEX and/or other private sector services.

9. U.S. Bureau of Census and U.S. Post Office. The Tiger and the ZIP plus 5 data files are available and currently operational on BNL computers as one means of defining local area boundaries.

10. Federal Communications Commission (FCC). The FCC is providing RF exposure and related data available from their databases and hard copy information. BNL is in the process of obtaining all computerized databases maintained by the FCC. These databases contain information on transmitters above 500 kHz and give data on tower location in terms of the latitude/longitude coordinates, height, power, frequency, and license information. Meetings with FCC officials have yielded valuable background information on such topics as RF emissions and antennae farms on Long Island. These data will be highly useful for developing models of differential field strength and RF propagation and direction at or near ground level.

One limitation of the FCC database is that their regulatory authority includes the private sector and state and local government agencies, but does not include federal agencies, military/defense, or 60 Hz transmitters. Therefore, this information is being requested from the Department of Commerce, National Technical Information Administration (NTIA), which regulates transmitters for

Federal agencies and military/defense units. BNL recognizes that security policies may limit access to some of this information.

11. Federal Aviation Administration (FAA). BNL has recently acquired the FAA Aircraft Emissions Database (FAEED) which contains emission factors for various aircraft engines and data correlating engines to specific aircraft (FAA AEE-110). In addition to browsing the data, the FAEED program enables the user to print the information and compute the total pollutants produced by a specified fleet. The FAEED User's Manual states that the database is, "likely to be useful to environmental impact statement preparers, air quality planners, and others who may need information about pollutants produced by a given aircraft fleet." Thus, this particular database will assist BNL in its developmental work to include aircraft emissions along with motor vehicle and other air emissions in the BNL exposure GIS. The FAA claims that the emission factors and emissions calculations included in the database have been verified and reviewed extensively. To assure that data remain current, the FAA plans on updating the FAEED as new emission factors become known.

The most recent version of the Emissions Dispersal Modeling System (EDMS) and Microcomputer Pollution Model for Civilian Airports and Air Force Bases has also been obtained by BNL. This database now includes the latest aircraft emission database (USEPA, 1992) and the latest motor vehicle emissions database (Mobile 5a). The EDMS permits complex air quality assessment modeling to be performed. A supplemental report (Segal, 1993): 1) expands on the emissions inventory portion of the model to accommodate ground support equipment and airport spray painting facilities; 2) condenses the emissions report into a one page printout; 3) summarizes calculated concentrations into hourly average time periods associated with each pollutant; 4) accesses the dispersion output file directly from the menu; 5) adds a gridding algorithm designed to permit the entry of up to 200 receptors into the model; and 6) expands the example problem procedure to accommodate gridding.

12. Poison Control. The Nassau County Poison Control Center has been collecting data on reported acute and chronic poisoning from exposures to pesticides and other chemicals. The database includes information on compound name, length of exposure (e.g., acute or chronic and time frame), and location of reported exposure. Data in computerized format is submitted quarterly to the National Database of the American Association of Poison Control Centers (AAPCC) Toxic Exposure Surveillance System (TESS). Annual detailed analysis of "epidemiologic patterns of toxicologic exposures" in the region are submitted to NYS DOH. The list of exposure variables in their data files along with hard copy forms used to obtain the data have been received. While Poison Control data cannot supply direct information on pesticide and other chemical applications, it has the potential to serve as a surrogate for specific chemical compound type and exposure location and time. It also has the potential to identify types of insecticides/chemicals/compounds found in various areas of the region and geographic locations of persons reporting adverse health effects.

In addition, since 1991 the Nassau County regional Poison Control office has maintained a separate database on pesticide poisoning which is being made

available to BNL. This database contains pesticide names and exposure type (acute/chronic) and location.

13. Cooperative Agricultural Extension. The Cooperative Extension is an Agricultural Advisory body operated by the Cornell University School of Agriculture. Since the turn of the century, they have been publishing newsletters and pamphlets which list the latest research and recommendations related to home and commercial care of lawns, crops, livestock and other farm/agricultural needs (Freeman, 1994; Sanok, 1994; CCE, 1994). Many Long Island residents, farmers, and commercial suppliers have relied over the years on recommendations from the Cooperative Extension to determine best methods for plant/lawn/agricultural care and insect and disease control. While the Cornell recommendations will not provide direct information on pesticide and other chemical applications, it can be used as a surrogate for agricultural applications over the years. Cooperative Extension staff have entered into a collaborative arrangement with BNL in preparation for reconstructing the agricultural history of the region. However, most of this information is in hard copy format and will require extensive efforts to consolidate and computerize, a task currently beyond the budgetary constraints of this GIS project.

14. National Weather Service (NWS). Historic weather data for the study region will be obtained from documents published by the National Weather Service containing daily weather data obtained from the 3 major airports (Kennedy, LaGuardia, Islip) located on LI. In addition, a number of local citizens are being paid to record weather data for smaller localities in the region. For example, one farmer on eastern Long Island has daily weather logs dating back to the turn of the century which he has offered to share with us. These logs (starting in 1901) document daily highs and lows, precipitation, wind direction, and wind speed (documented since 1955). This information will enable documentation of historic weather patterns, including wind direction and precipitation, to allow better replication of what may have occurred on a given day, for example, when a chemical was sprayed.

Staff from the BNL office of the National Weather Service are participating in the development of the BNL GIS. This Doppler Radar weather facility, erected in 1994, has state-of-the art weather forecasting equipment, capable of determining weather patterns within approximately a 250 mile radius. Currently they are not archiving their data, but have agreed to archive specific data for the LIBCSP (e.g., wind patterns by time, elevation, and location) as needed.

15. Northeast Regional Climate Center (NRCC). NRCC facilitates and enhances the collection, dissemination and use of climate data as well as monitoring and assessing climatic conditions and impacts in the twelve-state, northeastern region of the United States. Its activities are intended to further the economic efficiency and general welfare of public and private institutions and individuals in the region. NRCC's database includes a complete collection of historical climate data for the northeastern U.S. as well as continually updated NWS observations and forecasts. It includes data from a variety of sources, but the majority of data are collected at NWS Offices and cooperative observer network sites.

Data and information are disseminated to NRCC clients via telephone, FAX, computer networks and the mail. The NRCC also uses the Climate Information for Management and Operational Decisions (CLIMOD) system which provides clients having a computer terminal and either a telephone modem or an Internet connection with direct access to the data and information in the NRCC database. Data are also available in hard copy format. The NRCC also supplies digital data to its clients on diskette and on magnetic tape.

16. Historical Societies. Both Nassau and Suffolk Counties have local historical societies. Many villages and towns in the two counties have their own society or a resident historian. Information regarding changes in land use over time (e.g., from farm to residential subdivision, industrial and commercial) are preserved on hard copy documents. In addition, a number of these societies maintain phone books that date back to the late 1800s. This type of information would enable manual identification of residential and commercial properties over time, as well as address identification for individuals. For example, with this type of information it could be determined when farmland is/was converted to a shopping mall or gas station or converted to other uses such as residential developments. Substantial resources and time will be needed for such labor intensive tasks.

17. Long Island GIS Association (LIGIS). BNL Epidemiology Staff have attended presentations on new and updated ESRI products (ARC/INFO, ArcView and related modules), including an overview of the NYS Temporary GIS Coordination Council. ARC/INFO and MapInfo user group meetings were attended. A major concern within LIGIS is the development of procedures for GIS sharing rather than duplication because of the significant investment needed for developing an effective GIS.

18. United States Geological Survey (USGS) and Geochemical Health Analysis. USGS Scientists and the BNL Epidemiology Program staff have begun discussing a water-pesticide hypothesis for breast cancer etiology which may be consistent with the chlorinated compound related exposure hypothesis in the LIBCSP case-control study protocol.

19. Brookhaven National Laboratory (BNL). Through the GIS Internal Working Group, the Epidemiology Program staff has been in regular contact with various staff at BNL working on environmental exposure and GIS projects and/or GIS software. In particular, the Epidemiology Program staff has begun coordinating its GIS initiative with the work being conducted by the BNL Office of Environmental Restoration (BNL/OER, 1994). The OER is responsible for the "Super Fund" designated activities at BNL, which was placed on the EPA's National Priorities List in 1989. The OER work addresses a broad range of environmental exposure issues (including radiologic releases) potentially useful to the exposure GIS, such as sampling, tracing, and mapping possible sources of water contamination across the BNL site and selected adjacent areas.

As part of this process, BNL has developed an Environmental Map Atlas for Site Development which contains maps produced through research completed at BNL (BNL 1993). This Atlas contains maps of the following: wells (potable, supply and monitoring), cesspools and septic tanks, hazardous materials, storage

tanks, monitoring stations, service facilities, contaminated soil, recharge basins, emissions, and wetlands. Well monitoring information includes well location, dimension, and casing material.

20. Other GIS Resources. Discussions and meetings have been initiated with other agencies, organizations, and institutions having expertise in health related GIS development including Clark University, Colorado State University, Dartmouth College and Medical School, Pennsylvania State University, the National Center for Geographic Information and Analysis (NCGIA) at SUNY Buffalo, and the State of North Carolina.

21. Columbia University. The BNL Epidemiology Program staff and representatives from NCI LIBCSP met with Columbia University (CU) School of Public Health faculty to discuss the proposed LIBCSP case-control study. The BNL GIS project was described in order to familiarize the CU group with the general nature, type, and format of exposure data which will be available in the future for collaborative exposure-outcome studies. From an epidemiologic perspective, the two projects were viewed as complementary with respect to objectives, aims, methods, and anticipated outcomes. The projects have minimum overlap and maximum opportunity for collaborative interactions which will benefit the overall mission of the LIBCSP. The proposed interactions for Phase II are shown in Exhibit I of the Overview.

22. Nassau and Suffolk County Hospitals. Preliminary contacts have been established with administrative and medical records staff at Nassau and Suffolk County hospitals to facilitate the joint analyses of GIS and case-control data. BNL will work with these contacts as part of the collaborative effort with case-control study investigators from Columbia University. As stated in the Program Plan, this initiative is scheduled to continue during Phase II of the project.

E. BNL Internal Review Panel (IRP).

The BNL Associate Director for Life Sciences, Richard Setlow, has identified senior staff with expertise in GIS technology, medical and biological sciences, modeling, and applied mathematics to serve on the IRP that he will chair. The IRP will provide oversight for all aspects of the project. The Principal Investigator will report to the IRP approximately once each quarter. Members of the IRP include Medical Department Chair, Darrel Joel; Analytic Sciences Division Head, Ronald Peierls; and Information Services Division Manager, Diane Mirvis.

F. BNL External Advisory Board (EAB).

Plans for committee advisory input to the project were established in Phase I. Contacts have been made with national and regional experts in GIS, health, medical, chemical, water, air, other environmental/occupational exposures, and community breast cancer concerns. The Advisory Board is being established in preparation for Phase II to advise, consult, and provide external review for

the BNL GIS and will include specialists in GIS technology and development, spatial-temporal analysis, and scientific-cartographic visualization.

To date the following individuals have accepted appointments to the Board: Doreen Banks, Community Environmental Activist; Raymond Cowan, NY State DEC; Raymond Gerry Feder, USGS; Diane Sackett Nannery, Vice President, BC Help; Lorraine Pace, Community Breast Cancer Education Specialist, Department of Surgery, SUNY Stony Brook; Donna Peuquet, Department of Geography, Pennsylvania State University; Peter Rogerson, National Geographic Information and Analysis Center, SUNY Buffalo; Harvey Simon, EPA Region II GIS coordinator, NYC; and, Arthur Upton, Professor Emeritus, New York University and former Director, NCI (acceptance letters of participation in the Phase II RFP).

- G. A GIS Program Plan for Phase II has been prepared and submitted to NCI in November, 1994, as a separate document entitled: "Geographic Information System for Long Island: An Epidemiologic Systems Approach to Identify Environmental Breast Cancer Risks on Long Island."

The Phase II GIS Program Plan includes an explanation and breakdown of budget requirements. A separate IAG was approved by NCI for initial purchase of PC hardware and software for this project. Also included in the Phase II plan are additional hardware and software needs. However, identification of software, texts, and publications relevant to GIS data analysis (spatial, temporal, and spatial-temporal) will be ongoing. Visits have been made to software source and user facilities in order to better research and view demonstrations of those software options best suited for the needs of this GIS project.

IV. Significance of the BNL GIS

When completed, the GIS will be a comprehensive spatial and temporal system which will allow the identification of exact locations of features, parcels and environmental concentration measurements, and will allow the overlay of different types of information on the same map for visual assessment. The combination of currently available hardware (e.g., PCs, Sun servers and workstations, IBM RISC 6000 systems, and DEC VAX cluster) and software products (e.g., ARC/INFO, ARC/VIEW, MapInfo, IDRISI, CLUSTER, ORACLE), identified during Phase I, are capable of managing, integrating, displaying and analyzing the large quantities of complex and diverse data required of a GIS system.

The final BNL GIS will depict the location of various exposure parameters on a point, line or area basis. This GIS will then be available as a resource for determining first order estimates of individual exposures. The estimates from the GIS can be compared to the individual exposure estimates expected from the case-control study, (e.g., biomarkers, indoor air quality, dwelling tap water quality, and personal monitors) for consistency. The GIS can help construct past environmental exposure and long term residential address histories which ordinarily would be difficult to ascertain with accuracy through classical history taking or personal or telephone interviewing. The GIS can also

provide information on such issues as sample stratification for more cost-effective new or follow-up studies based on data acquired from the GIS, from the case-control study (LIBCSP), and/or from the NYS Cancer Registry. This GIS will provide more detailed spatial and temporal data useful for other purposes such as the construction of new or improved environmental risk indices.

While point and other locations of quantitative exposure concentrations based on direct measurement will be of use to the LIBCSP and other projects, existing spatial/temporal analysis methods can be used to further enhance the capability of the GIS to show associations between environmental exposures and breast cancer incidence and/or mortality. Spatial autocorrelation, spatial regression, Gaussian plume models and other methods of modeling dispersion of chemicals and other substances into the environment then can be used to more accurately estimate concentrations at sites (or dispersion surrounding a "point" source) other than those at which measurements were taken.

Thus, the BNL GIS will enable investigators to design more specific and focused studies for spatial and temporal analysis using GIS methodologies. This, in turn, will allow them to address spatial/temporal issues at the parcel/residence location level of spatial detail, a very important factor in its own right. The overall planning strategy for this project combines GIS techniques with exploratory, surveillance and descriptive epidemiologic techniques in preparation for evaluating and selecting databases for inclusion in the GIS. BNL anticipates that the resulting GIS will become a comprehensive research tool for identifying and defining environmental (and occupational) exposures and their potential relationship to breast cancer occurrence on Long Island. The GIS output can be disseminated widely, such as through the BNL WORLDWIDE WEB or the computer network available at all Long Island public libraries.

More generally, the GIS will also be available for use in the examination of other cancers and other diseases with possible environmental or occupational etiologies. For NCI and NIEHS, the GIS can serve as a foundation for ongoing surveillance on Long Island and become a prototype for use elsewhere, such as at SEER locations.

In addition, it is important to note that this is a data driven, open ended and iterative project conducted within a framework of broad resource, personnel, and time allocations as described in the Phase II Program Plan submitted in November 1994 and the Phase II RFP. Resource and time constraints could be viewed as potential limitations which, in turn, could have an adverse impact on the comprehensiveness of the final GIS.

V. Conclusions

During the four month project, an inventory of available resources was established to determine the feasibility of developing an environmental exposure GIS. This inventory identified: (1) available GIS tools, including GIS systems software, state of the art hardware, feature data and parcel level base maps of Nassau and Suffolk Counties; and (2) available environmental exposure data, including a large number of environmental exposure parameters of potential relevance, geographic coverages for both Nassau and Suffolk Counties, some with time frames measured in decades, and various environmental pathways.

Based on the initial inspection and review of computerized and hard copy data available for the LIBCSP region, the cooperation demonstrated by the various researchers, institutions, organizations and agencies who are already collaborating with BNL, it is clear that BNL can successfully develop and complete the GIS for the LIBCSP. When completed, the BNL GIS will have the capability to characterize and analyze complex environmental/occupational exposures and breast cancer risk patterns on Long Island both spatially and temporally. BNL anticipates that the GIS will become a significant resource for identifying and defining current and past environmental exposures, which in turn, may yield clues relevant to current breast cancer occurrence and may provide insights relevant to breast cancer prevention in the future. In addition, there is every reason to anticipate that this GIS will become a significant resource not only for the LIBCSP, but also for the scientific community in general and the public-at-large.

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TABLES

Table 1 (Revised). Broad Attribute Categories for Database Evaluation

[illegible]

Table 2. Preliminary Classification of Databases Identified for Possible Inclusion in the BNL Exposure GIS

[illegible]

* See Table 3 for more detailed breakdown.

Table 3. Preliminary Detailed Classification of Databases Identified for Possible Inclusion in the BNL Exposure GIS by Exposure and/or Feature Items*

[illegible]

Notes:

***Each database may contain more than one Exposure and/or Feature item.**

****Note: Additional exposure items will be included as they are identified.**

Table A
Distribution of All Databases and Those in Digital Format by Preliminary Generic Category

CODE	GENERIC CATEGORY	DATABASES		No. in Digital Format
		No.	Percent	
10	potable and other water *	137	29	60
06	toxic chemicals other than pesticides *	101	21	35
09	topography	95	21	48
05	hazardous & municipal waste *	88	18	44
02	pesticides *	55	11	19
12	geographic boundary specifications	43	09	30
13	climate/weather	37	08	05
08	demographic factors (census, other)	33	07	14
07	air pollutants/emissions *	33	07	08
11	soil	28	06	10
03	heavy metals including lead	22	04	09
01	ionizing radiation and EMF/EF *	18	04	06
14	roads/transportation	17	04	11
17	minerals/mining/land use/ecosystems	16	03	05
16	administrative and regulatory tracking/compliance	14	03	11
15	aeronautical/water navigation charts	10	02	04
04	asbestos	06	01	00
99	additional information required to classify	34	07	25
<p><i>Databases (currently N=467) may be classified into more than one category. Therefore, column totals do not sum to 100% and are not presented. Classifications are based on screened summary information and may change after further review.</i></p> <p><i>(*) Included in Congressionally mandated categories</i></p>				

TABLE B

Master List of Candidate Databases

(Note: As submitted with Original Closeout Report, N=419)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
1990, 1992 Census TIGER/LINE Files and Other TIGER Extract Products	Bureau of Census	Political and statistical area boundaries and codes, lat/long coordinates, feature names and types, and address ranges. Also hydrography, roads and transp. features	1990	08, 12, 14	Digital
Long Island Sound Study (LISS)	NYSDEC	Hypoxia, toxics, living marine resources, pathogens and floatables, with various fed, state and local entities involved	1985-1991	02, 05, 06	N/A
Low-Level Radioactive Waste Manifest Tracking System	NYSDEC	Transportation of low-level radioactive waste is tracked. 200 LLRW generators are located in NYS in 5 categories: industry, hospitals, universities, research organiz, and government	1987-present	01, 05	Manifests
Historic Tree Registry	NYSDEC	Compiled from nominations and updated every 10 yrs (next 2000) and includes tree name, owner, town, county and nominator. Includes Big Tree Register.	1990-2000	09	Registers
NE Pilot Lakes for EMAP-SW	ERL--Corvallis, Oregon	Info and location of NE Pilot lakes for 1991 and 1992 field seasons. Also TIMI? lakes for same years.	1991, 1992	10	N/A
Earthquake Epicenters	EPA Region I	From NY Geological Survey. Includes magnitude, locality, etc.	N/A	99	Digital
Computer Aided Management of Emergency Operations (CAMEO)	EPA Region I	PC-based system for emergency response planning and management. Contains data on 30,000 chemicals, plume modeling, facility chemical inventory and storage locations data.	N/A	05, 06	Digital
U.S. Hydrologic Units	ERL--Corvallis, Oregon	Hydrologic units for the continental U.S.	N/A	10	Digital
Breeding Bird Survey	ERL--Corvallis, Oregon	25 yrs of data from sample-frame-based-network with 2000 transects, avifaunal region boundaries, select summary metrics	25 years (specific years not supplied)	12	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Flood Insurance Maps	Federal Emergency Management Agency	100 and 500 year inundation boundaries	1970's to present	10, 12	Hard copy
Digital Shoreline Data	NOAA--Coast and Geodetic Survey	Digital shoreline from Coast and Geodetic Survey nautical charts, available as either a large-scale or small-scale data set	N/A	09	Digital
Guidelines for Developing Digital Environmental Sensitivity Index--Atlases and Databases	NOAA--Hazardous Materials Response and Assessment Division	NOAA publication that provides info on the history, coverage, and content of Environmental Sensitivity Index maps, as well as guidelines for the conversion of these data to digital format, for spill contingency and response planning and GIS use	Published 1984-1992	05	Hard copy
Topographic/Bathymetric Maps	NOAA--NOS	Includes bathymetric maps (sea floor topography), topographic/bathymetric maps (NOS bathymetry and USGS land topography), bathymetric fishing maps designed for use by commercial and sport fishermen	Compiled from 1975-1990/update schedule unknown	09	Hard copy
Conventional Nautical Charts	NOAA--NOS	Includes larger scale harbor charts for navigation and anchorage in harbors and small waterways, med. scale coast charts for coastwise navigation inside offshore reefs and shoals, entering large bays and harbors and navigating certain inland waterways	Compiled from 1975-1990/update schedule unknown	09	Hard copy
National Coastal Wetland Inventory	NOAA Strategic Environmental Assessment Division	Grid sampling of NWI maps and classification of coastal wetlands according to one of 15 habitat types	1972-1985 with 62% of air photos used having 1975-1981 dates	09	Digital
National Estuarine Inventory	NOAA Strategic Environmental Assessment Division	Series of related activities to develop a national estuarine database and assessment capability	1970-1985	10	Hard copy
National Shellfish Register Database	NOAA Strategic Environmental Assessments Division	Classified shellfish growing waters	1966-1990	02, 06	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Geographic Names Information System (GNIS)	Region II--obtained from USGS	Name info for all known places, features, and areas in the U.S. that are identified on USGS topographic maps by proper name. Data from the GNIS can be incorporated into other databases	N/A	09	Digital
National Resources Inventory (NRI) Database	Soil Conservation Service	Provides status, conditions and trends of soil, water and related resources	1977-1992	10, 11	Digital/Hard copy
Detailed Soils--Soil Survey Geographic Database (SSURGO)	Soil Conservation Service	County-level detailed soil survey geographic database (phys/chem, soil properties)	N/A	06, 10	Digital
General Soils Associations--STATSGO	Soil Conservation Service	State-level soils geographic database (soil boundaries, water boundaries)	N/A	10, 11	Digital
County Prime and Important Farmlands Maps	Soil Conservation Service	Classification of farmland as prime, unique or important. Other land, water areas, urban and built-up areas, roads, other transp. features, place names	N/A	11, 14	Hard copy
National Wetlands Inventory	U.S. Fish and Wildlife Service	Delineation and classification of wetlands	1979-1992	09	Hard copy/Digital
Atlantic Coast Ecological Inventory	U.S. Fish and Wildlife Service	Inventory of impt ecological resources along the Atlantic coast which could be impacted by coastal siting of refineries, petrochemical and gas facilities. Includes such attributes as aquatic organisms, terrestrial species, numbers, status, habitat boundary, areas of special biological concern (i.e. marshes and Class I shellfish waters) and salinity habitat boundaries.	1980/update schedule unknown	02, 06, 12	Hard copy
Digital Line Graph (Intermediate Scale)	USGS	US Public Land Survey, boundaries, transp, hydrography, hypsography, vegetative surface cover, non-vegetative features, man-made features survey control and markers	1980-1988	09, 10, 12	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Digital Elevation Model (Large Scale)	USGS	DEM data consist of an array of regularly spaced elevations	1983-1992	09	Digital
Digital Line Graph (DLG3) Files (Large Scale)	USGS	Digital representation of USGS 1.5 minute topographic quadrangle maps. Features US public land survey, boundaries, transport, hydrography, hypsography, vegetative surface cover, non-vegetative and man-made features, survey control and markers	1985-1992/update schedule unknown	09, 10, 12	Digital
Land Use and Land Cover	USGS	Generalized land cover/land use data. Avail in vector and grid cell format. Also political units, hydrologic units, census county subdivisions, federal land ownership, and state land ownership	1972-1985	09, 10	Digital
Digital Elevation Model (Small Scale)	USGS	DEM data consist of an array of regularly spaced elevations	N/A	09	Digital
National Uranium Resource Evaluation Data (NURE)	USGS	Geologic maps, aerial radiometric data, aeromagnetic data, data from hydrogeochemical and stream sediment analyses, geochemical data from rock sample analyses, radiometric data from borehole loggings, evaluation data for uranium resource estimates.	1974-1980	01, 06, 10	Digital/Hard copy
Hydrology Unit Maps	USGS	Hydrologic unit maps of each state showing the boundaries of river basins and providing a numerical code for each basin	N/A	10	Hard copy
Hydrologic Unit Boundaries	USGS and SCS	Delineation of hydrologic units according to USGS Hydrologic Unit Code (HUC), with possible extension to 14-digit code for subwatershed boundaries	N/A	10	Hard copy/Digital
STORET Monitoring Location (STORET_LOC)	EPA Region II--OPM/ISB	Contains all the NY stations info for STORET stations that have had data stored since 1985. This includes all surface water monitoring data. Does NOT include ground- water data.	Last modification date: 7/92	10	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Index Layer (County Boundaries)	EPA Region II--OPM/ISB	County boundaries derived from TIGER census data. For shoreline areas the boundary includes 3 mile limit	Compilation date: 8/91 Last modification date: 6/92	08, 12	Digital
TIGER Census Blocks (TIGER_BLK)	EPA Region II--OPM/ISB	Contains the block polygons for every 1990 census block. The coverage PAT file also contains population density and total population fields. Also includes an INFO demographic table containing 1990 census data related to each block. These data include total population, Hispanic origins, age, and the total number of housing units	February 1991 Publication date, May 1992 compilation date.	08	Digital
TIGER Census Points (TIGER_PTS)	EPA Region II--OPM/ISB	This point coverage contains the internal points for every 1990 census block. The coverage also includes an INFO table containing 1990 census data related to each block internal point. These data include: total population, race, Hispanic origin, age and the total number of housing units	February 1991 publication date May 1992 compilation date	08	Digital
TIGER Roads	EPA Region II--OPM/ISB	N/A	N/A	14	Digital
TIGER Railroads (TIGER_RRDS)	EPA Region II--OPM/ISB	Railroad coverage derived from TIGER line files	September 1991 publication date	14	Digital
Address Matched Roads (TIGER_ADR)	EPA Region II--OPM/ISB	TIGER 1990 Census line files with addresses	September 1991 publication date	14	Digital
CERCLIS Facilities (CERCLIS_FAC)	EPA Region II--OPM/ISB	Comprehensive Environmental Response, Compensation and Liability Act Info System (CERCLIS), i.e. Superfund site locations	August 1992 publication date	05	Digital

