1 of 3

Comprehensive Baseline Environmental Audit of the Inhalation Toxicology Research Institute Albuquerque, New Mexico

**U.S. Department of Energy
Office of Environmental Audit
Washington, DC 20585**

MASTER

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PREFACE

PREFACE

U.S. DEPARTMENT OF ENERGY COMPREHENSIVE BASELINE ENVIRONMENTAL AUDIT OF THE INHALATION TOXICOLOGY RESEARCH INSTITUTE

In a continuing effort to strengthen environmental protection within the U.S. Department of Energy (DOE), the Office of Environment, Safety and Health (EH) has established, as part of the internal oversight responsibilities within DOE, a program within the Office of Environmental Audit (EH-24), to conduct environmental assessments of DOE programs and operating facilities. The ultimate goal of this program is enhancement of environmental protection and minimization of risk to public health and the environment through systematic and periodic evaluations of the Department's environmental programs within line organizations.

This document contains the results of the Comprehensive Baseline Environmental Audit of the Inhalation Toxicology Research Institute (ITRI). This Comprehensive Baseline Environmental Audit was conducted by EH-24 from June 14 through June 25, 1993. The assessment's objective is to advise the Secretary of Energy, through the Assistant Secretary for Environment, Safety and Health, as to the compliance status of DOE facilities with regard to environmental requirements, adequacy of DOE environmental management programs, and corrective actions to address identified problem areas.

This document contains the findings identified during the Environmental Audit of ITRI. The audit included a review of all ITRI operations and facilities supporting DOE-sponsored activities.

June 1993
Washington, D.C.

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ENVIRONMENTAL AUDIT

INHALATION TOXICOLOGY RESEARCH INSTITUTE

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This report documents the results of the Comprehensive Baseline Environmental Audit conducted at the Inhalation Toxicology Research Institute (ITRI) in Albuquerque, New Mexico. The audit was conducted by the U.S. Department of Energy's (DOE's) Office of Environmental Audit (EH-24), beginning June 14, 1993, and ending June 25, 1993.

The scope of the audit at the ITRI was comprehensive, addressing environmental activities in the technical areas of air; soils, sediments, and biota; surface water/drinking water; groundwater; waste management; toxic and chemical materials; quality assurance; radiation; inactive waste sites; environmental management; and environmental monitoring programs. Specifically assessed was the compliance of ITRI operations and activities with Federal, state, and local regulations; DOE Orders; internal operating standards; and best management practices. Onsite activities included inspection of ITRI facilities and operations; review of site documents; interviews with DOE and contractor personnel, as well as representatives from state regulatory agencies; and reviews of previous appraisals. Using these sources of information, the environmental audit team developed findings, which fell into two general categories: compliance findings and best management practice findings. Each finding also identifies apparent causal factor(s) that contributed to the finding and will assist line management in developing "root causes" for implementing corrective actions.

The overall conclusions of the audit were that 1) ITRI has attempted to establish and implement an effective environmental program, however they lack the necessary formality and quality assurance to sustain DOE's goal of environmental excellence, 2) ITRI has not developed and implemented certain environmental programs properly to ensure the most efficient and effective use of resources, and 3) limited DOE oversight has contributed to delays and confusion in implementing key DOE environmental requirements.

A total of 25 findings were identified in this audit. Nineteen of these represent conditions which, in the opinion of the audit team, do not meet the requirements of Federal or state regulations, applicable DOE Orders, or internal ITRI operating procedures. Nine findings reflect a lack of adherence to "best management practices." None of the findings identified by the audit team appear to pose significant near term threats to public health and the environment. The key findings identified by the audit team, which cross environmental disciplines, are summarized as follows:

Formality of Environmental Programs: An overall tendency toward informality of operations is a common theme in many findings within this audit. The formal procedures for the conduct of certain environmental monitoring (including certain sampling activities), surface water, waste management, and quality assurance (QA) activities are lacking or absent. In addition, documented rationales for the design of air, radiation, and environmental monitoring programs was lacking or inadequate. While the QA activities at ITRI are generally being performed well, the element of formality needs to be incorporated for all QA activities, including groundwater QA work, in order to ensure the defensibility and validity of sampling data. Further, in other programs, such as those that address air and environmental monitoring, it appears that ITRI is devoting resources in excess of that needed to effectively manage the programs. On the surface, this may seem to be positive in that ITRI is striving to achieve more than minimal compliance. However, with problems existing in other environmental disciplines, the need to assure that all environmental programs are achieving compliance first is the important first step which should precede the bolstering of individual environmental programs. Subsequently, ITRI has not developed

and implemented certain environmental programs properly to ensure the most efficient and effective use of its resources.

DOE Guidance and Oversight of ITRI Environmental Programs: In the area of environmental management, there is inadequate guidance and oversight by DOE HQ, AL, and KAO. This was evidenced by inconsistent guidance given to ITRI regarding quality assurance and conduct of operations implementation. These instances appear to result from the fact that ITRI is an ER-led facility receiving guidance from AL which is a DP-led operations office. This arrangement appears to occasionally result in inappropriate, inconsistent, or conflicting direction. In addition, neither AL or KAO take a proactive, formal approach to ensure that only applicable directives are appropriately implemented. All the cognizant DOE parties have considered ITRI environmental issues a low priority, however, this conclusion has been made without the employment of a risk-based analysis. This has resulted in few onsite appraisals of ITRI environmental performance which appear to have been inadequate to ensure environmental excellence.

The audit team identified the following strengths of ITRI's environmental programs and staff:

- **ITRI Health Protection (HPO) Unit Dedication** - The HPO Unit staff has demonstrated a dedication to the accomplishment of onsite environmental protection despite limited attention devoted by external DOE sources to provide support and guidance concerning environmental issues. While the HPO Unit is moving forward to constantly improve environmental programs at ITRI, additional support and guidance supplied by DOE to ITRI can only serve to enhance the environmental programs being conducted by the HPO Unit.
- **HPO Unit Training** - An important aspect in implementing a successful environmental program is the staff's ability to understand the environmental issues affecting its operations. Subsequently, the audit team identified strong evidence to support that the HPO Unit has established an effective program to train HPO staff on environmental issues.
- **Toxic and Chemical Materials** - ITRI has demonstrated the effective management of Toxic and Chemical Materials onsite. Specifically, ITRI's efforts to address the management of toxic materials (i.e., poly-chlorinated biphenyls and asbestos) and hazard communications has resulted in a program which meets the full intent of environmental requirements and employs many useful best management practices.

SECTION 1.0

INTRODUCTION

1.0 INTRODUCTION

This report documents the results of the Comprehensive Baseline Environmental Audit of the Inhalation Toxicology Research Institute (ITRI) located on Kirtland Air Force Base in Albuquerque, New Mexico. ITRI is operated by the Lovelace Biomedical and Environmental Research Institute, Inc. The audit was conducted from June 14 through June 25, 1993 by the Office of Environmental Audit (EH-24).

DOE 5482.1B, "Environment, Safety and Health Appraisal Program," establishes the mission of EH-24 to provide comprehensive, independent oversight of Department-wide environmental programs on behalf of the Secretary of Energy. The ultimate goal of EH-24 is enhancement of environmental protection and minimization of risk to public health and the environment. EH-24 accomplishes its mission using systematic and periodic evaluations of the Department's environmental programs within line organizations, and through use of supplemental activities which serve to strengthen self-assessment and oversight functions within program, field, and contractor organizations.

These evaluations function as a vehicle to apprise the Secretary and Cognizant Secretarial Officer (CSOs) of the current status and vulnerabilities of Departmental environmental activities and environmental management systems. Several types of evaluations are conducted, including:

- comprehensive baseline environmental audits;
- routine reaudits;
- environmental management assessments; and
- special issue reviews.

The purpose, scope, and approach of this comprehensive baseline environmental audit is described below.

1.1 PURPOSE

The purpose of the Comprehensive Baseline Environmental Audit of ITRI is to provide the Secretary of Energy, through the Assistant Secretary for Environment, Safety and Health, with concise information pertaining to the following areas:

- Compliance status with environmental regulations;
- Adherence to best management (and accepted industry) practices;
- DOE vulnerabilities and liabilities associated with compliance status, environmental conditions, and management practices;
- Identification of causal factors associated with each deficiency to determine root causes;
- Adequacy of environmental management programs and organizations; and

- Noteworthy practices.

The information gathered during this assessment and embodied in this report will assist DOE in determining patterns and trends in environmental deficiencies, as well as causal factors contributing to the observed deficiencies. Line management is expected to fully utilize this information to develop corrective actions, to make appropriate modifications to internal self-assessment programs to prevent recurrence, and to supplement their formalized lessons learned programs to ensure broad applications to other operations, programs, and facilities.

1.2 SCOPE

The scope of the environmental audit was comprehensive, addressing all environmental media and applicable Federal, state, and local regulations. Also addressed were DOE Orders and formalized facility or program operating procedures, as well as best management practices. The technical disciplines addressed were air; surface water/drinking water; groundwater; waste management; toxic and chemical materials; quality assurance; radiation; and inactive waste sites. In addition, the environmental audit included a review of the environmental monitoring programs and related sampling and analysis, the effectiveness of environment management programs including the oversight of the ITRI by the DOE Albuquerque Field Office (AL), Kirtland Area Office (KAO), and the Headquarters Offices of the Assistant Secretary for Energy Research (ER) and the Assistant Secretary for Environmental Restoration and Waste Management (EM).

1.3 APPROACH

The environmental audit was conducted in accordance with the DOE Environmental Audit Program Guidance (DOE/EH-0232, January 1992), and the DOE Environmental Audit Manual (DOE/EH-0125, January 1990 POCs), and followed accepted audit techniques. The audit was conducted by a team of professionals managed by a DOE Headquarters Audit Team Leader and Deputy Team Leader from EH-24, and staffed by contractor technical support personnel. Further, a DOE auditor-in-training participated in the audit as a means of gaining knowledge and improving overall performance in his daily auditing responsibilities. The names, areas of responsibility, affiliations, and biographical sketches of the team members are provided in Appendix A. The audit included three phases: planning, onsite activities, and reporting.

During the planning phase, a memorandum was sent to the ITRI announcing the environmental audit and requesting information about the selected sites and the program in general. A pre-audit site visit was conducted on April 19 and April 20, 1993. The site's response to the information request memorandum combined with the pre-audit site visit formed the basis for the Environmental Audit Plan (see Appendix B), including the onsite agenda. Once onsite, the audit team modified the original agenda as more information was obtained and additional areas of interest were identified. The final daily activity schedule is contained in Appendix C.

Onsite activities were conducted from June 14 to June 25, 1993, and included interviews with both DOE and contractor personnel, as well as representatives from state regulatory agencies; document reviews, including previous audits and self-assessment reports; physical inspection of facilities; and observation of certain operations. New Mexico State

personnel responsible for DOE oversight under AIP, participated as observers during the entire audit process. Lists of site documents reviewed and interviews performed are provided in Appendices D and E, respectively. The audit team conducted daily debriefings that were open to DOE and site personnel and regulatory officials. Using these sources of information, the audit team developed findings as discussed in Sections 2.0 and 3.0 of this report.

The problems identified are categorized as either compliance findings or best management practice findings. Compliance findings are conditions that, in the judgment of the audit team, may not satisfy applicable environmental regulations, applicable DOE Orders, internal environmental policies and formal procedures, enforcement actions, permit conditions, or compliance agreements with regulatory agencies. Best management practice findings are derived from regulatory agency guidance, accepted industry practice or technical standards, draft or nonapplicable DOE Orders or guidance, and professional judgment.

Within the "compliance" and "best management practice" categories, each finding is prefaced by a performance objective(s) according to the DOE Performance Objectives and Criteria for Conducting DOE Environmental Audits (DOE/EH-0229). The performance objectives specify the particular compliance or best management practice standards that were not being met. The findings are not arranged in order of significance.

Site activities were reviewed for any noteworthy practices, activities, or programs that may have general application to DOE facilities and may warrant documentation for the purpose of information transfer among DOE facilities.

In an effort to understand why a finding was identified, a systematic approach was implemented to perform an "apparent causal factor" analysis (see Appendix F for definitions of causal and contributing factors). This approach is initiated by a series of "why?" questions concerning the cause(s) of a finding. The apparent cause(s) are compiled and reasons for the selection of specific cause(s) developed are provided within the supporting information for each finding. The causal factors are then used to determine the full scope of corrective action required to correct identified findings and to prevent recurrence.

It is the intent of this environmental audit to identify the causal factors that contributed to the observed environmental deficiencies. When developing root causes, an identification of the apparent causal factors contributing to each finding is essential. If one or more of these causal factors can be identified as contributing to a specific finding, it will be included in the supporting information for each finding. The apparent causal factors are then used to determine the corrective actions required to correct identified findings.

1.4 BACKGROUND AND PROJECT DESCRIPTION

ITRI is located on Kirtland Air Force Base (KAFB) East approximately 10 miles south of Albuquerque, New Mexico (see Figure 1-1 and Figure 1-2). KAFB occupies approximately 52,000 acres in southeast Albuquerque. ITRI occupies 135 acres on the southern boundary of KAFB. Approximately 40 of the 135 acres are developed, and most research activities are conducted within a 20 acre area. Surrounding ITRI to the north, east, and west is KAFB. The southern boundary of ITRI is adjacent to the Isleta Indian Reservation.

FIGURE 1-1. ITRI LOCATION MAP

FIGURE 1-2. ITRI SITE MAP

ITRI is located on a high arid mesa approximately 5600 feet above mean sea level.

The mission of ITRI is to determine the nature and magnitude of health effects on humans resulting from inhalation of airborne materials encountered in the workplace or the general environment. ITRI's initial program started in 1960. It was designed to conduct research concerned with health consequences resulting from inhalation of airborne fission product radionuclides. In the late 1960's and early 1970's, the research program expanded to include research on the transuranic alpha-emitting radionuclides. In the mid-1970's, the research program was expanded to examine health effects that might be associated with airborne chemicals released in the production and use of other energy technologies including coal combustion and gasification, solar collectors, fibers used for insulation, and light-duty diesel engines. In the 1980's, the program became more generalized with emphasis being given to the understanding of the basic biology of the respiratory tract and how the respiratory tract responds to inhaled materials.

The experimental facilities at ITRI are designed for conducting long-term inhalation toxicology studies using laboratory animals under controlled conditions. These facilities are designed with specialized air-handling capabilities, are isolated from other facilities, and are sometimes used for research on radioactive or potentially carcinogenic materials.

