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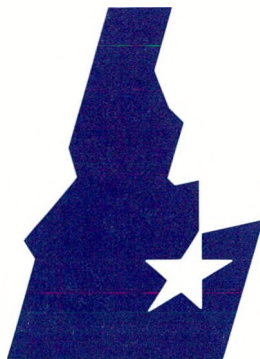
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**U.S. Department of Energy
Idaho Operations Office
Waste Minimization and Pollution
Prevention Awareness Plan**



Idaho National Engineering Laboratory

U.S. Department of Energy • Idaho Operations Office



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**U.S. DEPARTMENT OF ENERGY
IDAHO OPERATIONS OFFICE
WASTE MINIMIZATION AND
POLLUTION PREVENTION AWARENESS PLAN**

PUBLISHED MAY 1991

Prepared for they
U.S. Department of Energy
Idaho Operations Office
Under DOE Contract No. DE-AC07-76ID01570

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EXECUTIVE SUMMARY

This document provides a waste minimization plan pursuant to DOE Orders 5400.1, General Environmental Protection Program, 5400.3, Hazardous and Radioactive Mixed Waste Program, and 5820.2A, Radioactive Waste Management. The implementation guidance for Order 5400.1 establishes a general waste reduction program consolidating the above DOE orders and requires DOE-ID to issue a Waste Minimization Plan for all operating facilities and sites under DOE-ID's purview. These sites include Idaho National Engineering Laboratory, Component Development and Integration Facility, Grand Junction Project Office, and West Valley Development Project.

The overall objective of the Pollution Prevention Program is to implement waste minimization practices to achieve a realistic reduction in the total generation of wastes. This plan provides a baseline for the implementation of the DOE-ID Pollution Prevention Program. The beginning, and success, of any pollution prevention program depends on the support of management--both financially and structurally. All operating contractors' management will implement and follow a management commitment statement outlined by the DOE-ID's Waste Minimization Policy Statement.

The organization of the program at each level and each level's minimization functions are provided. Functions include planning, training, program implementation, reporting, auditing, waste tracking, and program evaluation.

Recommendations for improving the current database and the current waste tracking methodology are discussed. A proposed waste assessment procedure for characterizing wastes and examining the available waste minimization options is presented. Idaho National Engineering Laboratory uses several methods of technology transfer to facilitate the exchange of possible waste minimization techniques. The basis for a program assessment methodology provides for investigation into the effectiveness of the minimization techniques, budget, and management as well as product and service quality.

CONTENTS

EXECUTIVE SUMMARY	iii
ACRONYMS	viii
1. INTRODUCTION	1
1.1 Purpose	1
1.2 Scope	1
1.3 Legal and Policy Background	2
2. DOE-ID POLLUTION PREVENTION POLICY	5
2.1 Statement of Management Commitment	5
2.2 Policy Statement	5
2.3 Contractor Waste Minimization and Pollution Prevention Awareness Programs	5
3. DOE-ID POLLUTION PREVENTION PROGRAM STRATEGY, OBJECTIVE, AND GOALS .	7
3.1 Strategy	7
3.2 Goals	7
3.3 Objectives	7
3.4 Schedule of Activities to Achieve Goals	8
4. SITE DESCRIPTIONS AND MISSIONS	9
4.1 Idaho National Engineering Laboratory	9
4.2 Component Development and Integration Facility	10
4.3 Grand Junction Project Office	10
4.4 West Valley Demonstration Project	10
5. PROCESS WASTE ASSESSMENTS	11
6. COST ACCOUNTING	13
7. WASTE MINIMIZATION TECHNIQUES	14
7.1 Scope	14

7.2	Material Exchange	14
7.3	Inventory Management	15
7.4	Hazardous Solvent Substitution Program	16
7.5	Recycling and Reuse	16
7.6	Maintenance Program	16
7.7	Operational Procedures	16
8.	TRAINING, AWARENESS, AND INCENTIVES	18
8.1	Training Goals	18
8.2	Employee Orientation Program	18
8.3	Specialized Training Program	19
8.4	Performance Evaluations	19
8.5	Pollution Prevention Awareness	19
8.6	Incentive Awards and Recognition	20
9.	TRACKING AND REPORTING SYSTEMS	21
9.1	Tracking from Point of Generation to Point of Disposition	21
9.2	Procurement Control System	22
9.3	Program Activity Tracking	22
9.4	Federal and State Reporting Requirements	22
10.	QUALITY ASSURANCE	23
10.1	Quality Assurance Program Plan	23
10.2	Quality Assurance Training	23
11.	INFORMATION EXCHANGE AND TECHNOLOGY TRANSFER	24
11.1	Information Exchange	24
11.2	Outreach	24
12.	TECHNOLOGY TRANSFER	25
12.1	DOE-ID Technology Transfer	25

12.2	Technology Transfer at INEL	25
12.2.1	Vertical Transfer	25
12.2.2	Horizontal Transfer	26
13.	PROGRAM EVALUATION	28
14.	ORGANIZATION AND STAFF RESPONSIBILITIES	30
15.	RESOURCES	31
15.1	Program Budget	31
15.2	Pollution Prevention Program Personnel	31

APPENDICES

A--	GUIDANCE FOR WRITING FACILITY-SPECIFIC WASTE MINIMIZATION PLANS . . .	A-1
B--	INEL POLLUTION PREVENTION GOALS	B-1
C--	DOE-ID POLLUTION PREVENTION PROGRAM ACTIVITIES	C-1
D--	PLOT OF INEL	D-1
E--	PROCESS WASTE ASSESSMENT SCHEDULES	E-1
F--	MAJOR WASTESTREAM ASSESSMENT PROCESS	F-1
G--	DOE-ID POLLUTION PREVENTION PROGRAM ORGANIZATIONAL AND STAFF RESPONSIBILITIES	G-1
H--	DOE-ID POLLUTION PREVENTION PROGRAM BUDGET AND PERSONNEL RESOURCES	H-1

FIGURES

D-1.	Plot of INEL, showing major facilities	D-3
G-1.	DOE-ID organization for Pollution Prevention	G-4
G-2.	DOE-ID Pollution Prevention organizational hierarchy	G-5

ACRONYMS

CPAF	Cost Plus Award Fee
CDIF	Component Development and Integration Facility
DOE-HQ	Department of Energy - Headquarters
DOE-ID	Department of Energy - Idaho
EPA	Environmental Protection Agency
ERWM	Environmental Restoration and Waste Management
GJPO	Grand Junction Project Office
INEL	Idaho National Engineering Laboratory
PP/SP	Pollution Prevention/Special Projects
PWA	process waste assessment
RCRA	Resource Conservation and Recovery Act
WVDP	West Valley Demonstration Project

WASTE MINIMIZATION AND POLLUTION PREVENTION AWARENESS PLAN

1. INTRODUCTION

1.1 PURPOSE

This plan establishes the U.S. Department of Energy's Idaho Operations Office (DOE-ID) Pollution Prevention Program. The plan specifies those activities and methods that will be employed in the program to reduce the quantity and toxicity of wastes generated at the facilities under the control of DOE-ID. It is intended to satisfy the DOE and other legal requirements discussed in Section 1.3. The Pollution Prevention Program includes the Waste Minimization and the Pollution Prevention Awareness Programs as permitted by the implementation guidance for DOE Order 5400.1. The Pollution Prevention Program is administered by the Pollution Prevention/Special Projects (PP/SP) Unit of EG&G Idaho, Inc. (EG&G Idaho), for DOE-ID.

1.2 SCOPE

The DOE-ID Pollution Prevention Program is an organized, comprehensive, and continual effort to systematically reduce the amount and toxicity of wastes generated. The program is designed to eliminate or minimize pollutant releases to all environmental media from all aspects of DOE-ID's operations. These efforts offer increased protection of public health and the environment. They will also yield the following additional benefits:

- Reduce resource usage
- Reduce waste management and compliance costs
- Reduce or eliminate civil and criminal liabilities under environmental laws.
- Reduce or eliminate inventories and releases of hazardous chemicals reportable under the Emergency Planning and Community Right-to-Know Act

The program reflects the goals and policies for pollution prevention for DOE-ID and represents an ongoing effort to make pollution prevention part of DOE-ID's operating philosophy. In accordance with DOE policy, a hierarchical approach to waste reduction that stresses waste avoidance over waste treatment will be adopted and applied to all types of waste.

Pollution prevention will be accomplished first by eliminating or minimizing the generation of waste through source reduction or substitution. Those potential waste materials that cannot be eliminated or minimized will be recycled (i.e., used, reused, or reclaimed) or treated to reduce volume, toxicity, or mobility before storage or disposal.

The scope of this plan is confined to those activities that promote source reduction, material substitution, and environmentally sound recycling for all waste types. Methods for treatment of waste are covered in other directives.

Waste minimization goals, the development of waste generation baseline information through waste minimization assessments, and a process for continual evaluation of the program are primary elements of the plan. Various waste minimization techniques will be implemented with the support of contractor employee training and awareness programs. The goal is to reduce waste and still meet the requirements for quality, productivity, safety, and environmental compliance.

This plan applies to all operations and associated support operations under the control of DOE-ID. This plan will be reviewed annually and revised as necessary. At a minimum, the plan will be updated every three years.

The plan will be distributed to all operating contractors and affected employees, and the policy, goals, objectives, and strategy of the plan will be explained to all employees. Requirements for operating contractors are discussed in Section 14.

1.3 LEGAL AND POLICY BACKGROUND

The Resource Conservation and Recovery Act (RCRA) requires hazardous waste generators to establish a program to reduce the volume or toxicity of waste to the degree determined by the generator to be "economically

practicable." Hazardous waste generators must certify in their waste manifest that this requirement has been fulfilled. Generators must also identify in their biennial reports to the Environmental Protection Agency (EPA) (or their state) the efforts undertaken during the year to reduce the volume and toxicity of waste generated and the changes in volume and toxicity actually achieved. Waste generators also have the option to report waste minimization results in their annual submission of toxic chemical release inventories to EPA.

DOE Orders 5400.1, 5400.3, and 5820.2A mandate that the management of radioactive wastes and other pollutants shall be accomplished in a manner that minimizes the generation of such wastes.

DOE Order 5400.1 establishes environmental protection program requirements and responsibilities for ensuring compliance with environmental protection laws. The order requires the establishment of a Waste Minimization Program "that will contain goals for minimizing the volume and toxicity of all wastes that are generated" and a Pollution Prevention Awareness Program to establish training, awareness, and technology transfer programs. This plan implements both programs.

DOE Order 5400.3 establishes DOE hazardous and radioactive mixed waste policies and requirements and implements the requirements of RCRA within the framework of the environmental programs established under DOE Order 5400.1. The order states that it is DOE policy to implement waste minimization measures as specified in RCRA and requires the heads of field organizations to implement a waste minimization program for hazardous and radioactive mixed wastes.

DOE Order 5820.2A establishes policies, guidelines, and minimum requirements by which DOE manages its radioactive and mixed waste and contaminated facilities. It states that the "generation, treatment, storage, transportation, and/or disposal of radioactive wastes, and the other pollutants or hazardous substances they contain, shall be accomplished in a manner that minimizes the generation of such wastes across program office functions and complies with all applicable Federal, State, and local environmental, safety, and health laws and regulations and DOE requirements." The order requires the preparation of a waste management plan for each site that generates, treats, stores, or disposes of DOE wastes. The elements of the waste management plan are incorporated into the site-specific plan, which

"will indicate actions to minimize hazardous waste generation" as specified in the order.

DOE Order 5820.2A contains specific waste minimization requirements for management of high-level, transuranic, and low-level waste. These requirements include process modification, process optimization, and materials substitution.

DOE's "Waste Reduction Policy Statement" requires all DOE program offices and field operations to "institute a waste reduction policy to reduce the total amount of waste that is generated and disposed of by DOE operating facilities through waste minimization (source reduction and recycling) and waste treatment." The policy consolidates the requirements of DOE Orders 5400.1, 5400.3, and 5820.2A. This plan will address implementing programs to meet the requirements set forth in the above orders. This is accomplished by establishing policies, defining responsibilities, developing goals and objectives, training and awareness, waste tracking and reporting, and facility-specific waste minimization plans. The policy statement adopts the hierarchical approach to waste reduction and applies the policy to all types of waste. The policy requires waste reduction to be a "prime consideration" in research activities, process design, and facility design and operations.

2. DOE-ID POLLUTION PREVENTION POLICY

2.1 STATEMENT OF MANAGEMENT COMMITMENT

The DOE-ID general manager and contractor management are totally committed to minimizing the generation of waste, by giving preference to source reduction, material substitution, and environmentally sound recycling over treatment, control, and disposal of such wastes. Top management will take appropriate action to provide adequate personnel, budget, training, and material on a continual basis to ensure that the objectives of the Pollution Prevention Program are met.

2.2 POLICY STATEMENT

DOE-ID and contractor management are fully committed to implementing the comprehensive DOE-ID Pollution Prevention Program, demonstrated by the dedication of resources to develop and implement waste minimization goals and plans covering all operations. A key part of these plans is management recognition that pollution prevention is the duty of each employee and that success depends on achieving a broad-based knowledge and support of pollution prevention initiatives throughout the organization. This is achieved by, among other things, providing pollution prevention training to all employees, developing publicity campaigns, and by providing personal and organizational incentives to encourage people to participate. A second key element is the development and use of performance measures necessary to establish personnel accountability for pollution prevention for managers at all levels and then to hold them accountable.

2.3 CONTRACTOR WASTE MINIMIZATION AND POLLUTION PREVENTION AWARENESS PROGRAMS

All contractors that exceed the EPA criteria for small-quantity generators will establish a Waste Minimization and Pollution Prevention Awareness Program. The program will be implemented by facility-specific Waste Minimization and Pollution Prevention Awareness Plans that follows the format and guidance established by this plan and given in Appendix A. Contractors will ensure that their Waste Minimization and Pollution Prevention Awareness Programs are in accordance with Federal, state, and local environmental laws and regulations and DOE orders. Contractors will develop internal guidance

and instructions consistent with this plan, which will be included in their respective plans. Contractors will also be responsible for administering the guidance, instructions, and procedures applicable to the operations of any subcontractors under their control temporarily working on site.

3. DOE-ID POLLUTION PREVENTION PROGRAM STRATEGY, OBJECTIVE, AND GOALS

3.1 STRATEGY

The DOE-ID Pollution Prevention Program will obtain accurate and current information on wastestream generation and waste management costs, which will provide the basis for the implementation of specific waste minimization techniques and technologies. The program will develop a systematic approach to collect information, evaluate options, and identify cost-effective waste minimization techniques. The essential elements of the strategy are to (a) empower organizations to develop and administer the Pollution Prevention Program, (b) prioritize wastestreams to reduce, and (c) develop a method for tracking the performance and progress of the program.

The INEL Strategic Planning process is being applied to all Pollution Prevention activities to enhance the structure of current operations and to anticipate future trends in waste minimization. Strategies have been developed that integrate pollution prevention into all aspects of all waste generating processes. Waste minimization opportunities will be evaluated for each wastestream, and waste reduction goals will be set that reflect current technology. Additional waste reduction goals will also be set in anticipation of technological advancements.

3.2 GOALS

The primary goal of the program is to maintain continuous improvement in reduction of waste generation. Specific goals for reducing waste generation have been proposed for INEL and are listed in Appendix B. Specific goals have not yet been established for the Component Development Integration Facility, GJPO, or the West Valley Demonstration Project. When these sites establish specific goals, their goals will be added to Appendix B of this plan.

3.3 OBJECTIVES

Overall objectives of the DOE-ID Pollution Prevention Program are to achieve pollution prevention implementation through management accountability, personal commitment on the part of each employee, and the development of

performance measurement systems that will accurately monitor progress towards achievement of goals.

3.4 SCHEDULE OF ACTIVITIES TO ACHIEVE GOALS

The schedule of activities planned to assist in achieving the waste generation reduction goals is provided in Appendix C. The activities shown in Appendix C represent the planned activities of EG&G Idaho PP/SP Unit for the current year work packages. The work packages are organized by wastestream (low-level, hazardous, mixed, and municipal sanitary wastes, and hazardous solvents).

4. SITE DESCRIPTIONS AND MISSIONS

This section briefly describes the sites and project office activities under the jurisdiction of DOE-ID. These sites include Idaho National Engineering Laboratory (INEL), the Component Development and Integration Facility (CDIF) under the Butte Projects Office, the Grand Junction Projects Office (GJPO), and the West Valley Demonstration Project (WVDP) under the West Valley Project Office.

4.1 IDAHO NATIONAL ENGINEERING LABORATORY

INEL, situated on 890 square miles of the vast sagebrush desert between Idaho Falls and Arco in southeast Idaho, is the setting for some of the most advanced energy research in the world.