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
TRI 1989 Data (TRI89_FAC)	EPA Region II--OPM/ISB	Toxic Release Inventory Files. Contains info on over 300 toxic chemicals released or transported by facilities. The TRI system was mandated by the Emergency Planning and Community Right to Know Title III of the Superfund Amendment and Authorization Act. Data are for 1989	December 1989 publication date May 1992 compilation date	05	Digital
Point Population Data SF-171 (TIGER_PTS)	EPA Region II--OPM/ISB	Point coverage containing the internal points for every 1990 census block in the country. Also contains related attributes--total population, race, Hispanic origin, age number of housing units	February 1991 publication date May 1992 compilation date	08	Digital
DLG Hydrology (DLG100_HYD_A)	EPA Region II--OPM/ISB	Consists of hydrology lines taken from 1:100,000 DLG's	Last modification date 6/92	10	Digital
Administrative Boundaries	New York State Division of Equalization and Assessment	County, town, village, assembly districts, congressional districts, senatorial districts boundaries	N/A	09, 12	Digital
Climate	New York State Museum Biological Survey	N/A	N/A	13	Digital
Land Use/Cover	New York State Museum Biological Survey	N/A	N/A	09	Digital
Surficial Geology	New York State Museum Biological Survey	N/A	N/A	09	Digital
State Park Boundaries and Resources	NYS Office of Parks, Recreation and Historic Preservation	N/A	N/A	09, 12	Digital
NYS National Register of Historic Places	NYS Parks Management and Research Institute	N/A	N/A	99	Digital
County Boundaries (NYNE)	NJDEPE	County boundaries of NY State and New England	N/A	12	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Geographic Names	NYSDEC	Statewide point coverages by county from the USGS GNIS	N/A	99	Digital
Air Monitoring Stations	NYSDEC	Point coverage of the location of air monitoring stations in NY State from the NYSDEC Division of Air Resources	N/A	07	Digital
Campgrounds and Day Use Areas	NYSDEC	DEC Campgrounds, day-use area inventory data, camper profiles from campground permits	1980-present	99	Digital
Mines	NYSDEC	Statewide point coverage of mines from the NYSDEC Division of Mineral Resources	N/A	09, 17	Digital
Gas and Oil Wells	NYSDEC	Statewide point coverage of gas and oil wells from the NYSDEC Division of Mineral Resources	N/A	09	Digital
Regulatory Compliances Information System (RCIS)	NYSDEC	Statewide point coverage of all NYSDEC permitted facilities within the Division of Regulatory Affairs--Regulatory Compliance Information System	N/A	05	Digital
Forest Protection (Insects and Disease)	NYSDEC	Forest Health problems in NYS monitored for insect and disease damage	1985-present	99	Hard copy
Roads	NYSDEC	Statewide line coverage by county from the USGS 1:100,000 DLGs	N/A	14	Digital
Railroads	NYSDEC	Statewide line coverage by county from the USGS 1:100,000 DLGs	N/A	14	Digital
Hydrology Data	NYSDEC	Statewide hydrology data available in both DLG and ARC/INFO format	Current	02, 10	Digital
Hydrology	NYSDEC	Statewide line coverages by county from the USGS 1:100,000 DLG's	N/A	02, 10	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Land Acquisition Program	NYSDEC	NYSDEC has acquired title, easement, or placed under agreement to acquire a total of 331,367 acres. Over 3.0 million are protected. Real Property files include land use title data (deeds, abstracts, etc), and land survey maps for all lands under NYSDEC jurisdiction	1700s-present	08, 09	Hard copy/Digital
Tidal Wetlands	NYSDEC	GIS project inventorying 25,000 vegetated acres of tidal wetlands in Regions 1,2 and 3 south of the Tapanzee bridge	1974	09	Hard copy/Digital
Political Boundaries	NYSDEC	Political boundary data include town, county, state and DEC regional boundaries and are available in ARC/INFO format	Current	12	Digital
Political Boundaries	NYSDEC	Statewide polygon coverages of state, county, and town boundaries developed by NYS DOT at 1:24,000	N/A	12	Digital
Endangered, Threatened, and Special Species	NYSDEC	Status, distribution, location, and productivity data concerning 3 endangered, 18 threatened, and 34 special concern species	1976-present (some historic)	99	Hard copy/Digital
Fisheries Database (Biosurvey)	NYSDEC	Survey data for over 100,000 sites on streams and ponds throughout the state. Fish species composition main data type, but also have information on water chemistry, aquatic vegetation and invertebrates, gear, physical/morphological characteristics for streams and ponds, and comments concerning pollution, fishing quality, and endangered species	1926-1990	06, 10	Hard copy/Digital
Invertebrate Collection Information	NYSDEC	Over 600 stream sites statewide have been sampled. Data include species, quantity, flesh, samples (PCB's, heavy metals, pesticides), and water chemistry	1972-present	03	Hard copy/Digital
Ecological Zone (ECO)	NYSDEC	Polygon coverage of NYSDEC ECO Zones, developed by the Division of Fish and Wildlife	N/A	09, 12	Digital
Wildlife Management Units (WMU)	NYSDEC	Polygon coverage of NYSDEC Wildlife Management Units, developed by the Division of Fish and Wildlife	N/A	12	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Natural Heritage Program	NYSDEC	Polygon coverage of statewide rare animal and plant species habitats as developed by the Division of Fish and Wildlife	N/A	99	Digital
Air Quality Modeling Data	NYSDEC	Permit issuance based upon this data for compliance with AAQS and PSD. Computerized models developed to show atmospheric dispersion of pollutants and determines concentration projections around these sources	1978-present	07	Hard copy/Digital
Oil and Gas Wells	NYSDEC	20,000+ oil and gas wells including solution mining, natural gas storage facilities, geothermal wells, stratigraphic wells, and brine-disposal wells	Pre-1900-present	09	Hard copy/Digital
Public Water Supplies	DSA NYSDEC	Water supply permits contain information on water service areas, total water availability, and approved quantities of water allowed to be taken from wells and surface water sources	1905-present	10	Hard copy
Coastal Erosion Hazard Areas	NYSDEC	Coastal erosion info on 3200+ miles of coastline and adjacent lands.	1983-present	09	Hard copy
Rivers Program	NYSDEC	GIS Project for New York State Rivers inventory, with Wild, Scenic, and Recreational Rivers. 120 river segments are designed for a total of 1300 miles	Variable: updated annually	09, 10	Hard copy/Digital
Dams	NYSDEC	5700+ dams tracked and hazards rated. Complete geology, soils and topography on high hazard dams	1870s-present	09, 11	Hard copy/Digital
Primary Aquifers	NYSDEC	GIS project to manage data on 18 NY State Primary Aquifers through mapping, identifying, and developing techniques to present the information to a variety of users. The hydrogeological characteristics of the aquifers are described in the following maps: surficial geology, aquifer thickness, potentiometric surface, well yields, water infiltration potentials, and aquifer outline	1984-present	10	Hard copy/Digital
Surface Water Classification	NYSDEC	Description, quad map references, water quality classification, and water index numbers for lakes, rivers, and marine waters	1960s-present	06, 10	Hard copy

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Primary Aquifers	NYSDEC	Statewide polygon coverage of primary aquifers from the NYSDEC Division of Water Resources	N/A	09, 10	Digital
Hazardous Waste Sites (Inactive)	NYSDEC	1,400 inactive HWS's. To ensure that potential threats to fish and wildlife from these sites are considered in the remediation process, NYSDEC Div. of Fish and Wildlife has established a Site Evaluation Unit in the Bureau of Env't. Protection. The Dept of Health provides health risk assessments used with environmental data to classify sites	1979-present	05	Hard copy/Digital
GIRAS	NYSDEC	Statewide polygon land use data from the Geographic Information and Retrieval Analysis System from USGS at 1:2,450,000 scale	N/A	09, 17	Digital
Land Use and Land Cover Inventory	NYSDEC	Originally USGS-produced land use/land cover inventory called GIRAS (Geographic Information and Retrieval Analysis System)	1976-1986	09	Digital
Inactive Hazardous Waste Sites	NYSDEC	Statewide point coverage of inactive hazardous waste sites as developed by the Division of Hazardous Waste Remediation	N/A	05	Digital
Priority Inactive Hazardous Waste Sites (Top 400)	NYSDEC	Statewide point coverage of the highest priority inactive hazardous waste sites	N/A	05	Digital
DEM	NYSDEC	Statewide one degree Digital Elevation Models at 1:250,000 from the USGS	N/A	09	Digital
Hydrologic Unit Code (HUC) Boundaries	NYSDEC	Statewide polygon coverage of the USGS Hydrologic Unit Codes	N/A	10, 12	Digital
Flood Plain Management and Flood Control	NYSDEC	Flood hazard areas, flood control projects, 100 and 500 year inundation limits, complete basin hydrology, and stream hydraulics on 1500 communities	1975-present	10	Hard copy/Digital
Freshwater Public Fishing Access	NYSDEC	Easements, boat launch sites, fishing, parking areas, and footpath right of ways	1936-present	99	Hard Copy

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
State Forest Inventory	NYSDEC	Includes access data (roads, trails, etc) and boundary lines. Data stored on maps and computer used to calculate statistics and summarize for timber management reports	1950s-present	12, 14	Hard Copy
Marine Finfish and Crustacean Population Studies	NYSDEC	Ongoing studies: flounder, weakfish, ichthyoplankton, striped bass (W, Long Island), lobsters (Long Island Sound), , lady crabs (Great South Bay), and plankton	1970's-present	05, 06	Digital
Marine Fishing Public Access Sites	NYSDEC	250+ marine recreational fishing access sites identified, including small boat launch ramps, fishing piers, and beach sites. Inventory taken from data compiled in 1982. Total number of facilities has not changed significantly since then; however, numbers of residency restricted facilities have changed	1982-present	99	Hard Copy
Land Application and Composting Facilities	NYSDEC	40+ composting facilities & 60 land application sites permitted statewide	1978-present	05	Hard Copy
Landfills	NYSDEC	Municipal, construction, demolition debris landfills and Long Island landfills--about 250 statewide	1977-present	05	Hard Copy
Medical Waste Storage, Treatment, and Disposal Facilities	NYSDEC	Majority of facilities regulated by the Department of Health, DEC regulates about 10	1988-present	05	Hard Copy
Recyclables Handling and Recovery Facilities	NYSDEC	Data on tonnage of recyclables removed from waste stream presently collected at 50+ facilities statewide. Recyclables handling and recovery facility means a Solid Waste Mgmt Facility other than collection and transfer vehicles, at which recyclables are separated from the solid waste stream or at which previously separated recyclables are collected.	1989-present	05	Hard Copy/Digital

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Solid Waste Incinerators	NYSDEC	20+ solid waste incinerators and 2 Refuse-derived Fuel Processing Facilities permitted. Includes incineration ash chemical analysis data. The latter is a combination of structures, machinery or devices used to reduce the volume of mixed solid waste before delivery to an incinerator--a device to break down solid waste to an ash residue with few combustibles	1980-present	05, 06	Hard Copy/Digital
Transfer Stations (Solid Waste)	NYSDEC	About 400 transfer stations statewide. They are solid waste management facilities other than a materials recovery facility. Transfer stations may have a combination of structures, machinery or devices where solid waste is taken from collection vehicles and placed in other transfer units for movement to another facility	1970s-present	05	Hard Copy
Waste Oil Storage, Reprocessing, and Refining Facilities	NYSDEC	About 25 facilities. Waste Oil means used engine lubricating oil and any other oil incl, but not limited to, fuel oil, motor oil, gear oil, cutting oil, transmission fluid, hydraulic fluid, vegetable oil, which has been contaminated and has not been subsequently re-refined	1989-present	05	Hard Copy/Digital
Waste Tire Storage Facilities	NYSDEC	Several hundred waste tire storage facilities exist statewide. Waste tire means any tire that has ceased to serve the purpose for which it was initially intended due to factors such as, but not limited to, wear or imperfection and has been discarded. Facility name, address, number of tires, information	1989-present	05	Hard Copy/Digital
Geological Services Files	NYSDEC	Surfical & bedrock geology, complete soil survey set, various geotechnical projects and studies	1913-present	09	Hard Copy
Shellfish Water Monitoring and Population Studies	NYSDEC	1000+ water monitoring stations within 75 shellfish growing areas (1.2 million acres) tested for water quality. Shellfish permit data and pollution source inventories also maintained	1960s-present	02, 06, 10	Hard Copy
Groundwater Resources	NYSDEC	USGS Groundwater Site Inventory (GWSI) of 25,000+ water wells and logs. County and Basin Groundwater Resource Reports available on nearly all counties	1930s-present	02, 03, 06, 10	Hard Copy

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Lake Water Quality Assessments	NYSDEC	Water chemistry data for 1800+ lakes. Special studies include urban runoff, Lake George, acid rain, inventory surveys, water quality classifications, and the Adirondack Biota Project	1980-present	02, 06, 10	Digital
Long Island Aquifer Management	NYSDEC	GIS project to assist in the management of the quality of the Long Island Sole Source Aquifer	Mid-1970s-present	10	Digital
Freshwater Wetlands	NYSDEC	Inventory of all regulated wetlands in NYS. Polygon coverage of statewide regulated freshwater wetlands by county as developed by the NYSDEC Division of Fish and Wildlife. Work is not completed.	1980's	09, 12	Hard Copy/Digital
Hazardous Waste Site CAD Drawings	Region II--HWCB	Site drawings used to support inspection/enforcement activities of Region II Hazardous Waste Compliance Branch (HWCB)	N/A	05	Digital
1990 Census of Population and Housing Summary Tape Files	Bureau of Census	1990 detailed census data for population and housing by varying geographic coverages published as a series of four types of summary tapes (SFT 1-4).	1990	08	Digital
Population Estimates and Projections	Bureau of Census	Estimates of population in between census years, and projections of future populations	1990/ updated annually	08	Hard Copy
Risk Assistant	Devel. by EPA Exposure Assessment Group; available through Thistle Publishing Company	Analytical tools and databases to assist development of exposure and risk assessments of chemically contaminated sites. From site specific chemical concentration data the system provides numerous different types of reports on screen, disk or hard copy.	Chemical toxicity info updated on a monthly basis	06	Digital
Radiation Sites Database (RSDB)	EPA Region II	Provides name and address of radiation sites in the Region	N/A	01	Digital
Dun & Bradstreet	EPA Region II	Contains Dun & Bradstreet market identifier file, which includes info on all companies with credit ratings in the market	N/A	99	Digital

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Spill Prevention, Control, and Countermeasures (SPCC)	EPA Region II	Oil shortage facilities database for inspections and requirements	Frequently updated-following inspections	16	Digital
Facility Index System (FINDS)	EPA Region II	Provides a cross index for facility permit databases	Continually updated	99	Digital
Federal Reporting Data System (FRDS)	EPA Region II	Public water supply compliance database for SDWA monitoring requirements, maximum containment levels. Provides data for program oversight by EPA	Updated quarterly	06, 10	Digital
Contractor Listing Docket System	EPA Region II	Tracks info on contractors who have been listed as ineligible for EPA contracts under the CAA and CWA	N/A	99	Digital
Civil Docket	EPA Region II	Case activity tracking for enforcement cases	N/A	99	Digital
Federal Facilities Inventory System (FFIS)	EPA Region II	Serves as a tool for monitoring and planning projects which are intended to bring federal facilities into compliance with environmental regulations	Major updates twice/year	05	Digital
Federal Activities Computerized Tracking System (FACTS)	EPA Region II	Tracks Environmental Impact Statement (EIS), 309 and 201 project review activities	N/A	16	Digital
Superfund Enforcement Support System (SESS)	EPA Region II	Supports Remedial Project Manager (RPM) activities for National Priorities List (NPL) sites. Site data, waste data, Principle Responsible Party data	N/A	05	Digital
Underground Storage Tanks Data Management System (UST-DMS)	EPA Region II	DMS used for management of underground storage tank data	N/A	05	Digital

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Environmental Response Notification System (ERNS)	EPA Region II and also through the NCC	Records info on release of oil and hazardous substances into the environment	Daily updates	01, 05, 07	Digital
Underground Injection Control System (UICS)	EPA Region II and through the NCC	Inventory of UIC wells in the Region for permit compliance monitoring and inspection/ enforcement tracking.	Updates based on inspections which are not done at regular intervals	05	Digital
Contract Laboratory Program Analytical Results Database (CARD)	EPA Region II--Contract Laboratory Program--through NCC	Database to support Superfund RI/FS work. Contains ground and surface water sampling results	N/A	05, 10	Digital
Geographic Names Information System (GNIS) Database	EPA Region II, EPA Region III	Contains primary info for all known places, features, and areas in the U.S. identified by a proper name	N/A	08, 09	Digital
PCB Activities Database System (PADS)	EPA Region II from HQ	Provides data on PCB waste handlers (name, address, etc)	Quarterly updates	05, 06	Digital
Federal Facilities Tracking System (FFTS)	EPA Region II--OPM/EIB	Contains compliance tracking data for federal facilities	Monthly updates	16	Digital
Aerometric Information Retrieval System (AIRS)	EPA Region II--through NCC	Consists of 4 subsystems: Air Quality (AQS), Air Facilities Subsystem (AFS), Geo-Common Subsystem (GCS) and Area/Mobile Sources (AMS)	AQS updated weekly, AFS updated daily	07	Digital

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Biennial Reporting System (BRS)	EPA Region II--through NCC	Tracks trends in hazardous waste management with regard to capacity, source reduction and recycling	Biennial updates	01, 02, 03, 05, 06, 07, 10, 11	Digital
Resource Conservation and Recovery Act Information System (RCRIS)	EPA Region II--through NCC	Tracks permit, compliance and corrective action of hazardous waste generation, storage, treatment and disposal facilities	Daily updates at regional level; monthly updates at NCC	05	Digital
Comprehensive Environmental Response, Compensation and Liability Act Information System (CERCLIS)	EPA Region II--through NCC	Supports management and oversight of site-specific superfund activities, tracking activity from initial discovery through closeout	Weekly updates to regional system; monthly updates to NCC	05	Digital
Toxic Chemical Release Inventory System (TRI)	EPA Region II--through NCC	Data from facilities on the amount of over 300 toxic chemicals released into the air, land and water or transported off-site. These data are reported under SARA Title III Section 313	Yearly updates	05, 06, 07, 10	Digital
Permit Compliance System (PCS)	EPA Region II--through NCC	Tracks permit, compliance and enforcement status of NPDES facilities	Updated twice weekly at NCC	16	Digital
Grants Information Control System (GICS)	EPA Region II--through NCC	Contains administrative, project and financial data for all EPA grants, interagency agreements, and cooperative agreements	N/A	99	Digital
Needs Survey (NEEDS)	EPA Region II--through NCC	Contains an inventory of existing and proposed wastewater systems and estimation of projected needs, including costs	N/A	05, 10	Digital
Superfund Litigation System (SLS)	EPA Region II--through NCC	Tracks information related to hazardous waste site dumping	N/A	05	Digital

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Record of Decision Database System (RODS)	EPA Region II--through NCC	Tracks Superfund site cleanups and justifies the type of treatment chosen	Updated on an ongoing basis	05	Digital
Emergency Planning and Community Right to Know Act (EPCRA)	EPA Region II--through NCC	Identifies facilities not meeting EPCRA's reporting requirements, and supports inspection targeting and noncompliance notification processing	N/A	16	Digital
Laboratory Data Management System (LDMS)	EPA Region II--through NCC	Tracks ambient monitoring lab sample analysis done in EPA Region II's laboratory facilities in Edison, NJ. Stores results, provides reports and converts data for entry into national systems such as STORET	Updated daily	16	Digital
Reach File 3 (RF3)	EPA Region II--through NCC	Identifies all streams, lakes, reservoirs, coastlines and estuaries in the U.S. by segment	N/A	09	Digital
Storage and Retrieval of U.S. Waterways Parametric Data (STORET)	EPA Region II--through NCC	Repository of waterway parametric data, including ambient and effluent monitoring data, intensive surveys, and biological water quality data. Contains Water Quality System, Daily Flow System, Biological System and Fish Kill File	1960s-present	06, 10	Digital
Waterbody System (WBS)	EPA Region II--through NCC	Contains water quality inventory and assessment data of the states (not raw data)	Updated biannually	06, 10	Digital
Ocean Data Evaluation System (ODES)	EPA Region II--through NCC and PC version	Primary source for maintaining, retrieving, and analyzing marine, estuarine, and freshwater data	N/A	10	Digital