Additional research and support facilities include:

- Aerosol research laboratories for the study of gases, vapors, and particles in the laboratory. These labs also provide support for field sampling of airborne pollutants.
- Analytical chemistry laboratories located in a separate building.
- Toxicology, biochemistry, microbiology, and tissue culture laboratories.
- Animal housing facilities for over 15,000 animals ranging from mice to large domestic animals.
- Hospital facilities for medical evaluation and treatment of laboratory animals.
- A central computer center.

Other support facilities include: engineering and health protection facilities; machine, carpenter, and electronic repair shop; warehouse; cafeteria; conference rooms; research library; and administrative offices. Separate buildings house diesel generators, a pathological waste crematory and solid and liquid waste treatment and storage operations. Total building area is 265,086 square feet.

1.5 ENVIRONMENTAL PROGRAMS AND ORGANIZATION

ER/Office of Health and Environmental Research (OHER), within DOE Headquarters, is the Program Office with responsibility for establishing environmental policy, and program goals and objectives for DOE activities at ITRI. Energy Research (ER) provides the primary DOE ITRI funding for research, and is charged with providing administrative and programmatic guidance to ITRI. Organizationally this occurs through the flow of ER transmittals to the

Albuquerque Operations Office (AL) through KAO to ITRI.

Defense Programs (DP)-65, within DOE Headquarters (see Figure 1-3), also has responsibility for providing some funding and guidance to ITRI for defense programs related activities. In addition, DP has assigned responsibilities and authorities for managing defense programs-related activities to AL. AL is the primary organization responsible for approving ITRI-related environmental activities. AL has subsequently assigned KAO with primary responsibility for field oversight of ITRI.

EM/Office of Environmental Restoration (EM-40), within DOE Headquarters, is the Program Office with responsibility for providing funding and guidance to ITRI for environmental restoration-related activities. EM-40 has a site representative at the Environmental Restoration Project Office (ERPO), which is within AL, who has primary responsibility for budgeting, administrative, and on occasion technical review of ITRI environmental restoration activities.

ITRI is a government-owned, contractor-operated (GOCO) research laboratory operated by the Lovelace Biomedical and Environmental Research Institute, Inc. (LBERI) which is a subsidiary of the Lovelace Medical Foundation. DOE funding accounts for approximately 75% of the research and operations budget and non-DOE sources provide an additional 25% towards other research activities. ITRI currently has a staff of approximately 189 persons (see Figure 1-4). In addition, the line divisions within ITRI have primary responsibility for ensuring that their assigned activities are conducted in an environmentally sound manner. The line divisions do not contain staff charged solely with the conduct of Environmental, Safety and Health (ES&H) related activities. The Health Protection Operations (HPO) Unit, which reports directly to the ITRI Director, has responsibility for conducting day-to-day ES&H activities which includes such tasks as: environmental compliance, environmental monitoring, environmental restoration, hazardous and radioactive waste management, radioactive materials packaging and transportation, nuclear materials safeguards and security, and emergency management. The HPO Unit has a staff of 11 persons (see Figure 1-5). Additionally, ITRI has an internal auditor, who also reports directly to the ITRI Director and has responsibility for conducting ITRI ES&H oversight activities. Finally, the Quality Assurance (QA) Unit, which again reports directly to the ITRI Director, conducts QA activities of ITRI research and development activities and not ES&H activities.

DOE/ITRI Project Organization

FIGURE 1-3. DOE/ITRI PROJECT ORGANIZATION CHART

INHALATION TOXICOLOGY RESEARCH INSTITUTE Organizational Structure

FIGURE 1-4. ITRI ORGANIZATION CHART

FIGURE 1-5. ITRI HEALTH PROTECTION OPERATIONS ORGANIZATION CHART

SECTION 2.0

SUMMARY OF ENVIRONMENTAL AUDIT RESULTS

2.0

SUMMARY OF ENVIRONMENTAL AUDIT RESULTS

This section of the report summarizes the results and conclusions of the Office of Environmental Audit's (EH-24's) Comprehensive Baseline Environmental Audit of the ITRI which occurred from June 14 to June 25, 1993.

The overall conclusions of the audit were that (1) ITRI has attempted to establish and implement an effective environmental program, however they lack the necessary formality and quality assurance to sustain DOE's goal of environmental excellence; (2) ITRI has not developed and implemented certain environmental programs properly to ensure the most efficient and effective use of resources; and, (3) limited DOE guidance and oversight has contributed to delays and confusion in implementing key DOE environmental requirements.

The implementation of environmental requirements and activities at the ITRI was found by the audit team to be ineffective in many areas. The most notable are in the areas of quality assurance in environmental programs; and an overall lack of conduct of operations, specifically seen in hazardous waste management and surface water. In the area of environmental management, there is inadequate guidance and oversight by ER and both the Albuquerque Operations Office and Kirtland Area Office. This appears to result from the fact that ITRI is an ER-led facility located at a DP-led operations office. This situation has occasionally lead to inappropriate, inconsistent or conflicting guidance. ITRI has not adequately developed rationales for environmental monitoring programs nor has KAO taken a proactive approach in ensuring proper and appropriate implementation of guidance. Also, the changing role of DOE HQ oversight, due to DOE organizational realignment, is an important consideration that needs to be factored into future environmental activities.

A total of twenty-five findings were identified in this audit. Nineteen of these represent conditions which, in the opinion of the audit team, do not meet the requirements of Federal or state regulations, applicable DOE Orders, or internal ITRI operating procedures. Six findings reflect a lack of adherence to "best management practices" (BMPs). None of the findings identified by the audit team appear to pose significant near term threats to public health and the environment. The finding titles are listed in this report in Table 2-1. The number of findings by audit discipline is shown in Figure 2-1.

The audit team identified the following strengths of ITRI's environmental programs and staff:

- ITRI Health Protection Operation's (HPO) Unit Dedication - The HPO Unit staff has demonstrated a dedication to the accomplishment of onsite environmental protection despite limited attention devoted by external DOE sources to provide support and guidance concerning environmental issues. While the HPO Unit is moving forward to constantly improve environmental programs at ITRI, additional support and guidance supplied by DOE to ITRI can only serve to enhance the environmental programs being conducted by the HPO Unit.
- HPO Unit Training - An important aspect in implementing a successful environmental program is the staff's ability to understand the environmental issues affecting its operations. Subsequently, the audit team identified strong evidence to support that the HPO Unit has established an effective

TABLE 2-1
ENVIRONMENTAL AUDIT TEAM FINDINGS

Finding Number	Title of Finding	Page
Air (A)		
CF-1	Siting of Ambient Air Monitoring Stations	4
Surface Water/Drinking Water (SW/DW)		
CF-1	Spill Prevention Control and Countermeasure (SPCC) Plan Requirements	9
CF-2	Formality of Operations	10
BMPF-1	Secondary Containment	12
Groundwater (GW)		
CF-1	Groundwater Protection Management Program Plan	17
Waste Management (WM)		
CF-1	Waste Accumulation and Storage Operations	23
CF-2	Waste Characterization	27
CF-3	Moratorium Waste	29
CF-4	Contingency Plan Distribution	31
CF-5	RCRA Emergency Response	32
BMPF-1	Applicability of RCRA Small Quantity Generator and Interim Status Requirements	33
BMPF-2	Management of Satellite Accumulation Containers	35
BMPF-3	Evaluations of Offsite Waste Recycling Facilities	36
Toxic and Chemical Materials (TCM)		
CF-1	Hazardous Materials List Submittal	40
Quality Assurance (QA)		
CF-1	HPO Quality Assurance Program	45
CF-2	Internal Audit of HPO Programs	49
Radiation (RAD)		
No Findings Identified		

TABLE 2-1

ENVIRONMENTAL AUDIT TEAM FINDINGS (Continued)

Finding Number	Title of Finding	Page
Inactive Waste Sites (IWS)		
CF-1	CERCLA National Contingency Plan Requirements	56
CF-2	Emergency Planning and Community Right-to-Know Act (SARA Title III) Reporting	59
BMPF-2	Natural Resource Damage Assessment Determination	61
Environmental Monitoring (ENV)		
CF-1	Environmental Monitoring Plan for the Inhalation Toxicology Research Institute (ITRI)	65
CF-2	Review of Environmental Monitoring Activities at the Inhalation Toxicology Research Institute (ITRI)	67
Environmental Management (EM)		
CF-1	DOE Responsibilities for Environmental Management	73
CF-2	Environmental Training Program	77
CF-3	Conduct of Operations Implementation	78
BMPF-1	Self-Assessment Program	80

FIGURE 2-1. TOTAL FINDINGS BY DISCIPLINE

program to train HPO staff on environmental tasks.

- **Toxic and Chemical Materials** - ITRI has demonstrated the effective management of Toxic and Chemical Materials onsite. Specifically, ITRI's efforts to address the management of toxic materials (i.e., poly-chlorinated biphenyls and asbestos) and hazard communications has resulted in a program which meets the full intent of environmental requirements and employs many useful best management practices.

2.1 KEY FINDINGS

Key Findings presented below are, in the judgment of the audit team, findings or groups of findings that are integral to understanding the nature and scope of the environmental issues existing at the ITRI. The Key Findings identified during the audit are:

Formality of Environmental Programs: An overall tendency toward informality of operations is a common theme in many findings within this audit. The formal procedures for the conduct of certain environmental monitoring (including certain sampling activities), surface water, waste management, and quality assurance (QA) activities are lacking or absent. In addition, documented rationales for the design of air, radiation, and environmental monitoring programs was lacking or inadequate. While the QA activities at ITRI are generally being performed well, the element of formality needs to be incorporated for all QA activities, including groundwater QA work, in order to ensure the defensibility and validity of sampling data. Consequently, in programs such as those that address air and environmental monitoring, it appears that ITRI is devoting resources in excess of that needed to effectively manage the programs. On the surface, this may seem to be positive in that ITRI is striving to achieve more than minimal compliance. However, with problems existing in other environmental disciplines, the need to assure that all environmental programs are achieving compliance first is the important first step which should precede the bolstering of individual environmental programs. Subsequently, ITRI has not developed and implemented certain environmental programs properly to ensure the most efficient and effective use of its resources.

DOE Guidance and Oversight of ITRI Environmental Programs: In the area of environmental management, there is inadequate guidance and oversight by DOE HQ, AL, and KAO. Further, all the cognizant DOE parties have considered ITRI environmental issues a low priority, however, this conclusion has been made without the employment of a risk-based analysis. The inadequacy was evidenced by inconsistent guidance given to ITRI regarding quality assurance and conduct of operations implementation. These instances appear to result from the fact that ITRI is an ER-led facility receiving guidance from AL, which is a DP-led operations office. This arrangement appears to occasionally result in inappropriate, inconsistent, or conflicting direction. In addition, neither AL or KAO take a proactive, formal approach to ensure that only applicable directives are appropriately implemented. The low-priority consideration has resulted in few onsite appraisals of ITRI environmental performance which appear to have been inadequate to ensure environmental excellence.

SECTION 2.2 FINDINGS SUMMARIES

The following paragraphs describe the conclusions of the audit team with respect to ITRI programs for each of the audit disciplines. A summary for each discipline is provided.

AIR - The stated purpose for air monitoring activities at ITRI is to detect and to provide a quantitative measure of unplanned releases and the airborne re-suspensions of radionuclides. ITRI has a need to periodically, and continuously, review its air monitoring program to ensure that the program not only meets its' stated objectives but also that the program is providing the information that ITRI deems necessary in the most effective and efficient way possible.

Since the ITRI air monitoring program is not driven by regulation or permit requirements there is a need to formally document in the site's Environmental Monitoring Plan the: (1) rationale for the locations, (2) sampling design and (3) constituents monitored.

SURFACE WATER/DRINKING WATER - For the most part, ITRI has an effective program for controlling the discharges of contaminants in to the municipal sewer system. However, the audit team has identified two compliance findings and one best management practice finding.

ITRI needs to review its SPCC plan in the areas of inspections and documentation. Also there are issues regarding the secondary containment of chemical materials that needs to be resolved.

GP/ UNDERWATER - ITRI has made positive effort toward characterizing site groundwater and has also developed an effective database for the tracking and evaluation of its groundwater data. However, the audit team identified one compliance finding regarding the ITRI groundwater program related to compliance with the DOE requirements for a Groundwater Protection Management Program Plan.

WASTE MANAGEMENT - The ITRI waste management program is generally well operated and the personnel appear to be competent and dedicated. The audit identified five compliance findings and three best management practice findings. The compliance findings are concerned with the operation of ITRI's hazardous and mixed waste storage and accumulation area, hazardous waste characterization, the EM-30 waste moratorium, Research Conservation and Recovery Act (RCRA) emergency response requirements and RCRA contingency planning. The best management practice findings are concerned with RCRA small quantity generator status, the satellite accumulation areas and the evaluation of off-site waste recycling facilities.

The primary concerns, with regard to this program, are the operation of the RCRA-regulated storage and accumulation areas and the criteria that ITRI is using to ship non-radioactive waste offsite. The existing procedures need to be upgraded and additional procedures are needed to address mixed waste.

TOXIC AND CHEMICAL MATERIALS - The activities at ITRI regarding the toxic and chemical materials program appears good. There are strong programs in place for the MSDSs, pest control, asbestos abatement, PCB removal and receiving, shipping, procuring and storing chemicals. However, the audit team has identified one compliance finding

with respect to the required submittal of hazardous materials list to the Health Protection Operations unit (HPO).

QUALITY ASSURANCE - The Quality Assurance Program at ITRI, with regards to its environmental monitoring program needs to be upgraded and be afforded greater attention by management. The HPO QA Program needs to become more comprehensive and provide more emphasis on quality assurance activities and formality of operations. Additionally the Internal Audit Program must include more reviews, and /or audits of ITRI environmental monitoring activities.

RADIATION - The radiation portion of the audit identified no findings but some general deficiencies were noted with the environmental monitoring program which affect radiation monitoring. These items are discussed in the Environmental Monitoring section of this audit report and are specifically highlighted in findings ENV/CF-1 and ENV/CF-2.

INACTIVE WASTE SITES - The focus of this portion of the audit was to evaluate the programmatic aspects of the ITRI inactive waste sites and related activities rather than specific technical issues and/or procedures. In that context ITRI has made demonstrable progress toward environmental restoration. However, several deficiencies have been identified.

ITRI has not ensured that its current and planned environmental restoration activities are not inconsistent with the National Contingency Plan (NCP) process and CERCLA. Additionally ITRI needs to address the Emergency Planning and Community Right-to-Know Act (EPCRA) reporting requirements in a timely manner. Additionally ITRI needs to determine and implement the appropriate Natural Resource Damage Assessments (NRDA) requirements for its current and planned environmental restoration activities.

