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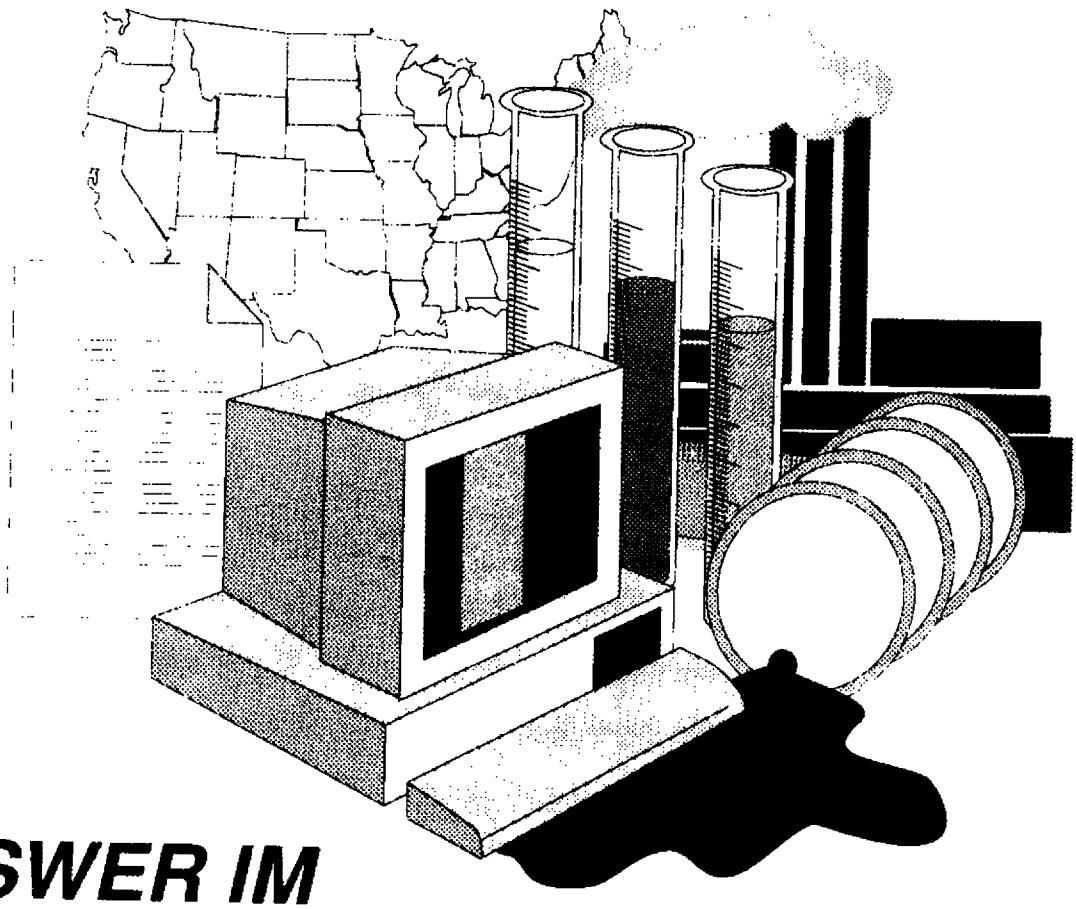
Strategic Information Resources Management (IRM) Plan



OSWER IM

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Executive Summary

This document is intended to serve three purposes. The first is to ensure that IRM support is sufficient and available to meet the goals and challenges outlined in the OSWER Strategic Plan for FY 1993-96. The second is to provide a mechanism for examining the strengths and weaknesses of the current support as a basis to more clearly identify the most effective and efficient future directions of the IRM program. The third is to provide OSWER managers with a common vision and understanding of the future of IRM and its importance to the success of hazardous waste and emergency response program.

Over the next several years, OSWER's IRM program staff will begin to reexamine current ways of providing IRM services and will move OSWER toward a more integrated approach for management of its IRM activities. This integrated approach will allow OSWER to position itself to plan for its information needs effectively, to collect information in a way that is not duplicative and yet ensures ready availability, and to promote sharing of that information. This approach will require working closely with program managers to plan for information requirements early in the program planning phases. Over the next several years, OSWER IRM activities will focus on five primary IRM strategies:

- **OSWER will provide increased IRM support to implement new and anticipated legislative mandates.** Hence, early in the program planning phases, OSWER will begin to identify and analyze the impact that the new and anticipated legislation will have on OSWER's current data collection and management system and activities.

- **OSWER will improve the quality of and access to its environmental and administrative information** through the continued enhancement of its current systems and data, and by improving access by the program areas and the public to OSWER information.

- **OSWER will continue its efforts to promote an increased awareness and understanding of new IRM technology concepts and techniques** among program areas to assist them in meeting their mission.

- **OSWER will work to improve the integration of OSWER's data to support an integrated cleanup program.** OSWER will maximize the benefits from its investment in information through an improved information management function that will allow OSWER information to be more readily shared and available both within OSWER programs and other media offices.

- **OSWER will identify and implement the appropriate IRM organizational structure for initiating an improved data management program and activities,** such as data standards, to promote access to timely, accurate, and

complete environmental and administrative information. In addition, OSWER will continue its support for vital IRM areas such as records management, strategic planning, and office automation.

This plan documents OSWER's current strategy for applying its IRM resources in support of OSWER's programmatic direction. Section 1 is a brief introduction. Section 2 examines OSWER's current IRM environment, identifies strengths, weaknesses, opportunities and threats, and future impacts on OSWER programs such as new or revised legislation and the development of new regulations. Based on an analysis of these factors, Section 3 identifies five long range IRM strategies, and twenty-six objectives that will enable OSWER to meet the goals and challenges identified in OSWER's Programmatic Strategic Plan.

Section 1 - Introduction

1.0 Introduction

The Office of Solid Waste and Emergency Response's (OSWER) Strategic Information Resources Management (IRM) Plan is the **first comprehensive office-wide IRM plan developed by OSWER** since 1986. IRM is that aspect of management that deals with the utilization of information and other information resources such as automated data processing technologies, telecommunications, office automation, and records and paperwork management. Although OSWER has planned for its IRM resources in past years, the OSWER programmatic strategic planning effort begun in FY1990 provided the opportunity for the IRM program to closely examine and assess its current IRM direction, and ensure that its future priorities support OSWER's programmatic goals and challenges outlined in the OSWER Strategic Plan 1993-1996. Further, this IRM planning effort coincides with many anticipated legislative mandates and expanded programmatic information collection activities. It allows OSWER to identify and analyze its information needs early in the program planning life cycle to ensure that effective and efficient information strategies are identified to support OSWER's programmatic direction.

This **plan documents OSWER's current strategy for applying IRM resources in support of programmatic direction.** The plan examines OSWER's current IRM environment, identifies potential problems, constraints, and future impacts on OSWER programs such as new or revised legislation or the development of new regulations. Based on an analysis of these factors, the plan identifies long range IRM strategies and objectives that will enable OSWER to meet the goals and challenges identified in OSWER's Programmatic Strategic Plan.

Through this process, the OSWER Strategic **IRM plan ties IRM needs to the mission, goals, and future programmatic directions** of OSWER, and to further refine these needs into measurable IRM objectives/activities that can be planned, managed, tracked, and funded during the planning years. **As the OSWER IRM planning process becomes more formalized, the process will provide the opportunity for improved communication** across OSWER offices as well as with other EPA offices and senior EPA management.

The remainder of this plan includes:

- **Section 2 - OSWER Critical Issues Analysis,** contains a description of the key challenges facing OSWER during the planning years, the impact of those challenges on IRM, and an analysis of the IRM strengths, weaknesses, opportunities and threats.

- **Section 3 - OSWER IRM Strategies**, details OSWER's IRM strategies for meeting the future programmatic goals and challenges facing OSWER during the planning years.

- **Appendix A - Scope and Approach**, contains a description of the methodology used to develop the strategic plan, the Interview Guide used to guide the discussion with interviewees, and the list of interviewees.

- **Appendix B - OSWER Organization**, details OSWER's current IRM organization, including a description of the responsibilities of the Information Management staff, Information Management Coordinators, Regional Waste Management Divisions, and the Information Management Steering Committee.

- **Appendix C - OSWER Systems**, contains a list of the OSWER systems contained in OSWER's Data Resource Directory, broken down by branch within the OSWER organization.

Section 2 - Critical Issues Analysis

2.0 OSWER Goals and Challenges

OSWER's mission is to protect human health and the environment from unacceptable risks posed by solid and hazardous wastes as well as the release of oil and chemicals into the environment. Specifically, the goals of the hazardous waste and emergency response program are to:

- **Minimize the quantity and toxicity of waste** created by commercial, domestic, and governmental activities;
- **Ensure environmentally sound management** of solid and hazardous wastes;
- **Prevent harmful releases of oil and hazardous substances** into the environment; and
- **Prepare for and respond in a timely and effective manner to releases of hazardous materials** into the environment.

Most of **OSWER's future program direction requires increased collection, analysis, use, or transfer of information or changes in the way the program's information resources are currently used. Changing the way OSWER manages its programs has a tremendous impact on the way OSWER manages its information and information resources** in those programs. These **changes can be extremely costly** if planning for information resources is not an integral part of OSWER's program management planning. The challenge for the IRM program is to find new and cost effective ways to provide the necessary quality information that meets both current and future program needs.

In meeting these goals, a **number of programmatic challenges have been identified** from the OSWER Strategic Plan for FY1993-1996, interviews with program managers, and EPA's Administrator's guidance. Each of these **challenges represents areas where IRM support will be needed to ultimately accomplish OSWER's programmatic goals.** To a degree, they represent hurdles that must be met to accomplish many of OSWER's current activities - but they also represent a change in focus and direction for the future. These include the following:

- ❑ **New and Anticipated Legislative Mandates.** New and anticipated legislative initiatives **require new information collection and analysis activities in support of regulation development and guidance.** Currently, information is collected by program offices to support individual program initiatives and specific Federal mandates. This information is not collected in a standard format, and thus is difficult to share. The costs of collecting information on an office-by-office basis can be substantial. These **costs will continue to grow if OSWER does not plan from an organization-wide perspective** for the future

support that will be required by new and anticipated legislative mandates. Some of these include the following:

- **RCRA Reauthorization.** The RCRA Reauthorization proposal will require that new information in areas such as municipal waste, mining waste, oil and gas waste, and municipal incinerators be collected and automated to support new legislative mandates. This universe of information is vast, and is not currently collected anywhere in OSWER.

- **Oil Pollution Act of 1990.** The Oil Pollution Act of 1990 established new Federal authority to direct responses to spills, improve preparedness and response capabilities, ensure that shippers and oil companies are responsible for damages from spills, and develop an expanded oil pollution research and development program. As a result of this legislation, over 500,000 facilities will be regulated. This program is funded through a Trust Fund and information management activities will need to support the general management of this program, new regulation development, and cost recovery and documentation issues.

- **Clean Air Act Amendments.** The Clean Air Act (CAA) provisions build on the SARA Title III requirements for disclosure of chemical hazard information and the use of the information to protect the public. New information requirements need to be identified and addressed in order to support CAA implementation. In addition, the appropriate means to disseminate this information to all parties concerned will need to be considered and planned for.

- **CERCLA Reauthorization.** In 1995, major changes to Superfund legislation are expected. Impacts of the new legislation may change the role and responsibilities of states, and increase the number of sites on the National Priorities List (NPL).

❑ **Environmental Policy Initiatives.** There are a number of environmental policy initiatives that will **result in new ways of managing OSWER programs.** These initiatives will **impact the way that OSWER manages its IRM** support to these areas. For example, risk based priorities, development of environmental indicators, and continued emphasis on public access to information will further highlight the need for improved and enhanced IRM activities. Examples of these initiatives include the following:

- **Integrated Cleanup Program.** OSWER's strategic plan envisions that by 1996 the agency will have made substantial progress toward full integration of the Superfund, petroleum spill, and various RCRA cleanup programs. This integration will ultimately encompass a fully consistent regulatory framework and an integrated priority scheme to

identify the worst sites at every stage of the pipeline where choices must be made. OSWER's current systems are not integrated. Therefore, the ability to share information across cleanup programs necessary for the management of an integrated cleanup initiative is not readily available.