Established in 1949 as the National Reactor Testing Station, INEL contains the largest concentration of nuclear reactors in the world. Over the years, 52 reactors, most of them first-of-a-kind facilities, have been built at INEL. Fourteen of them are still operating or are operable; the others having been phased out after completion of their research missions. In addition, work is conducted in fusion energy, low-head hydropower, industrial energy conservation, environmental research, strategic and critical materials, computer code development, materials testing, and advanced instrumentation development.

EG&G Idaho, the prime operating contractor, shares operating responsibilities for INEL with other contractors including Argonne National Laboratory-West, MK-Ferguson of Idaho Company, Protection Technology Idaho, Inc., Rockwell-INEL, Westinghouse Idaho Nuclear Company, Inc., and Westinghouse Electric Corporation. Westinghouse Electric Corporation is not included in this plan since they report to DOE-Pittsburgh, Naval Reactors Office.

The primary mission of INEL is to apply its engineering and scientific capabilities and facilities to support national defense and energy programs. Some specific objectives of this mission include:

- Conduct basic and applied research in relevant disciplines to maintain an outstanding technical base

- Encourage innovative ideas that fit the long-term vision of a multidisciplinary laboratory, solving problems of national importance
- Perform engineering and applied science to enhance U.S. industrial competitiveness
- Development, transfer, and deployment of technologies to avoid and/or dispose of hazardous and/or radioactive waste and for remediation/restoration of previous disposal sites to protect the public, employees, and environment.

Figure D-1 in Appendix D provides a plot of INEL, which shows the major facilities and immediate surrounding area and includes a brief discussion of major INEL facilities.

4.2 COMPONENT DEVELOPMENT AND INTEGRATION FACILITY

The Component Development and Integration Facility is operated by MSE, Inc. Located in Butte, Montana, the facility serves as a flexible, engineering-scale facility to test magnetohydrodynamic methods to improve efficiency of coal-burning electrical generation plants.

4.3 GRAND JUNCTION PROJECT OFFICE

The GJPO is located on a 56-acre site in Mesa County, Colorado. The GJPO's mission is to apply project management, engineering, and scientific capabilities to support energy resource management programs, geoscience, and environmental restoration. Geotech, Inc., is the operating contractor for GJPO in conjunction with Oak Ridge National Laboratory, Oak Ridge Associated Universities, and the General Services Administration.

4.4 WEST VALLEY DEMONSTRATION PROJECT

The West Valley Demonstration Project, located in West Valley, New York, performs demonstrations on solidification technologies for liquid high-level radioactive waste. These stable waste forms will be more suitable for disposal. The facility is operated by West Valley Nuclear Services.

5. PROCESS WASTE ASSESSMENTS

Process waste assessments (PWAs) will be conducted as part of an ongoing program to identify, screen, and analyze options to reduce the generation of waste. A PWA determines the amount of material in a process that is disposed of as waste during work operations. It provides a summary of material usage and waste production and identifies those processes and operations that need to be improved or replaced to promote waste minimization. The PWA provides a basis for prioritizing the specific modifications to processes or other waste minimization options that are developed during the PWA.

Assessments of all waste-generating operations under DOE-ID control will be conducted by PWA teams organized by the facilities conducting the PWA. The leader of each PWA team should be the process manager, the facility waste minimization coordinator, or someone familiar with the site's production and waste management operations and that has proven technical and problem-solving abilities.

The remainder of each assessment team will be drawn from process operations personnel or subcontractor organizations who can furnish the types of specialized expertise that will be needed to conduct the assessment.

Each PWA team will consist of a small core of individuals familiar with the site's production operations who will direct the focus of the assessment efforts and guide the data gathering. Other personnel, furnishing specialized expertise, will be used on a part-time basis as the need for particular expertise occurs. Each team should include members who have knowledge in the following areas:

- Federal, state, and local hazardous, low-level, mixed or municipal sanitary waste statutes and regulations
- Production and waste minimization principles and techniques
- Quality control requirements
- Purchasing and material control/inventory.

Each operating contractor will determine the order and areas of site operations to be assessed. Each PWA team may develop process area flow diagrams, material balances, process descriptions, and wastestream characterizations as needed for the assigned assessment area. Guidance found in DOE's Waste Minimization Guidance for Process Waste Assessments and EPA's Waste Minimization Opportunity Assessment Manual will be used in conducting the assessments.

Completion of the flow diagrams, material balances, and related narratives will permit the identification of process inefficiencies that may be modified or corrected to reduce waste generation. These waste minimization opportunities will be evaluated and identified with specific projects, which when implemented will reduce the volume and toxicity of the wastestreams. Each team will report assessment data and findings and recommend options for waste minimization. In identifying waste minimization options, the PWA teams will concentrate first on source reduction options, followed by recycling technologies.

Operating contractors will evaluate waste minimization opportunities recommended by the PWA teams. Contractors will screen the options to identify those that deserve careful evaluation. The results of the screening process will be a list of options that are candidates for technical and economic evaluation.

Operating contractors will evaluate the potential technical success and economic cost/benefit of each option resulting from the screening. The options will then be ranked in order of preferred implementation. The highest priority normally will be given to projects that reduce waste generation at the source, after which projects that recycle all or part of a wastestream will be considered. Operating contractors will report the results of their evaluation, including final rankings and ranking criteria in their report.

Schedules for conducting PWAs and evaluating waste minimization options are being developed and will be added to this plan as Appendix E by the end of FY-91. Waste assessments will be conducted on a recurring basis during the life of the Pollution Prevention Program. A systematic approach for evaluating each major wastestream has been developed and is outlined in Appendix F.

6. COST ACCOUNTING

A cost accounting system will be devised that accounts for the true cost of waste that is generated by DOE-ID operations and permits meaningful reviews and audits to be conducted. The system will calculate the short- and long-term costs arising from underutilizing raw materials found in the wastestream, management of the wastes that are generated, waste disposal, and third-party liabilities if the waste is improperly disposed of. Associated costs will include personnel, record-keeping, transportation (including on-site movement), pollution control equipment, treatment, storage, disposal, liability, compliance, and oversight costs.

Each waste generating process at INEL is required to develop and have an approved facility-specific waste minimization plan. A section of these plans is devoted to the costs associated with waste handling and disposal. This cost must include the handling, storage, shipment, and disposal costs for all waste generated. Where direct costs are not available, realistic estimates are made and are based on past practices or similar actions.

Activities to evaluate a new cost accounting system for waste and waste minimization efforts will be identified in FY-92 work packages. The waste costs derived from the cost accounting system will be utilized in proposals, planning, and budgeting.

7. WASTE MINIMIZATION TECHNIQUES

7.1 SCOPE

Waste minimization is any action that minimizes the volume or toxicity of waste by

- Avoiding its generation, such as source reduction
- Recycling processes that use, reuse, reclaim a material from a wastestream.

The following activities are not considered waste minimization:

- Transfer of hazardous constituents from one environmental medium to another
- Concentration conducted solely for reducing volume
- Dilution as a means of toxicity reduction, unless later recycling steps are involved.

If the activity is to make the material more amenable for disposal (e.g., reduce volume or toxicity before storage or disposal) then the waste is being treated, not minimized.

The following subsections describe waste minimization techniques that will be employed to minimize the generation of waste.

7.2 MATERIAL EXCHANGE

A Material Exchange Program has been initiated to enhance sound inventory management. Inventories of unused, excess materials will be processed through the Material Exchange Program before being declared as a waste. The Material Exchange Program attempts to match unused materials with alternate material users at INEL. When a match is made, custody of the unused material is transferred to the new user. Materials for which there are no alternate users will be sent back to the manufacturer when possible. Unused

materials will be declared wastes only after the above avenues have been exhausted.

A network of INEL material exchange coordinators has been formed to facilitate the identification of alternate users. A format for reporting unused material inventories to the Material Exchange Program has been developed and distributed to the material exchange coordinators. The coordinators have been categorized according to the material types used within their jurisdiction. Exchange requests are arranged by material category and redistributed to potential users in the material exchange coordinator network. When a material is not readily exchanged, it is placed on a master inventory that will be distributed monthly to all material exchange coordinators.

The Material Exchange Program procedures will be formalized in the Company Procedure Manual. Volumes of waste avoided through material exchange will be reported in the Annual Material Exchange Program Progress Report issued at the end of the fiscal year.

7.3 INVENTORY MANAGEMENT

Current methods to control the types and quantities of materials in the site inventory will be reviewed. Where necessary, inventory control techniques will be revised or expanded to reduce inventory size and hazardous chemical use while increasing inventory turnover. In particular, inventory control techniques will be used to reduce waste resulting from excess, out-of-date, and no-longer-used raw materials. Similarly, material controls will be revised or expanded to reduce raw material and finished product loss and damage during handling, production, and storage. The inventory management techniques will be applied to waste material as well as to raw materials and finished products.

The review of inventory management techniques will include a study of how existing inventory management procedures can be applied more effectively, whether new techniques should be added to or substituted for current procedures, the need for review and evaluation approval procedures for the purchase of materials, and the need for additional employee training.

7.4 HAZARDOUS SOLVENT SUBSTITUTION PROGRAM

Substitutions for hazardous solvents will be examined and applied to reduce toxic emissions that have been identified as harmful to human health and ecosystems. The strategy will include the 17 toxic chemicals identified by EPA to be reduced by 50% in 1995. Performance criteria will be established and testing performed to ensure solvent substitution candidates meet the occupational exposure, environmental, and industrial application requirements.

7.5 RECYCLING AND REUSE

The materials being recycled include paper, wood, glass, metal, plastic, cardboard, beverage cans, and some solvents. Scrap wood will be chipped for volume reduction and used in landscaping and soil erosion control with the possibility of use as a fuel in coal fired boilers. Vehicle, bus, and heavy equipment batteries are returned to the vendor when they are no longer useful. The used batteries are recycled for material recovery. Freon will be recovered for reuse and the shipping and storage containers (cylinders) will be evacuated completely to recover the freon that is left after the cylinder is emptied.

7.6 MAINTENANCE PROGRAM

The site equipment maintenance program will be reviewed to determine whether improvements in corrective and preventive maintenance can reduce waste generation caused by equipment failure. The methods for maintenance cost tracking and preventive maintenance scheduling and monitoring will be examined.

A determination will be made as to whether maintenance procedures are contributing to the production of waste in the form of process materials, scrap, and cleanup residue. The need for the revision of operational procedures, equipment modification, source segregation, and recovery as they apply to maintenance will be examined.

7.7 OPERATIONAL PROCEDURES

The production processes within the site will be examined to determine whether significant source reduction of waste can be achieved by improvements

in process efficiency. Operating procedures will be examined to determine whether the elimination or revision of standard operating procedures can contribute to the reduction of waste. The revision and review of operating procedures will be fully documented and incorporated as part of the site's employee training program.

8. TRAINING, AWARENESS, AND INCENTIVES

8.1 TRAINING GOALS

The Pollution Prevention training program will include all levels of personnel within DOE-ID and the operating contractors. A Pollution Prevention Awareness Training Program Plan will be finalized and issued before the end of FY-91. There are four goals of the training program:

- Meet the letter, intent, and spirit of the various orders, policies, laws, and guidelines that affect pollution prevention programs and associated training
- Provide training that will make all site employees aware of their role in waste minimization, the financial and environmental impact waste has on site operations, and to empower employees to seek ways to eliminate or minimize waste by taking advantage of opportunities present in their own jobs
- Provide training that is directly and immediately applicable to employees in varying positions
- Utilize existing programs, staff, and materials efficiently, without duplication of effort.

8.2 EMPLOYEE ORIENTATION PROGRAM

A waste minimization and pollution prevention awareness orientation program will be established and will be integrated into a general orientation program for all employees. The orientation program will include the following elements:

- The need for, and benefits to be derived from, pollution prevention
- The contribution each employee can make to an improved working and living environment

- Management commitment to waste minimization and site waste minimization policy
- Overview of policy and regulations
- Improved operation practices for reducing waste generation
- Solicitation of waste minimization and pollution prevention ideas and the discussion of solutions to identified problems.

8.3 SPECIALIZED TRAINING PROGRAM

Specialized training sessions on pollution prevention policy and procedures and waste minimization techniques will be tailored for management, line, and staff positions. These sessions will be incorporated into standard employee training. The adequacy of training procedures and of any special equipment needed to perform waste minimization functions will be evaluated annually by the program manager.

8.4 PERFORMANCE EVALUATIONS

Waste minimization goals, objectives, and accomplishments are being incorporated into annual job performance evaluations for managers and most employees.

8.5 POLLUTION PREVENTION AWARENESS

The Pollution Prevention Awareness Program required by DOE Order 5400.1 has been incorporated in the DOE-ID Pollution Prevention Program. The goal of the program is to incorporate pollution prevention into the decision-making process at every level throughout the organization. To achieve that goal, the Pollution Prevention Awareness Program has the following objectives:

- Make employees aware of general environmental activities and hazards at the site and waste minimization program requirements, goals, and accomplishments
- Inform employees of specific environmental issues

- Train employees on their responsibilities in pollution prevention
- Recognize employees for efforts to improve environmental conditions through pollution prevention
- Encourage employees to participate in pollution prevention
- Publicize success stories.

The program consists of four elements: a pollution prevention awareness campaign, awards and recognition, information exchange, and training.

The pollution prevention awareness campaign will be conducted at least once each year. It will be developed by the PP/SP Unit and will make extensive use of site newsletters, seminars, bulletin boards, signs, and slogans to enhance employee awareness of and participation in pollution prevention.

8.6 INCENTIVE AWARDS AND RECOGNITION

Award programs will be used to recognize individual and team waste minimization and pollution prevention achievements. Existing productivity and quality incentive programs will be used to provide incentive awards and recognition. Additional awards and recognition such as certificates, pins, and newsletter articles, will be developed and instituted by the PP/SP Unit.

9. TRACKING AND REPORTING SYSTEMS

9.1 TRACKING FROM POINT OF GENERATION TO POINT OF DISPOSITION

INEL is currently using the Radioactive Waste Management Information System, the Industrial Waste Management Information System, the Idaho Generator Quarterly Report, and the Waste Information Tracking System to track radioactive, mixed, hazardous, and solid waste for all contractors at INEL. INEL is developing upgrades to the present waste tracking methodology. The waste tracking methodology will be responsive to the following factors:

- Account for all waste types on a process basis
- Constrain user input to a standardized format and system of units
- Break performance down to the level necessary to establish management accountability at all levels of management
- Deal with recycled waste and the effect of treatment processes on waste
- Differentiate between production waste and remedial action waste
- Account for all INEL waste generators
- Associate waste back to the particular process where it was produced
- Account for waste minimization techniques implemented
- Record generator waste minimization goals and generator performance toward those goals.

In FY-92, a comprehensive program with dedicated funding will be identified to complete this task.

9.2 PROCUREMENT CONTROL SYSTEM

Procedures for control and purchase of hazardous chemicals or other materials will be reviewed to determine whether improvements in those procedures will aid in the achievement of waste minimization goals. The tracking system described in Section 11.1 will be used to track the purchase and usage of hazardous materials.

9.3 PROGRAM ACTIVITY TRACKING

A computerized system will be developed to provide feedback on the progress of the Pollution Prevention Program, including the results of waste minimization technologies and other implemented waste minimization options.

9.4 FEDERAL AND STATE REPORTING REQUIREMENTS

Tracking systems developed under this program will be designed to facilitate reporting waste generation and reduction data and accomplishments to the DOE, EPA, and the State of Idaho.

10. QUALITY ASSURANCE

10.1 QUALITY ASSURANCE PROGRAM PLAN

The PP/SP Unit is currently preparing a Quality Assurance Program Plan (QAPP) scheduled to be complete before the end of FY-91. The QAPP will address such issues as waste generation, waste characterization, materials inventories, and process assessments. The plan will ensure that this data is collected, reported, and tracked accurately. A database and an audit program are being developed to ensure that information within the database is accurate.

10.2 QUALITY ASSURANCE TRAINING

Once the QAPP is developed and finalized, a training program will be developed. This training will be available to waste coordinators, facility managers, and wastestream minimization specialists.

11. INFORMATION EXCHANGE AND TECHNOLOGY TRANSFER

11.1 INFORMATION EXCHANGE

Program staff have access to and are encouraged to make regular use of EPA's Pollution Prevention Information Clearinghouse database and DOE's Waste Information Network system. The PP/SP Unit will foster participation in business, education, and government forums that are designed to provide technical assistance and exchange waste minimization information. Representatives from the various DOE-ID contractor's staff will attend the semiannual DOE Waste Reduction Workshop and regularly participate in appropriate pollution prevention conferences and training courses.

11.2 OUTREACH

In addition to information routinely distributed to employees, pollution prevention information will be distributed and made available to the general public. INEL will routinely share details of pollution prevention successes with local civic groups, educational institutions, environmental organizations, trade associations, and similar public groups in the form of public meetings, presentation, newspaper and other articles, and through technology transfer activities (see Section 14). The benefits of such outreach will be threefold. First, such information will demonstrate the progressive nature of DOE-ID environmental programs. Second, this freely distributed information will continue to demonstrate DOE-ID commitment to openness. Third, by routine distribution of pollution prevention information, DOE-ID will perform a legitimate governmental function of improving the knowledge level of the general public.