ENVIRONMENTAL MONITORING - The two compliance findings, with regards to the environmental monitoring program at ITRI, both involved deficiencies in the EMP and inadequate mechanisms for the periodic review of environmental monitoring activities to determine their validity with respect to changing site conditions. There is a need to formally document the rationale for the locations, sampling design, constituents monitored, and the: (1) rationale for the locations, (2) sampling design and (3) constituents monitored. ITRI also has a need to periodically, and continuously, review its air monitoring program to ensure that the program not only meets its' stated objectives but also that the program is providing the information that ITRI deems necessary in the most effective and efficient way possible.

ENVIRONMENTAL MANAGEMENT - The audit team identified two compliance findings and one best management practice finding with regard to ITRI's Environmental Management. There is inconsistent environmental awareness training in the ITRI line organizations, and Conduct of Operations at ITRI are incomplete and inadequate: resulting in compliance findings. The Self-Assessment Program at ITRI has not been fully developed or adequately implemented, resulting in a best management practice finding. Additionally, there is an inconsistent flow of directives from the program offices and inadequate guidance on policy implementation from the field offices.

2.3 CAUSAL FACTOR SUMMARY

In an effort to understand why a finding occurred, a systemic approach was initiated to perform "probable root cause" analysis. This analysis is a two step process which first identifies causal factors and then identifies the root cause which is the basic fundamental reason, which if corrected, will prevent recurrence.

The cause(s) and rationale (s) in support of the casual factors are identified by the audit team in the discussion of each finding. The majority of these apparent causal factors are based on professional judgement by the audit team members. Line management responsible for ITRI operations should perform the final detailed causal factors analysis as a necessary step to correct all causal factors which have contributed to the findings. Additionally, line management should also complete a root cause analysis and address all root causes in the Corrective Action Plan. It is the responsibility of line management to address all causal factors in the Corrective Action.

This environmental audit identified 9 causal factors and one contributing factor which appear to have contributed to the occurrence of the findings (see Table 2-2 and Figure 2-2). The five causal factors and one contributing factor that appeared most frequently are policy implementation, procedures, risk, resource, design, and appraisals/audits/reviews. Each of these six causal and contributing factors are discussed below. Definitions of causal factors typically used in this type of audit process are presented in appendix F.

Policy implementation - appeared as a causal factor in approximately 68 percent of the audit team's findings. This causal factor was evident in the following disciplines: air, surface water/drinking water, groundwater, waste management, quality assurance, inactive waste sites, environmental monitoring, and environmental management.

Procedures - appeared as a causal factor in approximately 44 percent of the audit team's findings. This causal factor was evident in the following disciplines: air, surface water/drinking water, waste management, quality assurance, and environmental monitoring.

Risk - appeared as a causal factor in approximately 28 percent of the audit team's findings. This causal factor was evident in the following disciplines: surface water/drinking water, waste management, quality assurance, and inactive waste sites

Design - appeared as a causal factor in approximately 12 percent of the audit team's findings. This causal factor was evident in the following disciplines: surface water/drinking water and Quality Assurance.

Resources - appeared as a causal factor in approximately 8 percent of the audit team's findings. This causal factor was evident in the following disciplines: waste management and environmental management.

Appraisals/Audits/Reviews - appeared as a contributing factor in approximately 28 percent of the audit team's findings. This contributing factor was evident in the following disciplines: air, waste management, and environmental monitoring.

TABLE 2-2

SUMMARY OF APPARENT CAUSAL AND CONTRIBUTING FACTORS IDENTIFIED BY AUDIT FINDING

FINDING NUMBER	CAUSAL AND CONTRIBUTING FACTORS													
	Policy	Policy Implementation	Procedures	Personnel	Resources	Training	Change	Risk	Design	Human Factors	Barriers and Controls	Supervision	Quality Assurance/Control	Contributing Factor Appraisals/Audits/Reviews
	AIR (A)													
Siting of Ambient Air Monitoring Stations	✓	✓	✓											✓
SURFACE WATER/DRINKING WATER (SW/DW)														
Spill Prevention Control and Countermeasures (SPCC) Plan Requirements	✓	✓	✓											
Formality of Operations	✓	✓	✓											
Secondary Containment								✓	✓					
GROUNDWATER (GW)														
Groundwater Protection Management Program Plan	✓													
WASTE MANAGEMENT (WM)														
Waste Accumulation and Storage Operations			✓					✓						✓
Waste Characterization			✓											✓
Moratorium Waste		✓	✓											✓

TABLE 2-2

SUMMARY OF APPARENT CAUSAL AND CONTRIBUTING FACTORS IDENTIFIED BY AUDIT FINDING

FINDING NUMBER	CAUSAL AND CONTRIBUTING FACTORS												Contributing Factor Appraisals/Audits/Reviews
	Policy	Policy Implementation	Procedures	Personnel	Resources	Training	Change	Risk	Design	Human Factors	Barriers and Controls	Supervision	Quality Assurance/Control
Contingency Plan Distribution		✓											
RCRA Emergency Response			✓										✓
Applicability of RCRA Small Quantity Generator and Interim Status Requirements								✓					
Management of Satellite Accumulation Containers			✓					✓					
Evaluations of Offsite Waste Recycling Facilities					✓			✓					
TOXIC AND CHEMICAL MATERIALS (TCM)													
Hazardous Materials List Submittal						✓						✓	
QUALITY ASSURANCE (QA)													
HPO Quality Assurance Program		✓	✓						✓				
Internal Audit of HPO Programs		✓						✓					

TABLE 2-2

SUMMARY OF APPARENT CAUSAL AND CONTRIBUTING FACTORS IDENTIFIED BY AUDIT FINDING

CAUSAL AND CONTRIBUTING FACTORS														
FINDING NUMBER	Policy	Policy Implementation	Procedures	Personnel	Resources	Training	Change	Risk	Design	Human Factors	Barriers and Controls	Supervision	Quality Assurance/Control	Contributing Factor Appraisals/Audits/Reviews
	RADIATION (RAD)													
INACTIVE WASTE SITES (IWS)														
No Findings Identified														
Consistency with CERCLA National Contingency Plan Requirements		✓						✓						
Natural Resource Damage Assessment Determination		✓								✓				
Emergency Planning and Community Right-To-Know Act (SARA Title III) Reporting		✓								✓				
ENVIRONMENTAL MONITORING (ENV)														
Environmental Monitoring Plan for the Inhalation Toxicology Research Institute (ITRI)		✓	✓											✓
Review of Environmental Monitoring Activities at the Inhalation Toxicology Research Institute (ITRI)		✓	✓											✓

TABLE 2-2

SUMMARY OF APPARENT CAUSAL AND CONTRIBUTING FACTORS IDENTIFIED BY AUDIT FINDING

FINDING NUMBER	CAUSAL AND CONTRIBUTING FACTORS													
	Policy	Policy Implementation	Procedures	Personnel	Resources	Training	Change	Risk	Design	Human Factors	Barriers and Controls	Supervision	Quality Assurance/Control	Contributing Factor Appraisals/Audits/Reviews
ENVIRONMENTAL MANAGEMENT (EM)														
DOE Responsibilities for Environmental Management	✓										✓			
Environmental Training Program	✓													
Conduct of Operations Implementation	✓													
Self-Assessment Program	✓				✓									
TOTALS	0	17	11	0	2	1	0	7	3	2	1	1	0	7

Distribution of Most Significant Causal Factors

FIGURE 2-2. DISTRIBUTION OF MOST SIGNIFICANT CAUSAL FACTORS

Section 3.0 of this report presents the 25 compliance and best management practice findings identified during the audit by discipline, and discusses in greater detail the probable causal factors that contributed to the findings.

SECTION 3.0

ENVIRONMENTAL AUDIT FINDINGS

3.0 ENVIRONMENTAL AUDIT FINDINGS

3.1 AIR

3.1.1 Overview

The purpose of the air assessment portion of the environmental audit is to evaluate current practices with regard to: regulations promulgated under the Clean Air Act; New Mexico Air Quality Act; New Mexico Environmental Department Air Quality Bureau's Air Quality Control Regulations; Albuquerque/Bernalillo County Air Quality Control Board's Air Pollution Control Regulations; applicable DOE Orders; internal procedures at the Inhalation Toxicology Research Institute (ITRI); and best management practices associated with air pollution control. A list of air regulations, requirements, and guidelines used in this assessment is provided in Table 3-1.

The general approach of the air portion of the environmental assessment included the following activities: a review and inspection of site air emission sources; inspection of emission and ambient air sampling and monitoring locations; interviews with DOE Kirtland Area Office (KAO), Albuquerque Operations Office (AL), and ITRI personnel; and a review of site documents and files.

Air pollution control and permitting at ITRI falls under the jurisdiction of the City of Albuquerque Environmental Health Department/Air Pollution Control Division and is subject to Albuquerque/Bernalillo County Air Quality Control Board regulations. Air emission sources at ITRI that require permits or are registered include a 2162 horsepower (hp) diesel engine, four other diesel engines, six boilers, and one crematory. These sources are permitted or registered with the City of Albuquerque Environmental Health Department/Air Pollution Control Division. Potential air emissions from ITRI include the criteria pollutants, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulates; propane; diesel fuel; volatile organics; and radionuclides, primarily Xenon-133 (Xe-133). All releases are below permit limits and/or regulatory standards.

ITRI does not have the capability to collect onsite meteorological data and uses meteorological data from the Albuquerque International Airport, which is approximately 10 miles northwest of ITRI. Although not required by regulation, ITRI performs emissions and ambient air monitoring. Emissions monitoring is performed on 15 exhaust stacks, which are all the ventilation air discharge points which have the potential to release airborne radionuclides. Each of these discharge points have high efficiency particulate air (HEPA) filter emission controls. The ambient air monitoring program consists of five ambient air monitoring stations, four onsite and one offsite, which serves as a background station, to monitor particulate radionuclides. These monitoring activities are performed in support of the ITRI Environmental Monitoring Plan (EMP) goal of ensuring that ITRI's operations do not adversely impact the environment and that all applicable Federal and local environmental regulations are met as stated in their EMP. Additionally, the ITRI EMP states that emissions monitoring will be used for compliance with the requirement to perform periodic confirmatory measurements in 40 CFR Part 61, Subpart H. However, there are no specific requirements for the schedule or method(s) to be used for these periodic confirmatory measurements. Additionally, there is no specific requirement that the schedule or method(s) be submitted to EPA for review or approval. However, DOE-KAO is planning to submit their schedule and methodology for conducting these

**TABLE 3-1
LIST OF AIR
REGULATIONS, REQUIREMENTS, AND GUIDELINES**

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
DOE Order 5400.1	General Environmental Protection Program	DOE
DOE Order 5400.5	Radiation Protection of the Public and the Environment	DOE
DOE/EH-0173T	Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance	DOE
40 CFR Part 61	National Emissions Standards for Hazardous Air Pollutants	EPA
Air Quality	City of Albuquerque Environmental Health Department, Air Pollution Control Division, Air Quality Permit # 222; Air Quality Registration #s 222-M-1, 222-R-1; and Air Quality Registration Letter Dated December 9, 1981	City
Air Quality	City of Albuquerque Environmental Health Department, Albuquerque/Bernalillo County Ambient Air Quality Standards and Air Quality Control Regulations	City
Air Quality	New Mexico Air Quality Act	State
Air Quality	New Mexico Environmental Department, Air Quality Bureau, Air Quality Control Regulations	State

periodic confirmatory measurements to EPA Region VI for review and approval. No submittal date has been identified by KAO.

ITRI has documented a need for the emissions and ambient air monitoring programs in their EMP, however, these programs are not adequately reviewed with respect to changing facility operations and site conditions. In addition, present practices do not ensure the most effective and efficient emission and ambient air monitoring program designs to meet the goal and objectives identified in the ITRI EMP.

The air portion of the environmental audit identified one compliance finding. The compliance finding involved inadequate siting of ambient air monitoring stations. There were general deficiencies noted with the environmental monitoring program which affect air monitoring and these are discussed in the Environmental Monitoring section of the audit report (see Findings ENV/CF-1 and 2).

3.1.2 Compliance Finding

A/CF-1: Siting of Ambient Air Monitoring Stations

Performance Objective: DOE 5400.1, "General Environmental Protection Program" and DOE 5400.5 "Radiation Protection of the Public and the Environment," require that ambient air monitoring stations comply with the siting guidelines contained in DOE/EH-0173T, "Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance." Additionally, DOE 5400.1 states that it is DOE policy to conduct all operations in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards.

The Inhalation Toxicology Research Institute (ITRI) EMP states that the purpose of the ambient air monitoring program is to detect and provide a quantitative measure of unplanned airborne releases and the resuspension in air of radionuclides that may have been ground deposited and possibly transported by stormwater runoff and flooding.

Finding: The ambient air monitoring stations are inadequately sited and inspected with respect to the policies and requirements in DOE Orders and guidance documents and the ITRI EMP.

Discussion: ITRI has an EMP which describes the environmental monitoring activities. Deficiencies were identified in a review of the EMP during this audit, which are pertinent to this finding (see Finding ENV/CF-1) (ITRI-073). Specific deficiencies observed with respect to inadequate siting of ambient air monitoring stations include: 1) monitoring station A-4 is located a few feet from the side of a building; 2) monitoring stations A-2 and A-5 are located on the tops of buildings between or next to emission stacks (these stacks are not potential sources of radiological emissions); and 3) monitoring station A-1 is located within a few feet of two water tower tanks. The placement of these ambient air monitoring stations appears to prevent the collection of representative or meaningful ambient air samples and may not meet the ITRI EMP stated purpose of the ambient air monitoring program. The only station which appears to be located in a manner which would allow for the collection of a representative sample to meet the ITRI EMP stated purpose of the ambient air monitoring program is station A-3.

ITRI is in the process of implementing a self-assessment program which they feel will address this issue once it is completely implemented.

The apparent causal factors for this finding are inadequate policy implementation of DOE 5400.1 requirements into ITRI procedures and inadequate ITRI procedures covering the siting criteria for the location of ambient air monitoring samplers. A contributing factor is inadequate appraisals/audits/reviews of ambient air monitoring locations.

3.2 SURFACE WATER/DRINKING WATER

3.2.1 Overview

The purpose of the surface water/drinking water portion of the environmental audit was to evaluate compliance with Federal, State of New Mexico, and local water pollution control requirements established in conformance with the Clean Water Act (CWA), and with drinking water requirements codified under the Safe Drinking Water Act (SDWA). The audit also evaluated compliance with applicable DOE Orders for effluent monitoring and environmental media surveillance and water pollution control practices with respect to industry accepted best management practices. Table 3-2 lists applicable regulations, requirements, and guidelines used in this evaluation.