- **Environmental Indicators.** OSWER's continued drive toward measuring the effectiveness of its programs in reducing risk to human health and the environment through environmental indicators requires the identification and collection of the technical data necessary to depict this environmental progress. Each program area is in the process of identifying, collecting, and modifying its systems to store the technical data necessary to do this. However, since there is not an integrated approach to identifying these indicators, the opportunity exists for redundant collection efforts and storage of technical data between the program areas.

- **Geographical Initiatives.** Emerging environmental issues such as deforestation, watershed management, global climate change, and acid rain are creating increasing demands for information that EPA is not capable of providing. The Agency has been implementing geographic initiatives, such as multi-media monitoring programs designed to assess the health of the environment in specific locations. The Great Lakes National Program Office (GLNPO), the Chesapeake Bay Program (CBP) and the Gulf of Mexico Program are examples of these geographic initiatives. These programs will need to rely on the existing base of information contained in the separate program office's databases. However, it is very difficult to share data between these databases because the data has not been designed in such a way to facilitate sharing. This includes the lack of standard data element definitions as well as the lack of standard program definitions.

- **Risk Based Environmental Planning.** OSWER will increasingly set priorities for addressing hazardous waste issues on the basis of their relative risk, not only to human health but to ecological processes as well. The appropriate technical data needs to be available to support risk-based decision making.

❑ **Administrator's Program Priorities.** The Administrator of EPA has identified a number of initiatives that will continue to be program priorities during the planning years.

- **Public Access to Information.** A strong industry and public outreach and technical assistance program is necessary to reduce the generation of waste and help all sectors understand the benefits of source reduction. Additionally, OSWER shares information with other Federal agencies to support enforcement and other joint Federal

monitoring programs. The continued emphasis on public access to environmental information requires OSWER to find new and effective ways to communicate that information.

- **Training and Outreach Program**. The On-Scene Coordinator/Remedial Project Manager (OSC/RPM) Support Program has been very successful in ensuring that new Superfund field personnel receive appropriate training in a timely manner. This program will be expanded to ensure that information on remedy selection and innovative technology is effectively communicated to personnel. The Municipal Solid Waste (MSW), Underground Storage Tank (UST) and Emergency Planning and Community Right-to-Know (EPCRA) programs will continue their outreach programs ensuring that regions, state and local governments, and Indian Tribes receive training and technical assistance. OSWER has used many "voluntary" approaches to support training. Examples include the Consumer Handbook, environmental labeling, and the Agenda for Action. All of these efforts rely heavily on the dissemination of information, and OSWER must continue investigating creative methods for communicating knowledge.

- **Expanded Use of Innovative Technologies**. The Technology Innovation Office (TIO) was created to address technology concerns outlined in the Superfund 90 day study. TIO plans to increase the application of innovative treatment technology to contaminated soils and groundwater. TIO is exploring institutional barriers to innovative technology, and identifying opportunities in existing statutes and regulations for additional flexibility in policies, permit actions, grants and contracting procedures. OSWER is developing a policy directive and implementation plan for increasing the application of innovative treatment technologies which includes mechanisms and incentives for implementing innovative treatment in OSWER programs. These efforts requires a significant amount of effort to disseminate and track information about the application of innovative technologies. In addition, OSWER is working with other Federal Agencies to promote the use of innovative treatment technologies and is developing an information exchange network for those technologies. A database identifying vendors of treatment technologies is also under development.

- **Continued Research and Development**. The Office of Research and Development (ORD) provides technical information and evaluations for regulatory development, technology evaluation and development for cleanup activities, implementation tools such as monitoring methods and risk assessment protocols, and direct "hands-on" technical assistance to regions in cleanup and permitting technical decision-making. Examples of initiatives include: the development of

improved site specific risk assessment protocols and the demonstration of bioremediation as a cost effective remedial technology; a focused effort on understanding and improving the many limitations of pump and treatment technology for cleanup; and the development of innovative treatment technologies for use in cleanup actions under the Superfund Innovative Technology (SITE) program. There will need to be mechanisms available for communicating new treatment technologies to those areas that need to share this information.

- **Improved Program Management.** OSWER's internal program evaluations have identified the need to work towards continuous improvement in fiscal and information management programs, accountability processes, and planning and priority-setting methods. OSWER is implementing a number of recommendations which were developed as a result of the Superfund Management Review and the RCRA Implementation Study. These include the use of the integrated timeline for establishing performance expectations in Superfund, the integrated prevention/corrective action priority scheme in RCRA, and the evaluation of program performance and development of continued improvement programs in UST. Other areas that are being evaluated and improved include contract and financial management, cross program sharing of facility information, and integrated geographic data. In the effort to improve program management, information technology can be viewed as an enabler. IRM technologies and concepts are evolving very rapidly, offering new opportunities to support and improve all facets of OSWER's programs. New IRM technologies may enable more effective ways for OSWER to "do its business" and reduce resource needs for some of the most demanding functions.

2.1 Analysis of IRM Strengths and Weaknesses

An important principle of the IRM program is that IRM is not an end in itself, but provides value to OSWER by delivering information and related support services to the waste management programs. To ensure that these services will be available and sufficient to meet OSWER's future needs, a **key part of the strategic IRM planning process is to identify and evaluate factors both internal and external to OSWER** that may affect its future ability to provide IRM services. This analysis allows OSWER to develop an understanding of its IRM organization, the environment in which it must function, and the issues that affect its performance - all crucial factors for planning information needs for the future. The following is an analysis of the strengths, weaknesses, opportunities, and threats (SWOT) of the current IRM environment.

IRM Strengths

- **Funding for ongoing IRM systems and activities is available.** Financial resources are also available to investigate a number of new technologies to support ways of providing program support through such technologies as Geographical Information Systems, improved records management technologies, models, etc.

- OSWER has a **number of large, operational systems that provide critical program support.** These include CERCLIS, RCRIS, and CAMEO. The current administration of OSWER programs would not be possible without the support of these systems. They provide the fundamental information needs of program management by collecting and storing program management tracking information. In addition, a few of the systems provide environmental data which supports the analysis of future program management trends.

- A number of **IRM program management improvements** have been made to improve the way systems are developed in OSWER. These include the **system development life cycle guidance,** practice papers on data management and data modeling, and the investigation of the use and availability of administrative and technical data in OSWER.

- OSWER is often the **leader in the innovative use of IRM technology** in EPA by undertaking the initial stages of many highly visible projects such as records management, expert systems, and local area networks (LANs).

IRM Weaknesses

- OSWER's national information **systems were developed to support individual program office legislative needs.** As a result, these systems are not designed to share data. Because of the legislative requirement underlying the information collected, OSWER does not always have the flexibility to design systems and information architectures that facilitate the elimination of data redundancy, allow data to be shared, and provide the framework to develop integrated systems. This situation is not unique to OSWER; it is a pervasive weakness throughout EPA. Keeping pace with changing legislative requirements, increasing demand for information, rapidly changing technology, growing involvement of end users, etc. has made the task of managing OSWER's information a major undertaking.

- **Data is not defined in a standard format** that would allow sharing of data collected separately to support regulation development or meet legislative mandates. This problem has also led to concerns about OSWER's data quality.

- There is **no centralized organization or mechanism for defining and managing the data collected and used** in OSWER.

- OSWER program managers **do not have a full understanding of IRM** and how it can support their program activities. There needs to be some consideration of the costs and resources involved in using IRM in their planning efforts.

- Much of the **data that is collected by OSWER is program management or administrative data** used to manage the programs from a Headquarters perspective and to meet oversight report requirements. However, changes in management structure, such as the move toward risk-based environmental decision making and the use of environmental indicators to measure program success, require the collection of technical data from the field.

- OSWER staff need more **office automation and overall technology training** to help them use the tools that they currently have more effectively and to identify the areas where IRM can support them in the future.

- There is **no centralized mechanism for communicating information** on IRM activities of OSWER program offices within OSWER and with outside organizations, such as OIRM, NDPD, other program offices, and Regions.

- OSWER **IRM acquisition and budget requests are not tied to IRM plans.** Much of the funding for IRM within OSWER is not directly tied to IRM plans (i.e., 43A and 43B forms as part of the budget). OSWER has been able to fund many IRM activities through program activities, thus making it difficult to track the precise amount expended on IRM efforts.

IRM Opportunities

- OSWER's **strategic planning effort provides the opportunity for the IRM program to closely examine and assess its current IRM direction** and ensure its future emphasis supports programmatic goals and challenges. The setting of priorities, development of measures of success, and the tracking of yearly accomplishments will be a critical part of ensuring that OSWER's IRM efforts are effectively meeting program needs.

- OSWER is **moving away from developing stand-alone systems** to designing applications which will contain and/or access data that other systems utilize. For example, Biennial Reporting and Toxic Release Inventory systems are investigating methods for sharing their common data. The development and use of an information architecture will provide the blueprint to move toward an environment in which program specific applications could access and share potentially all of OSWER's information.

- This **move towards an information management rather than a systems management** perspective has been supported by the initial development of a data administration (DA) program in OSWER. An inventory of OSWER systems has been developed, data management and data modeling practice papers have been written and distributed, many of the major systems in OSWER have identified high level data models, and an OSWER-wide data model has been designed. These efforts have given OSWER the foundation which OSWER can build upon to develop an environment in which data can be shared across program areas.

IRM Threats

- OSWER is an information intensive organization. Information is the lifeblood of this organization, and is vital for the successful management of the hazardous waste program. The need to collect quality information is increasing in response to growing management, legislative, and public demands for more environmental information. If **no effort is made to change the current management approach toward system development and the management and collection of data, then the costs will continue to increase without an improvement in the systems and data** available to support future environmental management efforts.

- **Oversight agencies and Congress** are increasingly expressing concerns over the quality and accuracy of environmental data. Their **concerns could result in significant curtailment of program resources or the specificity of what information to collect.**

- The continual movement toward **increased program delegation to regions and states,** coupled with the increased number of programs resulting from legislation (e.g., solid waste, oil pollution, etc.), will result in a **more complex and dependent information sharing** arrangement between regions, states and Headquarters.

- **OSWER relies on the National Data Processing Division (NDPD) to provide its national telecommunications** support. This support is critical to the continued implementation of RCRIS and CERCLIS as well as other program efforts. OSWER's requirements for telecommunications is continuing to expand and may soon surpass the level of support that is currently available.

- **Availability of highly skilled technical personnel** in the Federal marketplace is already limited and will become more limited in the future. This is due to the increased demand within government and industry for highly skilled technical personnel, with the supply not growing.

2.2 IRM Future Directions

The primary goal of OSWER's IRM program is to support the hazardous waste management and emergency response programs by providing access to high quality information. Based on the SWOT analysis of OSWER's current IRM environment, it is clear that there are certain areas where OSWER must focus its IRM resources to support future programmatic goals and challenges described in OSWER's strategic plan. OSWER's IRM program staff will begin to reexamine current ways of providing IRM services to move OSWER toward a more integrated approach for management of its IRM activities. This integrated approach will allow OSWER to position itself to plan for its information needs effectively, to collect information in such a way that is not duplicative and yet ensures ready availability, and to promote sharing of that information. This approach will require working closely with program managers to plan for information requirements early in the program planning phases. Over the next several years, OSWER IRM activities will focus on five primary IRM strategies.

First, **OSWER will provide increased IRM support to implement new and anticipated legislative mandates.** This will mean that early in the program planning phases, OSWER will identify and analyze the impact that the new and anticipated legislation will have on OSWER's current data collection and management systems and activities.