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Health and Nutrition Examination Surveys (NHANES)... Hispanic Health and Nutrition Examination Surveys (HHANES)	National Center for Health Statistics	Statistical databases on the prevalence of diseases, distribution of physiological and psychological measurements in the general population, and nutritional status of the population over time.	NHANES I (1971-1975), NHANES II (1976-1980), HHANES (1982-1984) and NHANES III is currently underway (however, it is not available in digital form yet)	08	Digital/Hard Copy
Natality Databases	National Center for Health Statistics, Division of Vital Statistics	Collection of birth records in a national registration system. The data are obtained from certificates filled for births occurring in each state. Starting in 1972 all records were included for States that participated in the Vital Statistics Cooperative Program. Starting in 1985, all States and the District of Columbia participated	Varies by database; from 1964-1988	08	Digital/Hard Copy
Mortality Databases	National Center for Health Statistics, Mortality Statistics Branch	Mortality Data, by underlying cause of death, including all deaths occurring within the US. Deaths of U.S. civilians and deaths of members of the Armed Forces occurring outside the US are not included	1968-1988	08	Digital/Hard Copy
Fetal Death Databases	National Center for Health Statistics, Mortality Statistics Branch	Fetal death data are obtained from all reports of fetal death received from the 50 states and District of Colombia for fetal deaths occurring in those areas. Fetal deaths occurring to US Citizens outside the US are not included	1982-1988	08	Digital/Hard Copy
National Wild and Scenic River System Database	National Park Service	Collection of data on wild and scenic rivers of the nation	1970's-1980's (biennial updates)	09	Digital/Hard Copy
Climatic Data	NOAA-NCDC	Includes digital files such as Surface/Land, Daily Cooperative Summary of the Day, First Order Summary of the Day, Surface/Land Summary of the Month, Surface Airways Hourly	1940's-present	13	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
NOS Hydrographic Database	NOAA-NOS	Provides accurate and extensive digital bathymetric data for coastal waters. Consists primarily of depths, but also navigational hazards and bottom characteristics digitized from the plots of hydrographic surveys completed between 1930 and 1965, and from survey data acquired digitally in the field since 1965	1930-present	Digital	
Estuarine Living Marine Resource Program	NOAA Strategic Environmental Assessment Division	Contains life history, relative abundance and distribution of fishes and invertebrates in estuaries	N/A	02, 06	Digital
National Coastal Pollutant Discharge Inventory Program (NCPDI)	NOAA Strategic Environmental Assessments Division	Grid sampling of NWI maps and classification of coastal wetlands according to one of 15 habitat types	1972-1985, with 62% of air photos used having 1975-81 dates	02, 03	Digital
Integrated Risk Information System (IRIS)	System developed by USEPA OHEA; available on Region II LAN	An on-line database of health risk and EPA regulatory info on over 500 chemicals. Includes Reference Doses and Reference Concentrations for non-carcinogens, and unit risk values for assessing cancer risks from exposure to carcinogens by the oral and inhalation routes	Updated monthly	06, 07	Digital
Marine Pollution Retrieval System	U.S. Coast Guard	Contains details of pollution incidents in the coastal and inland zone where the Coast Guard is involved in on-scene coordination	1984-present	06	Digital
North American Breeding Bird Survey Database	U.S. Fish and Wildlife Service	Provides uniform basis for assessing long-term trends in avian populations	1966-present	99	Digital
State Water Use Data System	USGS	Collects and stores water use information to determine water withdrawal levels and purposes, water consumption, and water return to source	1950-present	10	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
WATSTORE-NWIS	USGS	Contains location, chemical and flow information on surface and ground water data collected by USGS-Water Resources Division. Contains major files of Station Header, Daily Values, Groundwater, Water Quality and Peak Flow	1971-present	06, 10	Digital
National Compliance Database (NCDB) and FIFRA/TSCA Tracking...System (FTTS)	EPA Region II	Tracks compliance data under FIFRA and TSCA	N/A	16	Digital
Quality Assurance Tracking System (QTRAK)	EPA Region II	Tracks and catalogs environmental monitoring projects and associated quality assurance activities	N/A	16	Digital
State Environmental Quality Review Data (SEQR)	NYSDEC	The primary tool is the Environmental Impact Statement. A typical EIS contains info on a wide range of subjects.	1978-present	16	Digital
Ambient Air Quality Data	NYSDEC	Air pollutants measured at 150+ monitoring sites across NY State	1956-present	07	Hard Copy
Breeding Bird Atlas Survey	NYSDEC	Survey of bird nesting activities of over 240 bird species in NY State	1980-1986	99	Digital
Fish Stocking and Hatchery Records	NYSDEC	Number, species, size of fish produced at 12 hatcheries, with stocking information and location. Approx. 3000 stockings per year	1940's-present	99	Hard Copy
Game Species	NYSDEC	Various databases such as Deer Take, Furbearer Pelt Tag System, Upland Gamebirds, Turkey Harvest, Waterfowl, etc.	1960's-present	99	Digital
Natural Heritage Program	NYSDEC	Rare plants, rare animals, and rare and exemplary communities	1980-present	99	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Wildlife Pathology Data	NYSDEC	Information on wildlife specimens submitted for pathological examination	1984-present	99	Digital
Forest Fire Reports	NYSDEC	Reports of forest fires occurring in commercial forests, non-commercial forests, and non-forested watersheds	1985-present	99	Digital
Sporting Licenses	NYSDEC	Hunting/Fishing Licenses and Deer Permits	1989-present (licenses) and 1984-present (permits)	99	Hard Copy/Digital
State Anglers' Survey Data	NYSDEC	A third statewide survey of resident and non-resident fishing experiences. Data provide a perspective on the economic value of fishing in NYS	1973, 1976-77, 1988	99	Hard Copy
Air Pollution Source Emissions	NYSDEC	Characterizes each source's emissions by CAS number and by hourly and annual emission rates. Primarily derived from permit-to-construct, certificate-to-operate applications, and enforcement documents. Administrative & technical info from each facility and air emission source regulated by NYSDEC Air Resources	Mid 1970's-present	07	Hard Copy
Aquatic Pesticide Permit	NYSDEC	Approximately 300 aquatic pesticide permits are issued yearly	1970's-present	02	Hard Copy
Hazardous Waste Treatment, Storage, and Disposal Facilities	NYSDEC	Hazardous waste generators (8,000), treatment facilities (160), and transporters (1,000). Permitting, compliance, and enforcement for generators and treatment facilities	1983-present	05	Digital
Pesticide Applicators, Producers, and Sellers	NYSDEC	Listing of over 35,000 applicators and 3,200 sellers of pesticides, and Product Registration lists of over 12,000 pesticide products	1970's-present	02	Hard Copy

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Radioactive Material Discharge Permits	NYSDEC	30 facilities (e.g. hospitals, manufacturers, pharmaceutical) are currently permitted. Enables the Bureau to track permit renewals and schedule facility inspections	1985-present	01, 07	Digital
Regulatory Compliance Information System (RCIS)	NYSDEC	RCIS contains records of regulated facilities and the applications/permits assoc. with them and is a permit application tracking system used to assist in the timeliness and quality of decision making. The system links facility with activity (permits) and applicant/permittee data. The database contains a summary of permit application info received and stored on paper at the regional offices.	1986-present	05	Digital
Chemical and Petroleum Spills	NYSDEC	10,000+ petroleum and hazardous chemical spills logged, and there are 4 categories of cleanup service contracts. The Spill Response Program is responsible for handling these logged spills per year statewide. This includes source and cause investigation, determination of necessary cleanup actions, and overseeing the actual cleanup	1986-present	06	Digital
Chemical and Petroleum Bulk Storage	NYSDEC	Chemical bulk storage (1800 facilities) including both above and under-ground. Petroleum bulk storage (50,000) and Major oil storage (500).	1985-present	05, 06	Digital
Industrial Chemical Surveys	NYSDEC	Hazardous chemical usage data for 14,000+ companies. The Industrial Chemical Survey compiles a catalog of industries using and producing certain toxic, potentially toxic, or hazardous substances. Used to help plan toxic control strategies and to provide informational reports for state and local agencies	1980-present	05, 06	Digital
Toxic Chemical Release Inventory (TRI)	NYSDEC	Chemical release reports to air, water, and land of toxic chemicals from 800+ manufacturing facilities in NY State.	1987-present	05, 06	Digital

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Wastewater Treatment Facilities (SPDES)	NYSDEC	7,000+ active wastewater facilities are permitted under the State Pollutant Discharge Elimination System	1980-present	05, 10	Digital
Water Quality Permit Basin Inventories	NYSDEC	Uses data from SPDES permits to determine proper allocation of pollutant releases within 17 river basins	1980-present	10	Digital
Priority Water Problem List	NYSDEC	700+ river segments & lakes in 1988 didn't meet the best usage of water as designated in the Water Quality Standards. Source and type of pollutants are documented for each listed water body	1988 survey	02, 06, 10	Digital
River Water Quality Monitoring	NYSDEC	Water quality monitoring stations located in strategic locations along major rivers within 17 major drainage basins. Toxics and conventional parameters measured	1964-present	02, 06	Digital
Aerial Photography	U.S. Dept of Agriculture Forest Service Phone:(801) 524-5856 (for the Eastern Region)	Applications include conservation practices, locating field boundaries, tax assessment, urban development, pollution studies, and watershed studies.	1950-present	12	Photographs are available in different scales on paper or film. Enlargements also available
Forest Visitor Maps (Family of Maps)	U.S. Dept of Agriculture Forest Service Phone:(414) 291-3693	Detailed info about a National Forest and/or National Grassland or subdivision thereof. Map shows recreational opportunities available on National Forests.	Revised on 7 year cycles	99	Printed on standard map stock and polyfilm
A Guide to Your National Forests (Family of Maps)	U.S. Dept of Agriculture Forest Service Phone:(414) 291-3693	Educates the user concerning the 3 main areas of the Forest Service. The map includes a brief description of each region and describes info contained within the map. Contains locations of cities, drainages, Interstate Highway System, and boundaries	N/A	09	Paper
Pocket Visitor Guide (Family of Maps)	U.S. Dept of Agriculture (Forest Service) Phone:(414) 291-3693	Small scale map of forests. Includes the location of cities and towns, boundary lines, primary, secondary and significant roads accessing Forest Service facilities or points of interest, major lakes and streams, all lands administered by the Forest Service, etc.	N/A	09, 12, 14	Updated on a regular basis and available on standard map stock

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Regional or State Guide (Family of Maps)	U.S. Dept of Agriculture Forest Service Phone:(414) 291-3693	Provides maps for people visiting a particular part of the country who need a small scale map to plan their visit.	N/A	12	Available on standard map stock paper
Wilderness and Special Area Maps	U.S. Dept of Agriculture Forest Service Phone:(414) 291-3693	Provide info on wildernesses, National Scenic Trails, Wild and Scenic Rivers, Geologic, Scenic, and National Recreation Areas.	N/A	09	Available on standard map stock paper
Hydrologic Units Geographic Database	U.S. Dept of Agriculture Soil Conservation Service /National Cartographic and Geographic Information Systems Cntr:(817)334-5559 Soil Conservation Service Resource Inventory Div: (202)720-5424	Hydrologic units, mapped and digitized by the SCS, define the locations of river basins, watersheds, and sub-watersheds. Hydrologic unit data is available for selected counties and areas throughout the US	N/A	10	Hydrologic unit data will be available in the USGS Digital Line Graph Optional Distribution Format. Distribution media is normally 9-track magnetic tape at 1,600 bpi
National Resources Inventory (NRI), Primary Sampling Unit (PSU) Geographic Database	U.S. Dept of Agriculture Soil Conservation Service Phone: National Cartographic and GIS Center: (817) 334-5559 Soil Conservation Service Resource Inventory Division: (202) 720-4530	The Soil Conservation Service conducts a national resource inventory of non-Federal lands on a 5-year cycle. Info is collected on soil characteristics, land cover and use, erosion, land treatment, conservation treatment needs, vegetative condition, and potential for cropland conversion.	The SCS conducted NRIs in '82 and '87. Sample points will be digitized for the first time beginning with the '92 NRI. The '82 and '87 data are georeferenced by State, county, Major Land resource Area, and 8-digit hydrologic unit code.	11	Digital data is stored in a Modified Digital Line Graph Optional format (DLG-3). A flat ASCII file accompanies the DLG-3 data file. Attribute data for 1982 and 1987 are in a flat ASCII file

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Soil Geographic Database (NATSGO)	U.S. Dept of Agriculture Soil Conservation Service Phone: National Cartographic and GIS Center: (817)334-5559 National Soil Survey Center: (402) 437-5423	The digital data is designed to be used for national, regional, and multi-State resource appraisal, planning, and monitoring	The base map used is a 1970 Census Bureau State and county digital data base, Albers Equal Area projection. Map unit composition for NATSGO was determined by sampling done as part of the 1982 National Resources Inventory.	11	Available in either USGS Digital Line Graph (DLG-3) Optional Distribution Format or the SCS Geographic Exchange Format. NATSGO data is 9-track magnetic tape at 1,600 bpi. The cost of spatial and attribute data for entire U.S. \$500. The Soil Interpretations Record attribute data is stored in a relational database. This format is ASCII and distributed on magnetic or cartridge tape
Soil Survey Geographic Database (SSURGO)	U.S. Dept of Agriculture Soil Conservation Service Phone: (817) 334-5559 AND (402) 437-5423	This level of mapping is designed for use by landowners, townships, and county natural resource planning and management. SSURGO is linked to a Soil Interpretation Record attribute relational data base, which gives the properties for each map unit.	N/A	11	Available in either DLG-3 or SCS. The attribute data is stored in a relational data base in ASCII and distributed on magnetic or cartridge tape. Distribution media is normally 9-track magnetic tape at 1,600 bpi. The cost for one county or soil survey area is \$500.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
State Soil Geographic Database (STATSGO)	U.S. Dept of Agriculture Soil Conservation Service Phone:(817) 334-5559 and (402) 437-5423	Designed for broad planning and management uses covering State, regional or multi- county areas. Examples of data: available water capacity, soil reaction, salinity, flooding, water table, bedrock, and interpretations for pesticide leaching potential, etc.	N/A	02, 10, 11	Available in either DLG-3 or SCS. Distribution media is normally 9-track magnetic tape at 1,600 bpi. The cost of one county or soil survey is \$500. The Soil Interpretations Record attribute data is stored in a relational data base in ASCII files and distributed on magnetic or cartridge tape. Distribution media for the soil interpretations record is normally 9-track magnetic tape at 1,600 bpi.
Agriculture, Census (1987) and Current Programs	U.S. Dept of Commerce Bureau of the Census Phone: Data User Services Division: (301) 763-4100	Data files and reports from the 1987 Census of Agriculture include statistics on number of farms; farm operator, and labor characteristics; livestock, poultry, and their products; crop production and value; operating expenditures; irrigation, and other data.	1987, results of the 1992 Census available since 1993 and continue through 1995	08	Printed reports, computer tape, diskettes, and CD-ROM

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Construction, Current Programs	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services Bureau of Census: (301) 763- 4100	Periodic surveys provide current statistics on construction activity. Examples of the data include monthly housing starts and sales, housing completions, housing under construction and value of new construction	Each quarter the Bureau compiles data on expenditures for upkeep and improvements to residential properties. Annual data include characteristics of new housing and housing units authorized for demolition in permit-issuing places	08	All reports are available in print and on microfiche; Characteristics of new Housing & Housing Units Authorized by Building Permits also are available on computer tape. Housing Starts, Housing Completions, New One- Family Houses Sold and For Sale, Price Index of New One-Family Houses Sold, Value of New Construction Put in Place, and Housing Units Authorized by Building Permits are carried on- line.
Current Business Data	U.S. Dept of Commerce Bureaus of the Census Phone: Customer Services Bureau of Census: (301) 763- 4100	Current business data are derived from either sample surveys or administrative records. The data cover most of the economic divisions of the economy. A series of current reports, based on sample surveys of retail, wholesale, and service industry trades, includes estimates of sales, inventories, and other economic measures for some kinds of business and geographic areas	The reports are issued monthly and annually	08	County Business Patterns: in printed reports, microfiche, computer tape, CD-ROM, diskette, and on-line. The Monthly Retail Trade, Monthly Wholesale Trade, Service Annual Survey, and Motor Freight Transportation and Warehousing: reports available in print, microfiche, and on-line. The annual reports are in print and microfiche only.

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Economic, Censuses (1987)	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services Bureau of Census: (301) 763-4100	Subject and geographic area summary data by Standard Industrial Classification Code and by State from the Censuses of Retail Trade; Wholesale Trade; Service Industries; Transportation; Manufactures; Mineral Industries; and Construction Industries from the 1987 and previous economic censuses.	Also products from 1992 censuses, including new censuses: Transportation, Communications and Utilities Industries, and Financial, Insurance, and Real Estate Industries will be available in 1994 and 1995	08, 14	All of the industry and geographic area series reports from the economic censuses are available on computer tape, CD-ROM, and in printed reports and microfiche. Selections from the economic censuses also are carried on CENDATA, the Census Bureau's on-line data base.
Foreign Trade Data	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services Bureau of the Census: (301) 763-2074	Data appear in published reports for commodity classifications derived from the Standard International Trade Classification Revision 3 and the Harmonized Commodity Description and Coding System. Monthly and annual data in different arrangements and greater detail than in the reports appear on computer tape, publications and excerpts from tabulations	Monthly or annually depending on the data	99	Variable depending on the product desired
Housing, Current Programs	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services Bureau of the Census (301) 763-4100	Current housing reports present statistics from such surveys as the Survey of Market Absorption and the American Housing Survey. They cover such areas as the US, regions, metro areas (inside and outside) and selected central cities.	Issued annually, quarterly, six times a year, or occasionally in various media.	08	All of the housing reports are available in printed reports, except "American Housing Survey, Microdata Files", which is only available on computer tape. All other reports are available on microfiche, except the "American Housing Briefs". Some reports are also available on-line.

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Manufactures, Current Programs	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services Bureau of the Census (301) 763-4100	Consists of the Annual Survey of Manufactures, the Current Industrial Reports, Manufacturers' Shipments, Inventories, and Orders; Survey of Plant Capacity, Pollution Abatement Costs and Expenditures, and manufacturing technology data within specific industries.	The Plant Equipment Expenditure Survey (quarterly and annual) contains actual and planned expenditures, by industry, for new structures and equipment.	08	Current Industrial Reports are available in print and microfiche; some are on computer tape and on-line.
Population, Current Programs	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services Bureau of the Census (301) 763-4100	Population Characteristics, Population Estimates and Projections, Local Population Estimates, Special Censuses, Consumer Income, Household Economic Studies, Survey of Income and Program Participation Microdata File, Current Population Survey Microdata File, Special Demographic Analyses and Statistical Briefs	Present	08	N/A
Population and Housing, (1990) Census	U.S. Dept of Commerce Bureau of the Census Phone:(301) 763-4100	Population and housing stats, organized hierarchically from the national level down to the census block level. The data files and reports are further organized by 100% count subjects and sample subjects. In addition, the Census Bureau will produce special tabulations for user-defined areas, such as neighborhoods, traffic zones, or other locally specified geographic areas not available in standard census files or reports	1990 and various products to be released over a period of time beginning in 1991	08	Available all or in part on computer tape, CD-ROM, on-line, and floppy diskette, as well as printed reports and microfiche. The computer tape files (some of which are available on CD-ROM) contain either complete count or sample population and housing data. Selected data are available on-line (CENDATA).

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Statistical Compendia	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services Bureau of the Census: (301) 763-4100 Superintendent of Documents (202) 783-3238	Contains: Statistical Abstract of the US, County and City Data Book, State and Metropolitan Area Data Book, County Statistics File 3, and Historical Statistics of the US from Colonial Times to 1970.	Variable: see comments section	08	All but County Statistics File 3 are available in printed reports and microfiche. The County Statistics File 3 is available on computer tape as are the County and City Data Book and the State and Metropolitan Area Data Book. The latter two are also available on floppy diskettes. The County and City Data Book is available on CD-ROM. Selections from all of the compendia (except Historical Statistics of the U.S. from Colonial Times to 1970) are carried in the Census Bureau's on-line data base, CENDATA.

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
TIGER/LINE Files and Other TIGER Extract Products	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services Bureau of the Census: (301) 763-4100 For more specialized info, applications, and training: (301) 763-1580	TIGER=Topologically Integrated Geographic Encoding and Referencing System. Contains digital data for map features, boundaries, names, codes, coordinates, and in the urban cores of the most populous counties, address ranges and ZIP Codes.	The 1990 Tiger/Line Census files are available for the entire nation. Other TIGER extract products which have probably been released are: TIGER/Line School District, TIGER/SDTS, TIGER/Boundary, TIGER/Census Tract Comparability, and TIGER/UA Limit files (1990)	08, 09, 12	Available on computer tape (9-track, 6,250 bpi, ASCII or EBCDIC, labeled or unlabeled) or tape cartridges (IBM 3480 compatible). Costs vary. These files are also available on CD-ROM. Files on computer tape or cartridge only: TIGER/SDTS, TIGER/Boundary, and TIGER/UA Limit
TIGER and Other Geographic Reference Products	U.S. Dept of Commerce Bureau of the Census Phone:(301) 763-4794	Geographic reference files based on the TIGER System. They provide varying hierarchical levels of the geographic and economic data collected in the Bureau's censuses and surveys	Varies between 1980 and 1990 depending on the geographic reference product	08, 09, 12	All except the Geographic Areas Reference Manual are available on computer tape. The TIGER/Census Tract Street Index is available on CD-ROM, microfiche, and computer printouts as well.

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
User Defined Areas Program (UDAP)	U.S. Dept of Commerce Bureau of the Census Phone: UDAP Staff Decennial Planning Division Bureau of the Census: (301) 763-4282	Users define the standard set of 1990 census data for areas not reported in standard data products. A standard set of data tables, presenting demographic, social, economic, and housing characteristics, has been designed for the UDAP.	1990	08	Data for each user-defined publication area (UDPA) will be available as an add'l cost option on computer tape reels, tape cartridges, and flexible diskettes for microcomputers. Data on the tape and diskette follow the format and content of the '90 census Summary Tape File 3A.
1990 Census Maps	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services: (301) 763-4100	Various versions of the 1990 census County Block Maps and four 1990 census outline map series produced on electrostatic plotters may be purchased from the Census Bureau	1990	08, 12	Depending on product desired: electrostatic plots, printed in reports, or CD-ROMS as metafiles for use on microcomputers.
Governments, Census (1987)	U.S. Dept of Commerce Bureau of the Census Phone: Customer Services: (301) 763-4100 FAX: (301) 763-4794	The data focus on State and local governments in the U.S. , featuring such subjects as value of taxable property, number of public employees, expenditures, and financial assets	1987	08	Computer tape, microfiche, on-line or print depending on the product.