12. TECHNOLOGY TRANSFER

12.1 DOE-ID TECHNOLOGY TRANSFER

The transfer of federally developed technology between laboratories and potential users is a contractual responsibility of DOE facilities and laboratories. Opportunities for transfer of technologies specific to waste minimization programs have been developed from information exchange systems, workshops, or topical conferences. Both DOE and EPA provide several transfer activities that INEL supports and uses. The Hazardous Waste Remedial Action Program provides a waste reduction bulletin board that DOE field organizations can access to share information. The EPA has a bulletin board for waste minimization and recycling, and the EPA also provides a monthly Pollution Prevention Newsletter. Direct exchanges of process technology between facilities are encouraged. Technology projects that are identified and implemented will be coordinated with the DOE-HQ's Office of Technology Development.

12.2 TECHNOLOGY TRANSFER AT INEL

To transform scientific or technical information into specific methods requires a certain amount of organized effort since technology transfer occurs along two dimensions--vertical and horizontal. INEL is using both dimensions of transfer in efforts to improve its pollution prevention results.

Technology transfer provides for dissemination of waste minimization ideas and methods to other waste generators, located either off or on INEL, and is incorporated into the objectives of the DOE-ID Pollution Prevention Program.

12.2.1 Vertical Transfer

Vertical transfer refers to the transfer of technology along the lines from more general to the specific, generally occurring within the confines of an institution. In particular, it includes the process by which new scientific knowledge is incorporated into technology and by which a "state of the art" becomes embodied in a system. Within the INEL institution, this infusion of knowledge revolves around several information systems.

The PP/SP Unit has established Team INEL, a multi-contractor coordinating committee, to ensure a consistent, site-wide pollution prevention effort and to provide an information exchange forum. Team INEL is made up of mid-level manager representatives from most INEL operating contractors. Team INEL is intended to function at a higher level of authority and responsibility than the quarterly Waste Minimization Coordinator meetings. Various aspects of the functioning of the DOE-ID Pollution Prevention Program and the facility-specific Waste Minimization and Pollution Prevention Awareness Programs are discussed to ensure all representatives have a clear understanding of what is expected of their Programs.

Annual reports, quarterly generator and Team INEL meetings, and articles published in the INEL employee newspaper all disperse waste minimization technology within INEL.

The annual Waste Reduction Report to DOE-HQ is used at INEL as a means to disseminate information on waste reduction performance, techniques used, and operating experiences. Once the report has been approved by DOE-ID, it is published and made available to all contractors.

The quarterly generator meetings provide a direct medium for waste minimization technology exchange. Discussions on minimization methods in use, future minimization technologies, and the Pollution Prevention Program provide for a free flow of information. The waste minimization coordinators are required and any interested INEL employees are encouraged to attend the meetings. Several of the meetings have included guest speakers from the EPA, Hewlett Packard, and Sandia National Laboratories. Also included are internal INEL speakers yielding information on current technology being used at INEL.

The employee newspaper, INEL NEWS, is published bimonthly and is available to all INEL employees. This, along with other more specialized employee publications, regularly include articles concerning waste management and waste minimization.

12.2.2 Horizontal Transfer

Horizontal transfer occurs through the adaptation of a technology from one application to another. Horizontal transfer takes place among institutions with transfer of information externally by each institution.

INEL excels in the horizontal transfer of technology and information, including the area of waste minimization.

Locally, INEL supports the flow of information through several methods. In accordance with the community relations plan, the Public and Employee Communications Group and Public Affairs Office produce many external publications available at local repositories.

The local news media provides a medium for information transfer on INEL waste minimization efforts. Through INEL-sponsored news conferences, news meetings, and news releases, the local community is provided with current INEL practices.

On a state-wide effort, INEL supports and attends several state-wide symposiums and conferences. Annual waste management symposiums are sponsored by Idaho State University and the University of Idaho. The DOE-ID and INEL provide public information meetings on INEL-specific plans and current technology.

The Environmental Oversight and Monitoring Agreement between the State of Idaho and DOE-ID provides direct interaction by the state and INEL for environmental restoration and waste management.

The Office of Environmental Restoration and Waste Management conducts waste reduction workshops biannually, focusing on specific waste minimization activities. Other technology transfer methods involve attending national conferences, both attending discussions as well as sponsoring sessions on specific technologies or areas; recently INEL provided support for the annual U.S. DOE Waste Management Conference and sponsored the annual INEL Computing Symposium.

13. PROGRAM EVALUATION

The Pollution Prevention Program will be formally evaluated by DOE-ID at least semi-annually during program reviews. All major activities will be reviewed. The evaluation will document program achievements and identify potential areas for improvement. Program performance will be included in DOE-ID's contractors CPAF evaluation and determination of award fees. The progress of the Pollution Prevention Program will be evaluated monthly with reports transmitted to the DOE-ID program manager.

The following criteria will be used to demonstrate the effectiveness of waste minimization efforts:

- Waste avoidance (through source reduction, reuse, and recycling)
- Improved regulatory compliance
- Reduced health risks.

The program will address these criteria when evaluating the success of process or other changes to achieve waste volume or toxicity reductions. An accurate assessment for each of the appropriate criterion will be provided in evaluating the success of each waste minimization option that has been implemented.

The program will conduct an economic analysis of the Pollution Prevention Program's efforts. It is anticipated the analysis will have many benefits. Some of the expected benefits include

- Establishing the true costs associated with the generation, transportation, treatment, and disposal of all wastes generated at INEL
- Demonstrating the cost savings achievable through source reduction and recycling of wastes
- Demonstrating the overall cost savings associated with the proposed INEL pollution prevention goals to the year 2000
- Showing the economic benefit of pollution prevention efforts against a varying waste generation volume.

An annual waste reduction report will be made to the DOE-ID manager and will contain current-year data, performance trends, forecasts, and measures used to gauge the performance of waste minimization activities. The report will be used to establish future waste minimization goals and program objectives. The report will also be used to determine changes to this plan.

14. ORGANIZATION AND STAFF RESPONSIBILITIES

The organizational responsibilities for implementing and administering the DOE-ID Pollution Prevention Program are defined using the current organizational structure and interfaces established between DOE-ID and its operating contractors. In general, DOE-ID establishes the DOE-ID Pollution Prevention Program, the PP/SP Unit conducts the program for DOE-ID, and the contractors implement the program at the DOE-ID facilities under their operational control. The Pollution Prevention Program organizational structure for DOE-ID and the organizational hierarchy for the DOE-ID Pollution Prevention Program are shown in Appendix G. Also included in Appendix G are specific organization and staff responsibilities.

15. RESOURCES

15.1 PROGRAM BUDGET

The DOE-ID Pollution Prevention Program has budgeted \$1,442,000 for FY-91, \$1,384,000 for FY-92, and \$1,950,000 for FY-93 (see Appendix H). This funding is divided between several programs: (a) program management, which includes the development of activity data sheets, planning packages, work packages, and databases; minimization standard practices; and measuring, tracking, and reporting; (b) pollution prevention awareness, which involves training for generators, engineers, procurement; the development of a life cycle product manual; and technology transfer; and (c) five wastestream minimization programs--hazardous solvents and sanitary, low-level, hazardous, and mixed waste. Operating contractors may also fund for pollution prevention activities out of their individual operating budgets.

15.2 POLLUTION PREVENTION PROGRAM PERSONNEL

The PP/SP Unit coordinates with the DOE-ID program manager to implement the DOE-ID Pollution Prevention Program and to develop the overall DOE-ID waste minimization goals.

The PP/SP Unit is responsible to (a) coordinate with the DOE-ID Pollution Prevention Program manager to develop and implement the program, (b) develop and oversee the INEL Pollution Prevention Awareness Training Program, which includes general training for all employees, specific training for targeted employee groups, continuing employee education, and new hire training, and (c) prepare and submit the plan and the required program reports to the DOE-ID program manager.

The EG&G PP/SP Unit has assigned wastestream minimization specialists for hazardous solvents, sanitary, low-level, hazardous, and mixed wastestreams. In addition, specialists have been assigned to pollution prevention awareness training and program management (see Appendix H).

APPENDIX A

**GUIDANCE FOR WRITING FACILITY-SPECIFIC
WASTE MINIMIZATION PLANS**

APPENDIX A

GUIDANCE FOR WRITING FACILITY-SPECIFIC WASTE MINIMIZATION PLANS

This appendix provides guidance for writing facility-specific Waste Minimization and Pollution Prevention Awareness Plans and provides forms for reporting waste reduction performance each calendar quarter. The guidance is based on DOE's Model Waste Minimization and Pollution Prevention Awareness Plan and the outline for the annual Waste Reduction Report given in the implementation guidance for DOE Order 5400.1.

CONTENTS

Definitions	A-5
A.1 Waste Minimization Plan Introduction	A-9
A.2 Waste Minimization Program Administration	A-9
A.3 Waste Minimization Program Description	A-10
A.4 Facility Wastestream Identification	A-12
A.5 Future Waste Minimization Program Goals and Objectives	A-13
A.6 Periodic Waste Reduction Performance Reporting	A-13
APPENDIX A--MANAGEMENT COMMITMENT STATEMENT	A-15
APPENDIX B--DOE-ID QUARTERLY WASTE REDUCTION PROGRESS REPORT	A-19

DEFINITIONS

Process Manager

For the purposes of Waste Minimization Plans, process managers are accountable for the wastes produced by the people and processes they manage.

Waste Reduction

Waste reduction consists of both pollution prevention and waste treatment activities. Pollution prevention and waste treatment both comprise a number of practices and approaches, which are defined below.

Pollution Prevention. Pollution prevention and waste minimization are interchangeable terms. Pollution prevention is both source reduction and recycling. Source reduction is the preferred practice in the DOE's hierarchy of waste reduction approaches. Source reduction and recycling both comprise a number of practices and approaches, which are defined below.

Source Reduction--Source reduction is any activity that reduces or eliminates the generation of waste at the source, usually within a process. Source reduction includes activities such as product changes, input material changes, technology changes, and good operating practices.

Product changes include product substitutions, product conservation and changes in the product composition that result in less waste being generated by the process.

Input material changes include material purification and material substitutions that result in less waste being generated.

Technology changes include process changes, equipment, piping, or layout changes, additional automation, and changes in operational settings that result in less waste being generated.

Good operating practices include activities such as procedural changes, loss prevention practices, management practices, wastestream segregation, improved material handling, improved product scheduling, preventive

maintenance, procurement control, inventory control, and improved housekeeping that result in less waste being generated.

Recycling--For our purposes, the EPA's Waste Minimization Opportunity Manual, EPA/625/7-88/003, definition of recycling is used. The EPA manual states that "A material is recycled if it is used, reused, or reclaimed. A material is used or reused if it is either (1) employed as an ingredient (including its use as an intermediate ingredient) to make a product; however a material will not satisfy this condition if distinct components of the material are recovered as separate end products (as when metals are recovered from metal containing secondary materials) or (2) employed in a particular function as an effective substitute for a commercial product. A material is reclaimed if it is processed to recover a useful product or if it is regenerated. Examples include the recovery of lead values from spent batteries and the regeneration of spent solvents." Recycling is DOE's second preferred approach to waste minimization, after source reduction.

Waste Treatment--Waste treatment is the processing of a waste after it has been generated and before it is disposed of only to reduce its volume, amount, and/or toxicity. Treating wastes after they have been generated is the least desirable step in DOE's waste reduction hierarchy.

Waste Category

The waste categories of municipal sanitary, radioactive, hazardous, and mixed wastes are defined below.

Municipal Sanitary Wastes. Municipal sanitary wastes include both liquid and solid wastes. For this report, the only liquid sanitary wastes we are interested in with respect to waste minimization are those discharges that go to a government-owned treatment facility and are not solely caused by human habitation. An example of liquid sanitary wastes of interest would be the INEL's Central Laundry and Respirator Facility's discharges. Solid municipal sanitary waste types are defined below.

Solid Municipal Sanitary Waste Types--

- Type 1 -- Trash, paper, sweepings, etc.
- Type 2 -- Cafeteria garbage
- Type 3 -- Wood and scrap lumber

Type 4 -- Noncombustible masonry and concrete
Type 5 -- Scrap metal
Other -- Solid waste not included in the preceding types.

Asbestos wastes, bulky wastes, and compostable wastes are classified separately from the other types and from each other because they are disposed of separately.

Radioactive Wastes. Radioactive Wastes includes high-level, transuranic, and low-level wastes in gaseous, liquid, and solid states. High-level and transuranic categories include wastes in all forms. The classes of low-level waste are defined below.

Low-level Radioactive Waste Classes.

Class 1 is combustible wastes.
Class 2 is compactable wastes.
Class 3 is waste metals to be sized or melted.
Class 4 is non-compactable wastes.
Class 5 is remotely-handled, non-compactable wastes.
Liquid wastes.
Gaseous wastes.

Hazardous Waste. Hazardous wastes are those that are either listed or characteristic wastes as defined by the RCRA include wastes that are in gaseous, liquid, and solid states.

Mixed Waste. Mixed waste is waste that is both hazardous under RCRA and radioactive and includes wastes in solid, liquid, and gaseous form.

Routine and Nonroutine Waste

Routinely Generated Wastes. Routinely generated wastes are produced on a regular or periodic basis during normal operations.

Nonroutinely Generated Wastes. Nonroutinely generated wastes are produced by such activities as decontamination and decommissioning, environmental remediation, and lab clean-outs.

A.1 WASTE MINIMIZATION PLAN INTRODUCTION

Describe your facility in general terms. Include such things as the company, department, program, and specific facility. Describe the purpose of the operations and processes and the products produced. A simple flowchart may also be used. This description should be brief (two pages maximum).

A.2 WASTE MINIMIZATION PROGRAM ADMINISTRATION

A.2.1 Management Commitment Statement

Complete, sign, and submit the management commitment statement contained in Appendix A.

A.2.2 Process Manager Information

State the process manager's name, title, telephone number, and complete mailing address.

A.2.3 Waste Minimization Coordinator Information

State the waste minimization coordinator's name, title, telephone number, and complete mailing address.

A.2.4 Building Information

List the building number(s)/name(s) of building(s) at your facility where processes generate waste.

A.2.5 Organization Information

List the organization name(s) and number(s) included in this plan.

A.2.6 Functional Organization Information

Identify the functional organization responsible for waste minimization at your facility by name and function. Attach an organization chart. The organization will be simple or complex as dictated by the complexity of your waste minimization efforts.

A.2.7 Organization Responsibilities

Discuss the responsibilities of the facility personnel identified in Section A.2.6 with respect to your Waste Minimization Program.

A.2.8 Waste Minimization Documentation

Describe the Waste Minimization Program documentation at your facility. Include in your description how waste minimization data are collected, recorded, analyzed, and reported.

A.3 WASTE MINIMIZATION PROGRAM DESCRIPTION

A.3.1 Program Scope, Objectives, and Goals

State the explicit scope, objectives, and numerical goals of your facility's Waste Minimization Program for CY-91. This statement should articulate a commitment to evaluate policies, technologies, procedures, and personnel training programs to aggressively pursue waste minimization at your facility and should include a realistic schedule for these evaluations. Specific numerical goals (i.e., 5 to 15% yearly or a specific percent reduction by a specific year) for reducing the volume or toxicity of each wastestream should be set. These goals should be correlated with facility production rates.

A.3.2 Process Waste Assessments

Describe the Process Waste Assessments (PWAs) performed at your facilities in CY-90 and their results. If you did not perform any assessments in CY-90, state that no PWAs were performed at your facility in CY-90.

A.3.3 Planned Process Waste Assessments

Describe the PWAs planned for your facilities for CY-91 in the order of their planned schedule, with the earliest first. If no assessments are planned for your facility in CY-91, state that no PWAs are planned for your facility in CY-91.

A.3.4 Waste Reduction Techniques

Describe the waste reduction techniques that exist at your facility or that will be implemented by the end of CY-90. Report by waste type (hazardous, mixed, municipal solid, and/or radioactive), the process wastestream involved, and the applicable RCRA waste code(s). Explain the benefits received from implementing each listed technique.

A.3.5 Waste Reduction Technique Experience

Summarize your operating experiences (i.e., successes or failures) with the waste reduction techniques listed in Section A.3.4.

A.3.6 Background Radiation Limits

Describe any administrative background radiation limits applied to radioactive waste segregation efforts at your facility. If you do not produce or handle radioactive waste, state that your facility does not produce or handle radioactive waste and, therefore, background radiation limits are not applicable at your facility.