Second, **OSWER will improve the quality of and access to its environmental and administrative information** through the continued enhancement of its current systems and data, and by improving the access both by the program areas and the public to OSWER information.

Third, **OSWER will continue its efforts to promote an increased awareness and understanding of new IRM technology concepts and techniques among program areas to assist them in meeting their mission.** With new technologies being developed, and the increasing demand to perform more with less resources, the IRM program needs to ensure that information about technology is thoroughly disseminated to OSWER program and administrative management. New technologies, if applied properly, will aid the programs in carrying out their responsibilities more effectively and efficiently.

Fourth, **OSWER will work to improve the integration of OSWER's data to support an integrated cleanup program and maximize the benefits from its investment in information** through an improved information management function. This will allow OSWER information to be more readily shared and available both within OSWER programs and other media offices. Improving the effectiveness of OSWER information management is fundamental to meet the increasing requirement for data sharing among program offices, media offices, and public access to EPA's information. OSWER will begin to examine its use of technical data and analyze how its information and systems are interrelated as a first step towards integration.

And finally, **OSWER IRM program staff will emphasize those areas that will strengthen the IRM management infrastructure within OSWER program offices.** OSWER will identify and implement the appropriate IRM organizational structure for initiating an improved data management program and activities, such as data standards, that promote access to good, quality environmental and administrative information. In addition, OSWER will continue its support for vital IRM areas such as records management, strategic planning and budgeting, and office automation.

The next section describes, in more detail, these five IRM strategies that will drive the OSWER IRM program over the next several years. Figure 2-1 shows the relationship between the IRM strategies and the OSWER goals and challenges.

Figure 2-1 OSWER's Programmatic Goals and Challenges

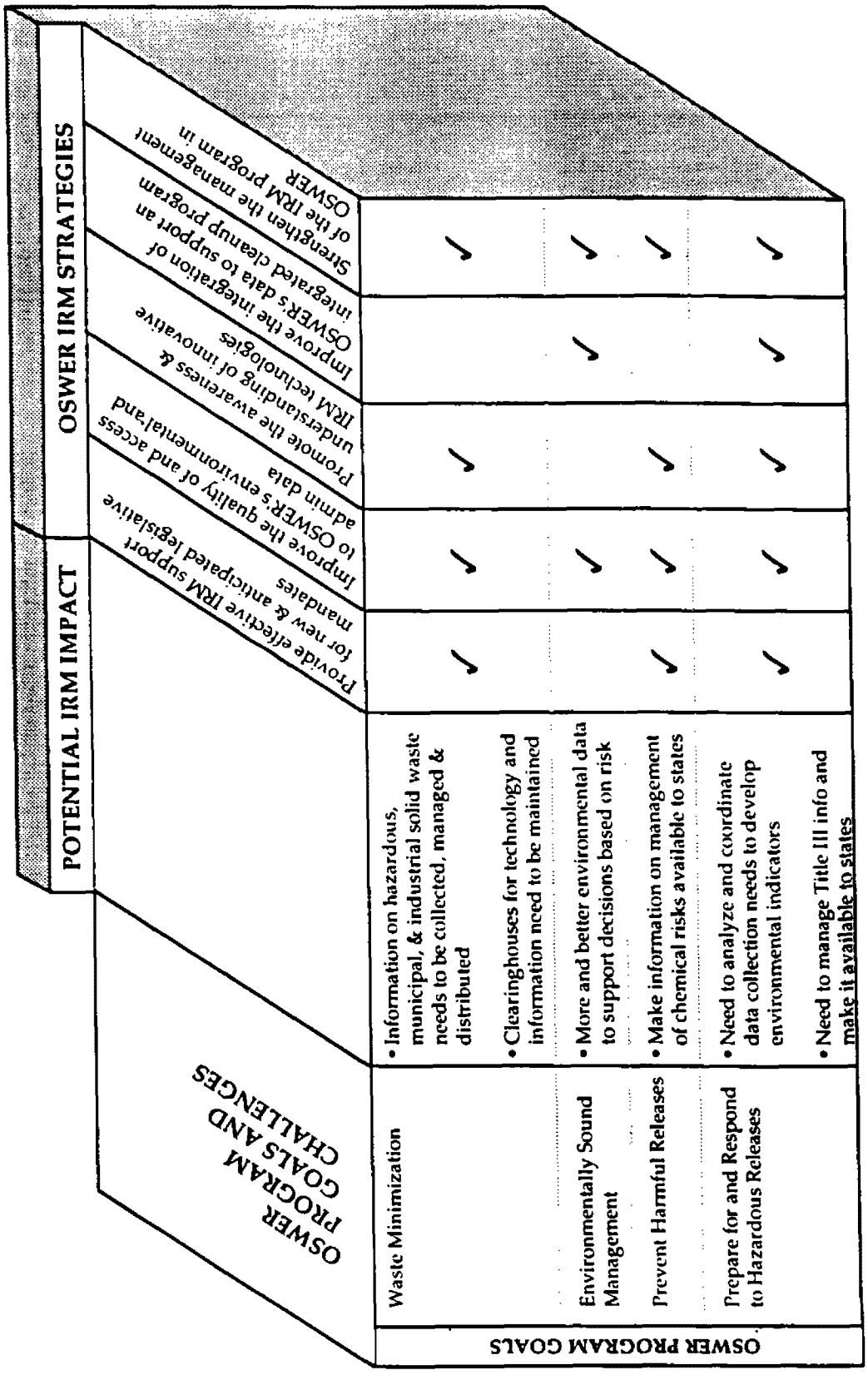


Figure 2-1 OSWER's Programmatic Goals and Challenges (cont.)

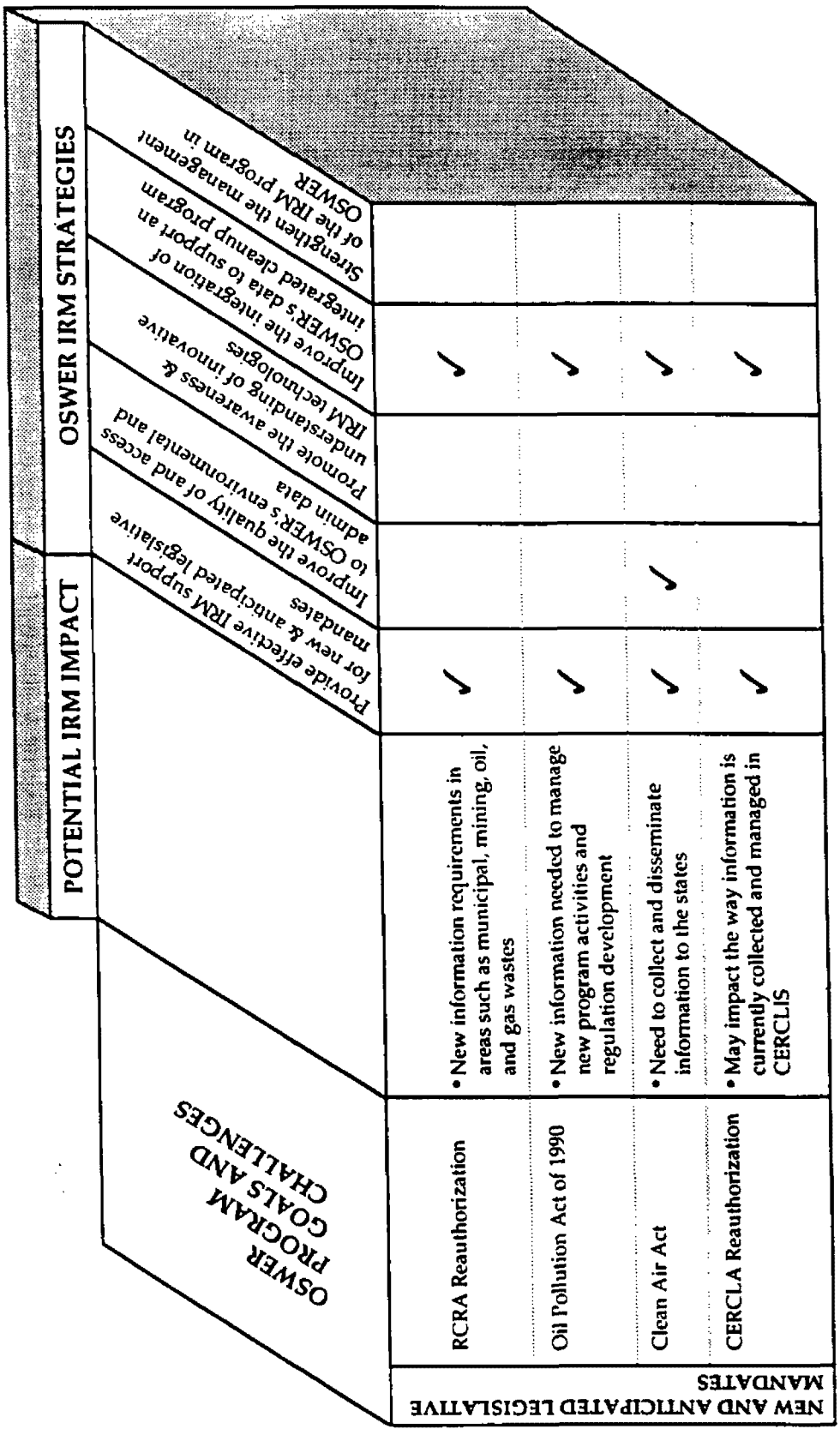


Figure 2-1 OSWER's Programmatic Goals and Challenges (cont.)