The general approach to the surface water/drinking water assessment included inspection of the sanitary sewer system and effluent sampling locations, storm drains, overland runoff patterns, and building drains; review of site procedures describing environmental sampling, water supply and sanitary sewer system maintenance and operations; review of drawings and site maps describing potable and wastewater systems and discharges; interviews with site and Kirtland Area Office (KAO) personnel regarding effluent sampling, operation and maintenance of water supply and wastewater systems, City of Albuquerque Sewer Use and Wastewater Control Ordinance, Safe Drinking Water Act, National Pollution Discharge Elimination System (NPDES) regulations for Storm Water Discharges, and environmental records; and interactions with other team members, particularly for Environmental Monitoring. Personnel from the State of New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau DOE Oversight Unit observed the audit and were also interviewed regarding wastewater and storm water requirements.

Sources contributing to the sanitary sewer discharges at ITRI include: sanitary wastes; discharges from laboratory operations; discharges from industrial cage washing equipment; kennel wash; cooling tower blowdown; and boiler blowdown. ITRI does not discharge any wastewater to the environment and accordingly does not have a NPDES permit.

Storm water is channeled through natural and man-made features to points west of the site where infiltration occurs. ITRI has documented that it is not subject to storm water permitting requirements under NPDES at this time. The upcoming remediation of the fourteen acre abandoned wastewater lagoon site will require a stormwater runoff permit for construction areas greater than five acres.

Prior to May 1992, wastewater at ITRI was managed by a series of settling and evaporation lagoons on the western portion of the site. Evidence of nitrate contamination was found in groundwater under the lagoons which lead to an agreement in 1989 between DOE and the State of New Mexico to discontinue use of the lagoons as a waste water treatment system. Wastewater at ITRI is currently discharged to the City of Albuquerque sewer system under a city permit issued May 21, 1992. The permit would have expired on June 3, 1993, but ITRI/KAO received an extension to August 3, 1993 in order to develop the renewal application. The sanitary sewer lines from the various buildings at ITRI are merged into one line and exit the site at the wastewater sampling location at the southwest corner of the site. The wastewater is carried in the pipeline approximately eight miles to the Tijeras Interceptor which is part of the City of Albuquerque sewer system and

TABLE 3-2
LIST OF SURFACE WATER/DRINKING WATER
REGULATIONS, REQUIREMENTS, AND GUIDELINES

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
DOE 1324.2A	Records Retention	DOE
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5484.1	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	DOE
DOE 5480.19	Conduct of Operations Requirements for DOE Facilities	DOE
DOE 6430.1A	General Design Criteria	DOE
40 CFR 110	Discharge of Oil	EPA
40 CFR 112	Oil Pollution Prevention	EPA
40 CFR 122 and 123	National Pollutant Discharge Elimination System	EPA
40 CFR 125	Criteria and Standards for the National Pollutant Discharge Elimination System	EPA
40 CFR 136	Guidelines Establishing Test Procedures for the Analysis of Pollutants	EPA
40 CFR 141 and 142	National Primary Drinking Water Regulations	EPA
40 CFR 143	National Secondary Drinking Water Regulations	EPA
Parts I through X	New Mexico Drinking Water Regulations	State
Parts 1-100 through 3-100	New Mexico Water Quality Standards	State
Permit No. 2178A	ITRI Discharge Permit	City of Albuquerque
HPO Procedure EM-6	Sewage Monitoring	HPO

which leads to the local publicly-owned treatment works (POTW). Sandia National Laboratory/New Mexico (SNLNM) also contributes wastewater to this pipeline at one location between the ITRI contribution and the Tijeras Interceptor as does the DOE Central Training Academy.

Monitoring is being conducted on wastewater exiting the site as part of the City of Albuquerque sewer system permit. ITRI is required by the permit to sample at the discharge point one work day per month for two months and four consecutive work days for one month during each quarter. The samples are analyzed for selected heavy metals. The permit also requires ITRI to analyze the discharge in the 2nd quarter of each year for Total Toxic Organics (TTOs) as well as heavy metals. Sampling of the wastewater was observed by the Audit Team and was found to be satisfactory with the exception that contractor sampling personnel did not have a copy of the sewage sampling procedure available for reference.

A Spill Prevention Control and Countermeasure (SPCC) Plan under 40 CFR 112 has been prepared. This document was reviewed as part of the audit. Because the distance from the western-most boundary of the site to the Rio Grande approximately ten miles and other physical conditions, such as soil composition, low annual rainfall, and topography, the potential for a release from any fuel oil tank at ITRI reaching navigable waters is extremely small.

Drinking water for ITRI is supplied by a combined system from the City of Albuquerque and Kirtland Air Force Base. Accordingly, ITRI is not subject to the requirements of the SDWA. ITRI has participated with the Air Force and SNLNM in regular sampling of drinking fountains for lead for industrial hygiene information. This sampling has shown lead concentrations below regulatory action levels. The drinking water system at ITRI is operated by the Engineering Section which also operates the back-flow prevention and cross-connection control program. This program stresses back-flow prevention for the drinking water system and prevention of cross-connections between the potable and wastewater systems.

The surface water/drinking water activities at ITRI are effective in controlling the discharge of permitted contaminants to the sewer system as evidenced by the discharges to the sewer system having met permit conditions for all sampling episodes. However, the lack of procedures and documented inspections of fuel lines and of pollution prevention equipment as required by 40 CFR 112 indicate that the SPCC program has been inadequately implemented and maintained. Inadequate secondary containment for certain fuel oil storage tanks and product chemical containers presents a potential for the release of hazardous materials to the sanitary sewer or the environment. Formality of operations with regard to aspects of surface water/drinking water programs is inconsistently applied throughout ITRI and poses a potential vulnerability in that operations and plans are not regularly reviewed, contracted designs are not verified, and procedures are not consistently reviewed and updated. In summary, the surface water/drinking water programs at ITRI are adequately controlling planned site discharges to the POTW. Unplanned releases of hazardous materials may not be controlled due to current engineering and/or administrative controls.

The surface water/drinking water portion of the environmental audit identified two compliance findings and one best management practices finding. Compliance finding

SW/CF-1 relates to compliance with SPCC Plan requirements set forth in 40 CFR 112. Compliance finding SW/CF-2 relates to the formality of operations within Plant Engineering with regard to surface water/drinking water programs. Best management practices finding SW/BMP-1 relates to inadequate secondary containment for certain fuel oil tanks and chemical materials containers.

3.2.2 Compliance Findings

SW/CF-1: Spill Prevention Control and Countermeasure (SPCC) Plan Requirements

Performance Objective: 40 CFR 112, Oil Pollution Prevention, states that visual inspections of above-ground pipelines should be conducted regularly, that the inspections be in accordance with a written procedure, and that records of the inspections be maintained for a period of three years. Additionally, written procedures for inspecting and testing the pollution prevention equipment and systems should be prepared and maintained and included as part of the SPCC; and, that testing and inspection be conducted on a scheduled periodic basis commensurate with the complexity, conditions and circumstances of the facility.

The ITRI SPCC Plan, Chapter VIII, requires that visual inspection of aboveground pipelines be conducted at weekly intervals.

Finding: ITRI is not performing inspections of fuel oil lines as suggested by 40 CFR 112 and the ITRI SPCC Plan, and the ITRI SPCC Plan is deficient in that it does not require inspection and testing of the applicable pollution prevention and control equipment, and does not require the development and implementation of procedures for performing inspection and testing activities for pollution control equipment.

Discussion: Visual inspections required by the ITRI SPCC Plan have not been and are not being performed and documented on the fuel oil supply lines which lead from the main fuel oil tank (10,000 gal. capacity) to the day tanks (100 gal. capacity) and to the boilers (I-SW-1). The fuel oil lines are pressurized when the fuel pump in TF 016 is activated. The result of a leak in the fuel oil lines could release pressurized oil either to the roof areas and/or to the trench drains in the boiler room. The oil pollution pathway would then be subject to transport to the storm drains by precipitation or to the sanitary sewer.

Procedures for the inspection of piping and the documentation requirements of that inspection do not exist (I-SW-1). HPO has a procedure for inspection of pollution control equipment (booms, skimmers, absorbent materials, etc.) on a regularly scheduled basis, however, the procedure is not in the required format and has not been formally approved. Inspections and testing of pollution prevention equipment assure that the equipment is in working condition and would perform as intended during deployment. Dry rot and damage by rodents are examples of damage that can occur to equipment during storage. Testing of equipment assures that the equipment will perform as intended, is the appropriate equipment for the types and quantities of anticipated releases, and provides response personnel with hands-on training in the deployment and use of the equipment.

The apparent causal factors for this finding are a lack of policy implementation in that the site-derived SPCC Plan requirements are not implemented, and that procedures are not available for certain inspection and testing activities.

SW/CF-2: Formality of Operations

Performance Objective: DOE 5480.19, "Conduct Of Operations Requirements For DOE Facilities", Chapter 1 Operations Organization and Administration, states that inspections, audits, reviews, investigations, and self-assessments are a part of the checks and balances needed in an operating program. Chapter 1 also states that procedures or other definitive documentation should specify policies that are to be applied for operations. These policies should specify goals and the means to achieve those goals.

DOE 5700.6C, "Quality Assurance", Criterion 5 - Work Processes, states that work should be planned, authorized, and accomplished under controlled conditions using technical standards, instructions, procedures, or other appropriate means of a detail commensurate with the complexity and risk of the work.

DOE 6430.1A, "General Design Criteria", Section 0140 Quality Assurance, states that control mechanisms shall be established to ensure that designs are independently verified to be adequate.

Finding: Formality of operations with regard to surface water/drinking water operations and activities at ITRI is not consistently implemented.

Discussion: DOE 5480.19 states "Better operating facilities have well-defined, effectively administered policies and programs to govern the activities of the operating organization." Inspections, audits, and reviews are integral parts of effective programs. These elements constitute formality of operations. Although inspections are performed and training of Plant Engineering personnel is documented, the concepts of formality of operations are not consistently applied to operating surface/drinking water activities at ITRI. Examples of this inconsistent application of formality of operations are:

- There is an inventory of the backflow preventors in place and a procedure which calls for annual inspections. However, the cross connection/back flow prevention program is not formally documented in a policy statement which sets forth the objectives and goals of the program, the means to achieve those goals, and responsibilities and authorities for the program (I-SW-1).
- The Engineering Standard with regard to surface water/drinking water activities was developed in 1985 by ITRI but has not been finalized and is still in draft form (I-SW-1). The use of draft procedures and standards for operating activities does not reflect management approval for those activities. Additionally, draft standards are subject to change without formal notification to users and could potentially result in activities being performed erroneously.
- Central Engineering procedure CM-A-002 (10/90), requires that a designs developed by subcontractors be in accordance with the requirements of 6430.1A. However, designs developed by subcontractors, including those for pollution prevention projects such as the fuel day tank reconfiguration effort, are not verified for conformance to DOE 6430.1A requirements by Plant Engineering (I-SW-1). Failure to verify design specifications could

potentially result in designs that do not meet the requirements of DOE Orders.

The apparent causal factors for this finding include policy implementation in that DOE policy is not fully implemented with regard to formality of operations and the absence of procedures which control work processes.

3.2.3 Best Management Practice Finding

SW/BMPF-1: Secondary Containment

Performance Objective: Best management practice suggests that areas where fuel oil tanks and product chemicals are located have secondary containment structures to avoid the release of materials to the environment in the event of a spill or leak.

Finding: There are fuel oil tanks and product chemical containers which have inadequate secondary containment.

Discussion: Fuel oil tanks TF-014 (100 gal. capacity) and TF-008 (overflow tank with 100 gal. capacity) are located in the boiler room in Building 9201. These tanks have no secondary containment and are situated approximately 1-2 feet from the trench drain that leads to the sanitary sewer system. A leak or spill from these tanks would result in the release of fuel oil to the sanitary sewer system. The five remaining fuel tanks (capacities ranging from 100 to 125 gallons) observed by the Audit Team were located in areas where drains to the sanitary sewer were plugged or the tanks were empty and the associated piping isolated from the primary fuel oil tank.

Additionally, some bulk liquid chemicals are stored in areas without adequate secondary containment. Of the seven areas inspected by the Audit Team, three areas were determined to have inadequate secondary containment. The areas which have inadequate secondary containment include, but are not limited to:

- Adjacent to Building 9211 are two flammable storage cabinets, each of which contains a 55-gallon drum of gasoline. The secondary containment provided by each cabinet does not have sufficient volume to contain the contents of the drum. Overflow of the secondary containment would be to the surrounding soil.
- In Room 601 of Building 9217, three 30-gallon drums of potassium hydroxide based detergent solution are stored in an undiked area near a drain which leads to the sanitary sewer. A release from these drums could affect the pH of the sanitary sewer effluent.
- One 55-gallon drum of ethylene glycol and one 55-gallon drum of 40 percent diethylaminoethanol (60 percent water solution) are stored near a drain in Building 9201 (Area B). The drain line was confirmed to lead to the sanitary sewer. A release from these drums could result in these materials entering the sanitary sewer line.

ITRI has recognized that the fuel oil tanks are of concern and has taken steps to correct the situation (I-SW-4). A funded project is currently in the design stage that would eliminate single-walled fuel oil day tanks and replace them with overhead tanks with secondary containment and redundant liquid level and leak detection alarms. ITRI plans to have this system operational in FY 94 (I-SW-4).

The apparent causal factors for this finding are design in that in the event of a spill or leak chemical materials would be released to either the environment or the POTW due to the physical locations of the tanks and the trench drains and risk in that ITRI has not yet addressed the potential risk to the environment from a release of these materials.

3.3 GROUNDWATER

3.3.1 Overview

The purpose of the groundwater portion of the ITRI environmental audit was to evaluate the programmatic status of groundwater protection and monitoring at the ITRI facility. The program was evaluated against the criteria established in DOE 5400.1 and site-specific procedures, as identified in Table 3-3.

The general scope and approach to the groundwater program assessment included interviews with ITRI, AL, and KAO staff, reviews of hydrogeologic assessment plans and reports, examination of programmatic planning and procedural documents, observation of monitoring well sampling procedures, conversations with the groundwater monitoring subcontractor, and observation of the potential groundwater contaminant source areas. Interaction with other audit team specialists, particularly for Quality Assurance, was maintained to ensure a thorough review of ITRI's groundwater program.

Management of the overall ITRI groundwater program is the responsibility of the Head of the Health Protection Operations (HPO) unit, and is implemented by the HPO Environmental Restoration (ER) Coordinator. The implementing documents for the ITRI groundwater program include the September 1990 ITRI Groundwater Protection Management Plan, HPO Standard Operating Procedure number EM-8, "Groundwater Monitoring", and project-specific assessment plans for the Diesel Oil Release project, and the Lagoons and Groundwater project (ITRI-043, ITRI-044, ITRI-051, and ITRI-054).