A.3.7 Pollution Prevention Awareness

Describe the function and effectiveness of any pollution prevention incentive, training, and/or employee awareness programs either already in effect at your facility or initiated in CY-90. If no programs were in effect or initiated in CY-90, state that no pollution prevention incentive, training, and/or employee awareness programs currently exist at your facility.

A.3.8 Design for Pollution Prevention

DOE orders require waste minimization principles be incorporated into the design of new projects and operations. Describe your facility procedures or controls to ensure this requirement is met.

A.3.9 Waste Reduction Measurement

Describe the measures you use to gauge the performance of waste minimization and waste treatment activities at your facility.

A.3.10 Waste Reduction Measurement Quality

Describe the factors at your facility that influence the waste minimization and waste treatment performance measures described in Section A.3.9. Influencing factors may include the quality of the data recorded on logs or in log books, whether or not the data recorded captures the information needed, and continuity of recorded data.

A.4 FACILITY WASTESTREAM IDENTIFICATION

A.4.1 Process Description

Briefly describe the processes than you expect will generate waste at your facility or in your program in CY-91. Report routinely and nonroutinely generated wastes separately in your facility-specific Waste Minimization Plan for this and all remaining sections. Report by waste category(s) produced. Solid municipal sanitary waste must be included by all facilities and/or programs (EG&G Idaho will submit one Company-wide Waste Minimization Plan for municipal sanitary waste).

A.4.2 Input Chemicals

Identify the major process input chemicals used in the routine and non-routine processes described in Section A.4.1 and the amounts used on an annual basis in kilograms and liters. Approximate averages are acceptable. Describe the final disposition of these chemicals (e.g., used up in the process, diluted in the wastestream, destroyed in the process, and part of the product). If your facility produces only solid municipal sanitary waste, state that your facility produces only solid municipal sanitary waste and describe the major inputs to your facility that produce that waste.

A.4.3 Wastestream Characterization

Characterize the wastestreams you expect to produce at your facility in CY-91 for each of the processes described in Section A.4.1. Report routinely and nonroutinely generated wastes separately. Identify the processes producing the waste(s) and include the waste class, radionuclide content, and activity in curies for radioactive and mixed wastes; EPA Waste Code(s) for hazardous and mixed wastes; waste type for solid municipal sanitary waste; and

both kilogram and cubic meter estimates on an annual basis for all waste types. Approximate averages are acceptable. Include a cost per cubic meter that includes the costs associated with the packaging, shipping, treating, storing, disposing, and ensuring regulatory compliance of generated waste for all waste categories produced at your facility.

A.4.4 Land Disposal Restricted Wastes

If you expect to generate any wastes restricted from land disposal as defined in 40 CFR 268 in CY-91, indicate the waste category, the mass in kilograms, the volume in cubic meters, and the calendar year quarter in which you anticipate generating these wastes. Also describe the treatment plan and schedule you have developed for treating each of the described wastes.

A.5 FUTURE WASTE MINIMIZATION PROGRAM GOALS AND OBJECTIVES

A.5.1 Future Scope, Objectives, and Goals

Project the explicit scope, objectives, and numerical goals of your facility's Waste Minimization Program described in Section A.3.1 for CY-92 through CY-96. This projection should articulate a continued commitment to evaluate policies, technologies, procedures, and personnel training programs to aggressively pursue waste minimization at your facility and should include a realistic schedule for these evaluations. Specific numerical goals (i.e., 5 to 15% yearly or a specific percent reduction by a specific year) for reducing the volume or toxicity of each wastestream should be set. These goals should be correlated with facility production rates and schedules.

A.5.2 Planned Waste Reduction

Describe the waste reduction techniques planned for your facility for CY-92 through CY-96. Include the estimated benefits, implementation costs, and implementation date for each planned technique. Report by waste category (hazardous, mixed, municipal sanitary, and/or radioactive), the process wastestream involved, and the applicable RCRA waste code(s).

A.6 PERIODIC POLLUTION PREVENTION PROGRAM REPORTING

A.6.1 Waste Reduction Performance Reporting

Every facility submitting a Waste Minimization Plan will submit waste reduction progress reports on a quarterly basis to the EG&G Idaho PP/SP Unit using the progress report in Appendix B. Quarterly progress reports are due from each facility by the end of April, July, October, and January of the following year for each calendar year beginning in CY-1991.

APPENDIX A
MANAGEMENT COMMITMENT STATEMENT

APPENDIX A
MANAGEMENT COMMITMENT STATEMENT

This appendix contains the management commitment statement that must be signed by the process manager or the company's general manager/president submitting the Waste Minimization and Pollution Prevention Awareness Plan. Strong management commitment is absolutely necessary to establish and maintain an aggressive DOE-ID Pollution Prevention Program.

MANAGEMENT COMMITMENT STATEMENT

SITE INEL _____ CDIF _____ GJPO _____ WVDP _____
COMPANY _____
DEPARTMENT _____
PROGRAM _____
PROCESS _____
PROCESS MANAGER NAME AND TITLE _____

POLICY: DOE-ID and Contractor Management are fully committed to the implementation of a comprehensive DOE-ID Pollution Prevention Program. This commitment is demonstrated by the dedication of resources to the development and implementation of waste minimization goals and plans covering all operations. A key part of these plans is management recognition that waste minimization is the duty of each employee and that success depends on achieving a broad-based knowledge and support of pollution prevention initiatives throughout the organization. This is achieved by, among other things, providing pollution prevention training to all employees, developing publicity campaigns, and by providing personal and organizational incentives to encourage people to participate. A second key element is the development and use of performance measures necessary to establish personnel accountability for pollution prevention for managers at all levels and then to hold them accountable.

CERTIFICATION: "I understand my responsibilities for pollution prevention as contained in both the DOE-ID Pollution Prevention Plan and my facility-specific Waste Minimization Plan, as well as the specific policy statement above, and I certify that I will be responsible for their implementation and maintenance. I further certify that I will take the appropriate actions necessary to request and provide adequate funding, personnel, training, and material on a continuing basis to ensure the objectives and goals of my facility's Waste Minimization Plan are achieved."

PROCESS MANAGER'S SIGNATURE: _____

DATE: _____

APPENDIX B
DOE-ID QUARTERLY WASTE REDUCTION PROGRESS REPORT

APPENDIX B
DOE-ID QUARTERLY WASTE REDUCTION PROGRESS REPORT

This appendix contains the DOE-ID quarterly waste reduction progress report forms for reporting waste minimization and waste treatment efforts for a calendar year. Facilities submitting this report may use the forms herein as master forms or may obtain them on a 3-1/2 inch computer disk. The progress reports are due to David P. Mackowiak, MS 3950, EG&G Idaho PP/SP Unit, by the end of the month following the end of the quarter (i.e., the reports are due by the end of April, July, October, and January of the following year, for each calendar year beginning in CY-1991).

DOE-ID QUARTERLY
WASTE REDUCTION PROGRESS REPORT
FOR
THE _____ QUARTER OF
CALENDAR YEAR 199____

SUBMITTED TO THE
POLLUTION PREVENTION/SPECIAL PROJECTS UNIT
EG&G IDAHO, INC.
P.O. BOX 1625
MAIL STOP 3950
IDAHO FALLS, IDAHO 83415-3950

DOE-ID QUARTERLY WASTE REDUCTION PROGRESS REPORT

PART 1. WASTE MINIMIZATION PROGRAM ADMINISTRATION

- 1.1. Year 199_____
- 1.2. Quarter 1st _____ 2nd _____ 3rd _____ 4th _____
- 1.3. Site INEL _____ CDIF _____ GJPO _____ WVDP _____
- 1.4. Company _____
- 1.5. Department _____
- 1.6. Program _____
- 1.7. Facility/Process _____
- 1.8. Process Manager _____
- 1.9. Waste Minimization Coordinator _____
Phone (_____) _____ Mail Stop _____
Mailing Address _____

1.10 Building number(s)/name(s) covered in this report where processes generating waste occur.

1.11. Organization name(s) and number(s) included in this plan.

1.12. Identify any changes that occurred in this quarter to the facility waste minimization organization described in your facility-specific Waste Minimization Plan for the current year. If there have been no changes in your organization this quarter, mark NA.

NA _____ You are done with Section 1.11.

Changes _____

PART 2. WASTE MINIMIZATION PROGRAM DESCRIPTION

2.1. Process Waste Assessment Experience. Briefly summarize the Process Waste Assessments (PWAs) performed at your facility in this quarter and their results. **NOTE:** This is not intended to replace documentation of a PWA. Use additional sheets if necessary. If no assessments were performed at your facility this quarter, mark NA.

NA _____ You are done with Section 2.1.

2.2. Waste Reduction Implementation. Describe the waste reduction techniques implemented at your facilities this quarter and recorded in Section 3 of this report and the processes involved. Explain the benefits (such as cost savings, volume or waste toxicity reduced, etc.) received from implementing each listed technique. Use additional sheets if necessary. If no technologies were implemented this quarter, mark NA.

NA _____ You are done with Section 2.2.

2.3. Waste Reduction Experience. Summarize your operating experiences (ie, successes or failures) with the implemented waste reduction techniques listed in Section 2.2. Use additional sheets if necessary. If you marked Section 2.2 NA, mark NA here.

NA _____ You are done with Section 2.3.

2.3 (Cont.)

2.4. Pollution Prevention Awareness Programs. Describe the function and effectiveness of any pollution prevention incentive, training, and/or employee awareness programs initiated at your facility in this quarter. Use additional sheets if necessary. If no programs were initiated this quarter, mark NA.

NA You are done with Section 2.4.

2.4.1 Waste Minimization Incentive Programs. NA You are done with Section 2.4.1.

2.4.2 Waste Minimization Training Programs. NA You are done with Section 2.4.2.

2.4.3 Employee Awareness Programs. NA You are done with Section 2.4.3.

2.5 New Process Registration. Complete the following New Process Registration Form to report the creation of a new process or to identify changes to existing processes that will utilize any of the chemicals that come under EPA's Industrial Toxics Project (ITP), a program for achieving voluntary reductions of 17 high-priority chemicals. The New Process Registration Form may be submitted at any time--it is not necessary to wait until the end of the quarter. The 17 chemicals of interest in the ITP are:

Benzene	Cadmium & compounds	Carbon tetrachloride
Chloroform	Chromium & compounds	Cyanide & compounds
Dichloromethane	Lead & compounds	Mercury & compounds
Methyl ethyl ketone	Methyl isobutyl ketone	Nickel & compounds
Tetrachloroethylene	Toluene	1,1,1-Trichloroethane
Trichloroethylene	Xylenes	

NEW PROCESS REGISTRATION FORM

FACILITY NAME: _____
LAB NUMBER: _____ PHONE: _____
POINT OF CONTACT NAME: _____
NEW PROCESS DESCRIPTION: _____

CHEMICALS OR PRODUCTS TO BE INPUT TO THE NEW PROCESS: *

<u>CHEMICAL NAME</u>	<u>ESTIMATED VOLUME/YEAR</u>	<u>UNIT OF PURCHASE</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

* PLEASE ATTACH MATERIAL SAFETY DATA SHEETS

EXPECTED WASTE OUTPUT:

<u>EXPECTED WASTE OUTPUT</u>	<u>ESTIMATED VOLUME/YEAR</u>	<u>UNIT OF PURCHASE</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

HAVE ANY STEPS BEEN TAKEN TO LIMIT/PREVENT THE WASTE OUTPUT OF THIS PROCESS IN EITHER THE CONCEPTUAL DESIGN OR DESIGN AND REVIEW STAGES OF THIS NEW PROCESS? PLEASE SUMMARIZE THE EFFORTS BELOW:

<u>Wastestream</u>	<u>ESTIMATED AVOIDED VOLUME/YEAR</u>
_____	_____
_____	_____
_____	_____
_____	_____

PART 3. WASTE REDUCTION PERFORMANCE

3.1 ROUTINELY GENERATED WASTES

This Section is for reporting facility/process waste generation and reduction performance for routinely generated wastes. Complete this section for each wastestream routinely produced by your processes in the quarter just ended. If your processes did not produce a waste type, mark it NA.

NOTE: ALL FACILITIES MUST REPORT MUNICIPAL SANITARY WASTE INFORMATION

3.1.1 Generation and Disposal of Routinely Generated Wastes.

Wastestream Name _____

Wastestream Description _____

Waste Type	NA	Volume Generated In Quarter	Volume Disposed In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Hazardous	_____	_____	_____	_____	_____		

3.1.1 (Cont.)

Waste Type	NA	Volume Generated In Quarter	Volume Disposed In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Radioactive							
High-level	_____	_____	_____	_____		_____	_____
Transuranic	_____	_____	_____	_____		_____	_____
Low-level							
Class 1	_____	_____	_____	_____		_____	_____
Class 2	_____	_____	_____	_____		_____	_____
Class 3	_____	_____	_____	_____		_____	_____
Class 4	_____	_____	_____	_____		_____	_____
Class 5	_____	_____	_____	_____		_____	_____
Liquid	_____	_____	_____	_____		_____	_____
Gaseous	_____	_____	_____	_____		_____	_____
Mixed	_____	_____	_____	_____	_____	_____	_____

3.1.1 (Cont.)

Waste Type	Volume Generated In Quarter	Volume Disposed In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Municipal Sanitary						
Type 1	_____	_____	_____			
Type 2	_____	_____	_____			
Type 3	_____	_____	_____			
Type 4	_____	_____	_____			
Type 5	_____	_____	_____			
Other	_____	_____	_____			
Asbestos	_____	_____	_____			
Bulky Waste	_____	_____	_____			
Compostable Waste	_____	_____	_____			
Liquid	_____	_____	_____			

3.1.2 Source Reduction of Routinely Generated Wastes.

Use this section to report the types and volumes of waste that you avoided through source reduction efforts during the quarter just ended. Source reduction includes such things as product changes, input material changes, technology changes, and good operating practices. If your organization did not initiate any source reduction activities that resulted in preventing waste generation, mark this section NA.

NA _____ You are done with Section 3.1.2. Submit only this page of Section 3.1.2.

Waste Type	NA	Volume Avoided In Quarter	Year-to-Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Hazardous	_____	_____	_____	_____		
Radioactive						
High-level	_____	_____	_____		_____	_____
Transuranic	_____	_____	_____		_____	_____
Low-level						
Class 1	_____	_____	_____		_____	_____
Class 2	_____	_____	_____		_____	_____
Class 3	_____	_____	_____		_____	_____

3.1.2 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to-Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Low-level (cont.)						
Class 4	_____	_____	_____		_____	_____
Class 5	_____	_____	_____		_____	_____
Liquid	_____	_____	_____		_____	_____
Gaseous	_____	_____	_____		_____	_____
Mixed	_____	_____	_____	_____	_____	_____
Municipal Sanitary						
Type 1	_____	_____	_____			
Type 2	_____	_____	_____			
Type 3	_____	_____	_____			
Type 4	_____	_____	_____			
Type 5	_____	_____	_____			
Other	_____	_____	_____			

3.1.2 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Municipal Sanitary (cont.)						
Asbestos	---	_____	_____			
Bulky Waste	---	_____	_____			
Compost. Waste	---	_____	_____			
Liquid	---	_____	_____			

3.1.3 Recycling of Routinely Generated Wastes.

Use this section to report the types and volumes of waste that you recycled in the quarter just ended. Recycling includes such things as use in the original process, reuse as a raw material in another process or reclamation for resource recovery. If your organization did not initiate any recycling activities that resulted in preventing waste generation, mark this section NA.

NA _____ You are done with Section 3.1.3. Submit only this page of Section 3.1.3.

Waste Type	NA	Volume Recycled In Quarter	Year-to-Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Hazardous	_____	_____	_____	_____		
Radioactive						
High-level	_____	_____	_____		_____	_____
Transuranic	_____	_____	_____		_____	_____
Low-level						
Class 1	_____	_____	_____		_____	_____
Class 2	_____	_____	_____		_____	_____
Class 3	_____	_____	_____		_____	_____

3.1.3 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Low-level (cont.)						
Class 4	_____	_____	_____		_____	_____
Class 5	_____	_____	_____		_____	_____
Liquid	_____	_____	_____		_____	_____
Gaseous	_____	_____	_____		_____	_____
Mixed	_____	_____	_____	_____	_____	_____
Municipal Sanitary						
Type 1		_____	_____			
Type 2		_____	_____			
Type 3		_____	_____			
Type 4		_____	_____			
Type 5		_____	_____			
Other		_____	_____			

3.1.3 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Municipal Sanitary (cont.)						
Asbestos		_____	_____			
Bulky Waste		_____	_____			
Compostable Waste		_____	_____			
Liquid		_____	_____			

3.1.4 Treatment of Routinely Generated Wastes.

Use this section to report the types and volumes of waste that you treated in the quarter just ended. Treatment includes such things as concentration conducted solely for reducing volume, dilution as a means of toxicity reduction unless later recycling steps are involved, or if the activity is to make the material more amenable for disposal (e.g., reduce volume or toxicity before storage or disposal). If your organization did not utilize any treatment facilities, mark this section NA.