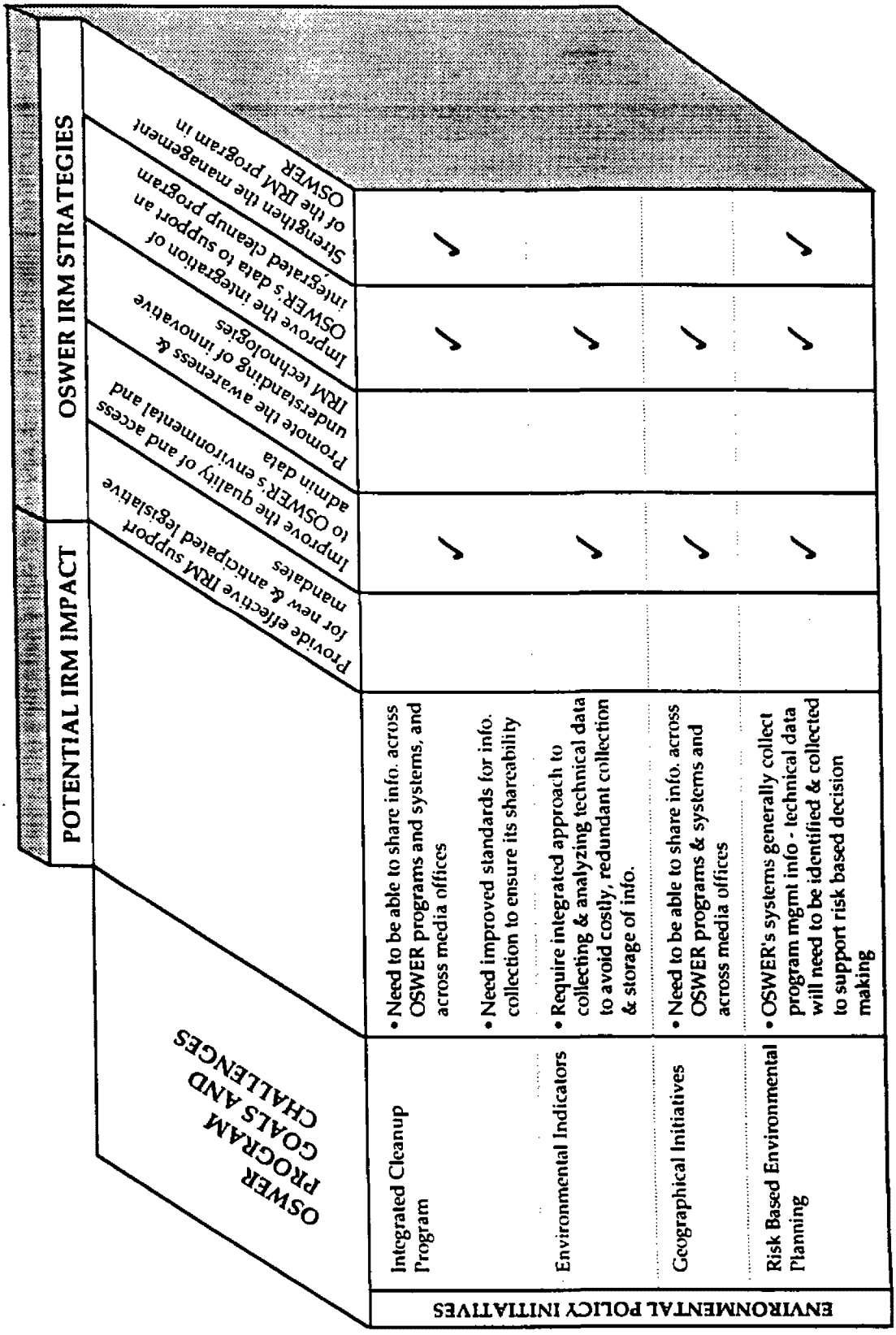
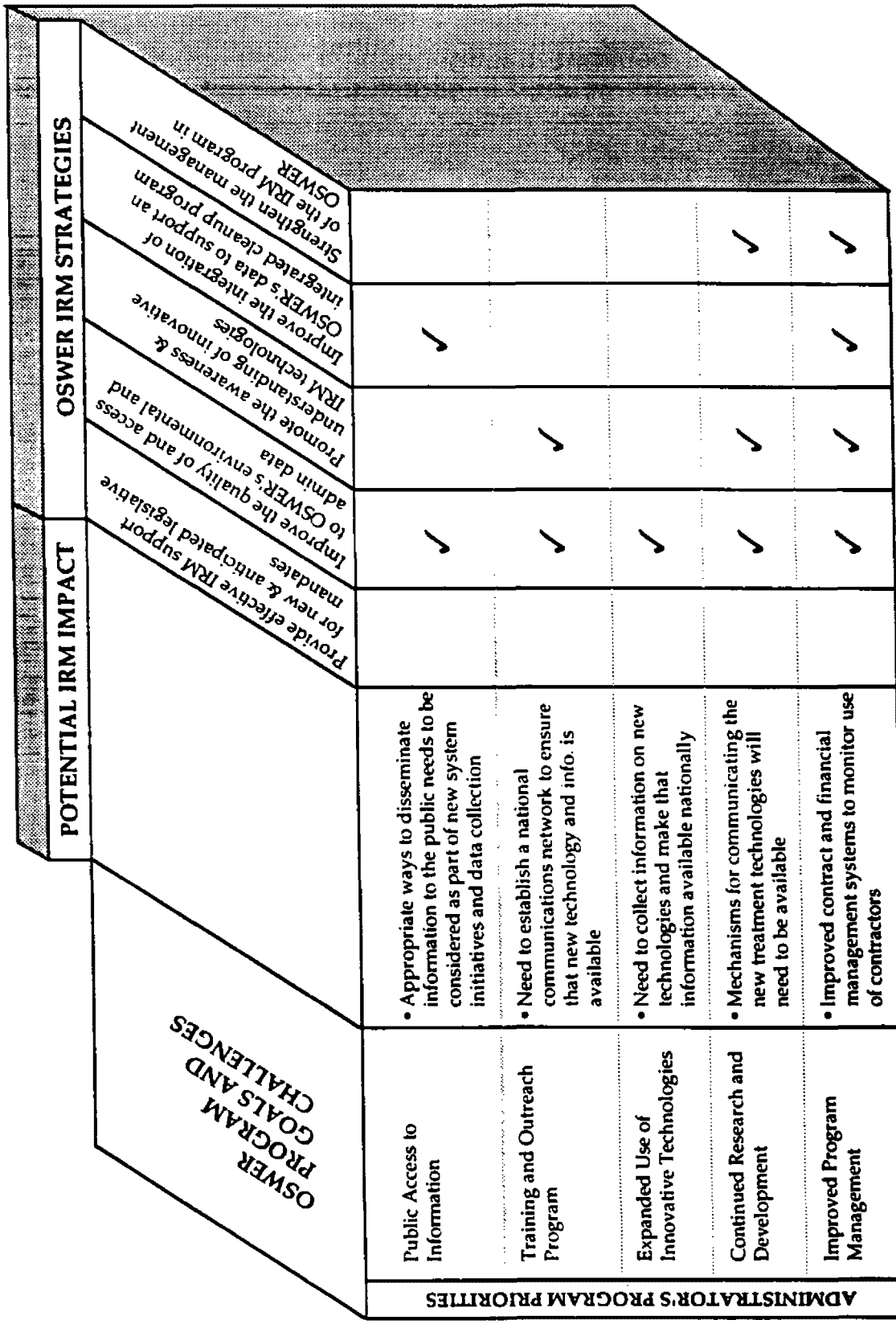


Figure 2-1 OSWER's Programmatic Goals and Challenges (cont.)



Section 3 - OSWER Strategy Overview

3.0 OSWER IRM Strategies and Objectives

The following **IRM strategies describe the long range course of action or approaches that OSWER will undertake** to accomplish OSWER's programmatic goals and challenges. Since these strategies describe broad approaches, each strategy is supported by one or more IRM objectives. The IRM **objectives are specific measurable accomplishments to be achieved at a given time in support of OSWER's IRM strategies.** In some cases, the IRM objective is an ongoing project or activity. In other cases, it is a project that will be planned and initiated during the planning years. For example, if OSWER's IRM strategy is to "provide timely IRM support for new legislative initiatives," then one implementing objective of this strategy is to "provide IRM support for the Oil Pollution Act," one of the newer legislative programs that OSWER must implement. At the end of each strategy discussion, there is a list of **success factors that provides the baseline for measuring success in accomplishing the strategies and objectives.**

As OSWER planning efforts become more refined over the years, additional objectives and more detailed success factors will be added to ensure that all of OSWER's IRM ongoing and future activities are included and can be monitored against future performance. These objectives will contain more detailed cost and scheduling information, and will form the basis for OSWER's tactical planning efforts. Figure 3-1 lists the strategies and objectives discussed in this section.

Figure 3-1 OSWER's IRM Strategies and Objectives

Strategy #1	**Provide effective IRM support to implement OSWER's new and anticipated legislative mandates**
Objective 1.1	Identify and analyze the information requirements for implementing RCRA Reauthorization
Objective 1.2	Provide IRM support for the implementation of the Oil Pollution Act
Objective 1.3	Provide IRM support for the Clean Air Act
Objective 1.4	Provide IRM support for the CERCLA Reauthorization
Strategy #2	**Improve the quality of and access to OSWER's environmental and administrative data**
Objective 2.1	Develop an approach to improve the quality of OSWER's data
Objective 2.2	Continue the enhancement of CERCLIS
Objective 2.3	Continue the implementation of RCRIS
Objective 2.4	Continue the development of the Biennial Reporting System
Objective 2.5	Investigate methods for disseminating information to the public
Objective 2.6	Continued enhancement and distribution of CAMEO
Objective 2.7	Improve access to EPA administrative systems
Strategy #3	**Promote the awareness and understanding of innovative IRM technologies to support OSWER's program activities**
Objective 3.1	Continue training OSWER personnel in IRM concepts and systems technologies
Objective 3.2	Develop emergency communication support to the field
Objective 3.3	Develop environmental models to support hazardous waste/Superfund decision making
Objective 3.4	Identify new and upcoming technologies for potential application in OSWER
Objective 3.5	Develop electronic data interchange (EDI) and electronic signature initiatives
Strategy #4	**Improve the integration of OSWER's data to support an integrated cleanup program**
Objective 4.1	Develop a future target information and application architecture
Objective 4.2	Analyze and identify the impacts of an integrated cleanup program on OSWER's current and future systems and information collection activities
Objective 4.3	Identify and develop an organization-wide plan for addressing the impact of collecting environmental indicator information
Objective 4.4	Identify alternatives for collecting, analyzing, and disseminating technical data
Strategy #5	**Strengthen the management of the IRM program in OSWER**
Objective 5.1	Expand OSWER Records Management Initiatives
Objective 5.2	Implement an OSWER-wide Strategic IRM Planning Process
Objective 5.3	Formalize the Data Administration organization in OSWER
Objective 5.4	Develop and promulgate OSWER Data Administration standards and policies
Objective 5.5	Investigate ways to convey new requirements to OARM
Objective 5.6	Expand the Office Automation capability throughout OSWER

❑ **Strategy #1 - Provide effective IRM support to implement OSWER's new and anticipated legislative mandates**

Obtaining accurate, complete and timely technical and management data on a national basis to administer OSWER ongoing program activities and new legislative initiatives is an important and at times overwhelming responsibility of the IRM program. New legislative initiatives require information analysis plans that describe how data will be collected, maintained, and made accessible after the effort is complete, and how the data quality will be ensured.

There are four important legislative and program initiatives that require planning and identifying new information management requirements to support their implementation. These include the RCRA Reauthorization, the Clean Air Act, the Oil Pollution Act of 1990, and the CERCLA Reauthorization. Early planning for information management support will result in more cost-effective and efficient information management approaches.

The following four objectives describe each one of these legislative and programmatic initiatives and their impact on future information requirements planning and analysis.

Objective 1.1 - Identify and analyze the information requirements for implementing RCRA Reauthorization. RCRA is currently being reauthorized to provide a hierarchy of pollution prevention, recycling, and waste treatment. RCRA is considering costs as well as the degree of human health and environmental risk mitigation in any new rules, and is fostering market-based approaches to encourage responsible management of solid waste. The role of states in managing solid waste will be preserved and EPA will focus efforts on technical issues related to environmental protection while reserving political issues for the Congress or courts. Specific activities include:

- Conduct research into the impact of these programmatic directions to identify any additional information requirements that will be needed to support the RCRA Reauthorization implementation.

- Develop an information plan that addresses the impact of the RCRA Reauthorization on current information systems and identifies the resources required to collect and automate new information needs required by the new law.

Objective 1.2 - Provide IRM support for the implementation of the Oil Pollution Act. The Oil Pollution Act of 1990 is a comprehensive statute designed to expand oil spill prevention activities, Federal authority in

response actions, and an oil pollution research and development program. EPA's oil spill program will emphasize rapid response with the appropriate equipment and personnel, and research and development of new prevention and mitigation technologies. The program will continue to build on foundations of the current program by incorporating the recommendations of studies, the concerns of Congress, and lessons drawn from EPA's own implementation experience. Specific activities include:

- Investigate and analyze the information requirements of this Act.
- Develop an information plan to obtain the IRM resources necessary to support the implementation of this legislative program.

Objective 1.3 - Provide IRM support for the Clean Air Act. The Clean Air Act (CAA) provisions build on the SARA Title III requirements for disclosure of chemical hazard information and the use of the information to protect the public. OSWER initiated a project to study the implications of the CAA on OSWER. Specific activities include:

- Identify any new information requirements to support CAA implementation.
- Determine the appropriate means to disseminate this information to all parties concerned.

Objective 1.4 - Provide IRM support for the CERCLA Reauthorization. In 1995, major changes to Superfund legislation are expected. Impacts of the new legislation may change the role and responsibilities of states, and increase the number of sites on the National Priorities List (NPL). OSWER will continue to analyze and assess the impact of the reauthorization on OERR's systems and data collection activities. The key activity for this objective is to:

- Identify and analyze the potential impact of CERCLA reauthorization on CERCLIS.