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Regional Economic Information System (REIS)	U.S. Department of Commerce Bureau of Economic Analysis (BEA) Phone: Public Information Office: (202) 254-6630	Contains over 20 years of economic data for all States, counties, and metro areas of the Nation. Beginning with 1969, REIS provides annual estimates of personal income by major source, per capita income, earnings by 2-digit Standard Industrial Classification industry, full and part-time employment by 1-digit SIC, regional economic profiles and other related info.	REIS is updated annually & released in early May. The estimates are available 16 months after the end of the last calendar year. (i.e. estimates from 1969-1990 were released in May of '92)	08	CD-ROM
Aerial Photographs	U.S. Dept of Commerce National Oceanic and Atmospheric Admin. (NOAA) National Ocean Service (NOS) Phone: Photogrammetry Branch NOS/NOAA: (301) 443-8601	Aerial photographs and field surveys provide the basic data for compiling coastal survey maps and airport obstruction charts.	N/A	09	Prints, film positives, negatives
Aeronautical Planning Charts	Dept of Commerce NOAA/NOS Phone:(301) 436-6990	Small-scale charts designed for pre- and in-flight planning of long flights. Designed to be used as a teaching aid, reference document, and an introduction to the wealth of info provided on NOAA's aeronautical charts and publications	N/A	09	Paper charts with varying revision cycles. The NOAA Aeronautical Chart User's Guide is an 8 1/2 by 11 inch book.
Bathymetric Maps	Dept of Commerce NOAA/NOS Phone: Mapping and Charting NOS: (301) 443-8855	Bathymetric maps, topographic maps of the sea floor, portray the size, shape, and distribution of underwater features through the use of contours. They serve as basic tools for performing scientific, engineering, marine, and marine environmental studies undertaken to develop energy and marine resources (not for navigation purposes)	N/A	09	Paper, digital, bromide

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Coastal Assessment Framework (CAF)	Dept of Commerce NOAA/NOS Phone: Strategic Environmental Assessments Division NOS/NOAA: (301) 443-8843	Hydrologic unit-based set of estuarine and coastal drainage areas extend from the mouth of an estuary to its head-of-tide, and encompass both the land and water components of each estuary.	N/A	02, 10	The CAF is available in ARC/INFO format. All digital files are geo-referenced, and are available in the geographic projection. The data can be supplied on PC-based media, including high-density 3 1/2 inch and 5 1/4 inch floppy diskettes
Conventional Nautical Charts	Dept of Commerce NOAA/NOS Phone: Mapping and Charting NOS/NOAA: (301) 443-8157	Printed reproductions at a reduced scale of some portion of the navigational part of the Earth's surface, Sailing charts, General charts, Coast charts, Harbor charts. They show the nature and shape of the coast, depths of water, general configuration of the bottom, magnetic variations, etc.	N/A	09, 10	Paper, digital in progress
Geodetic Data	Dept of Commerce NOAA/NOS Phone: National Geodetic Information Center: (301) 443-8631 FAX: (301) 881-0390	Comprise the results of geodetic surveys to determine, among other things, latitude, longitude, height, scale, and orientation control.	N/A	09, 12	NGS data products are available on paper, computer diskette, or magnetic tape
Hydrographic Surveys	Dept of Commerce NOAA/NOS Phone: Photo Reproductions: NOAA (301) 443-8404 Data in Digital Form: Nat Geophysical Data Center (303) 497-6338	Promote safe navigation through the determination of data relating to a body of water Available from shoreline to a 200 mile limit.	N/A	09, 10	Paper. Some hydrographic data are available in digital form. Contact the National Geophysical Data Center at the number above
Instrument Navigation Charts	Dept of Commerce NOAA/NOS Phone: NOAA Distribution Branch: (301) 436-6990	Aeronautical information for navigation. Enroute Low Altitude Charts, IFR Enroute High Altitude Charts, US Terminal Procedures Publication	Revisions are on a 56-day cycle	15	Paper charts, books

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Small Craft Nautical Charts	Dept of Commerce NOAA/NOS Phone: Mapping and Charting NOS: (301) 436-6990	Canoe charts, Folio charts, Area charts, Route charts, Recreational charts Data includes enlargements of harbors, tide, current, and weather data, etc	N/A	13	Paper, digital in progress
Supplementary Aeronautical Publications	Dept of Commerce NOAA/NOS Phone: NOAA Distribution Branch: (301) 436-6990	Provide pilots, planners and air traffic controllers with more detailed info than what is available on some aeronautical charts	Some products are updated every 56 days	15	Paper, some products are available in digital form
Topographic--Bathymetric Maps	Dept of Commerce NOAA/NOS Phone: Mapping and Charting NOS: (301) 443-8855	Series of maps which graphically depict the sea floor and adjacent land areas through the use of land and water contours and multiple tints. Not for navigation. Used to assist scientific, engineering, marine, geophysical, and marine environmental studies undertaken to develop energy and marine resources. The 1:250,000 scale maps are overprinted with Minerals Management Service mineral lease block info.	N/A	09, 10	Paper
Topographic Surveys and Planimetric Shoreline Maps	Dept of Commerce NOAA/NOS Phone: NOAA: (301) 443-8408	These surveys represent a unique and comprehensive record of the coastline and the adjacent waters, showing conditions existing on particular dates for more than a century and providing a detailed record of the changes that have occurred from both natural and artificial causes. Maps compiled at scales of: 1:10,000, 1:20,000 and 1:5,000 scale	N/A	09, 10	Stable-base matte or paper
Visual Aeronautical Chart Products	Dept of Commerce NOAA/NOS Phone: NOAA Distribution Branch: (301) 436-6990	Designed for Visual Flight Rule Navigation and planning slow to medium speed aircraft. Provide checkpoint info for pilots.	Revision cycles range from every 6 months to yearly	15	Paper charts
Numerical Models	NOAA and National Weather Service Phone: NOAA: (704) 259-0682	Consist of vorticity charts and mean relative humidity/ vertical velocity charts. These charts are analyzed twice daily and present mean relative humidity, vertical velocity, 500 millibar height contours, and absolute vorticity isopleths.	May 1, 1961-present	13	Microfilm and paper copies

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Precipitation	NOAA and National Weather Service Phone:(704)259-0682	24 hour precipitation charts and composite moisture index charts containing the lifted index/K-index (indexes of atmospheric stability), precipitable water, freezing level and average relative humidity from May 1, 1962-present	Precipitation charts from January 1, 1962-present and Composite Moisture index charts from January 1, 1962-present	10, 13	Microfilm and paper copies
Pressure	NOAA and National Weather Service Phone: NOAA: (704) 259-0682	These Northern Hemisphere and North American constant pressure charts for levels from 850 millibars to 1 millibar are produced twice daily	January 1, 1946-present	13	Microfilm and paper copies

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Synoptic Charts	NOAA and National Weather Service Phone: NOAA: (704) 259-0682	Northern hemisphere/ North American surface weather charts, North American weather depiction charts, U.S. winds aloft charts, daily weather maps, and U.S. radar summary charts.	N. Hemisphere surface charts: May 1, 1954-present, N. American surface charts March 1, 1942-present, Weather-depiction analysis charts: January 1, 1976-present, Winds-aloft charts: March 1, 1942-present, Daily Weather Map series: January 1899- December 1959 and Daily Weather Map-Weekly series from January 1960-present. The Climate Analysis Center offers one-year subscriptions to this weekly publication.	13	Microfilm, Paper copies, and publications
Temperature	NOAA and National Weather Service Phone: NOAA: (704) 259-0682	12 hour max/min temperature charts	April 1, 1966-present	13	Microfilm and paper copies

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
ARC Digitized Raster Graphics (ADRGs)	U.S. Dept of Defense/ Defense Mapping Agency Phone: DMA Combat Support Center: 1-800-826-0342	Digital raster representations of selected charts on CD-ROMs. Used in electronic map displays, digital moving map displays, command and control systems and for general planning purposes that require small to medium scale cartographic features.	N/A	15	CD-ROM. The ADRGs can be read on a Macintosh or IBM PC-compatible CD-ROM reader. The user must provide the application software to access the CD-ROM
Digital Chart of the World (DCW)	U.S. Dept of Defense/ Defense Mapping Agency Phone: Earth Science Info Center: (303) 236-5829	1,700 MB data base of vector geographic info. Provides global coverage of topographic info equivalent in detail to a 1:1 million scale map. Depicts major road and rail networks, major drainage systems, major utility networks, all major airports, contours, coastlines, international boundaries, and populated places	N/A	09, 12	Application software with its source code, operates on an MS-DOS based microcomputer, & is furnished with the DCW. Disk 1 covers North America. The VPFVIEW package, containing 4 disks, can display selected combinations of features & themes for a user-selected geographic area
Global Navigation and Planning Chart (GNC)	U.S. Dept of Defense/ Defense Mapping Agency Phone: 1-800-826-0342	Small scale aeronautical charts suitable for flight planning, operations over long distances, and enroute navigation in long-range, high-altitude, high-speed aircraft	N/A	15	Paper
Jet Navigation Chart	U.S. Dept of Defense/ Defense Mapping Agency Phone: 1-800-826-0342	Small-scale aeronautical charts. Used for high-altitude, high-speed, long-range navigation and planning and as a source for navigational filmstrips.	N/A	15	Paper

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Joint Operations Graphic-Air (JOG-A)	U.S. Dept of Defense/ Defense Mapping Agency Phone: 1-800-826-0342	JOG-A is a standard Joint Operations Graphic-Ground with an aeronautical overprint. JOGs are medium scale (1:250,000) cartographic products that support pre-flight and aeronautical operational functions. Feature portrayal includes relief, drainage, vegetation, populated places, cultural features, and coastal hydrography.	N/A	10	Paper
Operational Navigation Chart	U.S. Dept of Defense/ Defense Mapping Agency Phone: 1-800-826-0342	A worldwide small scale aeronautical chart. Designed for medium-altitude high-speed visual and radar navigation.	N/A	15	Paper
Tactical Pilotage Charts	U.S. Dept of Defense/ Defense Mapping Agency Phone: 1-800-826-0342	A worldwide medium scale aeronautical chart. Designed for very low-altitude through medium altitude, high-speed visual and radar navigation	N/A	10	Paper
World Mean Elevation Data	U.S. Dept of Defense/ Defense Mapping Agency Phone: 1-800-826-0342	A digital data file containing minimum, maximum, and mean terrain elevations.	N/A	09	ASCII coded 132 character records with 25 records per block and a variable number of blocks per file.
World Vector Shoreline (WVS)	U.S. Dept of Defense/ Defense Mapping Agency Phone: 1-800-826-0342	A digital data file containing the shorelines, international boundaries, and country names of the world. Shoreline derived by vector processing Digital Landmass Blanking data, international boundaries and country labels.	N/A	12	ASCII coded and written to unlabeled ANSI standard magnetic tape.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Vital Registration	U.S. Dept of Health and Human Services Centers for Disease Control Phone: Nat. Technical Info Service (NTIS): (703) 487-4763	The National Center for Health Stats, CDC, Department of Health and Human Services, provides uniform statistics through its birth, fetal death and death registration system of the US	Detailed natality data from 1968 to late 1980's are available to the public on data tapes. Detailed mortality data from 1968 to late 1980's are available to the public on data tapes. Local area summary, summary cause-of-death, detailed multiple cause-of-death, and fetal death tapes are available.	08	Data tapes are available in 9-track code, either extended binary coded decimal interchange code alone or in combination with binary code.
Land Records Information	U.S. Dept of the Interior Bureau of Land Management Phone: Eastern States Office: (703) 440-1600	Shows administration of public lands by the Federal Government and the availability of the lands for use under the public land laws. For official public land surveys, land status records include the Master Title Plat, Supplemental Master Title Plat, Use Plat, Historical Index, Control Document Index, Misc. Document Index, Serial Register, Mineral Location and Contest Index, Tract Books, Plat Books, and Patents.	Records for Federally owned land in the Eastern States are held in a different format and date back to 1755 and before.	09	N/A
Public Land Statistics, 1990	U.S. Dept of the Interior Bureau of Land Management Phone: Eastern States Office: (703) 440-1600	An annual publication that shows statistics related to the Bureau's management of approx. 270 million acres of public lands and 300 million acres of additional subsurface mineral estate during a given fiscal year.	Originally published in 1816. Updated annually.	09	"Public Land Statistics, 1990" is a 6- by 9- inch paperback book

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
1:100,000-Scale Surface Management Status Edition	U.S. Dept of the Interior Bureau of Land Management Phone: Eastern States Office: (703) 440-1600	Standard national map series showing public lands administered by the Bureau of Land Management (BLM), other Federal Agencies, States, Indian tribes, and private lands	N/A	09	Maps available as hard-copy lithographic products, individual color separate negatives, and composite negatives
1:100,000-Scale Surface/Minerals Management Status Edition	U.S. Dept of the Interior Bureau of Land Management Phone: Eastern States Office: (703) 440-1600	Standard national map series showing public lands administered by the Bureau of Land Management, other Federal agencies, States, Indian tribes, and private lands.	N/A	09, 17	These maps are available as hard-copy lithographic products, individual color separate negatives, and composite negatives
Minerals Availability System (MAS) Database	U.S. Dept of the Interior Bureau of Mines Phone: Branch of Minerals Availability Bureau of Mines: (202) 501-9597	Consists of 200,000 mining data points and 2,000 of the most important mines and processing plants in the US and abroad.	N/A	09, 17	5 1/4 inch or 3 1/2 inch floppy disk formatted in DOS. Clear formatted disks must be provided
Official Protraction Diagrams (OPDs) and Leasing Maps (LMs)	U.S. Dept of the Interior Minerals Management Service (MMS) Phone: MMS Atlantic OCT Region: (703) 787-1113	Official protraction diagrams and leasing maps are approved diagrams depicting areal measurements, coordinates, boundaries, and Federal and State land ownership for the Minerals Management Service Outer Continental Shelf cadastres in accordance with 30 Code of Federal Regulations.	N/A	12	Paper prints are the standard product. Stable base film (positive or negative) and microfiche may be available upon special request
Supplemental Official Outer Continental Shelf (OCT) Block Diags. (SOBDs)	U.S. Dept of the Interior MMS Phone: (703) 787-1113	Depict areal measurements, projected and non-projected boundaries, offshore boundary intersection coordinates, and Federal and State land ownership for individual OCT cadastre grid blocks.	N/A	12	SOBD's are available as xerographic prints

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Park Service Maps	U.S. Dept of the Interior National Park Service North Atlantic Region National Park Service 15 State St. Boston, MA 02109	The maps are part of the Official Map-folder series for each park. These maps provide travelers with up-to-date data on America's parklands. Most are in color.	N/A	99	Nearly every NPS unit has a map-folder printed on paper. Designed for layperson use.
National Wetlands Inventory (NWI) Products	U.S. Dept of the Interior/U.S. Fish and Wildlife Service Phone: Earth Science Info Center: (703) 648-5920 FAX:(703) 648-5548 Toll Free: 1-800-USA MAPS	Provides info on wetland location and type. The standard NWI map product is a 1:24,000-scale map of wetland point, line, and area features overlaid on a US Geological Survey 7.5 minute topographic map.	N/A	09	Maps available on paper or mylar. Digital data are available in Digital Line Graph Optional, MOSS Export, and GRASS vector format on 9-track magnetic tape, 8mm cassette, 1/4 inch cassette, and on floppy disk for small orders.
Aerial Photographs and Satellite Photographs	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 Phone: Sioux Falls ESIC: (605) 594-6151	Aerial photos at various scales, with different emulsions, and information on camera characteristics, cloud cover and sources for obtaining copies. Hand-held satellite photos in black-and-white, and color.	N/A	15	Photographic prints, transparencies, enlargements from photo negatives archived at EDC

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Bulletins	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 U.S. Geological Survey: (303) 236-7476	Reports on the results of resource studies and of geologic and topographic investigations, as well as collections of short papers related to a specific topic; generally more limited in scope or geographic coverage than professional papers. Some contain geologic or geophysical maps.	Products available in the following sources: Publications of the Geological Survey, 1879-1961, Publications of the Geological Survey, 1962-1970, Publications of the U.S. Geological Survey, 1971-1981, and annual supplements for 1982 and later years. New bulletins are listed in the monthly catalog, New Publications of the U.S. Geological Survey In addition, geologic maps are catalogued in GEOINDEX and USGS	09	Book publications

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Coal Investigation Maps (C Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone:(703) 648-5920 U.S. Geological Survey: (303) 236-7477	Geologic maps on topographic or planimetric bases; various scales; show bedrock geology, stratigraphy, and structural relations in certain coal resource areas	Maps available are in the following sources: Publications of the Geological Survey, 1879-1961, Publications of the Geological Survey, 1962-1970, Publications of the U.S. Geological Survey, 1971-1981, & annual supplements for 1982 and later years. New maps are listed in the monthly catalog, New Publications of the U.S. Geological Survey are catalogued as GEOINDEX and USGS	09	Paper
Digital Airborne and Satellite Imagery	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone:(703) 648-5920 Sioux Falls ESIC: (605) 594-6151 FAX: (605) 594-6589	Digital images of the US are available from the Earth Resources Observation System (EROS) Data, including Side-Looking Airborne Radar (SLAR), which penetrates cloud cover and enhances shadows of subtle terrain features and satellite Advanced Very-High Resolution Radiometer, useful for tracking vegetation growth on a regional basis. SLAR covers about 40% of the US and is an ongoing program. LANDSAT, SPOT, & AVHRR, provide multiple coverage of the U.S. and the world.	SLAR should cover the present time, LANDSAT 1 and 2 (Jan 1972-Feb 1982), LANDSAT 3 (March 1978-March 1983), LANDSATs 4 & 5 (July 1982-date)	09	SLAR & AVHRR--9-track, 6250-bpi magnetic tape, CD-ROMs. LANDSAT & SPOT--(magnetic tape, diskettes in various formats)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Digital Data Series (DDS)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone:(703) 648-5920 U.S. Geological Survey: (303) 236-7476	Subject matter includes geology, geophysics, geochemistry, mineral resources, rock core info, seafloor surveys, and other topics. Maps and other images are accompanied by explanatory text.	The publication was initiated in October 1991	09	CD-ROM
Digital Elevation Models (DEMs)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone:(703) 648-5920	Digital records of terrain elevations for ground positions at regularly spaced horizontal intervals which are derived from US Geological Survey.	N/A	09	The standard distribution product is 9-track 1,600- or 6,250-bpi magnetic tape
Digital Line Graphs (DLGs)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone:(703) 648-5920	Digital representations by points, lines and areas of planimetric information derived from 7.5- and 15-minute scale topographic quadrangle maps (large scale); 30-by 60-minute intermediate scale maps; and 1:2 million scale (small scale) sectional National Atlas maps.	N/A	09	The standard distribution product is 9-track, 1,600 or 6,250 bpi magnetic tape in a variety of formats. The sectional DLG's at 1:2 million scale are available on one CD-ROM , and the first of a series of CD-ROMs has been released with 1:100,000 intermediate-scale transportation and hydrography data.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Digital Sidescan Sonar Images of the Sea Floor (GLORIA Atlases)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: USGS-NOAA/ Joint Office for Mapping Research: (703) 648-6525 FAX:(703) 648-5464	Digital sidescan sonar images of the sea floor are available for the Exclusive Economic Zone around the 30 coastal states. The images show sea-floor morphology and geologic processes which have occurred seaward of the continental shelf.	As of May 1992, an atlas entitled "Atlantic Continental Margin" is available. The GLORIA Atlases are also available in digital format on CD-ROM.	15	Paper map products and CD-ROM
Flood-Prone Area Maps	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: U.S. Geological Survey Hydrologic Info Unit: (703) 648-6817	Maps showing flood-prone areas outlined on standard US Geological Survey topographic quadrangles	Efforts to produce these maps in 1969. As of fiscal year 1976, over 12,000 quads had been mapped.	09	Paper
Geographic Names Information System (GNIS)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 Toll Free: 1-800-USA-MAPS	Geographic names for all known places, features, and areas in the US that are identified by proper name. Each name is located by geographic coordinates and map source reference. Products include the National Geographic Names Data Base and the Topographic Map Names Data Base.	N/A	09	Published gazetteers, computer generated State and national listings in bound-paper and microfiche formats, and national, State, and topographic map names GNIS data on 9-track or 6,250-bpi magnetic tape in ASCII code.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Geologic Quadrangle Maps (GQ Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 Phone: U.S. Geological Survey/Map Distribution: (303) 236-7477	Multicolored geologic maps on topographic bases in 7 1/2 or 15 minute quad units; scales 1:24,000, 1:62,500, and 1:63,360; show bedrock, surficial or engineering geology	Sources include: Publications of the Geological Survey, 1879-1961, Publications of the Geological Survey, 1962-1970, Publications of the U.S. Geological Survey, 1971-1981 and annual supplements for 1982 and later years. New maps are listed in the monthly catalog, New Publications of the U.S. Geological Survey	09	Paper

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Geophysical Investigations Maps (GP Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 Phone: U.S. Geological Survey/Map Distribution: (303) 236-7477	Maps on topographic or planimetric bases produced at various scales. They show results of surveys using geophysical techniques, such as gravity and aeromagnetic surveys, which reflect subsurface structures that are of economic or geologic significance	Sources include: Publications of the Geological Survey, 1879-1961, Publications of the Geological Survey, 1962-1970, Publications of the U.S. Geological Survey, 1971-1981 and annual supplements for 1982 and later years. New maps are listed in the monthly catalog, New Publications of the U.S. Geological Survey	09	Paper
Hydrologic Investigations Atlases (HA Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 Phone: U.S. Geological Survey/Map Distribution: (303) 236-7477	Hydrologic investigation atlases are maps developed from basic data collection and special studies, and are used to present a wide variety of hydrologic and hydrogeologic facts concerning the Nation's water resources	N/A	10	Maps are available in paper media
Hydrologic Unit Maps	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: U.S. Geological Survey Books and Open File Reports: (303) 236-7477	Hydrologic unit maps of the US and each State show the boundaries of river basins and numeric codes for each basin	The maps were prepared beginning in 1972	10	The maps are available on paper media. Information on the digital data bases can be found in "Data Bases and Systems of the U.S. Geological Survey"

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Land Use and Land Cover Digital Data	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 FAX: (703) 648-5548 Toll Free: 1-800-USA-MAPS	Land use and land cover data provides info on urban or built-up land, agricultural land, rangeland, forest land, water, wetlands, barren land, tundra, and perennial snow or ice. Associated maps display information in five data categories: (1) political units, (2) State land ownership, (3) hydrologic units, (4) census county subdivisions, and (5) Federal land ownership.	N/A	08, 10, 11, 12	Digitized map info is processed through the Geographic Information Retrieval and Analysis System to produce data in formats: the vector polygon and the composite grid cell formats. In the vector polygon format, all topological elements of the polygon map are represented as points, lines and areas that (with special software) may be joined to form polygons replicating the graphic map.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Mineral Investigations Resources Maps (MR Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: U. S. Geological Survey: (303) 236-7477 and Earth Science Info Center: (703) 648-5920 FAX: (703) 648-5548 Toll Free: 1-800-USA-MAPS	Mineral distribution and classification maps show geographic distribution and grade of mineral-resource commodities.	Sources include: Publications of the Geological Survey, 1879-1961, Publications of the Geological Survey, 1962-1970, Publications of the U.S. Geological Survey, 1971-1981 and annual supplements for 1982 and later years. New maps are listed in the monthly catalog, New Publications of the U.S. Geological Survey	09, 17	Paper. These sources may also be available at an earth science library of a university.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Miscellaneous Field Studies Maps (MF Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: U.S. Geological Survey: (303) 236-7477 and Earth Science Info Center: (703) 648-5920 FAX: (703) 648-5548 Toll Free: 1-800-USA-MAPS	Mostly black-and-white maps on topographic or planimetric bases, quadrangle or irregular areas, various scales. Pre-1971 maps show bedrock geology in relation to specific mining or mineral-deposit problems; later maps are preliminary black-and-white maps on various subjects such as environmental studies, wilderness mineral investigations, and regional geology.	Sources include: Publications of the Geological Survey, 1879-1961, Publications of the Geological Survey, 1962-1970, Publications of the U.S. Geological Survey, 1971-1981 and annual supplements for 1982 and later years. New maps are listed in the monthly catalog, New Publications of the U.S. Geological Survey	09	Paper

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Miscellaneous Investigations Series Maps (I Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: U. S. Geological Survey: (303) 236-7477 and Earth Science Info Center: (703) 648-5920 FAX: (703) 648-5548 Toll Free: 1-800-USA-MAPS	Maps (mostly multicolored) on planimetric or topographic bases showing regular and irregular areas; various scales. This series portrays a wide variety of format and subject matter including bedrock, surficial, and marine geology, engineering geology, mineral and energy resources, and geophysics.	Sources include: Publications of the Geological Survey, 1879-1961, Publications of the Geological Survey, 1962-1970, Publications of the U.S. Geological Survey, 1971-1981 and annual supplements for 1982 and later years. New maps are listed in the monthly catalog, New Publications of the U.S. Geological Survey	09	Paper
National Earthquake Information Center Product	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: U. S. Geological Survey: (303) 236-7477 and Earth Science Info Center: (703) 648-5920 FAX: (703) 648-5548 Toll Free: 1-800-USA-MAPS For digitized data: Sioux Falls ESIC: (605) 594-6151 FAX: (605) 594-6589	The USGS National Earthquake Info Center collects and disseminates info on earthquakes within the US and worldwide.	Variable depending on specific database	99	CD-ROM and paper. Beginning with January 1989 edition, Earth Quake Data Report is also available on floppy disk