A total of eight monitoring wells and four piezometers were installed on site between April 1988 and November 1991. Each of the wells has a permanent, dedicated bladder pump installed for sampling. The wells have been sampled on a quarterly basis since installation and analyzed for parameters specified in the Discharge Plan, as supplemented and amended, and approved by the New Mexico Environment Department (NMED) Groundwater Protection and Remediation Bureau (GWPRB) in June 1988 (ITRI-149 and ITRI-150). Nitrates, Total Dissolved Solids, sulfate, and chloride attributable to the former wastewater lagoons are present above water quality standards in the groundwater near the lagoons, and are the basis for the Discharge Plan. Other analytes that have been detected in various ITRI well samples include benzene, toluene, 1,1,1-trichloroethane, and gross alpha radiation (ITRI-043). An additional eight monitoring wells and three piezometers were installed recently as part of further characterization and assessments of the Lagoons and the Diesel Oil Release sites.

The focus of this audit was the programmatic aspect of the ITRI groundwater program rather than specific technical issues and procedures. In that context, it appears that ITRI has made a positive effort toward monitoring and characterizing site groundwater conditions in accordance with the requirements of their NMED-approved Discharge Plan. ITRI has used high quality materials (e.g., stainless steel screens) in the monitoring wells, although the dedicated bladder pumps have performed below expectations. ITRI plans to replace all existing bladder pumps by Fiscal Year 1994. ITRI has also developed an effective database for tracking and evaluating the groundwater data. In an April 9, 1993 letter, the NMED acknowledged the long history of cooperation between ITRI/DOE and the State (ITRI-163).

TABLE 3-3

**LIST OF GROUNDWATER
REGULATIONS, REQUIREMENTS, AND GUIDELINES**

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
DOE 5400.1	General Environmental Protection Program. Chapter III, Section 4.a: Groundwater Protection Management Program; Chapter 4, Section 9: Groundwater Monitoring Plans	DOE
HPO SOP No.: EM-8	Groundwater Monitoring	ITRI

The major weakness identified during the audit was related to compliance with the DOE requirements for Groundwater Protection Management Program (GPMP) plans. One compliance finding, number GW/CF-1, was prepared to note examples of specific weaknesses with respect to the content and update requirements specified in DOE 5400.1 for the GPMP.

3.3.2 Finding

GW/CF-1: Groundwater Protection Management Program Plan

Performance Objective: DOE 5400.1, "General Environmental Protection Program," Chapter III, Section 4.a requires preparation of a Groundwater Protection Management Program (GPMP) Plan of sufficient scope and detail to reflect program significance, as appropriate. The order cites seven elements that must be included in the GPMP, as follows: (1) documentation of the groundwater regime; (2) design and implementation of a groundwater monitoring program; (3) management program for groundwater protection and remediation, including specific statutory actions; (4) summary and identification of areas that may be contaminated; (5) strategies for controlling contaminant sources; (6) remedial action program as part of the site CERCLA program required by DOE 5400.4; (7) decontamination and decommissioning and other remedial programs contained in DOE directives.

Chapter 4, Section 9 of DOE 5400.1 identifies the component elements of the Groundwater Monitoring Program that must be included as part of the GPMP, and requires that the monitoring strategy and rationale be specified. The GPMP Plan, which DOE 5400.1 required to be in place by May 9, 1990, shall be reviewed annually and updated every 3 years.

Finding: The ITRI Groundwater Protection Management Program Plan does not meet the content requirements of DOE Order 5400.1.

Discussion: A GPMP Plan was issued by ITRI in September 1990 after requesting the AL EHD Director for a 120-day extension of the DOE 5400.1-required deadline of May 9, 1990 (ITRI-054 and ITRI-252). Section 1.3 ("Objectives") of the GPMP Plan provided a cross-reference between the contents of the GPMP Plan and the seven required elements specified in DOE Order 5400.1, Chapter III, Section 4a. Examination of the cross-referenced sections, however, revealed that the various required elements had not been fully addressed or do not reflect information gathered since the GPMP Plan was initially prepared. Examples of weaknesses in ITRI's September 1990 GPMP Plan (presented in the order of the seven DOE 5400.1-required elements) include, but are not limited to, the following:

- Information on the groundwater regime (Section 2.2) is based largely on regional data and does not reflect site-specific data and evaluations that have occurred since 1990.
- The Groundwater Monitoring Program (Section 5) does not present a clear technical rationale for the sampling and analysis protocols, nor does it reflect recent changes to those protocols.
- Section 1.4 lists "some of the specific laws, regulations and orders with which ITRI must comply" but does not address a management program for groundwater protection and remediation. In addition, several of the orders listed (e.g., DOE 5700.6A and DOE 5480.14) are no longer valid.
- Section 2.1.1 identifies several "areas of concern" for potential hazardous

substance contamination, but does not discuss the specific contaminants of concern nor does it include sites that have been identified more recently (i.e., Building 9217 sump, old herbicide-sprayed area).

- Section 8 of the GPMP Plan ("Relationship to Other Programs or Activities") does not present a strategy for controlling contaminant sources.
- A remedial action program under the DOE 5400.4-required CERCLA program is not addressed.
- Decontamination and decommissioning, and other remedial programs contained in DOE directives, are identified in sections 8 and 9, but with little discussion of the rationale for selecting or not selecting the various remediation requirements that might otherwise appear to be applicable.

The 3-year update to ITRI's GPMP Plan has not yet been prepared. It is not clear whether the 1990 120-day GPMP Plan preparation extension request would apply to subsequent revision due dates as well. Based on the language of DOE 5400.1 the revision may have been due by May 9, 1993, but certainly no later than three years after preparation of the initial September 1990 GPMP Plan.

The apparent causal factor for this finding is policy implementation, in that the DOE 5400.1 requirements for Groundwater Protection Management Program Plans were not fully addressed in the ITRI GPMP Plan.

3.4 WASTE MANAGEMENT

3.4.1 Overview

The Waste Management portion of the audit evaluated ITRI's hazardous, radioactive, mixed, and solid waste management programs and underground storage tanks (USTs) with respect to applicable regulations and best management practices. The principal activities evaluated included waste storage and accumulation practices; recordkeeping and documentation; waste characterization, tracking, and offsite shipments; emergency planning; personnel training; and UST closure. Table 3-4 identifies the applicable regulations, orders, and policy performance objectives used in the waste management portion of the audit.

The general approach to the waste management portion of the audit included interviews with HPO staff responsible for waste management and environmental compliance, ITRI laboratory personnel, DOE-KAO personnel, DOE-AL personnel, and representatives of NMED. In addition, waste storage and accumulation areas were toured, and records and documentation pertaining to the waste programs and underground storage tanks were reviewed.

HPO staff are responsible for the proper day-to-day management of wastes at ITRI. Key personnel include the HPO manager, a hazardous waste management specialist, a health physicist, and four technicians. All of these personnel have broad responsibilities in other environmental and safety programs in addition to those pertaining to waste management. HPO staff are also responsible for oversight of UST closures.

Waste Management Programs

ITRI is currently a small quantity generator (SQG) of hazardous waste and an interim status storage facility for mixed waste, as defined by the Resource Conservation and Recovery Act (RCRA). At the time of the audit, NMED had verbally recognized the dual status of ITRI as both a RCRA SQG and an interim status facility. NMED is the regulatory agency that has primary RCRA authority over ITRI, including the authority to regulate radioactive mixed wastes. The State of New Mexico has adopted Federal RCRA regulations for its state hazardous waste program. Under the dual status, ITRI is subject to RCRA small quantity generator requirements for nonradioactive hazardous wastes and is subject to RCRA interim status requirements for mixed waste.

Most hazardous wastes are generated from laboratory research activities and primarily include ignitable solvents, acids, and unused laboratory chemicals that are no longer needed. The hazardous wastes are collected from the laboratories, stored temporarily onsite for up to 270 days, and then shipped offsite to commercial recycling facilities or RCRA treatment and disposal facilities.

ITRI is subject to DOE Office of Waste Management (EM-30) policies concerning the offsite shipment of nonradioactive hazardous waste. To control these offsite shipments, ITRI has established radioactive material management areas (RMMAs) and non-RMMAs. The ITRI documentation establishing these areas has not yet been approved by EM-30. The hazardous waste that ITRI is currently shipping offsite is only generated in areas defined by ITRI as non-RMMAs.

TABLE 3-4
LIST OF WASTE MANAGEMENT
REGULATIONS, REQUIREMENTS, AND GUIDELINES

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
40 CFR Parts 260 through 268	Hazardous Waste Regulations	EPA
40 CFR Part 280	Underground Storage Tanks	EPA
Subtitle C	Resource Conservation and Recovery Act	Congress
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5400.3	Hazardous and Radioactive Mixed Waste Program	DOE
DOE 5400.5	Radiation Protection of the Public and the Environment	DOE
DOE 5820.2A	Radioactive Waste Management	DOE
DOE 5480.19	Conduct of Operations	DOE
DOE EM Policy	Memorandum, Shipment of Waste Originating in Radiation Control Areas, May 17, 1991	DOE EM-30
DOE EM Policy	Performance Objective for Certification of Non-Radioactive Hazardous Waste, Draft, April 6, 1993	DOE EM-30
Procedures WM-1 through WM-19	ITRI HPO	ITRI

Nonhazardous chemical wastes and RCRA special hazardous wastes also are generated at ITRI and are disposed of offsite at either commercial RCRA treatment and disposal facilities or nonregulated recycling facilities. These wastes include used oil, photographic fixer solutions, and lead-acid batteries.

The only mixed wastes managed by ITRI are ignitable and ignitable/corrosive liquid scintillation vials contaminated with transuranic radionuclides, Ni-63, tritium, and C-14. ITRI stores the mixed waste onsite in an interim status storage area. ITRI has ceased active generation of these wastes by switching to non-RCRA-regulated scintillation solvents; however, some of the mixed scintillation liquids remain in ITRI laboratories and may be declared waste in the future. (They are currently being retained to document ongoing research activities.) In the past, ITRI has shipped mixed waste scintillation liquids to offsite commercial RCRA treatment and recycling facilities. However, due to a current lack of offsite treatment for some mixed wastes and the switch to nonhazardous scintillation liquids, ITRI has ceased these offsite shipments. Future alternatives for the mixed waste include offsite management at either a commercial facility or another DOE site.

A major concern at ITRI is the current status of a 1991 shipment of approximately 140 drums of mixed waste liquid scintillation vials to an offsite commercial mixed waste facility. The waste has not yet been treated and ITRI lacks control over the future treatment and disposal and associated liabilities of the waste.

Radioactive wastes generated and managed at ITRI include both low-level waste (LLW) and transuranic waste (TRU). Radionuclides of current concern include Ni-63, tritium, C-14, actinides (primarily in concentrations below the threshold for classification as TRU), S-35, and P-32. LLW includes aqueous wastes, dry solids (paper, gloves, etc), and animal carcasses. Most of these wastes are either frozen, compacted, or solidified, accumulated onsite, and shipped to NTS for disposal. Animal carcasses are packed in lime prior to shipment. S-35 and P-32 wastes are accumulated onsite and allowed to decay. ITRI plans to dispose of the decayed waste as nonradioactive waste in the future. ITRI currently stores but no longer generates TRU waste.

ITRI's TRU waste is being stored onsite until it can be shipped to DOE's Waste Isolation Pilot Plant (WIPP) for disposal.

In the past, ITRI has prepared an annual waste management plan as required by DOE 5820.2A. ITRI is currently meeting the requirement for this plan by preparing a Site Specific Plan for the DOE WM/ER 5-year plan, in accordance with formal DOE-AL guidance (I-WM-19).

ITRI also generates nonradioactive animal carcass waste. This waste is accumulated in a freezer onsite and then destroyed in an onsite crematory. Other medical waste is shipped offsite to a commercial disposal vendor.

Particularly strong areas of the waste management program include training of waste management personnel and generators and waste minimization.

Underground Storage Tanks

ITRI currently has no USTs. Prior to 1993, ITRI stored diesel fuel in 7 USTs ranging in size from 2,000 to 30,000 gallons, and between 1991 and late 1992, all the USTs and associated piping were removed and replaced with aboveground storage tanks. The removals were conducted due to ITRI's concern over known and potential leaks from the USTs or piping. ITRI has conducted an investigation of the subsurface contamination resulting from one of the known leaking USTs in accordance with a plan that has been submitted to NMED. ITRI has also initiated a corrective action to remediate the contamination.

The waste management portion of the audit identified 5 compliance findings and 3 best management practice findings. The compliance findings are concerned with operation of ITRI's hazardous and mixed waste storage and accumulation area, hazardous waste characterization, the EM-30 waste shipment moratorium, RCRA contingency plan distribution, and RCRA emergency response requirements. The three best management practice findings pertain to documentation of the dual SQG/interim status requirements which ITRI is subject to, management of waste accumulation containers in the laboratories, and evaluations of offsite commercial facilities that accept ITRI waste.

3.4.2 Compliance Findings

WM/CF-1: Waste Accumulation and Storage Operations

Performance Objective: 40 CFR 265.73 requires records to be maintained on the inventory of RCRA-regulated wastes managed at an interim status storage facility. 40 CFR 265.174 and 265.15 require weekly inspections to be performed and inspection records to be maintained. DOE 5480.19, Section XVI, requires operating procedures to be written that provide specific direction for operating systems and equipment. HPO Procedure WM-2, Hazardous Waste Management and Disposal, requires that the HPO Technician Logbook for weekly inspections be maintained in Building 9264.

Best management practices suggest that inventory and inspection records should be performed with sufficient rigor to reduce the potential for errors and omissions in documentation.

Finding: The operation of the RCRA interim status mixed waste storage area in Building 9269 does not meet requirements for inventories and inspections in 40 CFR 265, Subparts C, E, and I, and HPO Procedure WM-2; the operation of the waste storage and accumulation areas in Buildings 9264 and 9269 are not adequately proceduralized, as required by 5480.19, Section XVI; and the existing inspection practices are not adequately rigorous as suggested by best management practices.

Discussion: ITRI uses two three-room storage buildings, 9264 and 9269, for accumulating and storing RCRA-regulated wastes. The southern room of Building 9269 is used as an interim status storage area for mixed waste liquid scintillation vials, and the northern room of Building 9264 is used as a 270-day small quantity generator accumulation area. ITRI maintains separate inventory logs for the storage or accumulation of the following types of waste (ITRI-105, ITRI-106):

- RCRA ignitable waste
- RCRA corrosive (acid) waste
- chemical waste that is not subject to RCRA
- tritium and carbon-14 mixed waste that can be shipped offsite to a commercial treatment facility
- aqueous radioactive wastes that can be either solidified for offsite disposal as low-level radioactive waste (LLW) or decayed onsite
- mixed waste liquid scintillation vials.