Success Measures for Strategy #1

- Identification of the resources needed to collect and manage the information required under new and pending legislation early in the program planning life cycle.
- Identification of the most cost effective approach to providing program management with the information necessary to support the implementation of new and pending legislation.

- Reduced costs associated with the collection and management of the new information.

❑ **Strategy #2 - Improve the quality of and access to OSWER's environmental and administrative data**

As the public becomes more involved in environmental issues and concerns, there has been an increasing demand by the public for access to environmental information. There is a need for OSWER to disseminate information to a variety of users including states, regions, other EPA media offices and even the international community. For example, a major emphasis of the Emergency Planning and Community-Right-To-Know Act is the need to provide technical assistance, guidance, training and computer applications geared toward building state and local capabilities, and preparing local groups to receive planning related information generated as a result of the recently enacted Clean Air Act Amendments, the Oil Pollution Act, and Hazardous Materials Transportation Uniform Safety Act (HMTUSA). In addition, OSWER is continuing to share information on prevention, preparedness and response, by working with multi-national organizations such as United Nations Environment Program (UNEP) and Organization for Economic Cooperation and Development (OECD), as well as between nations on a bilateral basis. Further, OSWER shares information with other Federal agencies to support enforcement and other joint Federal monitoring programs. An important part of this strategy is not only to ensure that the necessary information is identified, collected, and made readily available to those outside parties, but that this information is of high quality as well.

One way that information is already accessible is through OSWER's operational systems. These systems provide key strategic administrative and management support to the hazardous waste program. The continued support and enhancement of these systems is of critical strategic importance to OSWER's success and effectiveness. The following objectives support the increased access to and improved quality of OSWER's data.

Objective 2.1 - Develop an approach to improve the quality of OSWER's data. OSWER will investigate approaches and/or models for the improvement of data quality in OSWER information systems. The need for quality information has been a key focus for OSWER's systems and collection efforts including RCRIS, BRS, and CERCLIS information. A data quality improvement model represents a unique synthesis of three disciplines: quality control, system life cycle management, and data administration. The following activities under this objective are:

- Investigate approaches and/or models for the improvement of data quality in OSWER information systems.
- Develop a model that will consist of a set of activities utilizing specific tools and techniques to address the programmatic, organization, and system technology factors that determine data quality for OSWER.

Objective 2.2 - Continue the enhancement of CERCLIS. The Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) supports EPA Headquarters and regions in the management and oversight of the Superfund program. It has two purposes: maintain an automated inventory of abandoned, inactive, or uncontrolled hazardous waste sites and act as a vehicle for regions to report Headquarters status of major stages of site clean-up. The system provides a decentralized national system where each region controls and enters its respective data on a regional system called WASTELAN. CERCLIS version 3.0 is currently in the requirements phase of the life cycle.

The next generation of CERCLIS will emphasize data sharing, integration and technical information exchange within the hazardous waste program at all organizational levels. The future impact of the CERCLA reauthorization legislation will continue to be studied so that future information impact to CERCLIS will be identified early in the planning cycle for the ongoing operation and maintenance of CERCLIS. Plans for CERCLIS include the following:

- Migrate CERCLIS operating environment to a simplified interactive data retrieval type environment.

- Select appropriate LAN support to ensure that access to CERCLIS is easy and available for all users.

- Modify CERCLIS to accommodate future environmental indicator information based on a recent study on the types of information needed to measure environmental effectiveness.

Objective 2.3 - Continue the implementation of RCRIS. The Resource Conservation and Recovery Information System (RCRIS) will replace the existing HWDMS system as the major system supporting the RCRA program. RCRIS accommodates new data as required by the 1984 Hazardous and Solid Waste Amendments (HSWA). RCRIS is used interactively on a day-to-day basis at the state and regional level, and is updated via batch uploads and merges on a monthly basis to the National oversight database. The system's users include EPA headquarters, regions, and states. The states, as hands-on management partners, have particular data needs unique to their operations. EPA regions and headquarters, as overseers and quality control partners, have their own information requirements. Often, the same data elements serve both purposes. The focus of RCRIS development to date has been to foster and strengthen the state/EPA partnership. Plans for RCRIS include:

- Complete national implementation of RCRIS and strengthen full two-domain implementation in states and regions to ensure state/EPA data sharing by FY 1993.

- Ensure RCRIS system management and support infrastructure at EPA Headquarters, regional, and state levels for a successful national system/process.

- Ensure RCRIS data quality to help management access information to manage RCRA program.

- Coordinate with Permitting, Compliance, and Corrective Action personnel to identify potential systems enhancements and to expand and strengthen information support.

Objective 2.4 - Continue the development of the Biennial Reporting System. The Biennial Reporting system (BRS) is being developed to track information the RCRA regulated community submits in Biennial Reports on hazardous wastes generated, managed, or minimized, etc. This data has been submitted biennially since 1985. The 1989 data is currently being submitted by the states to the regions for quality assurance and quality control, after which it will be loaded into a National database. Major activities for BRS include:

- Compare information requirements and current information in both Toxic Release Inventory (TRI) and BRS to identify whether the two systems can be integrated or share information in the future.

- Currently, regulations for the FY93 cycle are being finalized. Once this is completed, modify the BRS to support the data collection requirements for SARA capacity.

- Develop a linkage of BRS and RCRIS data to address data quality and management reporting.

- Integrate RCRIS and BRS data to support data quality and management reporting needs.

Objective 2.5 - Investigate methods for disseminating information to the public. OSWER will evaluate various technology solutions for disseminating information to the public. This includes consideration of public dissemination alternatives in the development of new OSWER information systems and automated data collections. Some areas that are underway include providing access to OSWER information through hotlines, dockets, video teleconferencing, and NDPD's Gateway Prototype.

An expanded telephone system has been purchased to support the improved efficiencies of OSWER hotlines. The hotlines provide answers to factual questions on CERCLA, RCRA, and UST regulations. Specific features of the new telephone system are being implemented. These features include

additional trunk lines to allow more users to call in at one time, and phone trees to direct callers more quickly to their area of interest.

Dockets are in the process of being converted to microfiche to allow more efficient access to RCRA docket information. In addition, an OSWER directives work group has been initiated to study potential improvements in the dissemination of OSWER's directives.

Another approach for disseminating information is the use of video conferencing. OSWER has participated in the implementation of the NDPD video conferencing pilot in 20 locations nationwide. Video conferencing provides visual and voice communications between geographically dispersed locations. This connectivity facilitates cooperation and joint efforts among various OSWER regions, labs, and Headquarters offices.

In addition to these initiatives, OSWER will coordinate with and support OIRM in the planning and implementation of the Gateway Prototype. The primary goal of Gateway is to enhance the availability and utilization of environmental information to support decision-making related to individual program areas and single media legislation as well as cross-media, geographic initiatives and broad environmental issues. The key components of the Gateway strategy are: 1) enhanced access - provide value to program offices by giving them faster, easier access to their own existing data and making that data available to a broader range of users; 2) cross-media data - provide cross-media data to decision makers by linking related program system data; 3) management tools - enhance program-specific and cross-media management by offering analysts and decision makers tools for intelligent data retrieval from single or multiple systems and spatial display and analysis of program and base geographic data; and 4) additional data - augment currently available data with additional programmatic and base geographic data as needed to support environmental decision-making. Gateway is still in the pilot phase. The Gateway team is currently in the process of coordinating an identification of Agency needs for geographic and demographic data sets, prioritizing these needs and formulating memoranda of understanding with other agencies to acquire and exchange data to support improved environmental decision-making.

Activities under this objective are:

- Consider technology solutions that promote the dissemination of information to the general public and other agencies
- Implement the expanded telephone system to increase support for dissemination of regulation information to public.
- Study the potential improvements in the dissemination of OSWER directives.

- Support the continued expansion of the video conferencing in selected regions and labs, states, and other agencies.

- Support the continued development and implementation of the Gateway prototype.

Objective 2.6 - Continued enhancement and distribution of CAMEO. CAMEO was developed by NOAA to support emergency planners and first responders both to plan for and safely handle chemical accidents. It contains response information and recommendations for 2,629 commonly transported chemicals, and air dispersion models to assist in evaluating release scenarios and evacuation options. The system also contains several easily adaptable databases and computational programs that address the emergency planning provisions of Title III, the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA).

CAMEO is a very important tool in support of EPCRA Title III. The role of the Preparedness Staff in OSWER is to help communities prepare for emergencies involving hazardous substances. CAMEO has opened the door for improved communications with state and local governments. Plans for CAMEO include the following activities:

- Continued support and upgrade of the PC version during FY92.

- Increased sharing of CAMEO with the international community including France, Sweden and Latin America.

Objective 2.7 - Improve access to EPA administrative systems. OSWER administrative staff has had difficulty in accessing and obtaining information needed to perform their function from the EPA-wide administrative systems. Activities to improve access to administrative systems are:

- Investigate methods and procedures to improve the capabilities of exchanging administrative information between OSWER and EPA-wide administrative staffs.

- Train OSWER personnel on the potential interfaces with the agency-wide systems.

Success Measures for Strategy #2

- Quality assurance checks of OSWER's data will show marked improvement in the quality of the information for CERCLIS, RCRIS, and BRS, as well as new collection efforts.

- RCRIS will be installed in every region and state by the end of FY 1993.

- BRS will be completed and integrated with RCRIS by FY 1993.
- CERCLIS will be modified to include future environmental information by FY 1993.
- Increased public understanding and support of OSWER and Agency actions as a result of greater access to information in areas such as environmental risk.
- OSWER management can directly access the financial and administrative information.

❑ **Strategy #3 - Promote the awareness and understanding of innovative IRM technologies to support OSWER's program activities**

Information technology is advancing at a rapid pace. It is essential that OSWER IRM managers keep abreast of new technological developments that could have potential application in OSWER. OSWER will explore new ways of providing IRM services to support program areas in the future. Some of the areas that will be investigated include geographical information systems to assist engineers, scientists and managers in identifying and assessing environmental risks and trends; expert systems and environmental models to assist in decision making; and electronic signatures and Electronic Document Interchange (EDI) to promote the dissemination of OSWER documents between OSWER headquarters and regions.

The following IRM objectives describe some of the ways that OSWER is using new technology to support OSWER program activities.

Objective 3.1 - Continue training OSWER personnel in IRM concepts and systems technologies. OSWER will initiate an informal training program designed to provide OSWER managers with a broader understanding of information technology and its application. This program will establish the organizational responsibility for technical support and provide the means for communicating among OSWER offices and regions on the latest trends in technical issues and their application to OSWER. Training activities are:

- Expand OSWER IRM training program to include training for managers in new technologies such as GIS and expert systems.

- Develop a newsletter to share new technology activities and ongoing system development efforts.

Objective 3.2 - Develop emergency communication support to the field. OSWER Information Management staff is initiating a project to research and evaluate alternatives for providing emergency communications capability to the field in the case of a national disaster. There are three levels of support that have been identified: catastrophic accidents such as EXXON Valdez, site cleanup work, and emergency spills. For catastrophic support, OSWER is investigating the development of formal agreements among the U.S. Coast Guard, Department of Transportation, and Nuclear Regulatory Commission for system-to-system and person-to-person connectivity in instances where a catastrophic emergency has occurred. Activities included in this objective are:

- Support the development of portable satellite unit teams which will be dispatched to locations of catastrophic emergencies to ensure communication during these incidents.

- Continue working with NDPD to develop portable desks for on-site coordinators (OSCs) for the site cleanup work and emergency spill levels. Portable desks will include a cellular phone, a portable PC, snapshot video camera and FAX machine. In addition, mobile vans will be utilized and include the same equipment as the portable desks as well as continuous video capabilities.

Objective 3.3 - Develop environmental models to support hazardous waste/Superfund decision making. OSWER has a project underway to analyze the use of scientific models in aiding programmatic decision making. In FY 92, OSWER will continue its multi-year program to improve the use of computerized environmental models. An OSWER pilot project focusing on appropriate applications for a few selected ground water models is now in progress. This objective includes the following activities:

- Provide regional office staff with descriptive information about the models, a few case studies describing appropriate applications, and a framework for assessing modeling efforts.