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Uranium Resource Evaluation (NURE) Data	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) U. S. Geological Survey: (303) 236-7477 and Earth Science Info Center: (703) 648-5920 FAX: (703) 648-5548 /Toll Free: 1-800-USA-MAPS For digitized data: Sioux Falls ESIC: (605) 594-6151 FAX: (605) 594-6589	Maps and reports containing geologic, geophysical, and geochemical data obtained under the DOE's National Uranium Resource Program from 1974 to 1980. The data were transferred to the USGS in 1984. The type of NURE data available are: Geologic maps, aerial radiometric data, aeromagnetic data, data from hydrological and stream-sediment sample analyses, geochemical data from rock sample analyses, radiometric data from borehole logging, and evaluation data for uranium resource estimates.	N/A	01, 06, 10	NURE data are available in three formats: paper copies, microfiche, and computer- readable magnetic tapes.
National Water Conditions (Report Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: U.S. Geological Survey Hydrologic Information Unit: (703) 648-6817	Reports provide monthly summary information on hydrologic conditions	N/A	10	Monthly reports are brief, paper-bound documents with black and white illustrations
National Water Summary (Report Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Sci Info Center: (703) 648-5920 U.S. Geological Survey (303) 236-7476	Reports provide summary hydrologic info nationally, and for each State. Each report concerns a different aspect of hydrology	N/A	10	Reports are available as high-quality paper-bound documents with color illustrations
National Water-Use Information (Report Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Sci Info Center: (703) 648-5920 U.S. Geological Survey (303) 236-7476	Reports provide periodic information on water use at the State and national levels	The report is issued every 5 years to provide for the comprehensive and systematic documentation of data on water use throughout the US	10	Paper-bound documents with black and white illustrations

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Oil and Gas Investigations Charts (OC Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone:(703) 648-5920 U.S. Geological Survey: (303) 236-7477	Charts show strategic info for certain oil and gas fields and other areas having hydrocarbon potential	Sources include: Publications of the Geological Survey, 1879-1961, Publications of the Geological Survey, 1962-1970, Publications of the U.S. Geological Survey, 1971-1981, and annual supplements for 1982 and later years. New maps are listed in the monthly catalog, New Publications of the U.S. Geological Survey	09, 17	Paper
Oil and Gas Investigations Maps (OM Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone:(703) 648-5920 or U.S. Geological Survey: (303) 236-7477	Geologic maps (color or black & white) on topographic or planimetric bases; quadrangle or irregular areas. These maps, at various scales, show geology, stratigraphy, and structural relations in certain hydrocarbon resource areas.	Most of the maps in this series were published before 1965	09, 17	Paper

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Open-File Reports	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone:(303) 236-7476 or (703) 648-5548	Include manuscript reports, maps, and other material that are made available for public consultation and use. Many open-file reports include, or consist of, geologic, geophysical, or geochemical maps.	Sources include: Publications of the Geological Survey, 1879-1961, Publications of the Geological Survey, 1962-1970, Publications of the U.S. Geological Survey, 1971-1981 and annual supplements for 1982 and later years. New maps are listed in the monthly catalog, New Publications of the U.S. Geological Survey	06, 09	Delivered as black and white paper or microfiche copies produced on demand from an original held by the Books and Open-File Reports section of the USGS. Some open-file reports are digital products in the form of diskettes or CD-ROMs
Orthophotoquads	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 Toll Free: 1-800-USA-MAPS	Distortion-free aerial photographic images that are formatted as standard 7.5-minute quadrangles or as quarter-quadrangles at a scale of 1:12,000.	N/A	09	Black-and-white diazo or photographic prints, negatives or positives. Demonstration of digital orthophotoquads available on either 1.2MB 5 1/4-inch or 1.44 MB 3 1/2-inch diskettes

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Other Format Maps	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: (703) 648-5920 and U.S. Geological Survey: (303) 236-7477	The USGS publishes maps in non-quadrangle format. These maps include: a county map series, State base map series, U.S. base maps, a National Park series, and outline maps of the World. These maps provide data on boundaries, hydrography, Public Land Survey System, transportation, manmade structures, hypsography, vegetative and non-vegetative surface cover (i.e. woods, orchards, sand), geographic systems, geographic names, bathymetric contours (in coastal areas). No hypsography data is included in planimetric editions.	N/A	09, 10, 12	Paper
Other Map Products	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: (703) 648-5920 and (303) 236-7477	Published to meet the special needs of Federal agencies & include: Defense Mapping Agency, 15-minute topographic maps, shaded relief topographic maps, satellite image maps, and U.S. border maps. Map feature and color separates of the USGS map series are also available for persons who want to custom design map content for their own use.	N/A	09, 12	Paper. Also a series of map feature and color separates of USGS maps are available in film negative or positive formats for those who want to custom-design map content for their own use.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Photographic Products from Airborne and Satellite Imagery	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 FAX: (703) 648-5548 Sioux Falls ESIC/ Geological Survey: (605) 594-6151 FAX: (605) 594-7589	Color and black and white photographic products generated from imagery digital data by the Earth Resources Observation System (EROS) Data Center (EDC).	N/A	09	Side-Looking Airborne Radar (black & white photo prints, film positives or negatives of strip images, mosaics and mosaic indexes. Advanced Very High Resolution Radiometry (available as color prints or transparencies), and Land Satellite & SPOT (available as color prints, transparencies, enlargements and black & white prints)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Professional Papers	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 U.S. Geological Survey Books and Open-File Reports: (303) 236-7476	Comprehensive reports on the results of resource studies and of geologic, hydrologic, and topographic investigations. Also include collections of related papers addressing different aspects of a single scientific topic. Many contain geologic or geophysical maps.	Sources include: "Publications of the Geological Survey, 1879-1961", Publications of the Geological Survey, 1962-1970", "Publications of the U.S. Geological Survey, 1971-1981" and annual supplements for 1982 and later years. New maps are listed in the monthly catalog, "New Publications of the U.S. Geological Survey"	09, 10	Book publications
Quadrangle Format Maps	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 U.S. Geological Survey/ Map Distribution: (303) 236-7477	Quadrangle format maps are a multicolored topographic base map series of the USGS. Elevations are shown in feet or meters. The maps show and name prominent natural and manmade features. Those at scales of 1:24,000 show an area in detail. Maps at a scale of 1:250,000 cover very large areas on each sheet.	N/A	09	Paper
Quaternary Geologic Atlas of the United States	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: (703) 648-5920 and (303) 236-7477	Multicolored maps on topographic bases; show regional distribution of surficial geologic materials in the conterminous U.S. and adjoining areas	N/A	09	Paper

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Regional Aquifer-System Analysis (Report Series)	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: Earth Science Info Center: (703) 648-5920 U.S. Geological Survey/ Books and Open File Reports: (303) 236-7476	Reports provide the results of studies of regional groundwater systems. The studies concern the occurrence, movement, and quality of groundwater in major aquifer systems	28 systems identified for study (17 were completed by the end of fiscal yr 1990) The overall objective is to assemble hydrologic, geologic and geochemical info and create capabilities necessary for effective groundwater management	06, 10	Published as paper-bound documents. Some maps are published on paper media as hydrologic atlases
Satellite Image Maps	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: ESIC: (703) 648-5920 U.S. Geological Survey: (303) 236-7477	Experimental multicolored or black and white image maps produced from digital data collected by LANDSAT and SPOT. Most of the color image maps are generated to simulate color-infrared photography. Many satellite image maps in standard quadrangle formats have the topographic maps printed on the reverse sides	N/A	09	Paper
State Geologic Maps	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: ESIC: (703) 648-5920 U.S. Geological Survey: (303) 236-7477 (Contact State agency to see if N.Y. is available)	Geologic map compilations of individual States; scales range from 1:125,000 to 1:2,500,000. Show the general distribution of rocks and sediments exposed at the surface throughout the entire State. Major faults are also shown.	09, 11	N/A	

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Surface Water Map	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: ESIC: (703) 648-5920 U.S. Geological Survey: (303) 236-7477	The Surface Water and Related Land Resources Development Map includes the U.S. and Puerto Rico at a scale of 1:3,168,000. Depicted on the map are streams and lakes, dams, reservoirs, major river basin boundaries, and related features	The current map depicts information from the period 1981 to 1983	10	Paper
Thematic Maps	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone:(703) 648-5920 or (303) 236-7477	Maps in which info on special subjects is geographically displayed on planimetric base maps or overlays registered to planimetric or topographic base maps. This category is divided into land use/land cover and associated maps, and National Atlas maps. Land use refers to human uses of land (i.e. housing). Land cover describes the vegetation, water, natural surface, and manmade structures on the land surface. The National Atlas maps are separate sheets of selected thematic maps from the "National Atlas of the United States of America"	N/A	08, 09, 10	Land use, land cover, and associated maps are available as 2 color maps in the USGS Open-File L. Series, and as overlays along with associated overlays of political units, hydrologic units, and census county subdivisions for use with 1:250,000 and 1:100,000- scale base maps. National Atlas maps are available in paper form.
Water Supply Papers and Other Book Series	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) ESIC (703) 648-5920 or (303) 236-7476	The USGS publishes a wide variety of reports containing the results of water resources investigations, many of which depict maps of the areas studied	N/A	10	Paper-bound documents Catalogs of USGS publications are available free from: USGS 582 National Center Reston, VA 22092

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Water Data	U.S. Dept of the Interior/ U.S. Geological Survey (USGS) Phone: The Assistant Chief Hydrologist for Operations: (703) 648-5031 Water Information Clearinghouse: 1-800-426-9000 Phone: U.S. Geological Survey/ Hydrologic Info Unit: (703) 648-6817 Phone: Other Contacts: The District Chief in the State of Interest	Water quantity and quality data for geographic regions of the US are available in print form and as machine-readable files.	N/A	02, 06	WATSTORE data are available in machine-readable form, or as computer-printed tables or graphs, statistical analyses, digital plots and published reports
Advanced Very High Global Resolution Radiometer (AVHRR) Instrument Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	The AVHRR instrument data provide global area coverage, local area coverage, and high resolution picture transmission. When processed into mapped images the data are used for cloud study, weather status, and surface studies.	N/A	13	Data are available on magnetic tape. Also available as images or photographic negatives
Aeromagnetic Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) NOAA(Colorado): (303) 497-6128 FAX: (303) 497-6513	Consist of surveys providing info on magnetic fields, aeromagnetic data, and geomagnetism for surveyed areas. Requestors of data covering a given region should designate latitude/longitude parameters; data will be provided for region as available.	N/A	01	CD-ROM and other primarily magnetic media

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Bathymetric Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Colorado): (303) 497-6128 FAX: (303) 497-6513	Data sets include: National Ocean Service Digital Hydrographic DataBase, which consists of depth, navigation features, and bottom characteristics; ETOPO5 , which is a data set of average elevations/depths for 5 arc-minute squares of latitude and longitude; GEO physical DA ta System, a trackline geophysical database which includes bathymetry, magnetics, gravity and seismic data, and Geophysical Long Range ASDIC (GLORIA) Sidescan image data on CD-ROM; and hydrographic data from sources other than NOS.	N/A	10	NOSHB and ETOPO5 media are currently available on 9-track magnetic tape, and will be made available on CD-ROM in the future. GEODAS is available on CD-ROM and 9-track tape. GLORIA is available on CD-ROMs, and other hydrographic data bases are available on 9-track tape.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Climate	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (North Carolina): (704) 259-0682	The following climate products are available and produced by the National Climatic Data Center: Climatic Atlas of the United States, Climatic Study of the Near Coastal Zone, and a Historical Climatology Series.	Climatic Atlas of the U.S., last published in 1963, presents monthly and annual climatic maps and tables of various weather and atmospheric parameters for the U.S.; the time period for Climatic Study of the Near Coastal Zone including the East Coast of the U.S) is N/A; and the Historical Climatology Series 3-1 through 3-12 covers the contiguous U.S. from 1895-1983 and were updated periodically	13	Microfilm, publications, and paper copies

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Cloud Motion Vectors (WINDS)	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	Cloud motion vectors are computed by measuring the movement of clouds over a specific time period using manual or automated techniques. The wind vectors cover the ocean areas from latitude 60 degrees S to 60 degrees N and from longitude 15 degrees W to 175 degrees E.	Data are available from 1974 to the present	13	The data are archived on 1,600 bpi tapes. One tape is used per month
CoastWatch Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: Mary Hollinger/ National Oceanographic Data Center (202) 202-4549 FAX: (202) 606-4586	A growing number of near-real time ocean data products are provided by the NOAA Coastal Program's CoastWatch and are stored at the National Oceanographic Data Center. Much of this data will be available for on-line access. These products include: sea surface temperature products; and Channel 1,2 and solar zenith angle data.	Presently, real-time AVHRR SST images from NOAA polar orbiters for the Northeast is available. Data from satellites are telecommunicated in near-real time to coastal managers and planners. On-line access to metadata and data is available.	10	The SST data are available only by telecommunication or floppy diskette. In the near future, selected products will be available on CD-ROM

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Coastal Zone Color Scanner (CZCS) Level II Digital Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	The Coastal Zone Color Scanner was designed for quantitative remote sensing of the bio-optical properties of marine waters by measuring the visible spectral signatures of the sea.	10	October 24, 1978 to June 23, 1986.	
Daily, Monthly, and Seasonal Heat Budget Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	The Heat Budget products are produced from AVHRR data. Data are derived from corrected infrared and visible radiances mapped into 2.5 degree displays.	Data are available from June 1, 1974. Monthly mean heat budgets were produced from 1974 thru 1978. Seasonal heat budgets: 1974 to present. Decadal heat budget data are derived from the seasonal heat budget data and are available for the yrs. 1974-1986	13	

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Daily and Weekly Vegetation Index Tapes (New)	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	The vegetation index tapes include weekly polar stereographic and Mercator arrays. They contain composites of the data needed for the vegetation index mapped to Mercator, polar stereographic, and Plate Carre projections at about 20-km resolution	N/A	09, 17	Data are available on 9-track magnetic tapes
Daily and Weekly Vegetation Index Tapes (Old)	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	The tapes contain information regarding the amount of vegetation which the AVHRR instrument can discern. The index measures the density and vigor of green vegetation.	There is a daily version and a weekly version	09, 17	9-track 6,250 magnetic tapes
Geomagnetic Observatory Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) NOAA (Colorado): (303) 497-6337 FAX: (303) 497-6513	Geomagnetic observatory data include secular change data, mathematical models of the Earth's magnetic field, magnetic field survey data, and geomagnetic variation data. They have numerous datum, accuracies, resolution and sources	N/A	01	Primarily magnetic media. Requestors of data of a given region should designate latitude/longitude parameters; data will be provided for region as available.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Geophysics of North America (GNA) CD-ROM	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Colorado): (303) 497-6591 FAX: (303) 497-6513	This compact disc contains consolidated land and marine data for North America, much of which is from the Geological Society of America's "Decade of North American Geology". It includes magnetic, gravity, earthquake seismology, thermal aspects and stress data. Satellite imagery data, topography, and additional grids of magnetic and gravity are also included in this compilation. Access material is available on Floppy Disc.	N/A	09, 13	Most of the data sets included on the CD-ROM cover the Northern Hemisphere from approximately the Prime Meridian to the International Date Line
Global Change Data Base	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Colorado): (303) 497-6125 FAX: (303) 497-6513	Global change data bases include: National Geophysical Data Center-EPA Global Ecosystems Data Base which is revised annually and consists of multithematic global or continental scale data sets; and the NGDC Reprocessed AVHRR Data Base, which contains monthly and biweekly calibrated and uncalibrated versions of the NOAA/ AVHRR Vegetation Index	N/A	17	For NGDC-EPA, the data is delivered in a generic GIS format on CD-ROMs, revised annually over the life of the project.. On request, subsets or the entire data base can be provided on various media. The NGDC Reprocessed AVHRR Data Base is distributed on CD-ROM.
Global Cloud Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	Global cloud data provide a study of the entire Earth's atmosphere. The data set contains averages and variances of various cloud radiative properties derived from the International Satellite Cloud Climatology Project.	N/A	13	Two magnetic tapes per month

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Global Photographic Displays of Sea Surface Temperature (Quality Control Image, Global/Climatic)	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	Photographic displays representing the global assessment for sea surface temperatures and others representing the regional assessment	N/A	10, 13	Data are available on film
Global Regional Radiance Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	The data set contains visible and infrared radiance data from the AVHRR, MIR and VSSR instruments aboard the NOAA's Geostationary Meteorological Satellite, METEOSAT, and Geostationary Operational Environment Satellites. These data were gathered as part of the International Satellite Cloud Climatology Project (ISCCP)	Data available from July 1, 1983.	13	Data are available on magnetic tapes
Gravity Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Colorado): (303) 497-6120 FAX: (303) 497-6513	Usually include observed gravity, free-air and Bouguer anomalies and elevation. Data sets available from National Geophysical Data Center include a variety of regional surveys; the U.S. National and World Relative Gravity Reference Network Base Stations; and gridded data for the U.S. and North America	N/A	99	All data are available on CD-ROM, magnetic tape, and 5 1/4 or 3 1/2 inch floppy diskette

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Marine Geology Files	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Colorado): (303) 497-6339 FAX: (303) 497-6513	Data sets include the full spectrum of geologic analyses performed on seafloor sediment and ocean crust samples, as well as in situ measurements such as drilling logs and seafloor photographs. Samples described and analyzed include cores, grab samples, dredge hauls, and drill samples from the ocean floor	N/A	05, 06	Paper copies, microfilm, microfiche, magnetic tape, floppy diskette, slides and CD-ROM formats are available. Requestors of data covering a given region should designate latitude/longitude parameters; data will be provided for region as available
Marine Geophysics	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Colorado): (303) 497-6338 FAX: (303) 497-6513	National Geophysical Data Center's marine geophysical data holdings are inventoried within GEODAS. Data include bathymetry, magnetics, gravity and seismic reflection sub-bottom profiles, side-scan imagery, and some seismic refraction.	N/A	09	CD-ROM or 9-track magnetic tape Requestors of data covering a given region should designate latitude/longitude parameters.
Paleoclimate Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Colorado): (303) 497-6280 FAX: (303) 497-6513	Data include tree-ring growth and ice core records for annual resolution climate reconstructions; and fossil plankton, fossil pollen, and geochemical measurements used to interpret lower frequency climate variability.	N/A	13	Floppy diskette or 9-track magnetic tape

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Seismology	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Colorado): (303) 497-6472 FAX: (303) 497-6513	A broad array of data obtained from earthquakes categorized in data bases, archived by the National Geophysical Data Center.	N/A	99	Primarily magnetic media
Solar Backscan Ultraviolet Radiometer (SBUV)/2 Level 1B Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	The (SBUV)/2 was designed to map the total ozone concentrations and vertical distribution of ozone in the Earth's atmosphere.	Data are available from December 12, 1984	13	Data are available on magnetic tape
Television and Infrared Operational Satellite (TIROS) Operational Vertical Sounder (TOVS) Level 1B Data Sets	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	A Level 1B data set contains the raw instrument values, location of the satellite with respect to the Earth's surface, and the necessary calibration values used to convert the raw instrument values to meaningful numbers. The data are used to calculate pressures, temperatures, water vapor percentages, and ozone concentrations in the atmosphere.	Data are available from October 19, 1978	13	The data are available on magnetic tape

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Television and Infrared Operational Satellite (TIROS) Operational Vertical Sounder (TOVS) Sounding Products	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301) 763-8400 FAX: (301) 763-8443	This product measures radiation in various spectral intervals, overt broad layers and depths of the atmosphere. Each product set includes: time, date, latitude, longitude, solar zenith angle, land/sea indicator, pressure bounds and layer mean temperatures for 15 vertical layers in the atmosphere, pressure bounds and layer mean precipitable water for three layers, tropopause pressure and temperature, total ozone amount, cloud cover percentage and cloud top pressure altitude, and equivalent black body temperatures.	Data available from January 1, 1979	13	Data are available on magnetic tape
Topographic Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Colorado): (303) 497-6764 FAX: (303) 497-6513	Topography is the 3-D shape of the land surface, including its relief and the position of features, both manmade and natural. Raw topographic data may be used for making surface models or for analyses in conjunction with other data to evaluate resources or hazards.	N/A	09	Primarily magnetic data

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Vegetation Index (Old and New) Hard-Copy Images	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301)763-8400 FAX: (301)763-8443	Imagery of the vegetation index values as mapped to a polar stereographic projection. This imagery is derived from the NOAA Polar Operational Environmental Satellite (POES) AVHRR.	Data starts on March 10, 1982	17	The vegetation index imagery is on 2 different types of output media. The old type is on photographic negatives. The new type is produced on an Optronics Laserwriter. The images can be requested as a 10- by10-inch negative, glossy contact print, positive transparency, or an enlargement.
Visible and Infrared Spin Scan Radiometer (VISSR) Data	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: NOAA (Wash DC): (301)763-8400 FAX: (301)763-8443	The VISSR instrument simultaneously scans the Earth's atmosphere, land surfaces, and oceans in several different wavelengths. The data from the instrument can be viewed as either a photographic image or received in digital form on computer tapes	Latitude 60 degrees S to 60 degrees N, longitude 15 degrees W to 175 degrees E. Hard- copy imagery is available from 1966 to the present.	09, 10	The imagery is available either in hard-copy format or on magnetic tape. Imagery is also available on 35mm microfilm with each reel covering several days worth of data. Data are available on 9-track magnetic tapes, 3480 tape cartridges, 10-by10-inch negatives, 35 mm microfilm reels, or 16mm film loops.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
NOAA National Climate Data Center (NCDC)	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, (NESDIS) and Information Service Phone: NOAA (N. Carolina): (704) 259-0682 FAX: (704) 259-0876	Information is provided in a wide number of classification schemes, standards, data formats, reference systems, accuracy, meteorological and climatological data. NCDC holds all weather records routinely collected by the U.S. federal Govt.	Daily climatological observations and radar observations also archived at NCDC. The archive of historical weather data includes observations from the 1800s to the present.	13	Data are available in a variety of media including magnetic tape, floppy diskettes, microforms, hard-copy manuscripts, photographs and charts
NOAA National Climate Data Center (NCDC) Satellite Data Services Division (SDSD)	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, (NESDIS) and Information Service Phone: NOAA/NESDIS/NCDC/SDSD E/CC6: (301) 763-8400 FAX: (301) 763-8443	The SDSD is a component of the NCDC. SDSD houses info that was acquired by a series of spacecraft satellite sensors beginning in 1960. This division archives and quality controls satellite data for retrospective use. Digital data from the latest satellites are the fastest growing section of the division's holdings. Products that are derived from satellite data, such as sea and air temp, ozone, cloud motion vectors, sea surface height, & surface winds, are also available to users.	Products are available in delay- mode only, at different time schedules. The satellite derived products are used only for retrospective purposes. SDSD houses info that was obtained beginning in 1960.	10, 13	Satellite and satellite derived data at SDSD are available on magnetic tape and cartridges. Some data are available to users in the form of photographs, negatives, slides, and transparencies.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
NOAA National Geophysical Data Center (NGDC)	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: National Geophysical Data Center: (303) 497-6958 FAX: (303) 497-6513	The NGDC combines, in a single data center, the fields of seismology, geomagnetism, marine geology and geophysics, solar phenomena, the ionosphere, and snow and ice. . NGDC collects, organizes, archives, publishes, and disseminates solid earth, solar-terrestrial physics, and snow and ice data from worldwide sources.	N/A	13	Data are available from NGDC on a variety of media, including magnetic tape, floppy diskettes, CD-ROMs, microforms, hard-copy and computer printouts, publications, photographs, maps, tables, graphs, and direct electronic transfer by computer.
NOAA National Oceanographic Data Center (NODC)	U.S. Dept of Commerce National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) Phone: National Oceanographic Data Center: (202) 606-4549 FAX: (202) 606-4586	A component of the NODC is the Ocean Pollution Data and Information Network. OPDIN provides access to the ocean pollution data and info produced by 11 participating Federal departments and agencies. Another component is the NOAA Library and Information Network (NLIN). It includes a million-volume research collection with a comprehensive coverage of:	Hydrographic Surveying (1820-present), Oceanography, Meteorology and Hydrology (1870-present), Living Marine Resources (1870-present), and Meteorological Satellite Applications (1960-present)	02, 06, 10, 13	Data are available on 9-track, magnetic tape, and 5 1/4-inch or 3 1/2-inch diskettes. Paper products include data summaries, graphic plots, statistical analyses, logs, reports, and publications. Selected data are available on CD-ROM, microfilm, and microfiche.
National Highway Planning Network	U.S. Dept of Transportation/ Federal Highway Administration The National Energy Software Center: (708) 252-7250 Bruce Peterson (Oak Ridge National Laboratory): (615) 574-4419	The National-Highway Planning Network is a geographically-based analytic network representation of major highways in the U.S. jointly sponsored by the Federal Highway Administration and the U.S. Army Forces Command. The NHIPN has been used for vehicle routing, scheduling, and tracking; studies of environmental and social impacts of transportation; optimal network design, and as a base for the integration of roadway inventory data.	N/A	14	ASCII fixed-format text files, approximately 17MB. Also available as separate state files in compressed form on multiple PC-DOS floppy diskettes.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Flood Insurance Rate Maps (Digital and Analog)	Federal Emergency Rate Management Agency Phone: Federal Map Distribution Center: 1-800-333-1634	Digital thematic overlay and analog maps of flood hazards. These products map delineating areas expected to be inundated by the 1 percent chance/year flood event, base flood elevation, floodway, and other flood-risk related data. Data is available in 4 thematic layers: political areas, map panel areas, FEMA hydrography, Flood Hazard Zones.	N/A	10, 12	CD-ROM; analog.
Global Snow Cover Parameters from Satellite Microwave Data	National Aeronautics and Space Administration Phone: DAAC User Support Office/GSFC: (301) 286-3209	Global snow cover maps derived from the NIMBUS-7 Scanning Multichannel Microwave Radiometer (SMMR) data for a period of 9 years.	1978-1987	13	One magnetic tape
GISS Global Soils Data Set	National Aeronautics and Space Administration Phone: Complete Database: (303) 497-1219 Condensed: (212) 678-5539 (Nadim R. Habra)	Global digital data base of soil properties at a resolution of 1 degree latitude by 1 degree longitude. For each land cell, the data base includes major and associated soil units, surface texture, and slope; phase and misc. land units are included where available	N/A	11	Complete data set: 1 CCT and Condensed version: 1 magnetic disk
GISS Global Vegetation and Land Use Databases	National Aeronautics and Space Administration Phone: National Center for Atmospheric Research: (301) 286-3209 Nadim R. Habra NASA/GISS: (212) 678-5539 FAX: (212) 678-5552	Digital data bases of vegetation and land use, compiled at a resolution of 1-degree latitude by 1-degree longitude resolution. The vegetation and land use data bases can be used independently, or they can be combined to produce a land cover data base	N/A	09, 12	One computer compatible tape