Other inventory-related logs include an employee-generated computer log that tracks the total quantity of RCRA-regulated waste generated each month to ensure that ITRI does not exceed the RCRA small quantity generator (SQG) limit of 1000 kilograms per month and a color-coded marker board that shows the total inventory of the buildings (I-WM-5, I-WM-6). To document inspection activities, ITRI maintains inspection logs for each of the two buildings.

HPO Procedure WM-2 is the primary ITRI procedure directing the management of hazardous waste at HPO. However, WM-2 and other ITRI procedures do not address several aspects of hazardous waste management and recordkeeping that are required under RCRA. The following deficiencies pertaining to facility inspections and waste

inventories were noted:

- ITRI did not have a written inventory for the contents of one of the seven mixed waste drums (LS-010) in 9269, as required under 40 CFR 265.73 (ITRI-106).
- The written inventory tags for at least two of the seven mixed waste drums (LS-008 and LS-009) in 9269 only identified the radioactive content of the drum and did not identify the RCRA-regulated content of the drum, as required under 40 CFR 265.73 (ITRI-106).
- ITRI did not have a written inventory of the approximately 20 containers of nonradioactive hazardous waste laboratory chemicals that had been placed in storage in the 9269 interim status mixed waste storage area (I-WM-12). Although ITRI maintains RCRA SQG status for nonradioactive hazardous waste and normally is not required to maintain an inventory of those wastes, any RCRA-regulated wastes placed in ITRI's interim status storage area would be subject to the inventory requirements in 40 CFR 265.73, regardless of their radiological nature. ITRI selected the 9269 interim status storage area for storing these containers because it was the only room in either 9264 or 9269 that had shelves and was a designated flammables storage area. Although it is not common for ITRI to store smaller containers of waste in the buildings, ITRI has no procedural requirement to maintain an inventory of "unbulked" waste.
- For the eight weeks prior to the audit, ITRI did not maintain a written record of weekly inspections for the Building 9269 mixed waste interim status storage area, as required under 40 CFR 265.15 (ITRI-105).
- The ITRI procedural requirement for performing weekly inspections of the RCRA-regulated areas does not specifically address the mixed waste storage area in 9269, as required under 265.15(b). Instead, the procedure is directed at inspections of hazardous waste accumulation areas.

In addition, ITRI has not adequately proceduralized the routine inspection and inventorying practices for these buildings in accordance with DOE 5480.19, and is not following its existing procedures, as described below:

- RCRA-regulated mixed waste activities pertaining to 9269 are not addressed in WM-2 or any other ITRI procedure. WM-2 is only applicable to nonradioactive hazardous waste, specifically excludes mixed waste, and does not identify Building 9269.
- HPO staff responsible for completing QA forms under HPO Procedure WM-5, Radioactive Waste Management and Certification, are not certain whether the forms are to be completed for mixed waste containers (I-WM-12). WM-5 requires that a QA form to be completed for each container of radioactive waste at the time the container is filled and sealed. Although the procedure has been used to document inventories of mixed waste drums in the past, the forms are primarily intended to certify nonhazardous radioactive

waste bound for NTS, and no QA forms have been completed for the five sealed drums of mixed waste currently in storage.

- ITRI has no procedural requirements to maintain the RCRA-required records for weekly inspections of 9269.
- The inventory logbooks used by HPO technicians as the primary record of how wastes are "bulked" are not required by WM-2 or any other ITRI procedure.
- ITRI has no procedural requirement that specifies the types of waste that may be placed in each waste storage room of 9264 and 9269.
- ITRI has no procedural requirements to limit the quantities of waste generated and accumulated to 1,000 kilograms/month and 6,000 kilograms, respectively, as allowed for RCRA SQGs, and to maintain RCRA-required inventory records for mixed waste.
- ITRI has no written procedure for the management of mixed waste, including liquid scintillation vials.
- The HPO Technician logs containing inspection records of 9264, which under WM-2 are required to be maintained at 9264, are instead maintained in the HPO offices at the other end of the site.

Finally, ITRI does not perform inspection activities with sufficient rigor, as suggested by best management practices:

- Weekly inspections of 9269 are not fully effective. This was evidenced by the fact that one of the seven drums of land disposal restricted (LDR) mixed waste in 9269 had not been marked with an accumulation start date, as required by 40 CFR 268.50, even though the drum had been stored in the area for almost a full year.
- The weekly inspection forms for 9264 and 9269 do not leave space to describe problems that may be observed at the storage area or to describe how the problems have been corrected (ITRI-105). Documentation of such problems and corrective actions is required under 40 CFR 265.15 for the interim status storage area in 9269, and is a best management practice for other areas.
- The inspection forms do not include a management sign-off to ensure that the inspections have been performed and that any special items receive prompt management attention.

The apparent causal factors for this finding are supervision, appraisals, and procedures. HPO technicians currently perform many of their waste management duties without

supervision that could minimize or prevent some of the noted deficiencies. As a contributing factor, operations at Buildings 9264 and 9269 have not been the subject of effective RCRA appraisals/audits/reviews by ITRI, KAO, or AL. Another apparent contributing factor is procedures in that HPO procedures for waste management do not address many aspects of the operation of 9264 and 9269.

WM/CF-2: Waste Characterization

Performance Objective: 40 CFR 265.13 requires interim status storage facilities to have in place a waste analysis plan that contains procedures describing the sampling and analysis methods to be used, the analysis frequency, the analytical parameters, and the rationale for the selection of parameters. The ITRI Health Protection QA Plan requires all HPO tasks to be described in detailed HPO procedures that provide specific actions to be performed to ensure quality.

Finding: The ITRI Waste Analysis Plan does not contain all information required under 40 CFR 265.13, and procedures for ITRI waste characterization activities do not include adequate requirements to ensure quality in accordance with the ITRI Health Protection Program Quality Assurance Plan.

Discussion: ITRI mixed waste management activities are subject to requirements for RCRA waste analysis plans, and ITRI has in place a waste analysis plan in Appendix D of procedure WM-2, Hazardous Waste Management and Disposal (ITRI-109). The plan emphasizes that process knowledge is the primary tool used to characterize hazardous wastes, and that sampling and analysis will be performed if required by an offsite disposal vendor. However, this plan does not adequately describe how ITRI will characterize the only mixed waste streams managed at ITRI, ignitable and ignitable/corrosive mixed waste liquid scintillation liquids. Specific deficiencies pursuant to 40 CFR 265.13, include the following:

- Section 4.g. of WM-2 specifically excludes mixed waste from the procedure, and hence, from the Waste Analysis Plan in the procedure.
- For distinguishing between hazardous and mixed waste, the plan does not indicate the frequency of analysis or the conditions under which the waste will be analyzed for radioactivity. In addition, the plan also does not identify the factors which will be considered in determining whether the sampling and analysis for radioactivity will be performed; instead, the plan states that the samples will "sometimes" be collected and analyzed.
- For determining the chemical characteristics and listings applicable to the waste, the plan does not describe the factors to be considered or the standards to be used to determine the adequacy of process knowledge in terms of the type, quality, source of data, and necessary level of detail. Therefore, ITRI has no documented method for determining whether sampling and analysis is necessary or whether process knowledge is adequate.
- In situations where sampling and analysis of mixed waste may be necessary, the plan does not identify the specific sampling and analytical methods to be performed.

WM-2 also describes how HPO will perform hazardous waste characterization and requires any waste accepted from a generator to be accompanied by a Hazardous Waste Generator Tag to identify the waste. The procedure also requires HPO to complete a Hazardous Waste Shipment Quality Assurance Inspection Form for each container of hazardous waste

shipped offsite. Generators use HPO Notice 31, Disposal of Radioactive/Hazardous Wastes, and HPO Notice 66, Hazardous Liquid Waste Pickup on Tuesdays, to manage hazardous waste in labs; and HPO Notice 49, Disposal of Liquid Scintillation Counting (LSC) Vials, to manage scintillation vials that are mixed waste (ITRI-076). While the notices and procedures give generators and HPO staff some direction in the management of RCRA-regulated wastes, the following nonconformances with the ITRI HPO Program Quality Assurance Plan were identified:

- HPO Procedure WM-2 does not require HPO staff to verify generator information either prior to or after pickup.
- When hazardous waste is shipped offsite, ITRI allows the vendor accepting the waste to complete the shipping manifest, which ITRI reviews and signs. However, HPO Procedure WM-2, which addresses manifesting, does not specify who is allowed to complete the manifest and contains no requirement to review the manifest to ensure that it is complete and correct before it is signed and released. During the audit, a manifest completed by a vendor for waste Carnoy's solution did not contain the waste code for the chloroform toxicity characteristic, which is applicable to that hazardous waste. ITRI did not recognize the omission until after the shipment left the site. (ITRI took action to correct the manifest immediately after identifying the error; I-WM-16)

ITRI has recognized the need to improve the characterization and documentation of their hazardous and mixed wastes and has an ongoing project to identify and develop a waste stream profile for each waste stream generated onsite. At the time of the audit, the initial data collection effort had been completed, and ITRI had tentatively planned to complete the project during FY 1993 (I-WM-16).

The apparent causal factor that contributes to this finding is procedures in that ITRI's existing waste management procedures for characterization of waste do not adequately describe the ITRI process for characterizing hazardous and mixed wastes and the records needed to document the hazardous characteristics of a waste. Additionally, a contributing factor appears to have been a lack of internal and external appraisals/audits/reviews that have evaluated the hazardous and mixed waste characterization program.

WM/CF-3: Moratorium Waste

Performance Objective: DOE 5400.5, Section II.5.C(2) defines the "potential for contamination" as follows: "property shall be considered to be potentially contaminated if it has been used or stored in radiation areas that could contain unconfined radioactive material or that are exposed to beams or particles capable of causing activation." The May 17, 1991, memorandum from EM-30 establishes a moratorium which prohibits the offsite shipment of hazardous and toxic wastes by a facility originating or stored in radiologically-controlled areas to commercial facilities not licensed by the Nuclear Regulatory Commission (NRC) or an agreement State until the release criteria, bases for that criteria, and the method(s) used for measuring a waste for comparison to the criteria have been approved by DOE Headquarters. A July 25, 1991 memorandum from DOE KAO imposed the moratorium on ITRI. The EM-30 performance objective (PO) for certification of non-radioactive hazardous waste (i.e., PO for lifting the moratorium) defines the Moratorium specific term Radioactive Materials Management Area (RMMA), using DOE 5400.5. Federal regulations and DOE Orders do not establish a level of activity below which a material can be considered nonradioactive, and has established no release limits except for materials which are only contaminated on the surface.

Finding: The Inhalation Toxicology Research Institute (ITRI) is using a criteria which lacks adequate rationale for defining an RMMA, as the basis for determining which RCRA waste may be subject to the DOE moratorium, that has not been approved by EM-30. ITRI may have shipped moratorium waste offsite.

Discussion: On May 17, 1991, DOE imposed a moratorium on the offsite shipment of all hazardous and toxic wastes originating or stored in radiologically-controlled areas to commercial facilities not licensed by the NRC or an agreement State. At that time a request was also made for information on the release criteria, the bases for that criteria, and the method(s) used for measuring a waste for comparison to the criteria. This information was to be reviewed by DOE Headquarters to determine its regulatory and technical validity. The moratorium was to remain in place at a facility until DOE Headquarters approved the information submitted. On July 25, 1991 a DOE KAO memorandum directed ITRI to cease the shipment to commercial facilities not licensed by the Nuclear Regulatory Commission or an agreement state of any RCRA-hazardous waste originating in a radiologically controlled area until further notice (ITRI-107).

Since that time there have been numerous memoranda generated by DOE Headquarters, DOE Albuquerque Operations Office (AL), DOE Kirtland Area Office (KAO), and ITRI pertaining to the moratorium (ITRI-107). ITRI's submittal was transmitted by DOE KAO to DOE Headquarters in September 1991. Comments were received from DOE Headquarters in October 1991 (ITRI-116). These comments were transmitted as not being complete or comprehensive. ITRI responded to the DOE Headquarters comments (ITRI-114), and a response package was submitted to DOE KAO and AL in November 1991 (ITRI-117). ITRI generated Health Protection Notice HPO No. 064, which designates the specific ITRI areas that are considered RMMAs. This notice was initially submitted by ITRI to DOE KAO and AL in September 1991 and a revised version which addressed DOE Headquarters comments was submitted in June 1992. To date, the release criteria, the bases for that criteria, and the method(s) used for measuring a waste for comparison to the criteria submitted by ITRI has not been approved by DOE Headquarters.

A June 7, 1991, memorandum from EM-30 states that the moratorium is applicable only to RCRA and TSCA wastes which have a "potential for contamination" as defined in DOE 5400.5, Section II.5.C(2). Additionally, this memorandum states that the "potential for contamination" could include wastes outside of a site's radiologically controlled areas if the site defines their areas in accordance with the defined areas contained in DOE 5480.11. These definitions are based on dose limits and surface or air concentrations greater than thresholds specified in the order. The "potentially contaminated" definition in DOE 5400.5 does not contain any thresholds.

Health Protection Notice HPO No. 064 has been and is currently being used to define a RMMA. ITRI is using Health Protection Notice HPO No. 064 to determine which ITRI wastes are not subject to the DOE moratorium. However, this notice specifically exclude areas where unconfined radioactive material could be present. Areas excluded include: Class B laboratories, except the hoods in those laboratories; Class C laboratories, and areas with contamination at levels below those which must be designated as an "Airborne Radioactivity Area" or a "Contaminated Area" according to the definitions contained in DOE 5480.11 are determined not to be RMMA's. This designation alone, without supporting rationale, is not sufficient to eliminate these areas as RMMA's and is therefore, inconsistent with the definition in DOE 5400.5 and the information contained in the June 7, 1991, memorandum from EM-30 discussed above.

As a result, some areas at ITRI which are not designated as RMMA's by the sites definition could potentially be RMMA's. While the potential for contamination may exist, the actual contamination of the waste at levels that could be measured is unlikely. Administrative procedures on the amounts, forms, and way in which radioactive materials can be used in these areas would not likely result in contamination of RCRA wastes generated or stored in these areas. Since the rationale for defining ITRI RMMA's is inadequate, RCRA wastes that may be subject to the moratorium could have been shipped offsite to non-NRC licensed facilities. Currently, ITRI issued a memorandum on June 22, 1993 to stop shipment of RCRA wastes offsite to non-NRC licensed facilities until the moratorium is lifted at ITRI by EM-30 and use the mechanism for requesting exceptions (memorandum from, EM-30 to Distribution, dated June 7, 1991, "Update to the Moratorium on the Shipment of Hazardous Wastes Organizations in Radiologically Controlled Areas) for one time shipments or specific waste streams should the need arise to prevent a regulatory noncompliance situation.