- Expand the products resulting from the OSWER pilot project and provide coordination and support for an Agency-wide Task Force on Environmental Modeling to develop standards for model development, verification, validation, and peer review.

Objective 3.4 - Identify new and upcoming technologies for potential application in OSWER. There are a number of new technologies that will be investigated during the planning years with potential application to OSWER's requirements. These include expert systems to support OSWER decision-making in the field, and the development of GIS applications.

One project underway is the development of an expert system to assist regions in the preparation of the SARA Section 104E information letters. These letters are information requests to the PRP's which are the first step in the enforcement process. The letters are currently manually developed. The new expert system will contain the necessary knowledge rules to develop the 104E letters, and then allow the automatically developed letter to be transferred into a word processing package for further customization as required. Because the number of these letters is increasing, the expert system will provide a tremendous benefit to the enforcement effort once implemented. The information requirements for this system will be documented over the next fiscal year.

OSWER is using GIS applications in a number of ways. The Office of Solid Waste is developing a Location Rule GIS that will allow states and EPA to site hazardous and municipal waste facilities that are permitted on fault zones, wetlands, etc. The system will instruct users on how to go about siting these

new facilities. This system was developed and implemented in Las Vegas. Future plans call for expanding the system to other OSWER regional and state locations. Additionally, Superfund is implementing a GIS system that will determine the demographics surrounding Superfund sites. This system will include Superfund site maps and local population information from the Census Bureau to determine the impact on populations located near Superfund sites. This system will be implemented in Headquarters this year.

- Investigate the potential for designing expert systems such as one with linguistics capability to read legislative materials and to identify conditional statements, such as "if, then" statements to support regulation development.

- Continued support for the GIS work group to discuss GIS and spatial issues and to promote the use of GIS in OSWER.

Objective 3.5 - Develop electronic data interchange (EDI) and electronic signature initiatives. OSWER is investigating the potential application of EDI and electronic signatures to support improved communications among OSWER Headquarters and regions. EDI would allow OSWER offices to transmit complete documents over telecommunication lines. Electronic signatures will ensure that official documents can be transmitted without original signatures. The implementation of electronic signatures requires the development of procedures for the use of electronic authorization and electronic signature in document creation and processing. These procedures must provide adequate safeguards for signature application, transmission, verification, and security, as well as meet existing Federal standards. Some areas where this technology will apply include RCRA permitting, contractor oversight, vendor approvals, etc. Under this objective, OSWER will:

- Coordinate OSWER-wide efforts in this area with the EDI and electronic signature initiatives sponsored by OARM.

Success Factors for Strategy #3

- More IRM technologies, such as GIS and expert systems, move from "innovative" to "available."

- Increased use of new IRM technologies in support of OSWER's programs.

- All OSWER personnel are trained on a cyclical basis in new OA concepts, new IRM technologies and concepts.

- **Strategy #4 - Improve the integration of OSWER's data to support an integrated cleanup program**

  OSWER is an information intensive organization. The collection, use, and management of information is the major thrust of its IRM program. Information is currently managed by program offices who operate specialized applications to collect, process, and store program information. In many cases, the information in these systems is similar and in some cases redundant. OSWER's national information systems were developed to support individual program office legislative needs. As a result, these systems are not designed to share data. Due to the legislative requirement underlying the information collected, OSWER does not always have the flexibility to design systems and information architectures that facilitate the elimination of data redundancy, allow data to be shared, and provide the framework to develop integrated systems. Keeping pace with changing legislative requirements, increasing demand for information, rapidly changing technology, growing involvement of end users, etc., has made the task of managing OSWER's information a major undertaking.

  The need to share data between OSWER program areas and between media groups is becoming more important as programmatic initiatives are being integrated from an Agency-wide perspective (such as geographical initiatives and an integrated cleanup program). OARM is supporting various projects (Gateway and Idea) to support the integration/sharing of data between media office systems. The complexities of integrating data across media groups, rather than just in a specific program area, is a formidable task. Further, OSWER's current base of systems cannot easily or cost effectively be replaced or redesigned. Only by gradually migrating the current systems and designing new systems within an integrated structure, will EPA, as well as OSWER, be able to share data to more effectively support programmatic missions.

  OSWER will move away from developing stand-alone systems to designing an information architecture that will allow all program specific applications to access potentially all of OSWER's information stored in a single location. This move towards an information management rather than a systems management perspective has been supported by the initial development of a data administration program in OSWER. A repository of OSWER systems has been developed, data management and data modeling practice papers have been written and distributed, many of the major systems in OSWER have identified high level data models, and an OSWER-wide data model has been designed. These efforts have given OSWER a sound foundation for an expanded data administration program.

  The following OSWER IRM objectives identify planned and ongoing activities for improving the integration of OSWER's information.

Objective 4.1 - Develop a future target information and application architecture. OSWER has conducted a number of information management activities over the past year to develop the baseline information for the development of a future target OSWER Systems Architecture. These activities included the development of the OSWER Data Resource Directory (DRD). The DRD contains information about OSWER systems, databases, models, data entities, and relationships. In the future, it will contain additional information on OSWER organizations. A Computer-aided Software Engineering tool, called Information Engineering Workbench (IEW) by KnowledgeWare, is also being used in conjunction with the DRD. In addition to assisting with the analysis of the current systems' data models, IEW supports the documentation of key components of the data in OSWER. Specifically, IEW contains for each system, an entity relationship diagram (ERD), a set of data entities with textual definitions, relationships between the data entities, and relationships between the systems and the data entities. Data models for a number of OSWER mission critical systems representing a cross-section of OSWER systems have been developed to provide a baseline model for OSWER's current data architecture. In addition, the sharing of information between the systems has been documented through the development of system dependency diagrams. Activities under this initiative include:

- Develop a future system architecture vision which involves developing common databases that are accessible through multiple applications across program areas.

- Analyze the disparities between the future systems architecture and the current systems architecture to provide a road map for future systems development. This architecture will indicate which databases should be maintained and which applications will use them (and share some or all of them). In addition, the architecture will establish common meaning for data, so that data can be shared, and shared consistently across OSWER.

- Develop a strategy for migrating the current and future systems development efforts to an information management approach.

- Coordinate OSWER integration efforts with OIRM's initiatives for Agency-wide data integration.

Objective 4.2 - Analyze and identify the impacts of an integrated cleanup program on OSWER's current and future systems and information collection activities. OSWER's Strategic Plan FY 1993-1996 envisions that by 1996, the agency will have made substantial progress toward full integration of the Superfund, petroleum spill, and various RCRA cleanup programs. This integration will encompass a fully consistent regulatory framework, and an

integrated priority scheme to identify the worst sites first at every stage of the pipeline where choices must be made. OSWER currently operates two large systems, RCRIS and CERCLIS, to support its separate RCRA and Superfund cleanup activities. To support an integrated cleanup program, significant changes will be made in the current systems environment as well as in other areas where information is collected, processed and analyzed to support cleanup efforts. These system changes can be extremely costly and long term in nature, particularly if planning efforts do not focus on the IRM impacts of these changes early enough in the program planning cycle. Plans for this objective are to:

- Identify the impacts of an integrated cleanup program on current system support, including areas where information needs to be standardized such as common facilities identifiers.

- Define alternative strategies for future IRM support.

- Recommend an approach that includes the potential costs and benefits for implementing the identified strategies.

Objective 4.3 - Identify and develop an organization-wide plan for addressing the impact of collecting environmental indicator information. OSWER's continued drive toward measuring the effectiveness of its programs in reducing risk to human health and the environment through environmental indicators requires the identification and collection of the technical data necessary to depict this environmental progress. Each program area is in the process of identifying, collecting, and modifying its systems to store the technical data necessary to do this. However, since there is not an integrated approach to identifying these indicators, the opportunity exists for redundant collection efforts and storage of technical data between the program areas. Information management activities will address this integration of environmental data from each program area to develop accurate measures of environmental progress across program areas. OSWER will:

- Develop a plan that will address the systems and data collection efforts that will be affected by the evaluation of new technical information.

- Identify alternative OSWER-wide approaches for collecting environmental indicator information, and their potential costs and benefits.

- Recommend strategies for collecting information and making it available to the program areas.

Objective 4.4 - Identify alternatives for collecting, analyzing, and disseminating technical data. There has been much emphasis on the collection of technical data from both inside and outside of OSWER. As a result, OSWER is conducting a study to characterize the use of technical and scientific databases within the hazardous waste community and to identify any problem areas. This study will focus on describing the completeness of the data; identifying what quality assurance procedures are in place; identify levels of training needed to use the databases efficiently; identify the levels of technical support required to support the databases; and, assess how these systems fit within the current and future OSWER information architectures. The study's activities include:

- Identify the uses of technical data and scientific databases and their programmatic context throughout OSWER.

- Develop recommendations for improving the management of technical and scientific data throughout the hazardous waste community.

Success Measures for Strategy #4

- By the beginning of 1993, OSWER will have developed a strategy for migrating systems, databases, and data collections to the future targeted information and application architecture.

- Sufficient technical data exists to identify environmental indicator information to measure the success of the hazardous waste program.

- By the beginning of 1993, all new system development and data collection activities will incorporate OSWER and Agency data standards.

❑ **Strategy #5 - Strengthen the management of the IRM program in OSWER**

OSWER resources and program management support must be directed toward managing information as a resource if real changes and improvements in the way OSWER manages information are to be realized in the future. The IRM program is responsible for promoting and implementing the management principles governing the planning for and management of information as a resource. These include developing IRM policies on data administration; implementing a centralized IRM planning process that will tie to the IRM budget process and ensure centralized coordination, control, and decision-making over OSWER-wide acquisitions and system development efforts; and promoting IRM concepts such as improved records management initiatives.

The following IRM objectives have been identified to implement this strategy.

Objective 5.1 - Expand OSWER Records Management Initiatives. Superfund is one of EPA's largest, most complex, and most visible programs. For several years, EPA has recognized that Superfund's success depends in part on the Agency's ability to capture and make effective use of key documents and records. Effective management of Superfund records is vital to the Agency's ability to make sound decisions, recover costs from responsible parties, and operate efficiently and perform basic program functions, such as compiling Administrative Records and supporting enforcement actions. A key goal of the IRM program is to ensure that OSWER's records are complete, well organized, readily accessible to program staff, protected from unauthorized disclosure, and safeguarded and reserved for future uses over a very long timeframe.

As part of the effort to improve management of Superfund records, OSWER's Information Management staff initiated the Superfund Document Management System (SDMS) project in 1989. The overall goal of the project is to identify, select, and implement an integrated solution to the Agency's requirements for managing Superfund site files.

The purpose of the SDMS project is to provide an integrated solution to OSWER's requirements for managing Superfund site files. The SDMS project identified and evaluated a range of alternative solutions to meet the Agency's requirement for managing Superfund site files. OSWER is in the process of validating the selected approach that combines automated document-level indexing with limited digital imaging. Plans for this project are to:

- Begin the design and development of the baseline SDMS system in FY 92.

- Implement SDMS as a pilot in a selected region and then roll out to the remaining regions on a phased basis.

- Conduct a review of SDMS by RCRA program areas to evaluate its potential application to the RCRA records management program.

Objective 5.2 - Implement an OSWER-wide Strategic IRM Planning Process. The purpose of an OSWER strategic IRM planning process is to ensure that IRM resources adequately address both existing and future OSWER programmatic needs. The OSWER strategic IRM planning process will support the OSWER programmatic planning cycle to ensure that IRM plans reflect the programmatic priorities and new requirements. OSWER's strategic IRM plan will be updated regularly to reflect OSWER changing priorities and resource considerations. Future iterations of the plan will contain more details on project initiatives and will more closely tie to the IRM budgeting process. It will highlight and summarize the OSWER offices' tactical plans, and form the basis for a routine review of the OSWER IRM program and associated resources.