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
GISS Wetlands Database	National Aeronautics and Space Administration Phone: National Center for Atmospheric Research (303) 497-1219 Nadim R. Habra NASA/GISS: (212) 678-5539	This data set consists of wetland data source, wetland type, fractional inundation, vegetation type and soil type compiled globally at a resolution of 1 degree latitude by 1 degree longitude. The series of arrays of the wetland data base includes info for all land cells that have at least 1% of their area designated as wetland.	Sources of info used in compilation are maps produced over a variable time frame from 1971-1981. The data set reflects wetland distribution for the current climate	10, 11	One computer compatible tape
Shuttle Imaging Radar Data (SIR-A and SIR-B)	National Aeronautics and Space Administration Phone: National Space Science Data Center: (301) 286-4953	This data set provides data from the SIR-A which flew aboard the Space Shuttle Colombia in November 1981 (STS-2) and the SIR-B which flew aboard the space shuttle Challenger in October 1985.	SIR-A: 21/2 days in November 1981 and SIR-B: unspecified time in 1985	99	Magnetic tape and photographic images
Vegetation Index Derived from Satellite Microwave Data	National Aeronautics and Space Administration Phone: DAAC User Support Office/GSFC: (301) 286-3209	This data set is a microwave vegetation index formed from differences of vertically and horizontally polarized brightness temperatures expressed in degrees Kelvin at 37 GHz frequency.	Composed of monthly composites of global Scanning Multichannel Microwave Radiometer observations (January 1979-August 1987) & Global Special Sensor Microwave/Imaging observations (July 1987-December 1990). No SSM/I data is available for December 1987.	17	Two magnetic tapes

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Acid Deposition System (ACS) Subtitle: National Acid Deposition Program-National Trends Network(NADP-NTN)	US Environmental Protection Agency (EPA), Atmospheric Research and Exposure Assessment Laboratory (AREAL) Contact Pers: James A. Reagan, US EPA, AREAL, MD-56, Research Triangle Park, NC 27711, (919)541-4486	National water, (precipitation), samples from geographically representative sites in non-urban areas that are at least 50 km inland from large water bodies . Tested for constituents that contribute to and comprise acid precipitation such as: inorganic compounds, ions, and physical and chemical indicators of water quality	1978- present - Samples are collected weekly	03, 06, 10, 13	Hard copy - Computer printouts, Agency reports, journal publications.Machine readable - Diskette, tape (not preferred); on line to EPA and states
Agriculture Chemical Usage Subtitle: Pesticide Use Surveys	US Department of Agriculture (USDA), National Agricultural Statistics Service (NASS) Contact Pers: Sam Rives, USDA, NASS, 14th and Independence Streets, Washington, DC 20250, (202)447-2324	To quantify the amounts of agricultural chemicals, including pesticides and fertilizers used annually in major crop-producing states.	1990-present - samples are collected weekly, extra samples are required after a weather event (eg storm)	02, 06	Hard copy , Computer printouts, Agency reports, journal publications Machine-readable -- Diskette, tape (not preferred); on line to EPA and states

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
<p>Air Quality Subsystem of the Aerometric Information Retrieval System (AIRS) Subtitle: Aerometric Information Retrieval System Subtitle: Air Quality Data Handling System Subtitle: Comprehensive Data Handling System (CDHS) Subtitle: Emission Inventory System/Point Source and Area Subtitle: National Air Pollution Control Program Subtitle: Storage & Retrieval of Aerometric Data (SAROAD)</p>	<p>US Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS) Contact Pers: Jacob Summers, US EPA, OAZPS, National Air Data Branch, MD-14, Research Triangle Park, NC 27711, (919)531-5695</p>	<p>National compliance of data on air pollution point sources(individual facilities).Continuous emissions monitoring data, asbestos activities, primarily criteria pollutants and particulate; also info. on inorganic compounds, VOCs, and semi-VOCs</p>	<p>1985-present - frequency of sample collection varies by facility and state usually at regular collections</p>	<p>03, 04, 06, 07</p>	<p>AQS data are available through the Aerometric Information Retrieval System (AIRS). See AIRS in Part II</p>
<p>Alkalinity, Lake Area, and Deposition for New England States</p>	<p>Oak Ridge National Laboratory Contact Pers: Richard J. Olson, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831, (615) 574-7819</p>	<p>Alkalinity classes of surface waters in New York and New England were estimated. Deposition values for hydrogen, sulfate, and nitrate ions were estimated from monitoring data</p>	<p>Annual</p>	<p>06, 10</p>	

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Ambient Ozone Concentrations (same data appears in AIRS)	US Department of Energy (DOE), Brookhaven National Lab Contact Pers: Laboratory Division, Brookhaven National Laboratory, Upton, NY 11973, (516)282-2259	Data consist of ozone concentration levels by county and by a 0.5 by 0.5 degree latitude/longitude grid across the continental United States.	1978-1982 (except June to October) - April to May, April to June, May to September, June to September and June to October	13	Data appears in a more comprehensive form in the Aerometric Information and Retrieval System (AIRS).
Aquatic Toxicity Information Retrieval (AQUIRE)	US Environmental Protection Agency (EPA), Environmental Research Lab - Duluth Contact Pers: Anne Pilli, US, EPA, Environmental Research Lab, 6201 Congdon Blvd. Duluth, MN 55804, (218)720-5516	Consists of aquatic toxicity data extracted from scientific papers from over 6,000 domestic and international publications and from independently compiled data files. The scope of the scientific papers included has been defined by the criteria of single chemical exposure and has been limited to those organisms, that are exclusively aquatic. Exposures are tested in fresh water, salt water, tap water, brackish water, or estuarine water. Results are mostly relevant to surface and marine water exposures. Acute, sublethal and bioconcentration effects are included for tests with freshwater and marine organisms. The data collected include over 100,000 individual test results and information on 5,200 chemicals and 2,400 aquatic organisms	1970 - present - regularity of sample collection varies	05, 06, 10	Not available to user at this time (May 1992)
Biennial Reporting System Subtitle: Hazardous and Nonhazardous Waste Surveys	US Environmental Protection Agency (EPA), Office of Solid Waste and Emergency Response (OSWER) Contact Pers: John Fogerty, US EPA, OSWER, 401 M Street SW, Washington, DC 20460, (202)260-4697	Types and amounts of hazardous waste generated in water, soil, air, bulk chemicals; waste treatment methods (eg injection well, landfill, incineration; and waste management and waste minimization practices). Such things as hazardous waste codes as defined in 40 CFR, Part 261, subpart D, are recorded including inorganic compounds; pesticides; VOCs; semi-VOCs; ignitable, corrosive, and reactive wastes. Rankings and import and export of hazardous wastes for each state are also included.	1981-present - Frequency of sample collection - Biennial Regularity of sample collection - Regular	01, 02, 03, 05, 06, 07, 10, 11	Hard copy - EPA National Biennial Reports; computer printouts; files or log books (varies by state) Machine readable-- on line (national data beginning with 1989 is available on-line in Focus software to authorized EPA mainframe users; states have own data in various forms (e.g. tape, diskette)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Chemical Screening Branch (CSB) Existing Chemicals Assessment Tracking System (CECATS)	US Environmental Protection Agency (EPA), Office of Prevention and Toxic Substances. Contact Pers: John S. Leitzke, US EPA, Office of Prevention and Toxic Substances (TS-778), Existing Chemicals Assessment Division, 401 M St. SW, Washington, DC 20460, (202)260-3507	CECATS tract documents on chemical hazard/exposures to help determine which substances need further regulatory review. Administrative tracking information includes submission and report dates, submitter names, status of review, an initial disposition or distribution to outside groups.	1977-present - frequency of collecting samples varies	05, 06	Hard copy -- computer printouts Machine-- readable -- On line (direct access)
Community Health Air Monitoring Program	US Environmental Protection Agency (EPA), Atmospheric Research and Exposure Assessment Laboratory (AREAL) Contact Pers: Thomas Lawless, US EPA, AREAL, Research Triangle Park, NC 27711, (919)541-2291	Epidemiological studies in large metropolitan areas of US to determine human health effects and morbidity and mortality associated with air quality, along with human tissue samples from autopsied cadavers; and pulmonary function testing of individuals	1972-1977 - daily sample collection	07	Hard copy - Computer printouts; Agency reports
Emissions Certification Database	US Environmental Protection Agency (EPA), Office of Mobile Sources Contact Pers: Eldert A. Bontekoe, US EPA, Office of Mobile Sources, 2565 Plymouth Rd., Ann Arbor, MI 48105, (313) 668-4200	Contains emissions data on regulated pollutants (hydrocarbons, carbon monoxide, and oxides of nitrogen) from certain types of motor vehicles.	1975-present - samples are collected annually	06, 07	Hard copy -- Computer printouts Machine readable -- Tape, diskette, bulletin boards, on-line (ASCII)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Environmental Monitoring and Assessment Program Subtitle: Coastal Environmental Assessment Studies	US Environmental Protection Agency (EPA), Office of Research and Development Contact Pers: Thomas Dixon or Miriam Rodon-Naveira, US EPA, Office of Research and Development, (RD-680), 401 M Street SW, Washington DC 20460, (202) 260- 5782	Estimation of the current status, changes, and trends in indicators of the condition of the nation's ecological resources on a regional basis; monitoring of pollutant exposure and habitat condition, currently inorganic compounds, semi-VOCs, pesticides, PCBs (soil); acids (water); particulate criteria pollutants, acids (air).	Phased-in; first demonstration data collected 1990; full implementation expected by 1995- Samples collected every 4 years.	02, 05, 06, 07, 10, 11	Hard copy -- Computer printouts; Agency reports; journal publications Machine readable--Tape, diskette, on-line (ASCII, SAS), CD-ROM (future)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Environmental Radiation Ambient Monitoring System Subtitle: Airborne Particulate and Precipitation Data	US Environmental Protection Agency (EPA), Office of Radiation Programs Contact Pers: Geraldine A. Luster or Paula Goode, US EPA, Office of Radiation Programs, National Air and Radiation Environmental Laboratory, 1504 Avenue A, Montgomery, AL 36115-2601, (205) 270-3433	Nationwide sampling stations that provide air, surface water, drinking water, and milk samples from which environmental radiation levels are derived.	1973-present - Air particulate/precipita tion -Drinking water - Analyses tritium on a quarterly basis; gross alpha, gross beta, strontium-90, and gamma on annual composites; radium-226 and - 228 if the gross alpha exceeds certain levels; specific iodine-131 on a quarterly sample per year for each station; and an annual composite for plutonium and uranium for stations that exceed gross alpha levels. Surface water: Quarterly - Milk: Monthly	01, 03, 06, 07, 10, 13	Hard copy -- Agency reports - Machine readable -- Tape, on-line (ASCII, VAX backup, EBCDIC)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Federal Reporting Database System	US Environmental Protection Agency (EPA), Office of Groundwater and Drinking Water Contact Pers: Cecil J. Sexton, US EPA, Office of Groundwater and Drinking Water, 401 M Street SW, Washington, DC 20460 (202) 260-7276	Centralized database for information on public drinking water supplies. Information includes enforcement and compliance actions, treatment, variances and exemptions, area (county and population) the system serves, and historical information	1976-present - samples collection varies depending upon the size of the population	10	Hard copy -- Computer printouts, files, Agency reports, journal articles Machine readable -- Tape, diskette (ASCII, FILBGEN) is used to generate data, bulletin board, on-line
Fluoridation Census	US Department of Health and Human Services, Centers for Disease Control (CDC), National Center for Prevention Services (NCPs) Contact Pers: Darrell H. Sanders, Jr., US Department of Health and Human Services, CDC, NCPs, Dental Disease Prevention Activity, Atlanta, GA 30333, (404) 488-4451	Census determines the proportion of the population that is receiving the benefits of optimally adjusted fluoridated water throughout the nation.	Periodic census, 1967, 1969, 1975, 1980, 1985, 1988, 1989 - Groundwater is measured once yearly, surface water is measured once every three years.	06, 10	Hard copy -- Reports contain summary tables by states and territories Machine readable -- Diskette (dBase)
Hazardous Substance Release/Health Effects Database (HAZDAT)	US Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR) Contact Pers: Mike Perry, ATSDR, Office of the Assistant Administrator, Office of Information Resource Management, 1600 Clifton Road (E28), Atlanta, GA 30333, (404) 639-0720	Data covers all US territories and includes site characteristics; events; contaminants detected; contaminant media (media consists of water, soil, air, food sources, human samples (urine)); maximum concentration; population impacted by the site or event; classes of compounds: Inorganic compounds, VOCs, trihalomethanes, semi-VOCs pesticides, PCBs, dioxins/furans, radionuclides, asbestos, ions (including fluoride), physical and chemical indicators of water quality.	1980-present - sample collection and analysis varies according to site and agency	01, 03, 04, 05, 06, 07, 10, 11	Hard copy -- Computer printouts, Agency reports Machine readable -- On-line (IBM mainframe)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Integrated Data Base (IDB)	US Department of Energy (DOE) Contact Pers: M.L. Payton, U.S. DOE, Office of Civilian Radioactive Management DOE/RW-132, Washington, DC 20585 (202) 586-9140	A national database of spent fuel and radioactive waste. Samples are taken from bulk chemicals and soil. Class of compounds: Radionuclides (waste forms include spent fuel, highly radioactive materials and mixed low-level wastes)	1980-present (some data available as early as 1960)	05, 06, 11	Hard copy -- Agency reports
Interagency Monitoring of Protected Visual Environments (IMPROVE) Subtitle: National Park Service Visibility Monitoring Program	US Department of the Interior, National Park Service (NPS), Air Quality Division Contact Pers: Kristi Gebhart or William Malm, NPS, Air Quality Division, CIRA Building Colorado State University, Fort Collins, CO 80523, (303) 491-8292	Air quality data. Areas include national parks and wilderness areas with special prevention of significant deterioration (PSD) status. Monitoring is also conducted to determine what species of particulate, criteria pollutants (sulfur dioxide), acid aerosols, inorganic compounds (including sulfates, nitrates), causes visibility problems	1979-present (varies by site; some as early as 1979; others as late as 1988)- Two 24-hour samples per week	06, 07	Hard copy--Computer printouts, Agency reports, journal publications. Machine readable -- Tape, diskette (ASCII, SAS)
Lockheed-EPA, Environmental Monitoring Systems Laboratory Las Vegas (LESC-EPA, EMSL-LV) Subtitle: Hazardous Waste Data Management System (HWDMS)	US Environmental Protection Agency (EPA), Environmental Monitoring Systems Laboratory (EMLS) Contact Pers: William H. Engelmann/Steve P. Gardner, 944 East Harman, Las Vegas 89119, (702) 798-2664	Evaluates the success of other regulatory monitoring programs, to develop ground-water contamination profiles for hazardous waste disposal sites, and to design industry-specific ground-water monitoring systems to protect human health and the environment.	1978-1987; although data are still being generated at the site investigation level, as of May 1992 they had not been collected or entered into the database since 1987.	05, 10	Hard copy -- Computer printouts, Agency reports, journal publications

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Marine Pollution Retrieval System (MPRS)	US Department of Transportation, US Coast Guard, Marine and Environmental Protection Division Contact Pers: Mary Robey, US Coast Guard, Marine and Environmental Protection Division, 2100 Second Street SW, Washington, DC 20593, (202) 267-6670	Includes data on spills and potential spills into the navigable waters of the United States on any land or air releases to US coastal zones. Classified chemicals, facilities, vessels, resources, violations, materials, and personnel. Includes product and amount spilled, the location, date, and time, the removal party, the funds expended, and the source of the spill (facility or vessel). Inorganic compounds, VOCs, trihalomethanes, semi-VOCs, pesticides, PCBs, dioxins/furans, radionuclides, acids/acid aerosols	1973-present - Samples are collected whenever the circumstances of a pollution incident or potential incident justify the need.	02, 05, 06	Hard copy -- computer printouts. Machine readable-Tape (ASCII)
Microbiology and Residue Computer Information System (MARCIS)	US Department of Agriculture (USDA), Food Safety and Inspection Service, Science and Technology Program, Residue Evaluation and Planning Division Contact Pers: William T. Hubbert, D.V.M., USDA, Annex Building, 312th Street SW, Room 602, Washington, DC 20250, (202) 205-0007	Samples are collected of meat and poultry at slaughtering establishments and from import shipments at ports of entry nationally. They are analyzed for the presence of unacceptable concentrations of chemical compounds that may contaminate meat and poultry such as: approved pesticide chemicals; animal drugs used to treat or prevent diseases or to enhance production; and environmental contaminants.	1976-present - samples collected daily	02, 06	Hard copy -- Agency reports
Month and State Current Emission Trends	Argonne National Laboratory for the US Department of Energy (DOE) Contact Pers: Edward Kohout, 9700 South Cass Avenue, Argonne, IL 60439, (708) 972-7644	Provides monthly air emissions estimates and identifies trends for oxides of nitrogen, sulfur dioxide, and nonmethane volatile organic compounds by state, region, season, and sector	1975-present - samples collected monthly	05, 06, 07	Hard copy -- Computer printouts, Agency reports. Machine readable -- Diskette (ASCII, SAS, Tab delimited)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Acid Precipitation Assessment Program Version 2) NAPAP)	US Environmental Protection Agency (EPA), Air and Energy Engineering Research Laboratory Contact Pers: Janice Wagner, US EPA, MD-62, Research Triangle Park, NC 27711, (919) 541-1818	A study of the causes and potential adverse effects of acid deposition in and around the United States. Data includes point source emissions and facility data. Certain classes of compounds were looked at, such as, Criteria pollutants (except ozone), total hydrocarbons, total and size fractionated particulate, acids/acid aerosols, inorganic compounds	1985 - no samples collected	05, 06, 07	Hard copy -- Agency report. Machine readable -- Tape (ASCII)
National Air Monitoring Stations	US Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS) Contact Pers: David Lutz, US EPA, OAQPS, Research Triangle Park, NC 27711, (919) 541-5476	Part of SLAMS network, monitors ambient air concentrations of criteria pollutants and high population exposure.	data submitted quarterly (often monthly) by states	07	N/A
National Air Toxic Information Clearinghouse	US Environmental Protection Agency (EPA), Office of Air and Radiation/Office of Air Quality Planning and Standards Contact Pers: Vasu Kilaru, U.S. EPA, Pollutant Assessment Branch, MD-13, Research Triangle Park, NC 27711, (919) 541-5332	Collects, classifies and disseminate air toxic control information from state and local agencies, the U.S. EPA, and other federal and international agencies. Information on permit decisions, ambient air and source emissions test data, EPA risk information of various agencies can be found on database.	1984-present - Data collected on yearly basis	07	Hard copy -- Computer printouts, Agency reports. Machine readable -- On-line (ASCII)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Coastal Pollutant Discharge Inventory	US Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) Contact Pers: Daniel R.G. Farrow, NOAA, Office of Ocean Resources Conservation and Assessment (ORCA), Strategic Environmental Assessments (SEA) Division, Pollution Sources Characterization Branch, 6001 Executive Boulevard, Room 220, Rockville, MD 20852. (301) 443-0454	Contains pollutant loading estimates for estuarine, coastal, and oceanic waters of the contiguous U.S., excluding the Great Lakes. Classes of compounds analyzed in waters are Surface: Inorganic compounds (arsenic, iron, lead, mercury, zinc, cadmium, chromium, copper); pesticides, microorganisms (fetal coliform bacteria); PCBs; physical and chemical indicators of water quality (biochemical oxygen demand, total suspended solids); petroleum phosphorus; wastewater treatment sludges; flow (wastewater flow or surface runoff)	1982, 1987 (estimates are periodically updated)	02, 03, 05, 06, 10	Hard copy -- Computer printouts Machine readable -- Diskette (ASCII, SAS, Rbase)
National Contaminant Biomonitoring Program Subtitle: National Pesticide Monitoring Program Subtitle: Biomonitoring of Environmental Status and Trends Program	US Department of the Interior, US Fish and Wildlife Service Contact Pers: Donald Steffeck, US Fish and Wildlife Service, Division of Environmental Contaminants, 4401 North Fairfax Drive, Room 330, Arlington, VA 22203 (703) 358-2148	Documentation of temporal and geographic trends in concentrations of environmental contaminants that may threaten fish and wildlife and provides information on the success of regulatory actions intended to reduce environmental concentrations of toxic materials. Covers freshwater streams and interior upland and wetland habitats.		06, 10	Hard copy -- Published articles Machine readable -- Will probably be available after October 1992