NA _____ You are done with Section 3.1.4. Submit only this page of Section 3.1.4.

Waste Type	NA	Volume Treated In Quarter	Year-to-Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Hazardous	_____	_____	_____	_____		
Radioactive						
High-level	_____	_____	_____		_____	_____
Transuranic	_____	_____	_____		_____	_____
Low-level						
Class 1	_____	_____	_____		_____	_____
Class 2	_____	_____	_____		_____	_____
Class 3	_____	_____	_____		_____	_____

3.1.4 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Low-level (cont.)						
Class 4	_____	_____	_____		_____	_____
Class 5	_____	_____	_____		_____	_____
Liquid	_____	_____	_____		_____	_____
Gaseous	_____	_____	_____		_____	_____
Mixed	_____	_____	_____	_____	_____	_____
Municipal Sanitary						
Type 1		_____	_____			
Type 2		_____	_____			
Type 3		_____	_____			
Type 4		_____	_____			
Type 5		_____	_____			
Other		_____	_____			

3.1.4 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Municipal Sanitary (cont.)						
Asbestos		_____	_____			
Bulky Waste		_____	_____			
Compostable Waste		_____	_____			
Liquid		_____	_____			

3.2 NONROUTINELY GENERATED WASTES

This section is for reporting facility/process waste generation and reduction performance for nonroutinely generated wastes. Complete this section for each wastestream nonroutinely produced by your processes in the quarter just ended. If your processes did not produce a waste type, mark it NA.

NOTE: ALL FACILITIES MUST REPORT MUNICIPAL SANITARY WASTE INFORMATION

3.2.1 Generation and Disposal of Nonroutinely Generated Wastes.

Wastestream Name _____

Wastestream Description _____

Waste Type	NA	Volume Generated In Quarter	Volume Disposed In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Hazardous	_____	_____	_____	_____	_____		
Radioactive							
High-level	_____	_____	_____	_____		_____	_____

3.2.1 (Cont.)

Waste Type	NA	Volume Generated In Quarter	Volume Disposed In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Radioactive (cont.)							
Transuranic	_____	_____	_____	_____		_____	_____
Low-level							
Class 1	_____	_____	_____	_____		_____	_____
Class 2	_____	_____	_____	_____		_____	_____
Class 3	_____	_____	_____	_____		_____	_____
Class 4	_____	_____	_____	_____		_____	_____
Class 5	_____	_____	_____	_____		_____	_____
Liquid	_____	_____	_____	_____		_____	_____
Gaseous	_____	_____	_____	_____		_____	_____
Mixed	_____	_____	_____	_____	_____	_____	_____

3.2.1 (Cont.)

Waste Type	Volume Generated In Quarter	Volume Disposed In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Municipal Sanitary						
Type 1	_____	_____	_____			
Type 2	_____	_____	_____			
Type 3	_____	_____	_____			
Type 4	_____	_____	_____			
Type 5	_____	_____	_____			
Other	_____	_____	_____			
Asbestos	_____	_____	_____			
Bulky Waste	_____	_____	_____			
Compostable Waste	_____	_____	_____			
Liquid	_____	_____	_____			

3.2.2 Source Reduction of Nonroutinely Generated Wastes.

Use this section to report the types and volumes of non-routine waste that you avoided thorough source reduction efforts during the quarter just ended. Source reduction includes such things as product changes, input material changes, technology changes, and good operating practices. If your organization did not initiate any source reduction activities that resulted in preventing waste generation, mark this section NA.

NA _____ You are done with Section 3.2.2. Submit only this page of Section 3.2.2.

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Hazardous	_____	_____	_____	_____		
Radioactive						
High-level	_____	_____	_____		_____	_____
Transuranic	_____	_____	_____		_____	_____
Low-level						
Class 1	_____	_____	_____		_____	_____
Class 2	_____	_____	_____		_____	_____
Class 3	_____	_____	_____		_____	_____

3.2.2 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Low-level (cont.)						
Class 4	_____	_____	_____	_____	_____	_____
Class 5	_____	_____	_____	_____	_____	_____
Liquid	_____	_____	_____	_____	_____	_____
Gaseous	_____	_____	_____	_____	_____	_____
Mixed	_____	_____	_____	_____	_____	_____
Municipal Sanitary						
Type 1	_____	_____	_____	_____	_____	_____
Type 2	_____	_____	_____	_____	_____	_____
Type 3	_____	_____	_____	_____	_____	_____
Type 4	_____	_____	_____	_____	_____	_____
Type 5	_____	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____	_____

3.2.2 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Municipal Sanitary (cont.)						
Asbestos	---	_____	_____			
Bulky Waste	---	_____	_____			
Compost. Waste	---	_____	_____			
Liquid	---	_____	_____			

3.2.3 Recycling of Nonroutinely Generated Wastes.

Use this section to report the types and volumes of non-routine waste that you recycled in the quarter just ended. Recycling includes such things as use in the original process, reuse as a raw material in another process or reclamation for resource recovery. If your organization did not initiate any recycling activities that resulted in preventing waste generation, mark this section NA.

NA _____ You are done with Section 3.2.3. Submit only this page of Section 3.2.3.

Waste Type	NA	Volume Recycled In Quarter	Year-to-Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Hazardous	_____	_____	_____	_____		
Radioactive						
High-level	_____	_____	_____		_____	_____
Transuranic	_____	_____	_____		_____	_____
Low-level						
Class 1	_____	_____	_____		_____	_____
Class 2	_____	_____	_____		_____	_____
Class 3	_____	_____	_____		_____	_____

3.2.3 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Low-level (cont.)						
Class 4	_____	_____	_____		_____	_____
Class 5	_____	_____	_____		_____	_____
Liquid	_____	_____	_____		_____	_____
Gaseous	_____	_____	_____		_____	_____
Mixed	_____	_____	_____	_____	_____	_____
Municipal Sanitary						
Type 1		_____	_____			
Type 2		_____	_____			
Type 3		_____	_____			
Type 4		_____	_____			
Type 5		_____	_____			
Other		_____	_____			

3.2.3 (cont.)

Waste Type	NA	Volume Avoided In Quarter	Year-to- Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Municipal Sanitary (cont.)						
Asbestos		_____	_____			
Bulky Waste		_____	_____			
Compostable Waste		_____	_____			
Liquid		_____	_____			

3.2.4 Treatment of nonroutinely Generated Wastes.

Use this section to report the types and volumes of non-routine waste that you treated in the quarter just ended. Treatment includes such things as concentration conducted solely for reducing volume, dilution as a means of toxicity reduction unless later recycling steps are involved, or if the activity is to make the material more amenable for disposal (e.g., reduce volume or toxicity before storage or disposal). If your organization did not utilize any treatment facilities, mark this section NA.

NA _____ You are done with Section 3.2.4. Submit only this page of Section 3.2.4.

Waste Type	NA	Volume Treated In Quarter	Year-to-Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Hazardous	_____	_____	_____	_____		
Radioactive						
High-level	_____	_____	_____		_____	_____
Transuranic	_____	_____	_____		_____	_____
Low-level						
Class 1	_____	_____	_____		_____	_____
Class 2	_____	_____	_____		_____	_____
Class 3	_____	_____	_____		_____	_____

3.2.4 (cont.)

Waste Type	NA	Volume Treated In Quarter	Year-to-Date Volume	RCRA Codes	Radionuclide Content	Curie Content
low-level (cont.)						
Class 4	_____	_____	_____		_____	_____
Class 5	_____	_____	_____		_____	_____
Liquid	_____	_____	_____		_____	_____
Gaseous	_____	_____	_____		_____	_____
Mixed	_____	_____	_____	_____	_____	_____
Municipal Sanitary						
Type 1		_____	_____			
Type 2		_____	_____			
Type 3		_____	_____			
Type 4		_____	_____			
Type 5		_____	_____			
Other		_____	_____			

3.2.4 (cont.)

Waste Type	NA	Volume Treated In Quarter	Year-to-Date Volume	RCRA Codes	Radionuclide Content	Curie Content
Municipal Sanitary (cont.)						
Asbestos		_____	_____			
Bulky Waste		_____	_____			
Compostable Waste		_____	_____			
Liquid		_____	_____			

APPENDIX B
INEL POLLUTION PREVENTION GOALS

APPENDIX B

INEL POLLUTION PREVENTION GOALS

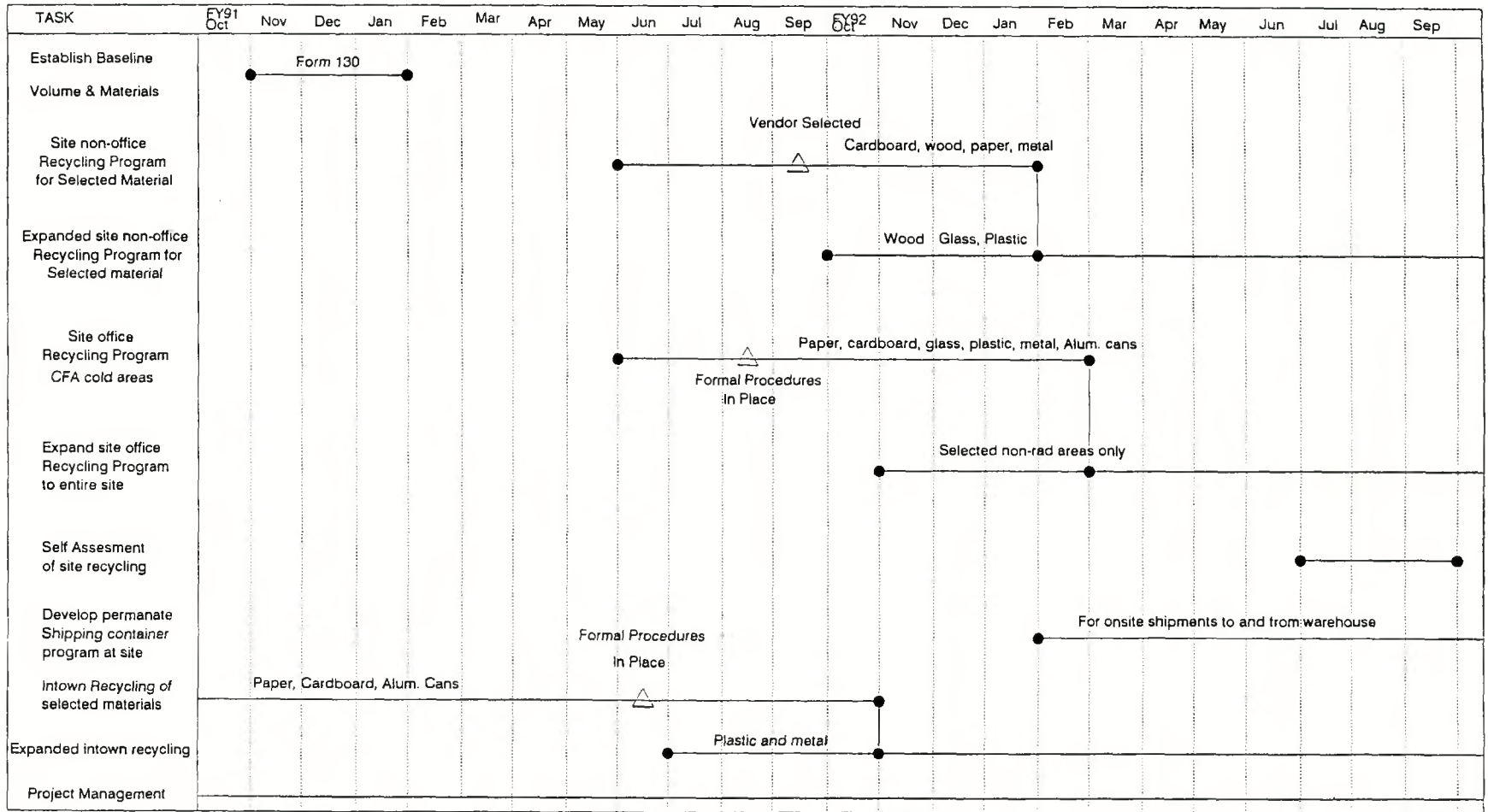
Goals for CDIF, GJPO, and WVDP have not been submitted. They will be reflected in this plan as they become available.

The long-term INEL Pollution Prevention Goals for all waste types are summarized below. Calendar year 1990 waste generation or material usage volumes are the baseline values for establishing the reduction goals and measuring progress towards the goals.

<u>Waste Type</u>	<u>% Waste Reduction Goal and Year</u>									
	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Hazardous solvents	10%	25%		50%					75%	
Hazardous waste			25%							50%
Low-level waste					25%					50%
Mixed waste					50%					75%
Municipal sanitary waste	10%	20%		25%						

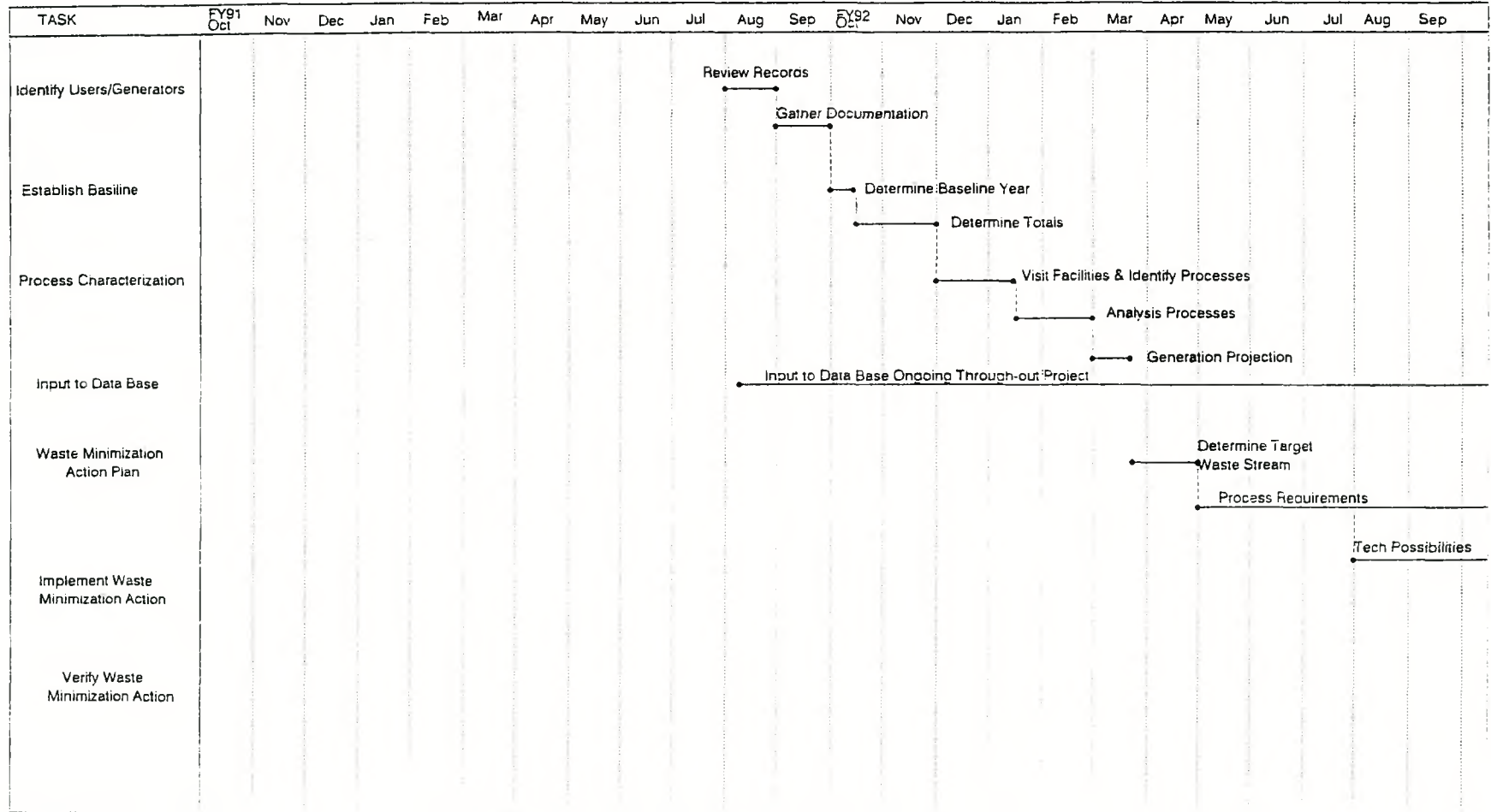
APPENDIX C
DOE-ID POLLUTION PREVENTION PROGRAM ACTIVITIES