The Strategic IRM plan will serve as a means of communicating OSWER's ongoing and future IRM initiatives and priorities and provide senior OSWER management and Agency IRM management with an understanding of the OSWER IRM program and associated resources, and how OSWER program and IRM goals are linked to OSWER IRM strategies and objectives. The IRM planning process will be designed to support and dovetail with the OSWER strategic programmatic planning activities to ensure that long range IRM initiatives are supporting OSWER strategic directions. In addition, the planning process will result in IRM plans that will provide information on OSWER's requirements to OARM, and information on related IRM activities to other EPA media offices. OSWER will:

- Develop and implement an annual planning process that will fully integrate the OSWER offices' IRM plans and support the annual update of the OSWER Strategic Plan.

- Design the process to include detailed descriptions, schedules and resources for all of OSWER's IRM objectives/activities to serve as a monitoring tool and communication source for all of OSWER activities.

Objective 5.3 - Formalize the Data Administration organization in OSWER. A data administration program is the management function responsible for the definition, organization, protection and efficiency of databases in OSWER. The goal of data administration is the cost effective collection, storage, and access of data of sufficient quality to support OSWER mission. Its purpose is to maximize the value, quality, and use of data resources in OSWER. The

data administration functions focus on the conceptual planning and organization of the data resource. This includes data modeling, developing policies and data standards, training users and program management in data management concepts, and coordinating other data activities throughout OSWER with system designers and users.

OSWER at this point has not yet completely formalized its data administration program. However, many data administration activities have been conducted in OSWER. For example, OSWER has developed a centralized inventory of its data and systems, performed data modeling for many of its larger information systems, and created a data dictionary for OSWER which serves as a central repository of information about OSWER data. These activities have provided OSWER with a baseline understanding of what data is under our control, where it resides, and where it is duplicated. It also provides an understanding of what data is available already in OSWER and where it is located.

To date, the only data administration role formally identified is the OSWER Data Administrator, a member of the IM staff. To formalize the data administration program in OSWER, other roles and responsibilities will be defined in the OSWER program offices. An organizational structure will assure senior management guidance, office-wide participation and sufficient staff resources to write, implement, and maintain OSWER-wide data administration policies, guidances and standards. This structure is an important organizational entity since the members are ultimately responsible for implementing and applying the data policies and standards to the operation of their organizations. They are also closest to the work being performed in the organization and are thus in the best position to propose new standards, revise current standards, and most importantly provide the analysis on the potential impact of a proposed OSWER-wide data standard in their program area. OSWER will:

- Establish a formal office-wide data administration organization to support the development and sharing of office-wide program data throughout OSWER. This organization will provide the leadership and coordination point for OSWER's data administration activities, and provide accountability for data administration activities in OSWER's offices.

Objective 5.4 - Develop and promulgate OSWER Data Administration standards and policies. OSWER has developed data management and data modeling practice papers as part of the life cycle management guidance. Additional standards and policies will be developed to fully support a data administration program. For example, data definition standards in such areas as facility identifiers, and procedures and policies on data standard

development will be developed to support and implement the program. As part of this objective, OSWER will:

- Develop a data standards program to develop and publish OSWER data standards to govern the collection and automation of OSWER's information.

- Develop an IRM policy that formally charters the organizational responsibilities of the data administration function in OSWER.

- Create a centralized review of new system development efforts and requirements to ensure compliance with the new data administration policies and standards.

Objective 5.5 - Investigate ways to convey new requirements to OARM. OARM provides OSWER with IRM operational services including mainframe computing, telecommunications and office automation support. OSWER is one of the largest customers of these OARM services. For example, several of OSWER's large collection efforts and system development efforts, such as the implementation of RCRIS, are dependent upon a national telecommunications infrastructure. An infrastructure is the communications backbone that provides national communications support to regions and states. OARM is responsible for providing the Agency with this very important IRM service. It is essential that OSWER work closely with OARM in identifying its IRM requirements so that OARM can adequately provide these services in the future. OSWER will:

- Investigate ways to better convey future IRM needs to OARM through regular user group sessions and the EPA IRM Steering Committee.

Objective 5.6 - Expand the Office Automation (OA) capability throughout OSWER. OSWER's IRM environment is changing from large, mainframe-based systems to a more OA-user oriented environment. Future IRM support will need to be directed toward providing users in headquarters and the regions with the communications, training, and hardware and software to effectively access and process OSWER information in support of daily programmatic activities. This support will provide improved communications through the use of LAN technology, and an improved capability to share and access information throughout the Agency. OA technology has the potential to bring powerful graphic, shared scheduling and executive information tools to all OSWER personnel. OA activities include the following:

- Install LAN technology in all OSWER offices and regions by FY94.

- Install scheduling packages that will allow OSWER staff to access each other's calendars.

- Investigate and evaluate graphic user interfaces to introduce graphic capability to OA users.

- Investigate the potential of executive information systems that will allow OSWER's managers access to OSWER databases and key program management information.

Success Measures for Strategy #5

- All OSWER IRM staffs will have adopted an integrated approach to the development of new OSWER systems and data collection activities as defined in the targeted information architecture.

- An office-wide data administration organization will be in place and will be recognized as the lead organization and central coordination point for all OSWER's data administration activities.

- In FY93, all OSWER offices will have developed detailed tactical plans describing their ongoing and future IRM activities.

- By the end of FY92, the implementation of SDMS pilot phase will be completed.

- All OSWER personnel will have access to and training in the latest OA tools and software to support their operations.

- By FY94, all OSWER regions and Headquarters offices will be able to communicate with each other.

Appendix A

Scope and Approach

Scope and Approach

The development of OSWER's Strategic IRM Plan was initiated by the Resource Management and Information Staff in the Office of the Assistant Administrator. A planning project team was formed that included members of the IM staff and the Information Management Coordinators (IMCs) from each OSWER office. The team attended the kickoff meeting and reviewed initial planning materials, identified appropriate interviewees from the program areas, and provided access to program-specific planning materials, studies, and reports.

The planning team reviewed all the budget and planning materials provided by the program areas, and interviewed over 40 personnel in support of the planning project. The interviewees included many of the chairs of the OSWER program planning committees, Deputy Office Directors, senior program staff, and IRM support staff. Based on an analysis of the planning materials and the information provided by the interviewees, the planning team developed a draft strategic IRM plan. The draft plan was distributed to all IMCs and selected program personnel for their review and comments.

Methodology

The OSWER Strategic IRM Plan was developed using a standard planning methodology based on the Office of Policy, Planning, and Evaluation's "Overview of Strategic Planning at the Environmental Protection Agency." The methodology was adjusted to adapt to OSWER's requirements and incorporated the key elements of a strategic planning process. These elements and the OSWER Strategic IRM planning process include the following:

- Identifying OSWER's programmatic mission and objectives as defined in OSWER's Strategic Plan FY 1993-1996;
- Evaluating the current IRM environment (a realistic view of the strengths and weaknesses in terms of OSWER's current IRM support and assessing the impact of internal and external factors on OSWER's current operating capabilities and identifying where changes may need to occur);
- Selecting and evaluating the most promising IRM strategies that will enable OSWER to meet and support the information challenges during the planning years, based on these analyses; and
- Identifying the major IRM objectives to implement the strategies during the planning years.

Interview Guide

1. **Programmatic Direction**
   - What is the strategic direction and/or key initiatives your organization plans to undertake during the next five years?
   - Do you anticipate any strategic changes to your organization's mission, goals, or major areas of emphasis, including upcoming legislation?
   - Will these changes result in new information being collected, shared across OSWER or EPA, or current information being collected in a new way?

2. **Importance of IRM**
   - How important is IRM (records and information management activities, information systems, hardware, PCs, telecommunications, etc.) to the success of your program?
   - How does your program currently benefit from IRM?
   - How does IRM support your major functions and objectives?
   - Are there areas where IRM support will be needed in the future to support your office functions?
   - Are there areas where current IRM support is not sufficient?
   - What tangible benefits could be realized if IRM support was improved?
   - Are there other opportunities for new IRM support that you can envision?

3. **Information Management**
   - To what extent will it be necessary for your program to obtain or provide information across OSWER program/organizational lines and across EPA program/organizational lines?
   - Will there be changes in your program mission that will change the way you need to collect information?
   - Will these changes affect the way that your systems are developed or will it affect your current systems' structure?

4. **Information Systems**
   - Who is responsible for the development, enhancement, and maintenance of your systems?
   - Who are the primary users of the systems?
   - Are there expected changes in your program area that will impact the systems that you currently use?
   - Are there opportunities for improvement in current/future system/software development support?

5. **Planned IRM Activities**
   - Who in your organization is responsible for planning future IRM support?
   - Who in your organization is responsible for identifying IRM requirements?
   - What are the expected IRM activities for your program over the next 1-5 years?
   - Does your program need new/improved systems or other types of IRM support (Data Management, Office Automation, Telecommunications support, GIS, etc.) that are not included in current IRM plans?
   - What are the anticipated benefits from these activities i.e., improved productivity, reduced maintenance costs, etc.?

6. **IRM Program Delivery**
   - What is your process for obtaining IRM support?
   - Who is responsible for budgeting and implementing IRM support in your organization?
   - How are you affected by current IRM policies (either informal or formal), i.e., such as policies on information management?
   - Do you envision increased or decreased IRM programming support in the future? Contractor support?
   - Are there any program obstacles or constraints which may impede your organization from acquiring or using needed IRM services?
     - Funding/FTE limitations
     - Lack of ADP training/staff within your own organization?
     - Uncertain future legislative requirements?

7. **Strategic IRM Plan**
   - How may this IRM plan be effective in serving your organization's mission needs?

Interviewee List

Office of Assistant Administrator

Dorothy Cantor, Special Science Advisor to Assistant Administrator

Special Assistant
Bill Hanson
Jim Berlow

Resource Management and Information Staff
Judith Kertcher, Director
Susan Absher

Jack Frost, Director of IMS
Peg Hall
Mary Lou Melley
Chuck Carpenter
DeBorah Allen **

Chemical Emergency Preparedness & Prevention
Jim Makris, CEPO, Director
Elaine Davies*, CEPO, Director
Tony Jover, IMC, Director

Technology Innovation Office
Meg Kelly, Deputy Director

Policy Analysis & Regulatory Management Staff
Margaret Schneider, Director

Organizational Management & Integrity Staff
Laurie May, Director

OERR

Timothy Fields, Deputy Director
Mike Cullen, IMC, Director MSDS

Office of Program Management
Clem Rastatter*, Director

Hazardous Site Evaluation Division
Larry Zaragoza, Acting Director

Hazardous Site Control Division
Walter Johnson

Emergency Response Division
Stephen Luftig, Director

OSW

Sylvia Lowrance*, Director of OSW
Myra Galbreath, IMC, Branch Chief
Jeff Denit

Communications, Analysis and Budget Division
Loretta Marzetti, Director
Jim O'Leary, Deputy Director

Permits and State Programs Division
Dev Barnes, Director

Waste Management Division
Russ Wyer, Director

Characterization and Assessment Division
Elizabeth LaPointe

OUST

David Ziegele*, Director
Wilna Ray, IMC

Implementation Division
William Foskett

OWPE

Norm Niedergang, Acting Director
Joe Acton, IMC

RCRA Enforcement Division
Susan Bromm, Director
Steve Heare*, Chief of Policy and Program Operations