The apparent causal factor for this finding is inadequate policy implementation of DOE order and moratorium requirements into ITRI procedures. A contributing factor is inadequate appraisals/audits/reviews of ITRI waste management operations and moratorium related criteria and implementing procedures by DOE KAO and AL.

WM/CF-4: Contingency Plan Distribution

Performance Objective: 40 CFR 265.53 requires interim status storage facilities to submit their contingency plans to all local emergency agencies and organizations that may be called upon to provide emergency services.

Finding: The ITRI RCRA Contingency Plan has not been distributed to offsite organizations that may be called on to assist in an emergency, as required under 40 CFR 265.53.

Discussion: ITRI developed the current version of its RCRA-required contingency plan in 1990 and submitted the plan to KAO (ITRI-032 and I-WM-13). The plan identifies the offsite organizations that may be called on to provide emergency services in the event of an emergency. However, the plan was not distributed by KAO or ITRI to offsite organizations that may be called on to provide emergency support (I-WM-18). ITRI was required to distribute the plan to these organizations in 1992 when ITRI became a RCRA interim status facility.

ITRI is currently revising its contingency plan, and a June 1993 draft version of the plan is now under review (ITRI-108). The new plan also identifies the offsite organizations that may be called on to provide emergency services at ITRI, and ITRI has established formal agreements with several of these organizations.

The apparent causal factor for this finding is policy implementation in that ITRI did not meet the RCRA requirement for contingency plan distribution.

WM/CF-5: RCRA Emergency Response

Performance Objective: Chapter IV of DOE 5480.19 states that emergency communications systems should be implemented to ensure that facility personnel are promptly alerted to facility emergencies.

40 CFR 265, Subparts B and C, require emergency communications equipment at interim status facilities to be tested and maintained as necessary to ensure proper operation and interim status facilities to be equipped with spill control equipment.

Finding: Emergency communications equipment at the waste storage and accumulation buildings are only tested informally, which is not in accordance with DOE 5480.19 and 40 CFR 265.33 and 265.15(b); and the buildings are not adequately equipped with emergency spill control equipment in accordance with 40 CFR 265.32.

Discussion: ITRI uses hand-held two-way radios as the sole means of communications equipment at the 9264 and 9269 waste storage and accumulation buildings. All employees having access to these buildings are required to carry radios while at the buildings. Some of these employees test their radios with a daily radio check. However, the tests are not documented and there is no ITRI requirement to perform and document these tests (I-WM-4).

The spill control equipment to be used at the 9264 and 9269 waste storage and accumulation buildings in the event of an emergency is located approximately 200 feet from the waste buildings in Storage Bin SU-006. The bin is locked and is not located within sight of 9264 and 9269. Although personnel having access to 9264 and 9269 all have keys to the bin, there is reduced accessibility to the spill control equipment in the event of an emergency as evidenced by the distance between the waste buildings and the bin and the fact that the bin is locked.

The apparent causal factors for this finding are risk and procedures. ITRI has not evaluated the risk associated with emergency response equipment that is not readily accessible, and ITRI procedures do not address RCRA and DOE requirements for emergency response equipment testing and maintenance.

3.4.3 Best Management Practice Findings

WM/BMPF-1: Applicability of RCRA Small Quantity Generator and Interim Status Requirements

Performance Objective: Best management practices suggest that facilities subject to unusual or uncommon regulatory exemptions should document the agreed-upon understanding of their status with the regulatory agencies which provided the exemption.

Finding: ITRI and DOE-KAO have not come to a common understanding with NMED on the specific RCRA small quantity generator and interim status requirements that will be applicable to ITRI hazardous waste and mixed waste management activities and has not documented the ongoing process of determining those requirements.

Discussion: ITRI and DOE-KAO have submitted a RCRA Part A notification to store mixed waste and is currently storing mixed wastes as an interim status storage facility (ITRI-114). In addition, ITRI's combined mixed waste/hazardous waste generation rate and combined inventory are below the regulatory thresholds for RCRA small quantity generator (SQG) status (1,000 kilograms/month and 6,000 kilograms, respectively, I-WM-5). Due to the fact that ITRI meets all SQG requirements for nonradioactive hazardous waste, and ITRI meets all SQG requirements except one for mixed waste (that requirement being the 270-day accumulation limit for onsite accumulation of waste), NMED determined that ITRI could be properly recognized under RCRA as both a SQG for nonradioactive hazardous waste and an interim status storage facility for mixed waste. This determination is fully compliant with existing RCRA statute and regulations. However, for a single facility to have both SQG and interim status requirements is fairly unusual. According to both NMED and KAO, the general terms of the understanding reached by ITRI, DOE-KAO, and NMED of the dual status are as follows (I-WM-11 AND I-WM-15):

- ITRI would be required to maintain a combined hazardous/mixed waste generation and inventory below the SQG regulatory thresholds.
- ITRI nonradioactive hazardous waste would be subject to the RCRA requirements for SQGs.
- ITRI mixed waste would be subject to requirements for interim status storage facilities in 40 CFR Part 265.

Even though this understanding was reached, Neither ITRI nor DOE-KAO documented this understanding (ITRI-136). Further, the details of the understanding were not examined or evaluated by ITRI or DOE-KAO, resulting in the following potential areas of disagreement between ITRI and NMED:

- ITRI is storing nonradioactive hazardous waste in the interim status storage area for mixed waste. NMED indicated to the audit team that it intended for hazardous and mixed wastes to be segregated.
- For emergency planning, ITRI is meeting 40 CFR Part 265, Subpart D, contingency plan requirements for both hazardous waste and mixed waste, but is not following the less rigorous SQG emergency posting requirements

for hazardous waste in 40 CFR 262.34.

- ITRI and KAO have not determined whether its first RCRA biennial report, due in March of 1994, is required to include only mixed waste or both mixed and hazardous waste.

While NMED has not performed a RCRA inspection of ITRI since 1988, it is not clear whether ITRI, DOE-KAO, and any future NMED inspector will have a common understanding of the specific RCRA requirements applicable to ITRI waste management activities. ITRI and DOE-KAO have not documented the general and specific terms of its understanding with NMED to ensure that NMED expectations will be met.

The apparent causal factor contributing to this finding is risk in that ITRI has not evaluated the potential risk of liabilities resulting from not meeting NMED expectations for RCRA compliance.

WM/BMPF-2: Management of Satellite Accumulation Containers

Performance Objective: Best management practices suggest that a program should be in place to maintain and track the containers used for the accumulation of hazardous and radioactive waste at the points of generation to ensure that the containers are properly sized and periodically collected for central accumulation.

Finding: DOE does not have an effective program to track and oversee the use of satellite accumulation containers to ensure that they are properly sized and periodically collected, as suggested by best management practices.

Discussion: HPO provides accumulation containers for all liquid hazardous and radioactive wastes generated in ITRI laboratories (except for liquid scintillation vials). To control the liquid waste accumulation containers and arrange for their periodic collection, HPO has issued HPO Notice 31, Disposal of Radioactive/Hazardous Wastes, and HPO Notice 66, Hazardous Liquid Waste Pickup on Tuesdays (ITRI-076). These notices advise generators on how to acquire acceptable waste accumulation containers and how to arrange for HPO to remove them for central collection and subsequent management.

The program for managing the liquid waste accumulation containers does not have formal controls that effectively prevent the long-term storage of liquid radioactive and hazardous waste in the laboratories. In one of the four laboratory rooms with waste accumulation areas inspected during the audit (Room 110), a 30-gallon container being used to accumulate an aqueous sulfur-35 waste had accumulated only 2 or 3 gallons over a two-year period, and further generation of the waste stream was unlikely (I-WM-8). HPO was not tracking the container to determine whether a smaller container that was emptied more frequently would be more appropriate.

Although ITRI recognizes the potential benefits of tracking liquid waste accumulation containers more closely, ITRI has no procedural requirements for tracking accumulation containers or periodically collecting inactive containers. ITRI performs monthly inspections of some accumulation containers, but the information from these inspections is not used to replace or remove oversized and inactive accumulation containers, and replacing or removing these containers is a low priority with HPO staff. To improve the effectiveness of the existing container monitoring activities, ITRI is currently evaluating a bar-code-based container tracking system to be used to more closely monitor accumulation containers and waste generation rates (I-WM-6).

The apparent causal factors for to this finding are risk and procedures. ITRI does not consider the risk associated with untracked waste accumulation containers to be a high priority, and ITRI does not have procedures to thoroughly control waste accumulation practices.

WM/BMPF-3: Evaluations of Offsite Waste Recycling Facilities

Performance Objective: Best management practices suggest that offsite commercial facilities used for waste recycling should be evaluated to ensure that wastes are properly handled and to decrease "cradle-to-grave" liabilities associated with the potential mismanagement of wastes by offsite facilities.

Finding: ITRI does not perform evaluations of offsite facilities that accept wastes for recycling, as suggested by best management practices.

Discussion: ITRI uses commercial facilities for the offsite treatment, disposal, and recycling of hazardous waste and certain recyclable wastes such as used oil, photographic fixer waste, and lead-acid batteries (I-WM-5). In the past, ITRI also used offsite commercial facilities for the treatment and storage of mixed waste (ITRI-136).

ITRI does not perform evaluations of offsite facilities that recycle used oil and special wastes such as photographic wastes and lead-acid batteries. The management of these wastes is exempt from many RCRA regulations, and facilities that recycle or otherwise manage these wastes are not subject to the same scrutiny as facilities that manage RCRA hazardous waste. However, the hazards associated with used oil and special wastes and the risk associated with their potential mismanagement by offsite commercial facilities is comparable to that of other hazardous wastes subject to full RCRA regulation. Therefore, evaluations of offsite commercial facilities accepting waste oil and special wastes are justified to reduce potential liabilities from waste mismanagement.

The specific offsite commercial facilities that accept ITRI wastes have not changed in several years, and ITRI currently performs evaluations of those offsite commercial facilities which accept hazardous waste subject to full RCRA regulation (I-WM-5).

The apparent causal factors that contributed to this finding are risk and resources. ITRI has not recognized the risk associated with the potential mismanagement by offsite facilities of wastes that are only partially regulated. Additionally, an ITRI request for additional resources to expand the HPO staff has not been met.

3.5 TOXIC AND CHEMICAL MATERIALS

3.5.1 Overview

The purpose of the toxic and chemical materials (TCM) portion of the environmental audit was to evaluate the compliance status of the ITRI with applicable regulations promulgated under the Toxic Substances Control Act (TSCA); the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); applicable DOE Orders and guidance; and best management practices. The TCM assessment focused on the ITRI's efforts to identify and subsequently manage asbestos, polychlorinated biphenyls (PCBs), chlorofluorocarbons, pesticides, and laboratory and bulk chemicals. Table 3-5 list the regulations, requirements, and guidelines used in this assessment.

The assessment included interviews with cognizant and responsible ITRI officials; reviews of relevant site documents, policies and procedures; inspections of facilities and interaction with other team members, particularly in the Surface Water/Drinking Water discipline.

The ITRI's inhalation toxicology research and support activities involve the use of a variety of hazardous chemical materials, including: laboratory chemicals, liquified gases, compressed gases, water treatment and conditioning chemicals, as well as gasoline.

Dielectric fluids are present in seven transformers and one capacitor bank associated with research equipment, and documentation indicates that none of this equipment contains PCB in levels regulated by TSCA (highest PCB content is 7 ppm). There are no capacitor distribution systems onsite. In 1980-1981 ITRI initiated their "relamp" project in which all PCB containing light ballasts were replaced.

The ITRI has a central warehouse which acts as the point of initial receipt and distribution of purchased chemicals including maintenance materials and laboratory reagents. A Health Protection Notice (No. 026) states that chemical procurement requests must undergo review and evaluation for hazard determination, and within the limited scope of this audit, it was determined that the procedure was followed. In addition, the ITRI Hazard Communication Program requires Material Safety Data Sheets (MSDS) for all chemicals present onsite. A comprehensive file of MSDS are maintained in the HPO office and ITRI library. The library file is accessible to employees at all times. Although MSDS are not required in immediate work areas, during the audit, ten areas which use hazardous chemicals were inspected and all maintained current subsidiary files of MSDS. The hazard communication program also requires that all ITRI work areas submit hazardous materials lists to HPO. However, six of the ten work areas inspected did not follow this requirement.

In Room 614 of Building 9217, a 55 gallon drum of an acidic solution (Di-2-Ethylhexyl Phosphoric Acid) was stored in immediate proximity of a 55 gallon drum of a basic solution (Tetra Ethyl Ammonium Hydroxide). However, of the approximately 20 work areas inspected this was the only example of incompatible material storage noted and therefore, was not considered indicative of overall chemical storage management.

Pesticides used to control landscaping insects and weeds are applied by Engineering and Facilities personnel (approximately eight gallons of pesticides are stored onsite). Pesticides used to control indoor insects and rodents are applied by a subcontractor who is licensed

TABLE 3-5
LIST OF TOXIC AND CHEMICAL MATERIAL
REGULATIONS, REQUIREMENTS, AND GUIDELINES

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
40 CFR 165	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Pesticide Storage/Disposal Regulations	EPA
40 CFR 171	FIFRA Certification of Pesticide Applicators	EPA
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions	EPA
HPO Notice No. 026	Procurement/Shipping of Hazardous Materials	HPO
HPO Notice No. 048	ITRI Hazard Communication Program	HPO
ITRI SOP 0569	Procedure for Pest Control at ITRI	ITRI
HPO SOP No. EM-8	Groundwater Monitoring	HPO
HPO SOP No. EM-9	Pesticide Control Program	HPO
40 CFR Part 61	National Emissions Standards for Hazardous Air Pollutants	EPA

by the State of New Mexico. Restricted use pesticides are not applied by ITRI or the subcontractor. ITRI personnel responsible for pest control are aware of the requirements stated in the site's pesticide program operating procedures.

All asbestos abatement at the ITRI is conducted by a subcontractor who is registered with the State of New Mexico, and all asbestos removed from site buildings is buried in a sanitary landfill which is permitted by the State of New Mexico. No asbestos waste is disposed of onsite. Since 1986, the site has been identifying and labeling locations which contain asbestos.

Overall, ITRI has a good program in place to manage hazardous and chemical materials. In particular, the site has removed all known PCBs and has documented evidence that the remaining electrical equipment does not contain regulated levels of PCBs. Also the site is actively identifying and labeling asbestos and it is projected that a total inventory of asbestos will be compiled by FY 1995 and MSDS files were found to be properly maintained in all chemical usage locations inspected.