Sanitary Waste

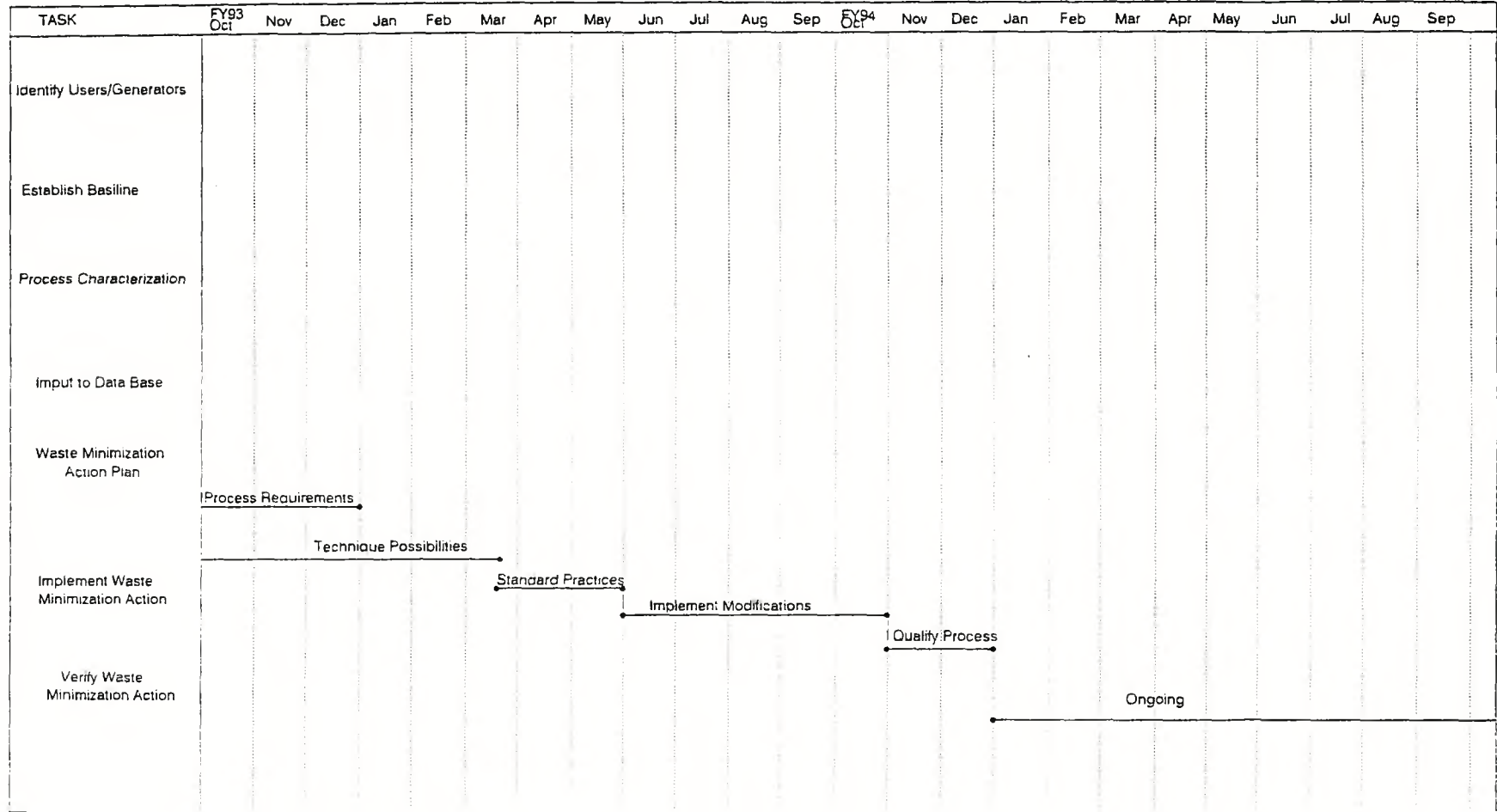


C-5

INEL MIXED WASTE STREAM SCHEDULE

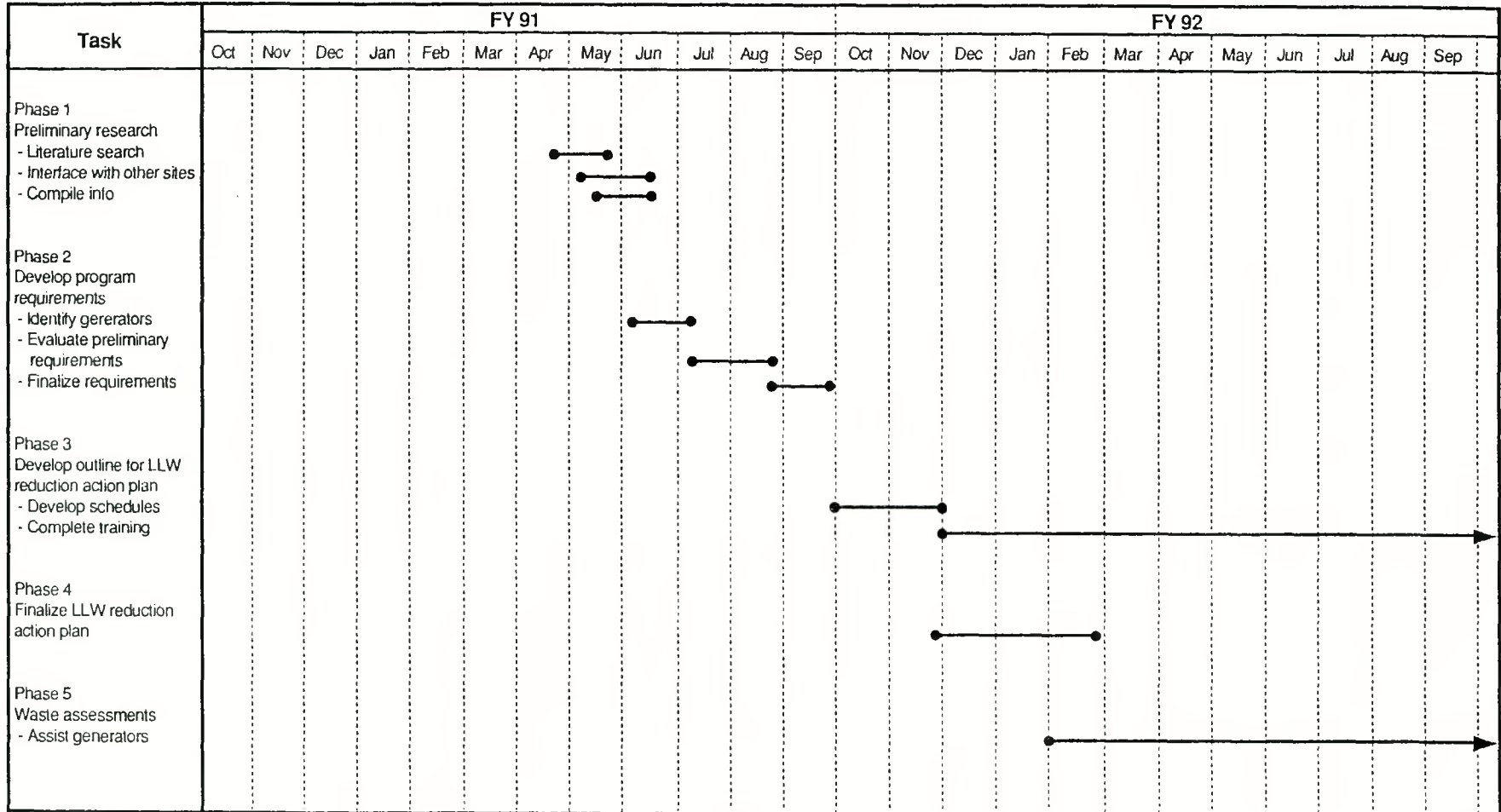


INEL MIXED WASTE STREAM SCHEDULE



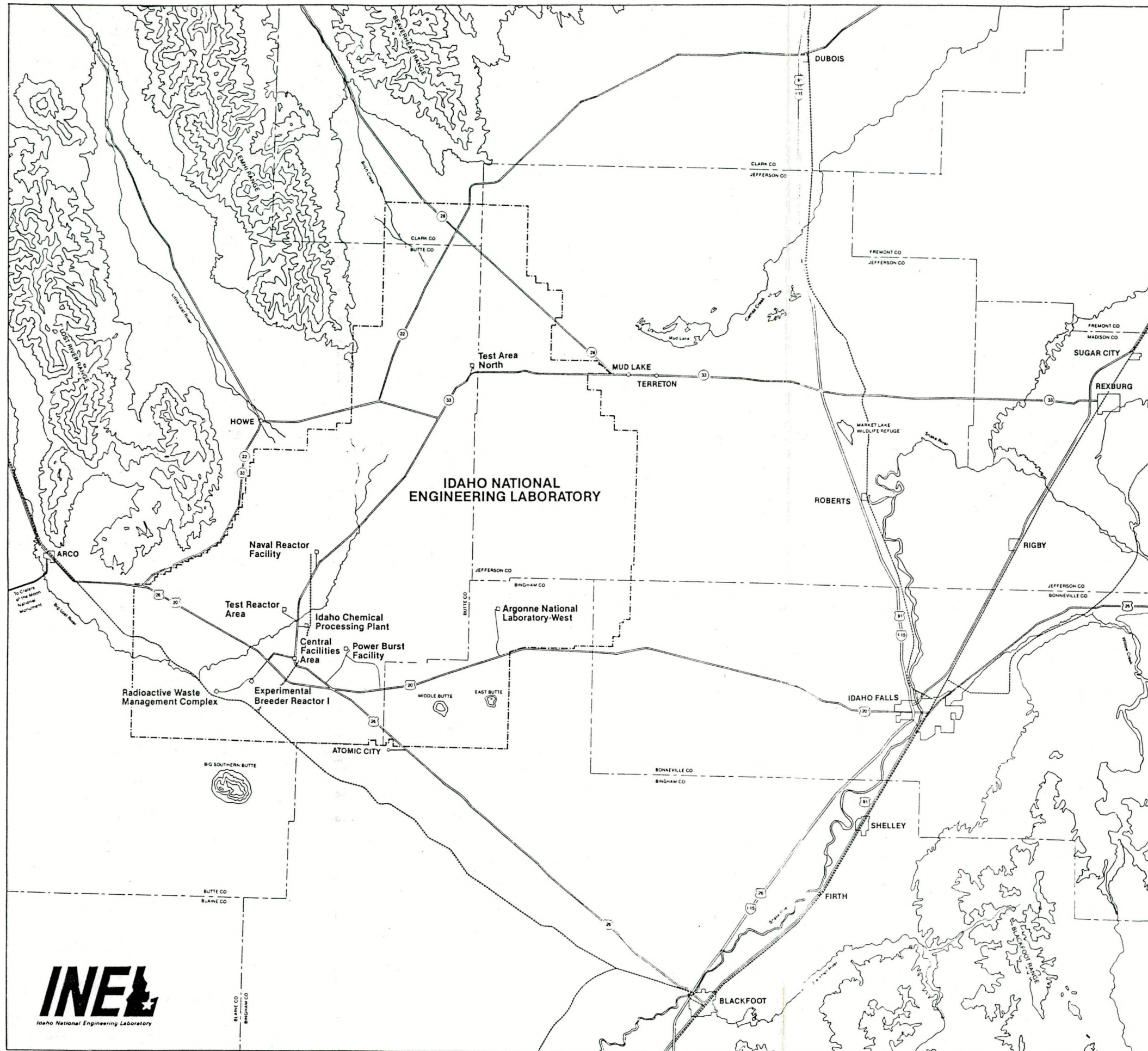
C-7

INEL Low-Level Waste Stream Reduction Schedule



8-C

APPENDIX D
PLOT OF INEL



Idaho National Engineering Laboratory (INEL)

INEL employment totals approximately 10,500, which amounts to about 2.5% of Idaho's total workforce. Some 8,000 workers staff the nine operating areas on the INEL Site, while the remainder work at facilities in Idaho Falls.

The Site covers 890 square miles of desert land at an elevation of nearly one mile. The INEL is 39 miles long from north to south and 36 miles wide at its broadest point.

Argonne National Laboratory-West (ANL-W)

ANL-W is the nation's testing ground for breeder-reactor technology. The facility houses Experimental Breeder Reactor II, the first pool-type liquid-metal reactor. In addition to EBR-II, the ANL-W complex has four other reactors and two fuel examination facilities.

Central Facilities Area (CFA)

Many services for the entire Site are headquartered at CFA. These include environmental laboratories, security, fire protection, medical, communications systems, warehouses, cafeteria, vehicle and equipment pools, bus system and laundry.

Experimental Breeder Reactor I (EBR-I)

EBR-I was the first reactor in the world to generate usable amounts of electricity. This historic accomplishment took place on December 20, 1951. Today EBR-I is a National Historic Landmark, open to the general public daily from Memorial Day through Labor Day each year.

Idaho Chemical Processing Plant (ICPP)

The ICPP complex houses reprocessing facilities for government-owned defense and research spent fuels. Since beginning operation in 1953 the facility has recovered more than \$1 billion worth of Uranium-235. Facilities at ICPP include spent fuel storage and reprocessing areas, a waste solidification facility and related waste storage bins, remote analytical laboratories and a coal-fired steam generating plant.

Naval Reactor Facility (NRF)

NRF is the birthplace of the U.S. Nuclear Navy. Prototype reactors for both surface ships and submarines were developed here. Reactors operating at the facility today continue to make important contributions to U.S. defense. The facility also serves as a training school for officers and crew who operate reactors for the Navy.

Power Burst Facility (PBF)

For years PBF served as the testing ground for nuclear fuels that power the nation's commercial nuclear reactors. Currently on standby status, PBF, because of its unique capabilities, is being considered for use in brain cancer treatments for a program called Boron Neutron Capture Therapy (BNCT).

Radioactive Waste Management Complex (RWMC)

Various strategies for waste storage, processing and disposal are studied at RWMC, established in 1952 as a controlled area for disposal of solid radioactive wastes generated in INEL operations. Since 1954 the facility has received defense wastes for storage. The Stored Waste Examination Pilot Plant (SWEPP), a state-of-the-art waste certification facility, is housed at RWMC. Currently SWEPP is used for certifying waste for shipment to the Department of Energy Waste Isolation Pilot Plant in New Mexico.

Test Area North (TAN)

TAN, located at the northern end of the INEL Site, consists of facilities for handling, storage, examination and research and development of spent nuclear fuel. Also located at TAN is the Process Experimental Pilot Plant (PREPP), a facility for processing radioactive waste for shipment to the Waste Isolation Pilot Plant in New Mexico.

Test Reactor Area (TRA)

TRA, the world's most sophisticated materials testing complex, houses extensive facilities for studying the effects of radiation on materials, fuels and equipment. The Advanced Test Reactor (ATR), located at TRA, produces a neutron flux that allows simulation of long-duration radiation effects on materials and fuels. ATR is also used for production of important isotopes used in medicine, research and industry.

Figure D-1. Plot of INEL, showing major facilities.

APPENDIX E
PROCESS WASTE ASSESSMENT SCHEDULES

APPENDIX E

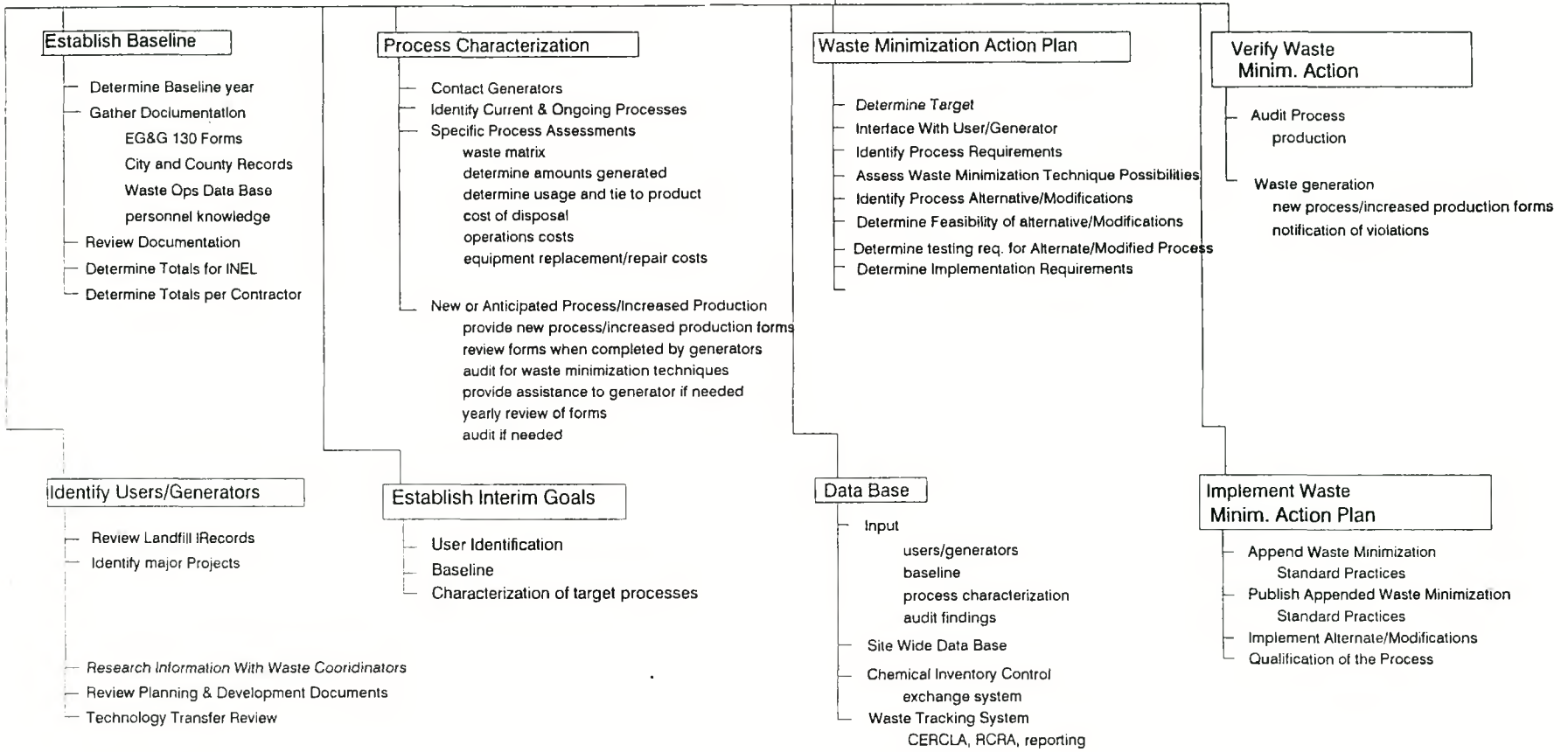
PROCESS WASTE ASSESSMENT SCHEDULES

This appendix will be added by end of FY-91.