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Herbicide Use Database	US Environmental Protection Agency (EPA) Office of Pesticide Programs(OPP); US Department of Agriculture, Economic Research Service; US Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), Office of Resources Conservation and Assessment (ORCA), Strategic Environmental Assessments Division Contact Pers: Leonard Gianessi, Resources for the Future, Inc., 1616 P Street NW, Washington DC 20036, (202) 328-5036	Contains data on herbicide use in agricultural crop production throughout the United States.	1987-present	02, 06	Hard copy -- Computer printouts, Agency reports, journal publications. Machine readable-- Diskette (ASCII, dBase)
National Human Adipose Tissue Survey Subtitle: National Human Monitoring Program (NHMP)	US Environmental Protection Agency (EPA), Office of Toxic Substances (OTS) Contact Pers: Janet Remmers, US. EPA, OTS, National Human Monitoring Program, 401 M Street SW, Washington DC 20460, (202) 260-1583	Baseline levels of chemical compounds such as Semi-VOCs, pesticides, PCBs, inorganic compounds and dioxins/furans are collected from cadavers and surgical patients in the continental United States and measured.	1967-present (Public Health Service administered NHATS from 1967-1970; EPA from 1970-present - Samples collected annually	02, 06	Hard copy -- Agency reports, journal publications Machine readable -- Not available in 1992

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Human Milk Monitoring Program	US Environmental Protection Agency (EPA), Office of Pesticide Programs (OPP) Contact Pers: Jerome Blondel, US EPA, OPP, Health Effects Division (H7509C), 401 M Street SW, Washington, DC 20460, (703) 557-0336	Provides information on the levels of pesticides and PCBs retained in human milk, the geographic variation in retention, and the characteristics of nursing mothers (including age, dietary information, race, and number of children nursed). Samples were taken from women residing in urban and rural areas throughout the United States	1974-1978 - Samples were collected irregularly - two studies conducted; mothers participating in the studies provided one sample per study	02, 06, 08	Hard copy -- Agency reports
National Pesticide Survey Subtitle: National Survey of Pesticides in Drinking Water Wells	US Environmental Protection Agency (EPA), Office of Pesticide Programs Washington, DC 20460, (800) 426-4791 Contact Pers: US EPA, OPP Docket, Office of Pesticide Programs, 401 M Street SW, Washington, DC 20460, (800) 426-4791	The survey focuses on the quality of water in drinking water wells nationwide before treatment, rather than the quality of drinking water at the tap.	1988-1990 - Each site sampled once	02, 10	Hard copy -- Agency reports, Machine readable -- Tape (SAS)
National Residential Radon Survey	US Environmental Protection Agency (EPA), Office of Radiation Programs (ANR-464), Washington, DC 20460, (202) 260-4189 Contact Pers: Frank Marcinowski, US EPA, Office of Radiation Programs, 401 M Street SW, (ANR-464), Washington, DC 20460, (202) 260-4189	Survey provides an estimate of the national frequency distribution of annual average radon concentrations in occupied residences for each of the 10 EPA regions. It was designed to achieve reasonable precision in estimating the number of homes with relatively high levels of radon concentration. It, also, provides information from which correlations can be made between radon concentrations, house construction, and heating, ventilation, and air conditioning characteristics. In addition, provided information on radon exposures to sensitive populations, such as children and smokers.	1989-1990. Sampled yearly	01	Hard copy -- Agency reports, journal publications Machine readable -- Tape, diskette (ASCII)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Shellfish Register of Classified Estuarine Water	US Department of Commerce, National Oceanic and Atmospheric Administration (NOAA); Interagency Task Force on Shellfish Growing Waters (US Environmental Protection Agency, US Food and Drug Administration, US Fish and Wildlife Service, NOAA) Contact Pers: Eric Slaughter, NOAA, Office of Ocean Resources Conservation and Assessment (ORCA), Strategic Environmental Assessments (SEA) Division, Human Activities Branch, 6001 Executive Blvd., Rockville, MD 20852, (301) 443-8843	A compilation of information about estuaries in the United States that have been classified for shellfishing. Inventories acreage and classification status of shellfishing water, including historical trends data; information on pollution sources(including point and nonpoint sources), productivity of waters and state management efforts.	1966-present - States collect data monthly; Register data are compiled every 5 years	02, 05, 06, 10	Hard copy -- Computer printouts, Agency reports Machine readable (for classification and pollution source data only; not available for water quality results) -- Diskette (RBase, Excel); other forms, varies by state

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Status and Trends for Marine Environmental Quality Subtitle:Biological Effects Surveys Subtitle:Mussel Watch Project	US Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), Office of Ocean Resources Conservation and Assessment (ORCA) Contact Pers: Thomas O'Connor, NOAA (OMA32), ORCA, Coastal Monitoring Bioeffects Assessment Division, 6001 Executive Blvd., Rockville, MD 20852, (301) 443-8644	NS&T contains seven major components: the Mussel Watch Project - monitors chemical levels in bivalve mollusks (mussels and oysters) and sediments; the Benthic Surveillance Project - monitors chemicals in benthic (bottom-dwelling) fish and associated sediments; frequency of external and internal disease conditions in fish is documented; Biological Effects Surveys and Research - two to three year studies conducted in specific locations after previous studies have indicated potential for substantial environmental degradation. These studies are designed to provide detailed information of the magnitude and extent of ecosystem degradation; Historical Trends Assessment -combines new and historical data to provide information about the evolution of environmental contamination, generally focusing on areas of highest contamination of specific chemicals; fish, shellfish and sediment data have been added to provide information on long term chemical contamination trends; Specimen Banking; Regional Assessment -compares local levels of contamination to national scale results; and a Quality Assurance Program - produces nationally uniform analytical results to ensure comparability among data sets. Biological effects research has been conducted in Boston Harbor, southern California, Tampa Bay, Long Island Sound, and the Hudson-Raritan Estuary; liver tumors, impaired reproduction or genetic toxicity in fish resulting from exposure to chemical contaminants have been studied in these areas	1984 - Present for benthic fish and sediments - Samples are collected yearly	06, 10	Hard copy -- Computer printouts, agency reports, journal publications, some microfilm. Machine readable - Diskette, on-line (ASCII, Lotus, Excel, SPSS, Rbase, as needed)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National VOC Data Base	US Environmental Protection Agency (EPA), Office of Research and Development Contact Pers: Dr. Larry T. Cupitt, US EPA, Atmospheric Research and Exposure Assessment Laboratory (AREAL), Research Triangle Park, NC 27711, (919) 541-2270	Reports of ambient and indoor VOC concentrations in urban, rural, remote, source dominated, and indoor environments throughout the United States and Canada	1970-1984 Sample collection varied depending on particular source of data	06	Hard copy -- Agency reports, Diskette (ASCII); the database is available on microcomputer (IBM PC compatible) diskettes for use with dBase III+; a utility program written in dBase III+ is available for entering new data into one of five VOC databases and/or extracting pertinent data based on a set of user identifiable filters
National Water Quality Networks Program Subtitle: National Stream Quality Accounting Network (NASQUAN) Subtitle: National Hydrologic Benchmark Network Subtitle: Radiochemical Surveillance Network Subtitle: Tritium Network	US Dept. of the Interior, US Geological Survey (USGS), Water Resources Division (WRD) Contact Pers: Timothy Miller, USGS, WRD, MS-412, National Center, 12201 Sunrise Valley Drive, Reston, VA 22092, (703) 648-6868	Includes the National Stream Quality Accounting Network (NASQUAN), the National Hydrologic Benchmark Network, the Radiochemical Surveillance Network, and the Tritium Network. Primary object is to detect water quality conditions and trends over time in surface waters; and secondly an estimation of constituent loads from the continent to coastal areas and the Great Lakes.	NASQUAN and Radiochemical Networks: 1973-present Benchmark Network: 1964-present Tritium Network: Early 1960's - present (tritium deposition estimates available from 1953)	06, 10	NASQUAN and Benchmark: Hard copy - Computer printouts; Agency reports (annual report by state) Machine readable - Tape; on-line (ASCII); CD-ROM available through US West, Inc., Denver, Co.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Ocean Data Evaluation System	US Environmental Protection Agency (EPA), Office of Water Contact Pers: Bob King, US EPA, Office of Water, (WH 556F), 401 M Street SW, Washington, DC 20460, (202) 260-7050	Contains a variety of data on the marine environment, including pollutant loadings and concentrations, environmental conditions, quality of receiving water, effluent data, bioaccumulation information, fish pathology, trawl sampling, benthic surveys, sediment chemistry and grain size, bioassays, and permit requirements. Samples collected nationally in water (primarily near sewage discharge outfalls), soil (marine sediments), human food sources (fish/shellfish)	1979-present - Most data are collected quarterly, but different facilities are required to measure different types of data as frequently as daily and as infrequently as annually.	02, 05, 06, 10, 11	Hard copy -- Computer printouts, Agency reports Machine readable -- Tape, diskette, on-line (ASCII, SAS, Fortran)
Pesticide Information Network	US Environmental Protection Agency (EPA), Office of Pesticide Program Contact Pers: Constance A. Hoheisel, (H7507C), 401 M Street SW, Washington, DC 20460 (703) 557-5455	Network contains information on The Pesticide Monitoring Inventory (PMI), a nationwide compilation of synopses of pesticide monitoring project conducted by federal, state, and local governments as well as private groups: includes location of the monitoring project and the name and address of a contact person; also included is the Restricted Use Products (RUP) Files - information on pesticide active ingredients, dates of restriction, reasons for restriction, and all products that contain the restricted active ingredients. The Coordination File is also included - a cross referencing chemical index of all synonyms for the active ingredients listed in the PMI and RUP files.	1970 - present - Samples are collected irregular; each project has its own sampling frequency	02, 06	Machine readable -- On-line (ASCII); diskette (for RUP file only)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Radioactive Materials Released from Nuclear Power Plants Subtitle: Commercial Power Reactor Dose	US Nuclear Regulatory Commission (NRC) Contact Pers: Joyce L. Tichler, (516) 282-3801 or Herbert Bernstein, (516) 282-2261, Brookhaven National Laboratory, Scientific Information Systems Group, ASD/DAS Building 051, Upton, NY 11973	Contains data from licensed nuclear power plants, national, that were declared by the utilities to be in commercial operation from 1978 onward, and includes facilities which are permanently or indefinitely shut down or are not yet in commercial operation.	1978 - present - Sample collection: Mixed frequency, varies by facility; the data may be on a quarterly, semiannual, or annual basis, depending on the licensee; written reports publish only annual data.	01, 05	Hard copy -- Annual reports Machine readable - - Not currently available (1990), may be available in future
Resource Conservation Recovery Information System Subtitle: Hazardous Waste Data Management System (HWDMS) Subtitle: Waste Management Database System	US environmental Protection Agency (EPA), Office of Solid Waste and Emergency Response Contact Pers: Kevin Phelps, US EPA, Office of Solid Waste and Emergency Response, 401 M Street SW, Washington, DC 20460, (202) 260-4697	Provides unit level data and integrated corrective action information. Provides qualitative information on hazardous waste facilities, nationally, that have applied for permits.	1980-present - Data collected through permit applications; additional information is collected by the RCRA program staff through inspections and/or other actions at a facility.	05	Hard copy -- Computer printouts Machine readable - Tape (ASCII) available at National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4650

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
State and Local Air Monitoring Stations (SLAMS)	US Environmental Protection Agency (EPA) Office of Air Quality Planning and Standards (OAQPS); US EPA Regions; states Contact Pers: David Lutz, US EPA, OAQPS, Research Triangle Park, NC 27711, (919) 541-5476	Sites that have been established to meet the Clean Air Act requirement that every state create a network of air monitoring stations for criteria pollutants, using criteria set by OAQPS for their location and operation. Sites include: National Air Monitoring (NAM).	Annual summaries of monitoring results	07	
Storage and Retrieval of Water Quality Data (STORET)	US Environmental Protection Agency (EPA), Office of Water Contact Pers: Thomas Pandolfi, US EPA, (PM-218-B), 401 M Street SW, Washington DC 20460, (202) 260-7030	A uniform data collection and reporting system for chemical, physical, and biological water quality data in the United States, U.S. Territories, and parts of Canada. The primary component systems within STORET include the Water Quality System - composed of physical and chemical data obtained during monitoring of waterways, including info on where, when and how samples were collected, the aquifer in which or above which the site is located; parameters tested for; and test results; The Biological System - containing biological data on aquatic organisms, including distribution, abundance, physical condition, and habitat descriptions. Includes sites; a complete record of observed biota (E.G., taxonomic identity, species counts); and possible sampling environment data (E.G., meteorology, physical and chemical water conditions)	N/A	06, 10	
Synthetic Organic Chemicals, United States Production and Sales (Annual Soc Report)	US International Trade Commission Contact Pers: James A. Emanuel, US International Trade Commission, 500 E. Street SW, Washington, DC 20436 (202)252-1367	Data collected by the United States International Trade Commission (ITC) on the production and sales of each synthetic organic chemical produced in the United States.	1916-present - no samples - data collected annually	06	Hard copy - Agency reports Machine readable - Bulletin board (quarterly reports only)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Total Diet Study (TDS) Subtitle: Market Basket Study	US Department of Health and Human Services (DHHS), US Food and Drug Administration (FDA), Division of Contaminants Chemistry Contact Pers: Ellis L. Gunderson, US FDA, 200 C Street SW, (HFF-420), Washington, DC 20204, (202) 245-1152	Provides estimates of dietary intakes of selected pesticides, industrial chemicals, radionuclides, and elements or nutrients (drinking water, human food sources) for the U.S. population	1961-present - Samples are collected quarterly	01, 02, 06, 10	Hard copy - Computer printouts, Agency reports, journal publications
Toxic Release Inventory (TRI)	US Environmental Protection Agency (EPA), Office of Toxic Substances Contact Pers: Steve Newburg-Rinn, US EPA, Office of Toxic Substances, 401 M Street SW, Washington, DC 20460, (202)382-3757	Contains data on estimated releases of over 300 toxic chemicals to air, water, and land by the manufacturing industry.	1987-present - Samples collected Annually	05, 06, 07	Hard copy - Computer printouts; Agency reports; Microfilm. Machine readable - On-line (ASCII); tape; diskette; CD-ROM
Toxic Substances Control Act Test Submissions (TSCATS)	US Environmental Protection Agency (EPA), Office of Toxic Substances Contact Pers: Geraldine D. Nowak, US EPA, Office of Toxic Substances, 401 M Street SW, Washington, DC 20460 (202) 260-2320	An index of unpublished, nonconfidential studies covering chemical testing results and adverse effects of chemicals on health and ecological systems throughout the nation.	1985-present	06	Hard copy - Computer printouts; microfiche (of the submitted documents) Machine readable - on line; diskette (CD-ROM); magnetic tape

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Water Data Storage and Retrieval System (WATSTORE) Subtitle: Daily Values File Subtitle: Groundwater Site Inventory File Subtitle: National Water Information System II Subtitle: Peak Flow File Subtitle: Station Header File Subtitle: Unit Values File Subtitle: Water Quality File Subtitle: Water Use File	US Department of the Interior, US Geological Survey (USGS), Water Resources Division Contact Pers: John Briggs, USGS, National Center, MS-437, 12201 Sunrise Valley, Reston, VA 22092, (703) 648-5624	Files include The Water Quality File which contains analytical results of water samples that describe the chemical, physical, biological, and radiochemical characteristics of both surface and ground waters. the Groundwater Site Inventory File contains inventory data on wells, springs, and other sources of groundwater, and includes site location and identification, geohydrologic characteristics, well construction history, and one time field measurements (such as water temperature). The Daily Values File includes parameter measured, such as streamflow, river stages, reservoir contents, water temperature, specific conductance, sediment concentrations and discharges, and groundwater levels. The Unit Values File contains information on water parameters measured such as rainfall, stream discharge, and temperature data. The Peak Flow File contains peak observations for maximum streamflow and gage height values at surface water sites. The Water Use File contains summary data on water use throughout the United States. The Station Header File is an index of sites from three other WATSTORE files (the Daily Values, Peak Flow, and Water Quality files), and includes information such as identification, location and physical description of sites.	1880-present - Frequency of sample collection: Varies by parameter; Daily Values File: daily or continuous measurements, including daily mean values and daily maximum and minimum values; Unit Values File: more frequent than daily; Peak Flow File: Ground Water Site Inventory File: one time basis for field measurements (e.g., water temperature); Water Quality File: weekly, monthly and quarterly	06, 09, 10, 13	Hard copy - Computer printouts; Agency reports Machine readable - Magnetic tape; diskette (ASCII; other data formats are available; the format is dependent upon the report); CD-ROM
BAYS	County of Suffolk/Office of Ecology Contact Pers: Larry Stipp phone: 853-3078	Collects water quality data from the marine waters of Suffolk County. This database contains nutrient data from designate stations in the bays of Suffolk County. Includes nitrates, nitrates, phosphates, etc.	Date of last update is 10/29/94	02, 05, 06, 10	d-BASE
FACT.94	County of Suffolk/Office of Ecology Contact Pers: Larry Stipp phone: 853-3078	Collects water quality data from the marine waters of Suffolk County. This database contains coliform data from permitted bathing beach facilities	Date of last update is 10/24/94	05, 10	d-BASE

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
TANKS	County of Suffolk/Office of Pollution Control Contact Pers: Larry Stipp phone: 853-3078	This database contains information relating to the location, construction and contents of underground chemical storage tanks	N/A	05, 06, 11	hard copy (data sheets) and an unspecified computer format exists
INDWS	County of Suffolk/Office of Pollution Control Contact Pers: Larry Stipp phone: 853-3078	This database contains data relating to licensed SPDES (State Pollution Discharge Elimination System) facilities	N/A	05, 06, 07, 10, 11	hard copy (data sheets) and an unspecified computer format exists
SAMPLES	County of Suffolk/Office of Pollution Control Contact Pers: Larry Stipp phone: 853-3078	This database contains data relating to samples taken in conjunction with inspections or enforcement. May contain info on asbestos, inorganics (metals, chloride, nitrates, nitrites), organics (pesticides, hydrocarbons), etc.	N/A	02, 03, 04, 05, 06, 07, 10, 11	hard copy (data sheets) and an unspecified computer format exists
INSPECT	County of Suffolk/Office of Pollution Control	This database contains data relating to an inspection of a permitted facility Contact Pers: Larry Stipp phone: 853-3078	N/A	05, 10, 11	hard copy (data sheets) and an unspecified computer format exists
VIOL	County of Suffolk/Office of Pollution Control Contact Pers: Larry Stipp phone: 853-3078	This database contains data pertaining to a violation of a SPDES (State Pollution Discharge Elimination System) permit or the county sanitary code	N/A	05, 06, 07, 10, 11	hard copy (data sheets) and an unspecified computer format exists
PUBLIC	County of Suffolk/Office of Drinking water and Groundwater Resources Contact Pers: Larry Stipp phone: 853-3078	This database system contains chemical and bacteriological data taken from public supply wells. The samples may have been taken by county personnel and the analysis done by the counties public health laboratory or the sample may have been taken by the purveyor and the analysis done by a private laboratory. Chemical databases exist which correspond to results from water testing: PUB.BACT, PUB.IO1, PUB.IO2 (inorganic 1, 2), PUB.ORG1, PUB.ORG-2 (organic 1, 2), PUB.POLYNUCLEAR, PUB.PEST-1 (i.e. heptachlor), PUB.ALDICARB, PUB.PEST-2	N/A	02, 03, 05, 06, 10	hard copy (data sheets) and ARC/INFO format

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
DISTRIBUTION	County of Suffolk/Office of Drinking water and Groundwater Resources Contact Pers: Larry Stipp phone: 853-3078	This database system contains chemical and bacteriological data taken from public water supply distribution systems. The samples may have been taken by county personnel and the analysis done by the county's public health laboratory or the sample may have been taken by the purveyor and the analysis done by a private laboratory. DISTRIBUTION also has similar chemical databases to those in the description of PUBLIC.	N/A	02, 03, 05, 06, 10	hard copy (data sheets) and ARC/INFO format
NON-COMMUNITY	County of Suffolk/Office of Drinking water and Groundwater Resources Contact Pers: Larry Stipp phone: 853-3078	A non-community public water supply is any facility that has its own private well and serves water to the public. Most restaurants, motels, and industrial facilities in areas not served by a public water supply fall into this category. The sample may have been taken by county personnel or by the purveyor and the analysis done either by the county's laboratory or by an approved private laboratory. NON-COMMUNITY also has similar chemical databases to those in the description of PUBLIC.	N/A	02, 03, 05, 06, 10	hard copy (data sheets) and ARC/INFO format
ALDICARB	County of Suffolk/Office of Drinking water and Groundwater Resources Contact Pers: Larry Stipp phone: 853-3078	This database was created to monitor the occurrence of and the efficacy of filters in removing the pesticide Aldicarb and related carbamate pesticides in the agricultural areas of the county. Samples are collected and the analysis is done by county health department personnel. ALDICARB also has similar chemical databases to those in the description of PUBLIC.	N/A	02, 06, 10	hard copy (data sheets) and ARC/INFO format
PRIVATE	County of Suffolk/Office of Drinking water and Groundwater Resources Contact Pers: Larry Stipp phone: 853-3078	This database contains water quality information from private residences with individual on site water supplies. The sample may have been taken due to a specific request from the homeowner or if the department had reason to believe the homeowner's well might be contaminated. Samples are collected and the analysis is done by county health department personnel. PRIVATE also has similar chemical databases to those in the description of PUBLIC.	N/A	02, 03, 05, 06, 10	hard copy (data sheets) and ARC/INFO format

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
MONQUAL	County of Suffolk/Office of Drinking water and Groundwater Resources Contact Pers: Larry Slipp phone: 853-3078	This database contains water quality data from monitoring wells that have been installed by the county for a specific groundwater investigation or for area wide water quality monitoring. All sample analysis is done by county personnel. MONQUAL also has similar chemical databases to those in the description of PUBLIC	N/A	02, 03, 05, 06, 10	hard copy (data sheets) and ARC/INFO format
Air Source Management System	Nassau County Department of Health/Division of Environmental Health Contact Pers: Joseph Schechter phone: 571-4931 For additional info call: Gordon Howe of the DEC at (518) 485-8416	Contains information concerning point source air emissions. The database includes information on approximately 7,000 emission points at stationary combustion units, industrial processes, incinerators, and retail gasoline vapor recovery systems.	Early 1980's - Present	07	Nassau County Department of Health maintains only hard copy data. The electronic format is maintained by the DEC in Albany, NY. NCDH updates the DEC database via modem.
Ambient Air Monitoring	Nassau County Department of Health/Division of Environmental Health Contact Pers: Joseph Schechter phone: 571-4931	This database includes meteorological parameters as well as chemical parameter monitoring for carbon monoxide, nitric oxide, nitrogen dioxide, sulfur dioxide, hydrogen sulfide, methane and non-methane hydrocarbons, total hydrocarbons, and ozone. In addition, over the last 10 years, approximately 6 sites were also monitored for high volume particulates (total suspended particulates). Currently only 2 sites (Salisbury Park and the Hempstead Lab) are in operation. Lead on particulates in air has also been monitored at sites in the City of Glen Cove, Salisbury Park, and the Hempstead Lab. NOTE: You may wish to contact the DEC which operates a state ambient air monitoring network. There are currently 4 sites in Nassau County, with more than a dozen in operation in the past. Among parameters tested were: particulates, carbon monoxide, sulfur dioxide, and lead. The DEC publishes quarterly and annual reports summarizing its monitoring data.	Ambient Air Monitoring--March 1985-present; High Volume Particulates--N/A; Lead on Particulates @ Hempstead--1992-present	06, 07, 13	Ambient Air Monitoring--IBM PC and Apple PC; High Volume Particulates--hard copy; Lead on Particulates @ Hempstead--hard copy

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Article XI	Nassau County Department of Health/Division of Environmental Health Contact Pers: Joseph Schechter phone: 571-4931	The Article XI system maintains information on the storage of toxic and hazardous materials (chemicals, petroleum, and medical) at approximately 3,700 facilities (940 chemical and 2,724 petroleum facilities). This includes information about hazardous materials stored in tanks as well as in containers at these facilities.	November 1986-Present	05, 06	IBM County mainframe and hard copy
Beaches	Nassau County Department of Health/Division of Environmental Health Contact Pers: Joseph Schechter phone: 571-4931	This database includes total fecal and coliform bacteriological monitoring from 43 permitted bathing beaches in Nassau County.	1970-Present	05	1970-Present--Hard copy and 1991-Present--IBM PC (dBASE format)
Industrial Survey Database	Nassau County Department of Health/Division of Environmental Health Contact Pers: Joseph Schechter phone: 571-4931	This database contains information on the chemical usage and chemical waste generation of approximately 6,000 commercial and industrial facilities. Chemical waste types coding tends to group similar types of chemical waste together, unlike the Article XI database which explicitly names the chemical waste compounds.	The surveys were conducted predominantly from 1977 through the early 1980s	05, 06	Information stored on magnetic tape
Marine Biota Baseline Data Bank	Nassau County Department of Health/Division of Environmental Health Contact Pers: Joseph Schechter phone: 571-4931	This databank contains a biological inventory of the Nassau County marine environment. More than 1800 organisms from 34 plant and animal phyla were identified from baseline studies and complaint investigations. The databank consists of three databases: plankton, benthic, and complaint. Information included on the data entry sheet includes: nitrates, nitrites, ammonium, weather, bacteria, and various taxonomic groups.	1970-1982	06, 10, 13	The data resides on magnetic tape (archived)

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Surface Water Quality Database	Nassau County Department of Health/Division of Environmental Health Contact Pers: Joseph Schechter phone: 571-4931	Contains information derived from monthly monitoring of between 125-137 offshore locations for total and fecal coliform was conducted by the NCDH. Approximately 60 of these sites were also monitored for physical and chemical parameters. Physical parameters included: water temperature, air temperature, secchi disk, visibility, wind direction, and water color or condition. Chemical parameters included: dissolved oxygen, pH, salinity, turbidity, total phosphate, ortho phosphate, ammonia nitrogen, nitrate nitrogen, and nitrite nitrogen.	1981-1991	01, 02, 03, 04, 06, 10	The data resides on magnetic tape
SWIM--Source Water Information Manager	Nassau County Department of Health/Division of Environmental Health Contact Pers: Joseph Schechter phone: 571-4931	Currently contains information from approximately 50,000 organic and inorganic chemical samples collected by public water systems and by this Department from 1,100 public water supply and monitoring wells. It includes: Inorganic Chemical Data, Volatile Organic Chemical Data, Basic Pesticide Data, and Additional Pesticide Data.	Inorganic Chemical Data (IOC.1 and IOC.2)--from 1949-Present Volatile Organic Chemical Data (POC.1 and POC.2)--from 1975-Present Basic Pesticide Data (12)--from 1977-Present Additional Pesticide Data (SOC.1 and SOC.2)--from 1993-Present	02, 06, 10	Data is maintained in dBASE format, with well locations in PC ARC/INFO format.