CERCLA Enforcement Division
Arthur Weissman, Acting Director

Program Management & Support Office
David Chamberlin, Acting Chief

Outside of OSWER

OIRM
Daiva Balkus

OPPE
Margaret Saxton

** **Strategic (IRM) Plan Project Manager**

* **Strategic Plan (Program) Work Group Chairs and Members**

Appendix B

OSWER Organization

OSWER IRM Overview

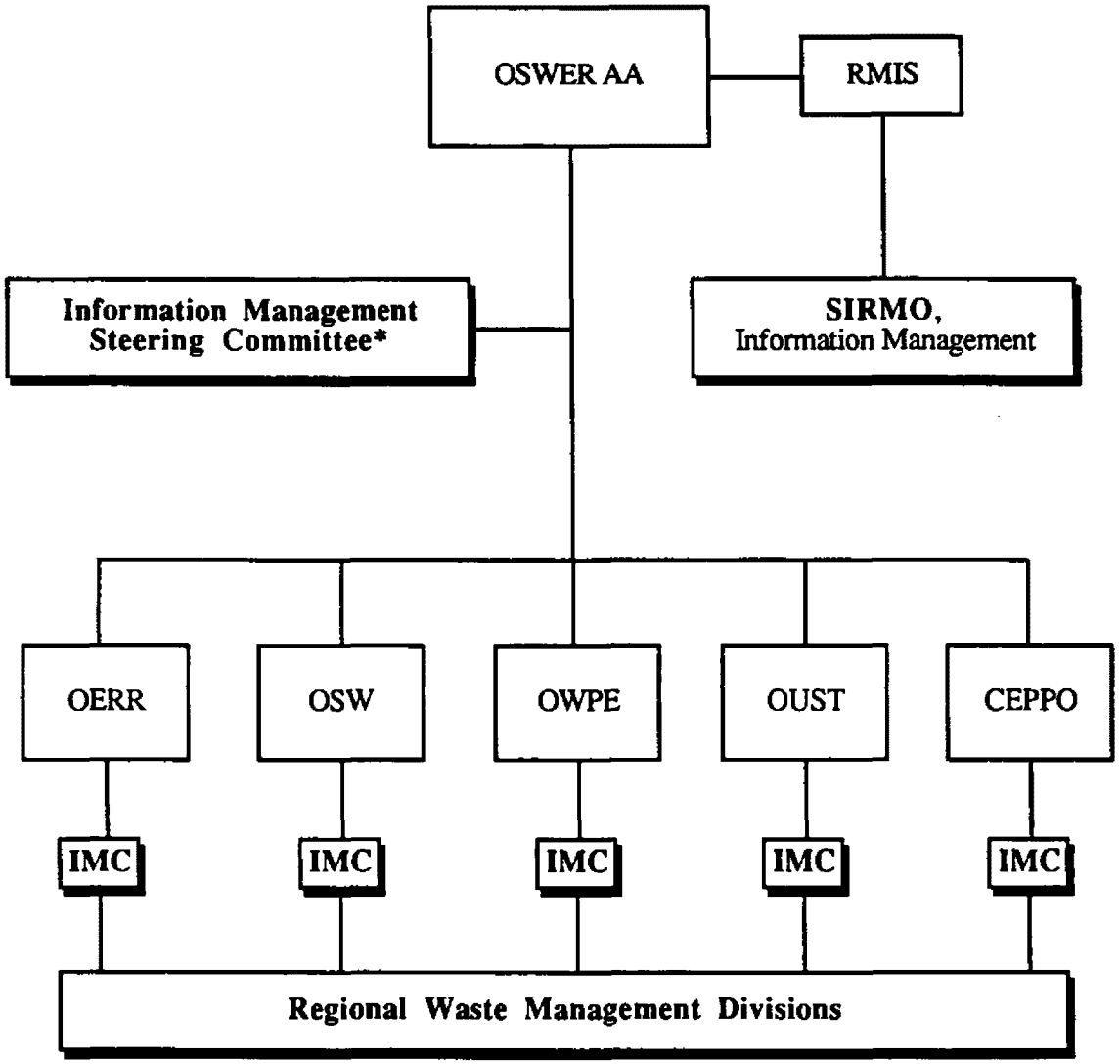
OSWER's information environment is characterized by a mixture of centralized and decentralized management of IRM services that support a diverse set of organizations: OSWER program offices, EPA regional offices, and state, county and local government organizations. OSWER's organizational approach to IRM is unique within the Agency. OSWER assigns most of the IRM responsibility to the individual program offices and the Regional Waste Management Divisions. OSWER-wide IRM policy development, oversight and guidance functions are centralized in the Information Management staff (IM) within the Resource Management and Information Staff which reports directly to the AA of OSWER.

EPA-wide IRM policy development, oversight and guidance functions are centralized in the Office of Information Resources Management (OIRM) within the Office of Administration and Resources Management (OARM) which is in the Office of the Administrator of EPA. OIRM also provides systems development support to all EPA customers through the Systems Development Center (SDC). The National Data Processing Division (NDPD) of OARM provides centralized operational services. NDPD operates the mainframes and telecommunications networks of EPA and offers support in office automation and other technological areas. OSWER is one of the largest customers of OARM. OSWER uses the mainframes for their large centralized applications such as CERCLIS and is dependent upon the telecommunications network for linkages to the regions and states. OARM also provides OSWER with office automation support and assistance in implementing new technologies such as GIS. A percentage of OSWER's IRM budget is appropriated to OARM for these services.

OSWER IRM Organizations

OSWER's IRM organizational framework consists of the Information Management staff (IM), the program office Information Management Coordinators (IMCs), and the Regional Waste Management Divisions. OSWER also has an Information Management Steering Committee to provide policy and direction for IRM resources in OSWER (see Figure B-1). These organizations are briefly described below.

Figure B-1 OSWER IRM Organization



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* IM Steering Committee Chair:
  Director of Information Management
  Members:
  Deputy Directors of OERR, OSW, and OWPE
  Director of OUST
  1 Regional Director, Waste Management Division - Lead for RCRA
  1 Regional Director, Waste Management Division - Lead for Superfund
  1 Assistant Regional Administrator
  Advisory:
  Director of OIRM

Senior IRM Official (SIRMO),
Information Management staff (IM),
Resource Management and Information Staff (RMIS)

The Information Management staff in the Resource Management and Information Staff provides overall leadership of OSWER's IRM program. The Director of the IM staff serves as OSWER's Senior IRM Official (SIRMO), with overall responsibility for the planning and management of OSWER's IRM program.

The IM staff drafts all OSWER-wide IRM policy, standards and procedures; leads the IRM planning process; coordinates and consolidates program office IRM plans and IRM inventories prepared by the program offices; leads OSWER's records management program; leads OSWER's data administration program; leads the research of new information management technologies and tools for potential application to OSWER programs; leads the development of initiatives for IRM staffing and training, organization, coordination, and communication; and provides staff support to the Information Management Steering Committee. In an oversight role, the Information Management staff reviews individual projects, and reviews and approves all OSWER ADP procurements.

Information Management Coordinators

The individual program offices plan and manage their respective IRM programs and, together with the regional offices, account for most of the IRM activities and resources within OSWER. The program offices determine program-specific IRM needs, manage the life cycle of individual systems, conduct records management activities, manage the acquisition and use of information processing technologies such as minicomputers, microcomputers, and local area networks, and provide training to their respective staffs in the use of available systems and technologies. The program offices also work with the Regional Waste Management Divisions to identify regional IRM needs and to determine the best approaches and headquarters' role in meeting these needs. Program office IRM activities are planned and managed under the supervision of an Information Management Coordinator (IMC). Each IMC serves as the single point of contact for coordination with the Information Management staff. The specific organizational placement of the IMC within each office, and the appropriate level of staff support, is determined by each Office Director.

Regional Waste Management Divisions

The Regional Waste Management Divisions plan and manage IRM activities specific to each region, and work jointly with program offices at headquarters to develop and support national program information systems. Within each regional office, an IRM unit within the Waste Management Division provides IRM support services to the Division (and to other regional staff), including system development and maintenance support, computer operations, and maintenance of personal computers and local area networks.

Information Management Steering Committee

The Information Management Steering Committee provides OSWER-wide guidance on IRM policy, planning, and prioritization of major initiatives, and direction on the development and implementation of OSWER's information systems and the technologies to meet OSWER's IRM requirements. In addition, the Committee:

- Reviews and approves long range and operating year IRM plans and budgets, and all IRM policies.

- Reviews and approves individual projects which fall within the "Threshold Criteria" outlined in OSWER's System Life Cycle Guidance, monitors project progress, determines whether additional resources may be allocated, decides whether to continue or terminate projects based on reviews at the end of major project milestones, and conducts other reviews at given points in the development process, as determined by the Committee Chairman. The Committee also resolves conflicts that may occur when systems projects impact multiple organizations.

Appendix C

OSWER Systems

OSWER Systems

The following is a list of the OSWER systems contained in the DRD. The systems are further broken down by branch within the OSWER organization.

Assistant Administrator (AA)

SYSTEM	BRANCH
Accident Release Information Program (ARIP)	CEPPO
Computer-Aided Management of Emergency Operations (CAMEO)	CEPPO
Data Resource Directory	RMIS
Five Year Information Resources Management System (FIRMIS)	RMIS
Hazardous Waste Collection Data Base	RMIS
OSWER Directives System	RMIS
Superfund Document Management System	RMIS
Workstation Inventory System (WIS)	RMIS
Cleanup Information Electronic Bulletin Board	TIO
NPL Site Data Base	TIO

Office of Emergency and Remedial Response (OERR)

SYSTEM	BRANCH
Emergency Response Notification System (ERNS)	ERD
Oil and Hazardous Materials Technical Assistance Data Base System (OHMTADS)	ERD
Reportable Quantities Data Base	ERD
CLP Analytical Results and Quality Assurance Data Base (CARD)	HSED
CLP Statistical Data Base	HSED
NPL Characterization System	HSED
NPL Information System	HSED
NPL Technical Data Base (NPL)	HSED
Preliminary Assessment (PA) Score	HSED
Prescore	HSED
Sample Tracking and Invoice Payment System (TIP)	HSED
Scheduling and Allocation Monitoring System (SAM)	HSED
Superfund Chemical Data Matrix	HSED
CERCLIS Version 2.0	OPM
CERCLIS Version 3.0	OPM
OERR Office Automation System	OPM
Records of Decision System (RODS)	OPM
WasteLan	OPM

Office of Solid Waste (OSW)

SYSTEM	BRANCH
Biennial Reports	CABD
Corrective Action Reporting System (CARS)	CABD
Hazardous Waste Data Management System (HWDMS)	CABD
Hazardous Waste Generators Survey Data Base	CABD
Hazardous Waste TSDR Facilities Screening Survey	CABD
Hazardous Waste TSDR Facilities Survey (TSDR Survey)	CABD
Resource Conservation and Recovery Information System (RCRIS)	CABD
Automatic Laboratory Evaluation System (ALES)	CAD
Delisting Petition Data Management System (DPDMS)	CAD
Industry Studies Data Base (ISDB)	CAD
Medical Waste Tracking System	CAD
Aerial Photo Data Base	PSPD
Authorized Tracking Data System	PSPD
Case Study Data System (CSDB)	PSPD
Corrective Action Bibliographic Data Base	PSPD
Federal Facilities Inventory System (ASIDES)	PSPD
FIRM Facility Financial Data Base (F3DB)	PSPD
Hazardous Waste Data Management System - SAS	PSPD
Capacity Assurance Plan Data Base	WMD

Office of Underground Storage Tanks (OUST)

SYSTEM	BRANCH
Corrective Action Advisor 1/Texas	
Integrated Financial Management System (INFIMIS)	
Reg-in-a-Box	
State Programs Data Base	
File Transfer System	ID
Office Forms Facilitator	ID
Operation Information System (OIS)	ID
Regional Operation Information System	ID
Underground Storage Tanks - Data Management (UST-DMS)	ID

Office of Waste Programs Enforcement (OWPE)

SYSTEM	BRANCH
Enforcement Case Support Expert Resources System	CED
OWPE Controlled Correspondence System	CED
Technical Enforcement Support Work Assignment	CED
OWPE Personnel Tracking System	PMSO
Site Enforcement Tracking System (SETS)	PMSO
RCRA Administrative Action Tracking System (RAATS)	RED