APPENDIX F
MAJOR WASTESTREAM ASSESSMENT PROCESS

POLLUTION PREVENTION/SPECIAL PROJECTS

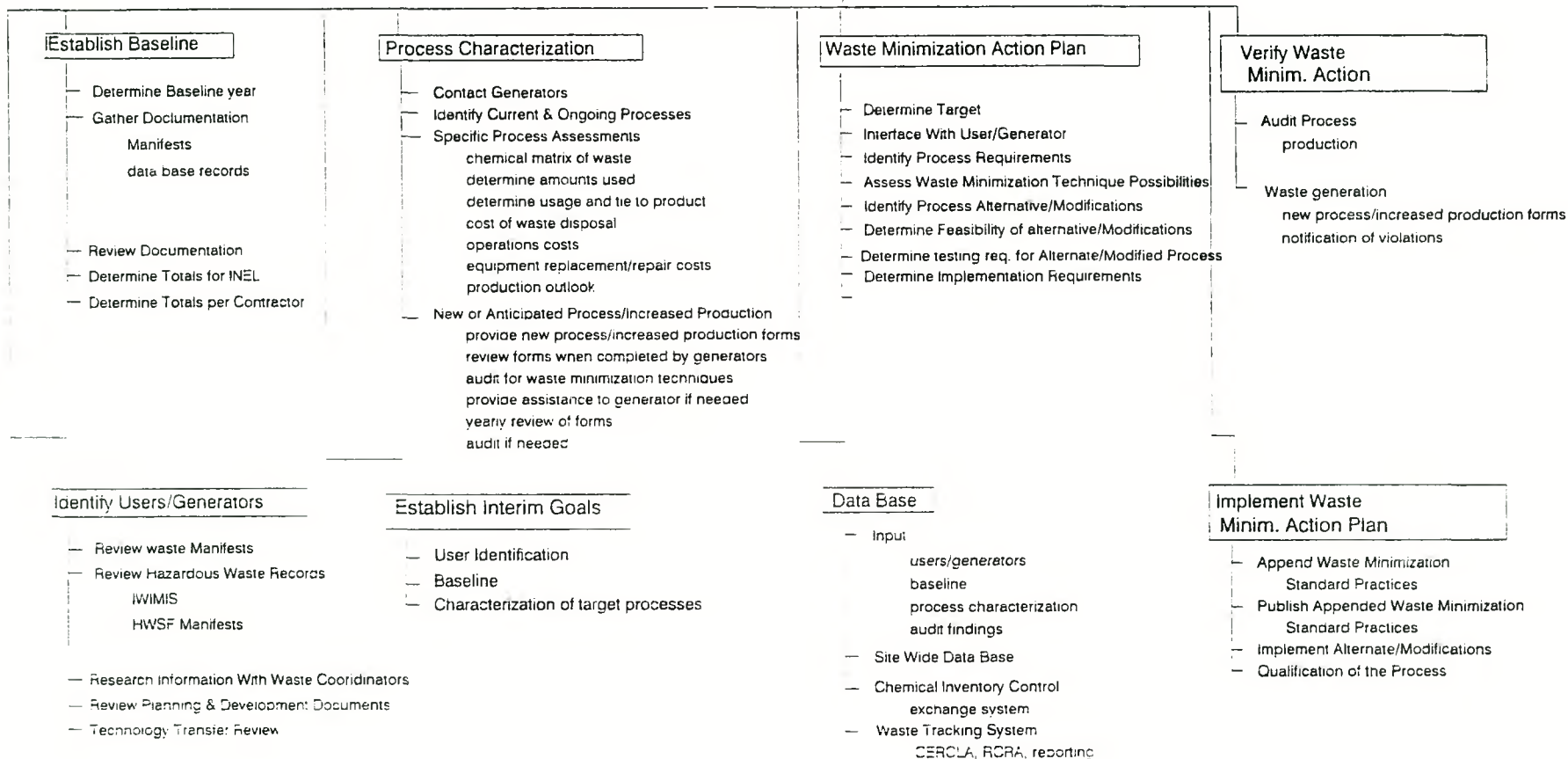
Sanitary Waste Workscope



F-3

POLLUTION PREVENTION/SPECIAL PROJECTS

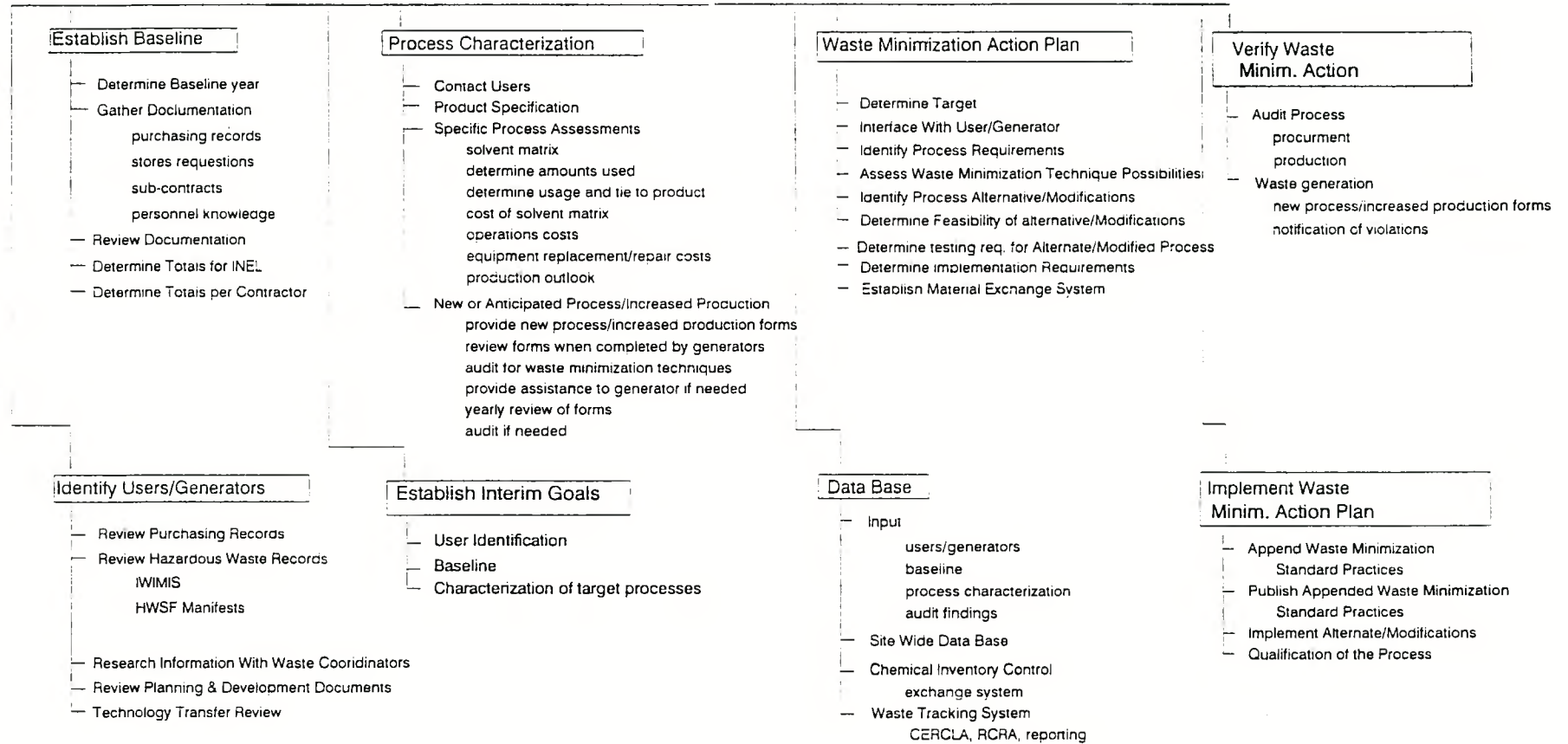
Hazardous Waste Workscope



POLLUTION PREVENTION/SPECIAL PROJECTS

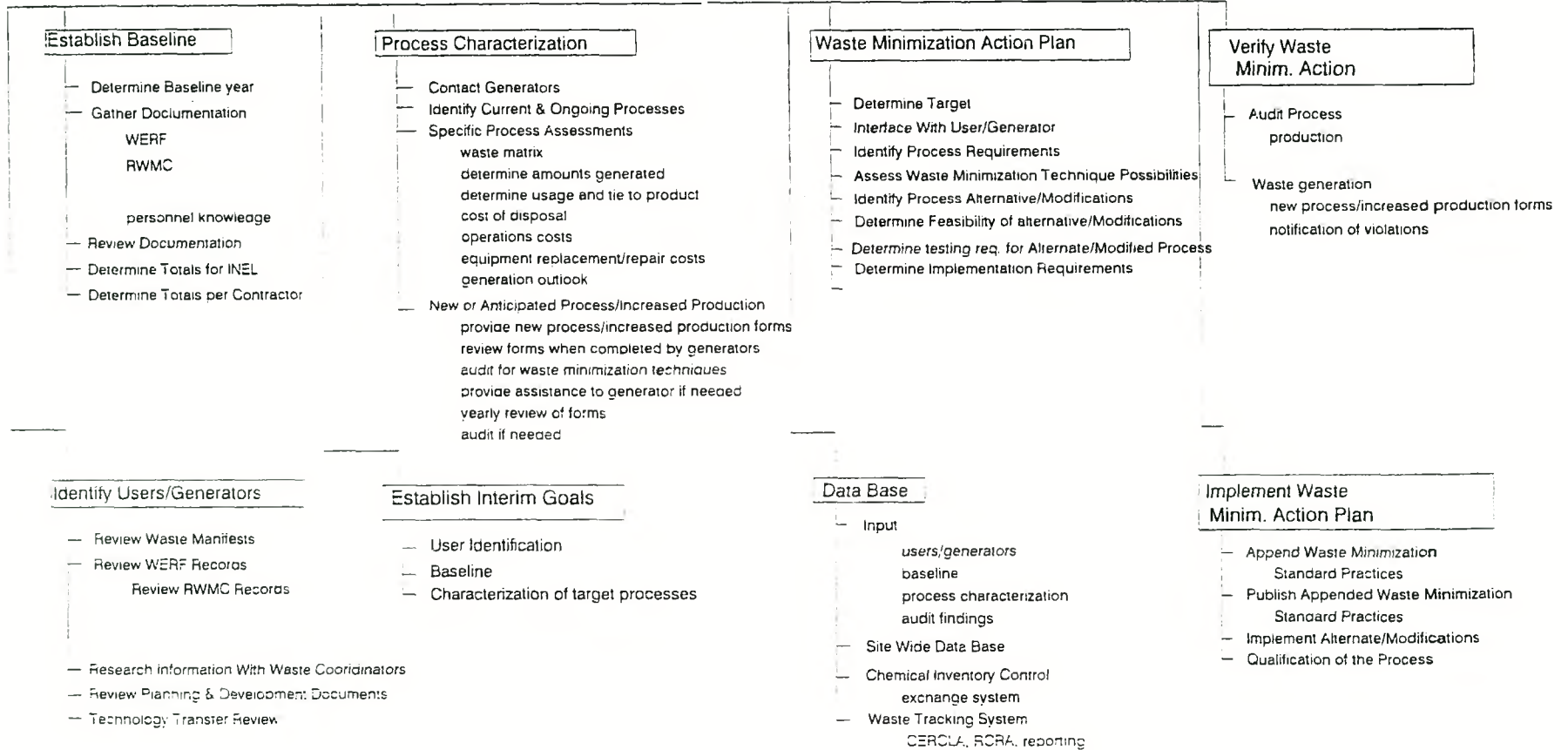
Hazardous Solvent Work Scope

F-5



POLLUTION PREVENTION/SPECIAL PROJECTS

Low Level Waste Workscope



POLLUTION PREVENTION/SPECIAL PROJECTS

Mixed Wastes Worksopce

Establish Baseline

- Determine Baseline year
- Gather Documentation
 - Review Waste Manifests
 - Review MWSF Records
 - Waste Ops Data Base
 - personnel knowledge
- Review Documentation
- Determine Totals for INEL
- Determine Totals per Contractor

Process Characterization

- Contact Generators
- Identify Current & Ongoing Processes
- Specific Process Assessments
 - waste matrix
 - determine amounts generated
 - determine usage and tie to product
 - cost of disposal
 - operations costs
 - equipment replacement/repair costs
 - radionuclide content
- New or Anticipated Process/increased Production
 - provide new process/increased production forms
 - review forms when completed by generators
 - audit for waste minimization techniques
 - provide assistance to generator if needed
 - yearly review of forms
 - audit if needed

Waste Minimization Action Plan

- Determine Target
- Interface With User/Generator
- Identify Process Requirements
- Assess Waste Minimization Technique Possibilities
- Identify Process Alternative/Modifications
- Determine Feasibility of alternative/Modifications
- Determine testing req. for Alternate/Modified Process
- Determine Implementation Requirements
- Establish Material Exchange System

Verify Waste Minim. Action

- Audit Process production
- Waste generation
 - new process/increased production forms
 - notification of violations

Identify Users/Generators

- Review Waste Manifests
- Review MWSF Records
 - IWIMS
- Research Information With Waste Coordinators
- Review Planning & Development Documents
- Technology Transfer Review

Establish Interim Goals

- User Identification
- Baseline
- Characterization of target processes

Data Base

- Input
 - users/generators
 - baseline
 - process characterization
 - audit findings
- Site Wide Data Base
- Chemical Inventory Control
 - exchange system
- Waste Tracking System
 - CERCLA, RCRA, reporting

Implement Waste Minim. Action Plan

- Append Waste Minimization Standard Practices
- Publish Appended Waste Minimization Standard Practices
- Implement Alternate/Modifications
- Qualification of the Process

APPENDIX G
DOE-ID ORGANIZATIONAL AND STAFF RESPONSIBILITIES

APPENDIX G

DOE-ID ORGANIZATIONAL AND STAFF RESPONSIBILITIES

G.1 DOE-ID MANAGER RESPONSIBILITIES

The DOE-ID manager establishes requirements for the DOE-ID Pollution Prevention Program and the DOE-ID organizational structure for implementing the program. The manager provides general direction for program efforts, allocates resources accordingly, and acts in an overview position to ensure waste minimization goals and reporting requirements are fulfilled.