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Hazardous Waste Report	NYSDEC Contact Pers: Robert Schneck phone: 444-0405 FAX: 444-0373	Hazardous waste reports must be filed if the site meets the definition of an RCRA Large Quality Generator (LQG) or if the site stored, treated or disposed of RCRA hazardous waste on site in units subject to RCRA permitting requirements. Various forms include info on: Identification and Certification, Waste Generation and Management, Waste Received from Off Site, On Site Waste Treatment, Disposal or Recycling Process System, and Off Site Identification. Data on Asbestos, waste oils, PCBs, and radioactive mixed wastes may also be reported.	Last completed report--1993	01, 03, 04, 05, 06	Hazardous waste report forms are on hard copy
NYS 1992 Toxic Release Inventory (TRI)	NYSDEC Contact Pers: Robert Schneck phone: (516) 444-0405 FAX: 444-0373	This is the sixth in a series of annual TRI reports published by the NYSDEC. The report summarizes the significant aspects of the 1992 TRI data and provides year figures for comparative purposes.	This report is based on data received as of August 16, 1993.	03, 04, 05, 06, 07, 10	The completed report is in booklet form
NYSDEC Region I Initial Spill Report	NYSDEC Spill Prevention and Response Contact Pers: Robert Schneck phone: (516) 444-0405 FAX: 444-0373	Reports contain information about the class of material spilled, location, cause, spill source, resource affected, notifier, and environmental impact.	Variable	05	Spill report forms are on hard copy
Spill Report	NYSDEC Office of Spills Management Contact Pers: Robert Schneck phone: (516) 444-0405 FAX: 444-0373	Report contains information about the type of material spilled, location, cause, spill source, resource affected, notifier, tank size, leak rate, amount spilled, and amount recovered. A sample of each spill is sent for laboratory analysis.	Variable	05, 06	Spill reports and lab reports are on hard copy
Pesticide Report Forms	NYSDEC Bureau of Pesticides Contact Pers: Robert Schneck phone: (516) 444-0405 FAX: 444-0373	They include: "Certified Private Applicator Record of Restricted Pesticide Purchase and Use", "Registered Pesticide Business Annual Report--Pesticides Used", "Commercial Certified Applicators Annual Report--Pesticides Used", "Certified Commercial Applicator or Registered Business Record of Pesticide Purchase and Use"	Several reports are filed annually	02	Report forms are on hard copy

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
SPDES Tracking Database	NYSDEC/Water Unit Contact Pers: Robert Schneck phone: (516) 444-0405 FAX: 444-0373	Used primarily to track the SPDES permitting process.	Date of last update: 10/31/94	10, 16	dBASE
INSAMS (Inspection and Sampling Management System)	NYSDEC/Water Unit Contact Pers: Robert Schneck phone: (516) 444-0405 FAX: 444-0373	Designed for planning, tracking, and reporting any inspections or sampling performed at facilities regulated under SPDES permits. This system contains several databases.	Date of last update: 10/24/94 (dates of updates for other databases included in INSAMS are variable and are between 6/89 and the present).	10, 16	dBASE
Permit Compliance System (PCS) Database	NYSDEC/Water Unit Contact Pers: Robert Schneck phone: (516) 444-0405 FAX: 444-0373	Contains all information about a facility's SPDES permit and all information pertinent to compliance monitoring. Specifically, the database contains the following: permittee name and address and facility name and address; every SPDES permit issued with: effective date, expiration date, modification dates, permit parameters, effluent limitations, monitoring type, and monitoring frequency; and Discharge Monitoring data for all Discharge Monitoring Reports (DMR) ever submitted.	Not specified	06, 10, 16	PCS report forms (facility/address report, limit summary report, and limit/measurement/violation report) are available on hard copy. State-wide facility/address report is also available on floppy disk (ASCII standard data format).
Nassau County Geographic Information System	Department of Public Works and General Services Contact Pers: Joseph Jones phone: 571-4096	The GIS, when completed, will include all structures (building, handicapped ramp, pool, etc.), transportation (bridge, parking, tunnel, etc.), utility features (signals, substation, utility pole, etc.), vegetation (brush, hedge, tree cover, etc.), recreation and miscellaneous (cemetery, recreation complex, recreation feature, etc.), hydrography (buoy, freshwater marsh, shoreline, etc.), hypsography (contour lines, spot elevations), control features (gridline, neatline, vertical control point, etc.)	Project start date was June 1990	09, 10, 12, 14	Arc/Info format

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Computerized Database of the Long Island Poison Control Center	Winthrop University Hospital-- L.I. Regional Poison Control Center Contact Pers: Thomas Caraccio phone: 542-2323 FAX: 739-2070	One of the major goals of the Long Island Regional Poison Control Center is to collect and analyze data on Toxic Exposures reported in their service area. The specific elements in this database include: date and time the call was received as well as the time of exposure, name and location of the caller and patient, age/sex of patient, site of exposure, route, reason for exposure, name of the product(s), amount(s) ingested, manifestations and the duration of clinical effects, therapy provided, disposition and medical outcome of the patient. There are several data sheets which are filled out and provide additional information. <u>The Lead Research Center at WUH</u> also compiles data in a computerized format on the number of patients with lead poisoning that are under medical management at both WUH and Nassau County Medical Center on a monthly basis. This is combined with reports received from the other member hospitals of the <u>Lead Consortium</u> consisting of Northshore University Hospital, SUNY Stony Brook, and both Nassau and Suffolk Counties Department of Health for analysis of trends on Long Island.	Quarterly --the data is submitted to the National Database of the American Association of Poison Control Centers (AAPCC) Toxic Exposure Surveillance System (TESS) and also to the NYS DOH. It serves as the basis for research. Quarterly --the Lead Research Center combines its reports with those of the other member hospitals of the lead consortium to analyze trends. Monthly --the Center tallies the total number of patient calls received in our region to identify and compare trends with previous months and years. Annually --a	03, 06	Computerized format. Data sheets are hard copy.

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Airphoto Inventory of Potential Hazardous Dump Sites in Suffolk County, New York	Cornell University phone: (607)255-6520 CLEARS 464 Hollister Hall Cornell University Ithaca, New York 14853	Contains aerial photographs of Nassau and Suffolk Counties, taken during 3 different years. "Site Data" sheets are included for Suffolk County which list the site type (i.e., dump, mined area); approximate size; site description (for each year); and site location. Also included are copies of parcel maps (from the Real Property Inventory) of the town in which each site is found. A "Disposal Site Referencing" data sheet is also associated with each potential hazardous dump site identification which includes a short description of the location as well as reference numbers which relates the site to a photo from each of the three years in which photographs were taken.	1962, 1978, and 1984	05	Photographs are not yet digitized, and data sheets are hard copy
The National Aerial Photography Program	U.S. Department of the Interior / U.S. Geological Survey phone: 1-800-USA-MAPS or Write to: Sioux Falls--ESIC U.S. Geological Survey Sioux Falls, SD 57198	Product specifications call for a minimum sun angle of 30 degrees for relatively flat terrain, photos must be cloud free and taken when atmospheric haze is minimal. Flight specifications for a NAPP mission require that the pilot follow predetermined flight lines in a north-south direction along center lines of quarter sections of USGS 7.5-minute quadrangles (quarter quads). Ten photographs are needed for stereoscopic coverage of each 7.5 minute quadrangle.	The Long Island region will be considered for aerial photography in the program in 1995.	09	Photographs

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
National Mapping Program	<p>Department of the Interior / U.S. Geological Survey / ESIC phone: (605)594-6151 EROS Data Center Sioux Falls, SD 57198 phone: (703)860-6045 Reston-ESIC 507 National Center Reston, VA 22092 phone: (202)523-3236 National Archives Washington, D.C. 20408</p>	<p>Several different types of maps may be purchased: topographic, topographic-bathymetric, land use/land cover, orthophotoquads, orthophotomaps, state maps, county maps, special maps, U.S. maps, and national park and monument maps. Aerial photographs may be ordered in color, black-and-white, and color-infrared. When ordering you can specify the specific year or range of years desired, the time of year, level of ground detail, size (9X9-36X36), and stereoscopic coverage. The National Archives also contains a Cartographic and Architectural Branch which keeps the aerial mapping photos of the U.S. taken for Federal agencies before 1941. In addition, the Still Picture Branch has a large collection of aerial photos which date from the early 20th century to the present day. National Atlas Maps are also available for purchase. The following categories exist for various time periods: relief and physiography; geology; coastal environment; climate; hydrology; soils and vegetation; ecology; and transportation.</p>	Early 1900s-present	09, 10, 11, 13, 14, 17	Photographs
The World Map Directory	<p>MapLink phone: (805) 965-4402 MapLink 25 East Mason St. Santa Barbara, CA 93101</p>	<p>The World Map Directory is the only moderately priced map reference for every country in the world that includes: city, regional, topographic and specialty maps. It is organized geographically and includes detailed text, with 108 map indexes and over 20, 129 maps. Date, scale, publisher and Library of Congress geographical number are listed for each map. It is also a catalog in that you can purchase any of the maps.</p>	Published annually	09	Paperback book. Individual maps may be ordered

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
The Map Information Unit	New York State Department of Transportation phone: (518) 457-3555 Map Information Unit NYSDOT State Campus, Bldg. 4, Room 105 Albany, NY 12232	The DOT is responsible for producing and maintaining the state's several base map series. Maps may be purchased over the counter at the Map Information Unit or ordered by mail. The Map Information Unit is the New York State affiliate of the ESIC. A wide variety of material is covered, including planimetric and topographic base mapping, geologic and soils mapping, aeronautical charts, tax mapping, hydrographic charts, satellite imagery, aerial photography, county highway maps, and railroads in NYS map. In addition, the unit maintains a map/photo collection which the public is welcome to use at the unit's office. The NYSDOT has begun production of a new statewide series of county maps. These detailed maps highlight transportation features, public lands, boundaries, and points of interest. The maps are produced entirely with digital technology and are designed for use in GIS applications. Copies of the digital computer files are also available. The files duplicate in digital form the map image that appears on the corresponding printed 1:24,000 scale map. The files are raster images composed of pixels, and are not vectorized for use as intelligent GIS layers. However, they are well suited for use as a backdrop to other GIS layers where they can provide additional visual information or be used for on-screen, "heads-up" digitizing, as well as general display and plotting of the map image. Suffolk and Nassau counties have been included in publication.	Suffolk county base map (1993 edition), Nassau county base map (1992 edition), Suffolk county highway map (1984 edition), New York State railroad map (1984 edition), Nassau county aerial photography (March 27, 1990)	09, 10, 11, 12, 14, 15	Maps--hard copy or digital
Pesticides in Ground Water Database	Environmental Protection Agency (EPA) Office of Pesticide Programs/Environmental Fate and Ground Water Branch Contact Pers: Ruth Allen	The PGWDB was created to provide a more complete picture of ground water monitoring for pesticides in the US. It is a collection of ground water monitoring studies conducted by federal, state, and local governments, the pesticide industry and private institutions. It contains monitoring data and auxiliary information presented as maps, graphs and tables.	1971-1991	02, 10	Available in computerized and hard copy form

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Cornell Cooperative Extension Inventory	Cornell Cooperative Extension, Riverhead, N.Y. Contact Pers: Bill Sanok (CCE) phone: 727-7850 FAX: 727-7130	Over 1000 "Inventory Worksheets for Local Government Records" exist which summarize 26 pieces of information about each record in storage in the CCE's basement. The information includes: government agency name and department, contact person and phone number, record series title, varying record series title, precise location of record, date span, arrangement, format, location of other copies, total quantity in cu. feet, whether it is still in creation, the annual accumulation, reference frequency, vital or essential?, archival?, condition, confidentiality, description, purpose, appraisal or recommendations, SARA Schedule Item No., record retention, whether it is an official copy, and the name of the person doing the inventory.	late 1800's-present	02	hard copy data sheets
Suffolk County Agricultural News (previously entitled Suffolk County Farm News)	Cornell Cooperative Extension Contact Pers: William Sanok, Editor phone: 727-7850 FAX: 727-7130	This catalog is published monthly and is distributed to those enrolled in the Commercial Agricultural Program of the CCE. It consists of collections of articles which fall into one of eight basic categories: floriculture, fruit, general, ornamentals, pest management, potato, vegetables, and viticulture. There is also a considerable amount of advertising contained within it. An index of the articles published during the year is included in the final issue of that year.	1917-present	02	hard copy
Long Island Horticulture News	Cornell Cooperative Extension Contact Pers: Ralph Freeman, Senior Editor 727-7850 (CEE number)	Contains practical and up-to-date information on a wide variety of topics for the commercial horticulturist (i.e., pesticide recommendations and application tips).	1970s-present	02	hard copy

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Long Island Horticultural Research Laboratory Annual Report	Cornell University and Cornell Cooperative Extension	The purpose of this report is to present brief summaries of the research conducted on Long Island by Cornell research and extension staff. Most of the research is conducted at the Long Island Horticultural Research Laboratory (LIHRL), a Cornell facility in Riverhead, but some of the work is conducted at commercial locations. The thrust of the research and extension programs is to address problems facing commercial agriculture on Long Island and the northeastern U.S. Some areas addressed include: greenhouse crops, nursery and landscape, turf, vegetables, potatoes, and grapes.	??-present	02	hard copy
Weather Data from the Bridgehampton Cooperative Weather Station for the National Weather Service	Mr. Richard Hendrickson phone: 537-0893	From 1901-1917--highest daily temperature, lowest daily temperature, amount of precipitation, and climatological data. From 1930-present--highest daily temperature, lowest daily temperature, daily temperature at 8 pm., time when rain/snow begins, time when rain/snow ends, wind direction, wind speed (1955-1970s and present), sky condition, and snow water content.	1901-present	13	hard copy (books)
Long Island Horticultural Research Laboratory	Cornell University	Data reports on pesticide use and weather. However, pesticide information is specific to their operation and does not apply to Long Island in general.	Pesticide records-- 1964 (and possibly back to 1950s) Weather data-- 1938	02, 13	hard copy
Advances in Potato Pest Management	Hutchinson Ross Publishing Company., Stroudsburg, PA.	This book contains data on the kinds of insecticides used to control the Colorado potato beetles on Long Island since the late 1800s.	late 1800s-present(?)	02	hard copy

MASTER LIST OF CANDIDATE DATABASES

NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
Bridgehampton Cooperative Weather Station Data	National Climatic Data Center Contact Pers: Tom Ross NCDC Ashville, NC phone: (704)271-4994	Mr. Hendrickson's data is available for purchase from the NCDC. The cost of the raw data on a disk is \$180.00 per disk (each disk holds 50 years of data). The data includes average temperatures, deviations from average temperatures, average precipitation, and deviations from average precipitation. Wind direction and speed data are not included here. A summary also exists for the years 1951-1974, and it is called CLIM20. It is about 2 pages long and costs \$1.00. The data is strictly averages and summaries--raw data is not included. However, raw data is also available on microfiche at a cost of \$1.00 per fiche. Each fiche holds about 5 years of raw weather data. Finally, a periodical exists which summarizes the data, and it is entitled, <i>Climatological Data for New York State</i> . It may be too general for our purposes and too time consuming to use.	Raw data is available back to the 1800s. CLIM20 covers the years 1951-1974.	13	diskette, microfiche and hard copy
National Air Quality and Emissions Trends Report, 1993	EPA Office of Air Quality Planning and Standards Contact Pers: Warren P. Freas Research Triangle Park, North Carolina 27711	The primary emphasis of this report is on those pollutants for which the U.S. Environmental Protection Agency has established National Air Quality Standards (NAAQS). Air toxics, another set of pollutants regulated under the Clean Air Act are also discussed. Air toxics are those pollutants known to cause, or suspected of causing, cancer or other serious health effects, such as reproductive effects or birth defects. The report examines changes in air pollution levels over time, and summarizes the current air pollution status. The 6 pollutants with NAAQS are: CO, Pb, NO ₂ , O ₃ , PM-10, and SO ₂ . This report tracks two kinds of trends: air concentrations, based on actual direct measurements of pollutant concentrations in the air at selected sites throughout the country; and emissions, which are estimates of that total tonnage of these pollutants released into the air annually.	1980-1993	03, 06, 07	hard copy

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NAME	SPONS. AGENCY	DESCRIPTION	TIME PERIOD	CODE	FORMAT
aps from the ffolk County mprehensive ter Resources nagement Plan olumes 1&2)	Suffolk County Department of Health Contact Pers: Joseph Baier-- Project Manager Suffolk County Department of Health Services	This plan is designed to ensure an adequate and safe water supply for Suffolk County residence through the planning period 2020 and beyond. The goal was to maintain water supply self- sufficiency within the various geographic regions of the county, with a minimum of inter-regional water transmission. The relevance of this report to the LIBCSP is the map content. It contains numerous, large maps of Suffolk County which depict data such as: nitrate occurrences in ground water, VOC occurrence in ground water, groundwater suitability based on generalized composite quality of nitrates, chlorides and VOCs, and others. Presently, the maps are hard copy, but they may be able to be linked with latitude/longitude coordinates and become an overlay. However, this is dependent on their degree of accuracy.	Most maps represent the time period--1972-1983	06, 10	hard copy

OVERVIEW

The Long Island Breast Cancer Study Project

GEOGRAPHIC INFORMATION SYSTEM (GIS)

FOR

**THE LONG ISLAND BREAST CANCER STUDY
PROJECT (LIBCSP)**

**BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK
(516) 282-2345**

**Jerome I. Barancik, Sc.D. - Principal Investigator
Caroline F. Kramer, R.N., M.S. - Co-Investigator
Henry C. Thode, Jr., Ph.D. - Co-Investigator**

**BROOKHAVEN NATIONAL LABORATORY (BNL)
GEOGRAPHIC INFORMATION SYSTEM (GIS) FOR
THE LONG ISLAND BREAST CANCER STUDY PROJECT (LIBCSP)**

OVERVIEW OF PHASES I AND II PROGRAM PLAN

As part of the LIBCSP, the Epidemiology Program at BNL will begin to develop a Geographic Information System (GIS) to address the potential relationship of environmental and occupational exposures to breast cancer etiology on Long Island. The LIBCSP is sponsored by the National Cancer Institute and the National Institute for Environmental Health Sciences.

A GIS is a computer-based technology designed to assemble, store, manipulate, analyze, and visually display in map format geographically referenced data from many different sources. This GIS will integrate data on water, air and soil contaminants, toxic releases, and other exposure factors with locations in space and time, such as current residence and residential history. Primary emphasis will be placed on determining the validity and reliability of data recommended for inclusion in the GIS. The task is made more complex by the need to integrate both location and time. The exposure time period relevant to cases of cancer diagnosed today may have begun ten or twenty years or more in the past, and to varying degrees, the accuracy and precision of the data will become more uncertain for data collected over periods extending further back in time.

In Phase I the work will first establish an inventory which identifies and classifies existing databases containing information on geographic features and/or environmental/ occupational exposures for Nassau and Suffolk Counties. Once this inventory is completed, data access, access costs, quality, the need for additional data collection and factors pertinent to data analysis will be determined. Data items for inclusion in the comprehensive and integrated GIS for Nassau and Suffolk Counties will then be defined along with a set of priorities for implementation. When these steps are completed, BNL's primary task will be to develop a GIS that incorporates environmental and occupational exposure data, including data on water contaminants, industrial releases, landfill plumes, air quality, meteorology, chemicals, pesticides, emissions, asbestos, lead, EMF, radiation, and many others. The GIS also will define terrain features and will include location of individual residences, utilities, roads, hazardous waste sites, and other relevant structures.

The BNL GIS is being designed to examine and link current and past exposure patterns in the Long Island region to breast cancer incidence and outcome patterns. For example, the BNL GIS will be linked to the comprehensive case-control study and other protocols which will be part of the LIBCSP. BNL investigators anticipate that the systems approach and analytic techniques developed in the LIBCSP in collaboration with other investigators will provide the framework to effectively analyze observed associations between exposure and outcomes relevant to breast cancer etiology on Long Island.

More specifically, the GIS developed in Phase II will provide a uniform data set on environmental and occupational exposures that will be the basis for analyzing exposure patterns and interrelationships *per se* and for analyzing exposure and outcome parameters with emphasis on findings that cut across LIBCSP clinical, case-control, and laboratory studies. An external GIS Advisory Board is being established for Phase II, which will include specialists in GIS technology development, spatial-temporal analysis, and cartographic visualization.

Exhibit 1 describes the key elements of this plan and their relationship to other initiatives being undertaken by LIBCSP participants. It also underscores the descriptive epidemiology (hypothesis generating) focus of the BNL initiative compared to the analytic epidemiology (hypothesis testing) focus of the other studies.

For further information please contact Dr. Jerome I. Barancik or Caroline F. Kramer at (516) 282-2016 or (516) 282-4953.

EXHIBIT 1

RELATIONSHIP OF BNL EXPOSURE GIS PROGRAM PLAN TO OTHER LIBCSP INITIATIVES