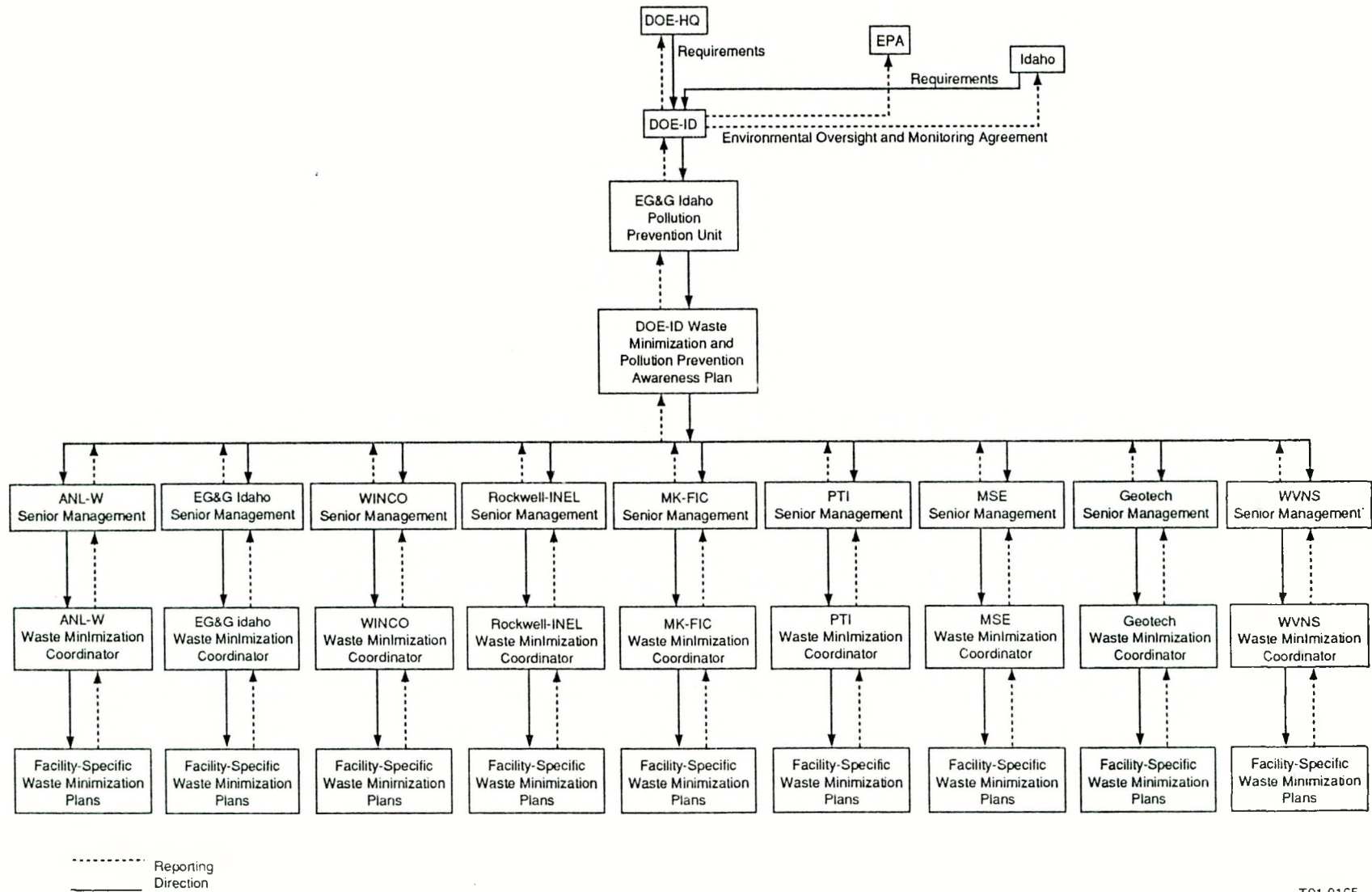
G.2 DOE-ID ASSISTANT MANAGER FOR ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT RESPONSIBILITIES

The DOE-ID assistant manager for Environmental Restoration and Waste Management (ERWM) is responsible for overseeing the development of the DOE-ID Pollution Prevention Program. The assistant manager ensures the program follows DOE, EPA, state, and DOE-ID guidelines for waste minimization and pollution prevention and best management practices for environmentally sound operations.

The assistant manager of ERWM also has responsibility to

- Administer the Pollution Prevention Program
- Approve the general schedule and annual milestones for implementation of the program
- Approve long-range waste minimization goals developed by the DOE-ID Pollution Prevention Program manager

G-4



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Figure G-1. DOE-ID organization for Pollution Prevention.

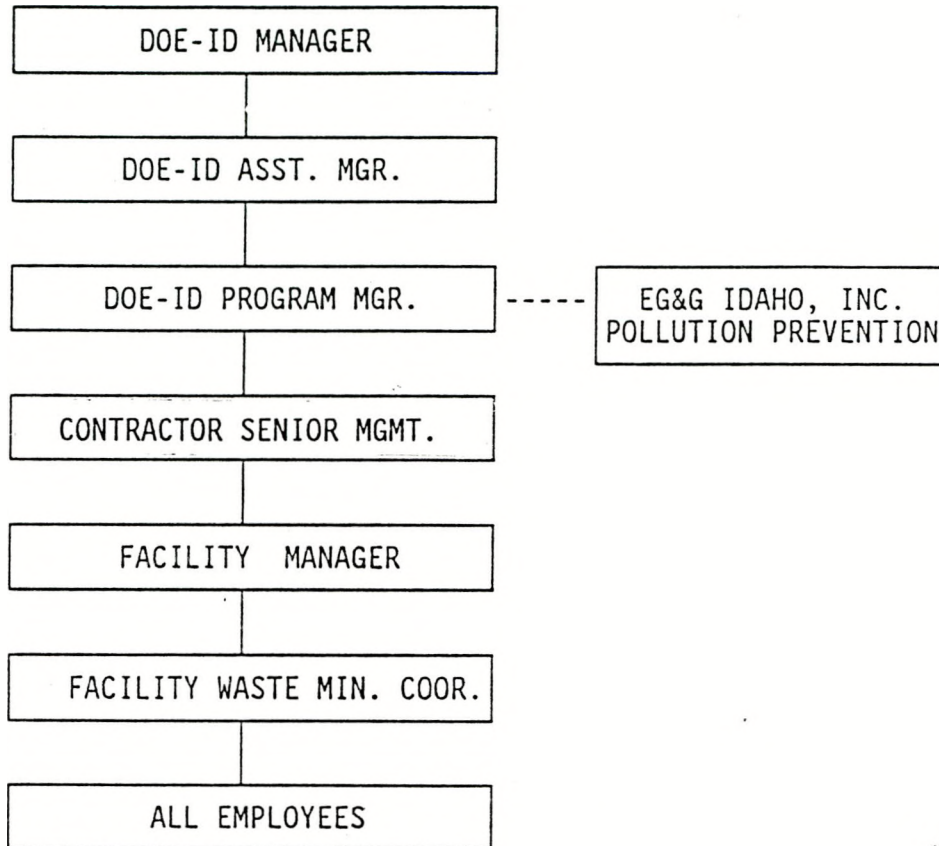


Figure G-2. DOE-ID Pollution Prevention organizational hierarchy.

- Approve and transmit all Pollution Prevention Program plans and reports being sent to the State of Idaho, DOE-HQ, or other external interested parties
- Approve the general criteria for auditing the DOE-ID Pollution Prevention Program and the reports detailing contractor waste minimization performance
- Establish contractor waste minimization incentives through appropriate Cost Plus Award Fee (CPAF) awards.

G.3 DOE-ID POLLUTION PREVENTION PROGRAM MANAGER RESPONSIBILITIES

The DOE-ID Pollution Prevention Program manager has the responsibility to oversee the conduct and provide general guidance to the PP/SP Unit for implementing the DOE-ID Pollution Prevention Program as directed by the assistant manager of ERWM.

The DOE-ID program manager also has responsibility to

- Review the DOE-ID Waste Minimization and Pollution Prevention Awareness Plan
- Develop the contractor waste minimization performance audit criteria
- Provide guidance for the development of DOE-ID waste minimization procedures, waste minimization tracking systems, and pollution prevention training programs
- Develop DOE-ID long-range waste minimization goals in conjunction with the PP/SP Unit of EG&G Idaho
- Develop requirements and formats for all required waste minimization reports

- Conduct periodic CPAF audits of all contractor waste minimization and pollution prevention awareness programs, procedures, tracking systems, and pollution prevention training programs
- Identify the corrective actions necessary for all contractor waste minimization and pollution prevention awareness program areas that are found to be deficient.

G.4 EG&G IDAHO POLLUTION PREVENTION/SPECIAL PROJECTS UNIT RESPONSIBILITIES

The PP/SP Unit coordinates with the DOE-ID program manager to implement the DOE-ID Pollution Prevention Program and to develop the overall DOE-ID waste minimization goals.

The PP/SP Unit also has responsibility to

- Coordinate with the DOE-ID Pollution Prevention Program manager to develop and implement the program.
- Prepare and issue to all contractors routine requests for information such as facility-specific waste minimization plans and waste reduction performance data.
- Develop and implement site-wide source reduction and recycling efforts.
- Coordinate the waste minimization goals among all contractors and facilities to ensure these goals can be met.
- Establish information networks for internal communication of waste minimization techniques, procedures, and success stories.

- Develop and oversee the INEL Pollution Prevention Awareness Training Program. This program includes general training for all employees, specific training for targeted employee groups, continuing employee education, and new hire training.
- Prepare and submit the annual DOE-ID Waste Reduction Report.
- Prepare and submit the DOE-ID Waste Minimization and Pollution Prevention Awareness Plan and the required Program reports to the DOE-ID program manager.

G.5 CONTRACTOR SENIOR MANAGEMENT RESPONSIBILITIES

Contractor senior management is responsible for all company waste minimization activities. The activities include management evaluation, performance monitoring, and the specific tasks identified in the Waste Minimization Plans. Senior management provides program incentives and resources to carry out the program.

Contractor senior management also has responsibility to

- Transmit and distribute contractor waste reduction reports according to the reporting requirements of the DOE-ID Pollution Prevention Program
- Develop, implement, and maintain an internal company audit program for conformance to program goals.

G.6 PROCESS MANAGER RESPONSIBILITIES

Process managers are accountable for the wastes generated by the people and processes they manage. The process manager coordinates with the PP/SP Unit for guidance to implement the DOE-ID Pollution Prevention Program at their facility. Process managers provide the direction of and emphasis for

the facility's Waste Minimization and Pollution Prevention Awareness Program and are responsible for establishing detailed waste minimization policies for their facilities. Additionally, they

- Prepare and issue program guidance to their facilities.
- Integrate company goals into their facility plans and objectives for minimizing waste. The majority of goals and objectives will be narrow in focus, achievable in short or intermediate time frames (6 to 18 months). The goals and objectives will be detailed and specific to particular areas, wastestreams, and processes in the facility.
- Develop and submit data and internal program reports to the senior management and to the PP/SP Unit.
- Ensure the accuracy of all wastestream data prior to inclusion in waste minimization reports.
- Prepare a facility-specific Waste Minimization and Pollution Prevention Awareness Plan to meet the criteria contained in Appendix A.
- Develop facility incentive programs and minimization procedures and review their applicable procedures to ensure waste minimization is incorporated into daily operations.
- Establish and approve an internal Pollution Prevention Awareness Training Program that will allow workers to incorporate appropriate waste minimization practices into daily work practices. The program will include general training for all employees and specific training for certain, targeted groups of employees.
- Assess the adequacy of their internal information and reporting systems.

- Establish their waste minimization audit criteria and action item tracking systems
- Review waste minimization performance of all workers under the process manager's jurisdiction.

G.7 FACILITY WASTE MINIMIZATION COORDINATOR RESPONSIBILITIES

Facility Waste Minimization Coordinators report to their Process Manager and to the PP/SP Unit on all waste minimization activities. Coordinators help incorporate waste minimization goals and objectives into the daily operation of their area or facility and

- Prepare the facility-specific Waste Minimization Plan for submission to the facility or area manager and the EG&G Idaho PP/SP Unit.
- Track and report the waste generation, minimization, and treatment data required by the DOE-ID Pollution Prevention Program.
- Prepare and implement specific waste minimization training for operations being conducted at the facility. Facility training organizations should be utilized to the fullest extent possible to provide the training.
- Administer a pollution prevention audit program for the facility.
- Evaluate facility waste minimization program performance and initiate corrective actions from waste minimization audits.
- Evaluate facility or program processes and recommends changes and upgrades to improve facility minimization performance.
- Maintain a continuous interface between work area personnel and the PP/SP Unit.

G.8 EMPLOYEE RESPONSIBILITIES

All employees are responsible for applying waste minimization practices and procedures. Employees conduct detailed work practice reviews to better understand the processes and develop insights for applying waste minimization practices. Employees should participate in evaluating methods to minimize waste, including the following:

- Inventory control
- Material substitution
- Materials exchange
- Source segregation
- Waste segregation
- Process changes
- Procedural controls
- Recycling
- Good housekeeping.

Employees should continually review work processes to sustain constant improvement in waste minimization practices.

APPENDIX H

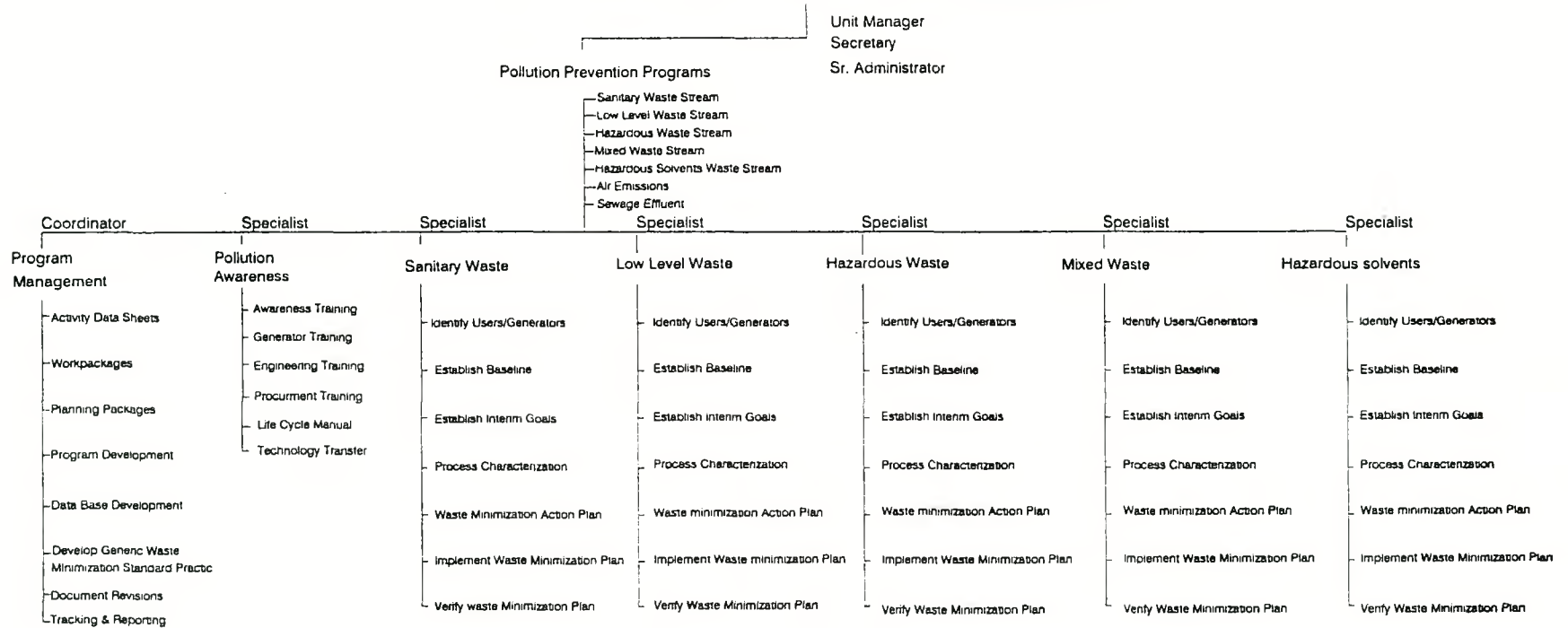
**DOE-ID POLLUTION PREVENTION PROGRAM
BUDGET AND PERSONNEL RESOURCES**

APPENDIX H

1991 DOE-ID POLLUTION PREVENTION PROGRAM
BUDGET AND PERSONNEL RESOURCES

<u>ACTIVITY</u>	<u>FUNDING (\$K)</u>	<u>PERCENT OF TOTAL WMIN BUDGET</u>	<u>PERSONNEL (FTE)</u>
Program Management	435.8	30	2.36
Pollution Prevention Awareness	262.1	18	0.94
Hazardous Solvent Substitution	310.8	22	2.32
Hazardous			
Hazardous Wastestream Reduction	6.2	1	0.06
Hazardous Waste Database	26.8	2	0.24
Hazardous Material Exchange	69.5	5	0.63
Hazardous Material Recycling	36.0	2	0.35
Low-level Wastestream Reduction	44.2	3	0.29
Mixed Wastestream Reduction	20.0	1	0.19
Municipal Sanitary Wastestream Reduction	230.6	16	1.24
TOTAL	1,442.0	100	7.38

Pollution Prevention/Special Projects



H-4