The toxic and chemical materials audit identified one compliance finding covering the site required submittal of hazardous materials list to HPO.

3.5.2 Compliance Finding

TCM/CF-1: Hazardous Materials List Submittal

Performance Objective: Section 2 of Health Protection Notice No. 048, ITRI Hazard Communications Program, requires that all laboratories and work areas must prepare and maintain a current listing of all hazardous chemicals known to be in that area and that copies of updated lists must be provided to HPO on an annual basis.

Finding: Not all ITRI laboratory/work areas submit a hazardous materials list to HPO as required by HPO Notice No. 048.

Discussion: In general, ITRI has a sound TCM management program with written guidance for the procurement and shipping of hazardous materials and a good Hazard Communications Program (HPO Notice No. 048). However, there is a problem in that not all ITRI laboratory/work areas submit a hazardous materials list to HPO as required by the Hazard Communications Program.

The purpose of the ITRI Hazard Communications Program is to inform employees and contractor personnel of all the chemicals at site laboratories/work areas which present a potential physical or health hazard. All laboratories and work areas must prepare and maintain a current listing of all the hazardous chemicals known to be in that area. In addition, copies of updated lists must be provided to HPO on an annual basis.

Nine laboratories and one work area (shop) were inspected and all maintained a current listing of hazardous chemicals. However, five laboratories and the Mechanical Shop did not submit a copy of the list to HPO which is not in conformance with the requirements of Section 2 of Health Protection Notice No. 048:

- Building 9200, laboratories 122 and 127;
- Building 9201, laboratory 333;
- Building 9202, laboratory 348;
- Building 9218A, Chemical Toxicology Lab; and,
- Building 9220A, Mechanical Shop.

Interviews with personnel from the areas which did not submit lists to HPO indicated that they were not aware of the reporting requirements (I-TCM-6). By not submitting chemical lists to HPO, personnel from these areas not only did not conform with site requirements but also did not submit information needed for EPCRA reporting requirements (40 CFR 355 and 40 CFR 370) (see Finding IWS/CF-3). Also, a review of the HPO files confirmed that other laboratories and work areas had not submitted lists.

The site is planning to develop an inventory control system (projected start date, July 1993) which will incorporate the reporting requirements of Health Protection Notice No. 048 as a major data source (I-TCM-1). Of the 10 areas inspected, six did not conform to site reporting requirements which is indicative of a larger sitewide concern.

The apparent causal factors for this finding are supervision in that maintained HPO files were incomplete and training in that some of the site personnel interviewed were not aware of the reporting requirement of Health Protection Notice No. 048.

3.6 QUALITY ASSURANCE

3.6.1 Overview

The purpose of the quality assurance (QA) portion of the environmental audit was to evaluate application of QA precepts to the ITRI's environmental programs. Programmatic QA issues at ITRI were reviewed against DOE Orders, regulatory agency requirements, national consensus standards, and ITRI QA policies and procedures. The applicable regulations, requirements, DOE Orders, and guidelines used in this evaluation are listed in Table 3-7.

The general approach to the QA assessment of environmental programs at ITRI involved interviews with staff responsible for assuring quality of the environmental compliance and monitoring programs, and included reviews of documents and procedures. The assessment of QA for ITRI environmental program activity was coordinated with other audit team specialists to ensure that all potential QA issues were identified, reviewed, and addressed.

QA activities at ITRI are based on the Site-Wide Quality Assurance Program Plan (SWQAPP), April 1992, which describes the overall strategy for a total quality management system (organizational structure, functional responsibilities, levels of authority and organizational interfaces) using the ten quality criteria of DOE 5700.6C, Quality Assurance. The Health Protection Program Quality Assurance Plan (HPPQAP), November 1990, tiers off of the SWQAPP and establishes the environment, safety and health (ES&H) policy, responsibilities, and controls for activities affecting quality assurance within Health Protection Operations (HPO). HPO has issued procedures which implement the requirements of the HPPQAP.

Quality assurance activities with regard to environmental activities at ITRI are performed by the Quality Assurance Unit, the Internal Auditor and HPO, all of which report directly to the Director. The Quality Assurance Officer manages the Quality Assurance Unit and provides quality assurance consulting and assistance to the various ITRI units and groups, including HPO and has audit responsibility for research activities. The Quality Assurance Officer has no audit responsibilities with regard to HPO but does provide quality assurance technical assistance and consulting to HPO upon request. The Internal Auditor is responsible for auditing activities and operations that are not within the purview of the Quality Assurance Officer (non-research activities), including HPO activities. HPO procedures depict which HPO programs must be audited and a time schedule for those audits. HPO procedures also control the preparation and distribution of procedures; the review of standard operating procedures (SOPs); field sampling activities for sewage, groundwater, soil/vegetation, air and other safety and health activities; and activities associated with radioactive and non-radioactive waste management.

The HPO QA program has not been fully developed or implemented as required by DOE 5700.6C. There is a lack of a clear understanding between quality assurance and quality control precepts within HPO. This has been exacerbated by the lack of regularly scheduled audits of all HPO programs, including environmental monitoring and all waste management operations, and limited management attention devoted towards quality assurance activities within HPO. In summary, the HPO quality assurance program requires improvements in several areas and management needs to show a greater commitment allocating the limited

TABLE 3-6
LIST OF QUALITY ASSURANCE
REGULATIONS, REQUIREMENTS, AND GUIDELINES

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5700.6C	Quality Assurance	DOE
DOE-ER-STD-6001-92	DOE Standard - Implementation Guide For Quality Assurance Programs for Basic and Applied Research	DOE
40 CFR 136	Guidelines Establishing Test Procedures for the Analysis of Pollutants	EPA
HPO Quality Assurance Program	Health Protection Program Quality Assurance Plan	ITRI-HPO
ITRI Quality Assurance Program	Site-Wide Quality Assurance Program	ITRI
HPO Procedures	HPO Procedures	ITRI-HPO

resources available to quality assurance for ES&H activities.

The QA portion of the environmental audit identified two compliance findings. These compliance findings address the HPO Quality Assurance Program and the Internal Audit Program (QA/CF-1 and QA/CF-2).

3.6.2 Compliance Findings

QA/CF-1: HPO Quality Assurance Program

Performance Objective: DOE 5700.6C, "Quality Assurance", Criterion 4 - Documents and Records, requires that revisions to procedures should be reviewed and approved by the organizations that originally reviewed and approved the procedures.

Criterion 5 - Work Processes, states that work shall be performed to established technical standards and administrative controls. Work shall be performed under controlled conditions using approved instructions, procedures, or other appropriate means.

Criterion 6 - Design states that verification and validation of work shall be completed before approval and implementation of the design.

Criterion 7 - Procurement states that the organization shall ensure that procured items and services meet established requirements and perform as specified. Prospective suppliers shall be evaluated and selected on the basis of specified criteria.

Criterion 10 - Independent Assessment states that planned and periodic independent assessments shall be conducted to measure item quality and process effectiveness and to promote improvement. Responses to assessments should include action to correct the deficiency; cause identification; actions to prevent recurrence; lessons learned; and actions to be taken for improvement.

Finding: The HPO QA program is not fully developed or implemented in accordance with DOE 5700.6C.

Discussion: The HPO Quality Assurance program is set forth in the Quality Assurance Plan. Procedures implementing the QA requirements have been written and approved. However, in summary, the Audit Team's review of the HPO QA program revealed the following:

- procedures are not available for certain environmental tasks or activities performed by HPO personnel;
- assessments of certain critical HPO environmental functions are not performed;
- assessments of procured laboratory services for environmental monitoring are not performed;
- the HPO QA program does not contain all the program elements required by DOE 5700.6C;
- the majority of HPO environmental field sampling procedures (EM-X series) do not contain field sampling quality assurance/quality control requirements;
- HPO environmental field sampling procedures do not always accurately reflect the actual field sampling activities;

- new construction or site modification designs are not consistently reviewed for environmental impacts as required; and
- HPO procedures are not always consistent with regard to stated requirements.

Detailed discussions of each of these points follows.

Detailed procedures are not available for certain environmental activities performed by HPO personnel (I-QA-8). These activities include, but are not limited to:

- preparation of quality control spiking standards and working solutions for all environmental samples;
- preparation of all required reports and plans; and
- preparation of corrective action plans, tracking/trending, and lessons learned activities.

Assessments of certain critical HPO environmental functions and procured laboratory services are not performed (ITRI-057; I-QA-7 and I-QA-8). The ITRI internal auditing program has not historically included evaluations of environmental monitoring sampling and analysis (S&A) programs and does not currently include environmental monitoring programs such as sample collection and analytical services all of which are performed by contractors (see Finding QA/CF-2 for additional information on internal audits).

DOE 5700.6C requires that prospective suppliers shall be evaluated and selected on the basis of specified criteria. However, HPO does not have an approved laboratory evaluation criteria for selecting contractor laboratories (I-QA-11). Currently, two laboratories analyze the site's environmental monitoring program samples. These laboratories were selected based on their historical association with ITRI, formal audits performed by other government organizations, and their experiences with the methods of analysis required by the site. (Historically, both laboratories have successfully analyzed performance samples prepared by HPO.) ITRI has employed one laboratory for approximately five years and the other for about one year. HPO or the Internal Auditor has not conducted any vendor inspections of either laboratory (I-QA-7 and I-QA-8). The data generated by these laboratories are incorporated into the Annual Site Environmental Monitoring Report which documents the site's environmental management performance and confirms compliance with environmental standards and requirements. The lack of audits of these laboratories can raise doubts concerning the defensibility and validity of the data generated. HPO has identified this problem and is in the process of developing a laboratory evaluation criteria which includes preselection criteria, an onsite laboratory audit checklist, QA requirements, and deliverable requirements (I-QA-11).

The HPO QA program does not include all the required elements of DOE 5700.6C (ITRI-057). Formal programs for corrective actions development and implementation; tracking and trending of assessment findings and corrective actions; and lessons learned have not been developed and implemented. These programs ensure that corrective actions are developed consistently and properly closed and that findings are analyzed for recurrent trends. Formal tracking of findings and corrective actions enable management to

determine the status of these items and to make decisions based on accurate information. A lessons learned program ensures that information developed from the trend analyses and other sources are incorporated into facility activities and operations.

A review of HPO field sampling procedures revealed that all procedures with the exception of HPO EM-8, "Groundwater Monitoring", lacked field sampling QA/QC requirements. For example, HPO EM-8 is the only HPO procedure which details requirements for chain-of-custody documentation. The requirement for field sampling QA/QC activities has been recognized by HPO as evidenced by the Environmental Protection Program Implementation Plan for November 1992 to November 1993 requirement for written chain-of-custody procedures. These omissions to procedures relative to QA/QC activities [such as chain-of-custody documentation, complete sample preservation requirements, sampling handling, and procedure availability] are not being adequately controlled for all media sampling and potentially may bring into question the quality of data generated.

Observation of groundwater monitoring activities by the Audit Team revealed that HPO procedures do not accurately reflect actual field sampling activities. As observed, the discrepancies between HPO EM-8 and actual field sampling activity include the following:

- Section 3b of HPO EM-8, which lists the responsibilities of HPO technicians, does not accurately reflect how groundwater monitoring program operating responsibilities are currently being implemented. Since January 1993, samples have been collected by contractor personnel, not HPO technicians as the procedure currently states. All the responsibilities listed in Section 3b, except for data entry into ITRI's data base for storage and trend analysis, are the contractor's responsibility.
- Step 19 requires that a sampling well be purged until temperature, pH, and specific conductance readings stabilize. The SOP does not, however, define what constitutes stabilization for these three parameters. As a result, the geologist is left to professional judgment to determine stabilization.
- Step 2 states that a filter specific to each well be connected to the groundwater discharge tube after the well has stabilized. This dedicated filter is to be used for all four sampling events in a calendar year before being discarded. This practice was ended in 1992 after which the filters were discarded after each sampling event. This is an improvement to the procedure but the procedure was not amended to reflect actual activities.
- After well stabilization, Step 21 of the procedure states that a filter be connected to the groundwater discharge tubing and samples collected per Table 1 of the SOP (Step 23). Table 1 of the SOP lists both organic and inorganic constituents. The SOP does not specifically require that organic samples be collected on unfiltered water which is in accordance with accepted sampling practice. Based on interviews with ITRI and contractor personnel, there is no indication that filtered organic samples have ever been collected from the wells (I-QA-5 and I-QA-6). The SOP lacks revisions reflecting actual sample acquisition activities with regard to unfiltered organic samples.

ITRI SOPs lack revisions that ensure conformance with 5700.6C, Criterion 4 - Documents and Records. Changes to SOP EM-8, although known and approved by HPO, were not documented (i.e., corrections handwritten, initialed, and dated). This is a vulnerability to DOE in that the defensibility and validity of monitoring data is dependent of several factors, one being compliance with approved procedures. SOP EM-8 is currently being revised to reflect actual field sampling procedures and is projected for completion in July 1993.

Reviews of new construction or site modification designs are required by the HPO QA Plan to have HPO environmental review and approval prior to initiation of construction activities (I-QA-8). These reviews are not consistently being accomplished by HPO. These inconsistencies pose a problem in that the incorporation of ES&H requirements into all facility designs are not being verified, and potential impacts to the environment may not be identified.

A review by the Audit Team revealed that HPO procedures are not always consistent with regard to stated requirements. HPO EM-1, Policy and Program for Environmental Management (May 1993), requires that "all HPO procedures are reviewed and revised as necessary" while HPO AD-2, Policy, Plan and Conduct of Operations for Health Protection (2/11/93), requires that "all HPO procedures are reviewed annually and revised as necessary". This discrepancy could potentially result in HPO procedures not being reviewed annually and revised as necessary to reflect current HPO requirements.

The apparent causal factors for this finding are policy implementation in that QA policies and requirements set forth in DOE Orders, HPO program plans, and HPO procedures have not been fully implemented, procedures in that activities are being conducted by HPO that are not controlled by procedures, and design in that the QA program has not been adequately designed to ensure defensible and valid data for the environmental monitoring program.

QA/CF-2: Internal Audit of HPO Programs

Performance Objective: DOE 5700.6C, "Quality Assurance", Criterion 3 - Quality Improvement, states that processes that do not meet established requirements be promptly identified, documented, analyzed, resolved, and followed up.

Criterion 10 - Independent Assessment, states that a process of independent assessments should be established and implemented and that scheduling of assessments and allocation of resources should be based on the status, risk, and complexity of the item or process being assessed. The organization performing independent assessments shall have sufficient authority and freedom from the line organization to carry out its responsibilities.

Best management practice suggests that audit plans specify dates for the completion of pre-audit reviews by auditees and that audits be accomplished on scheduled dates with or without the completion of reviews of audit plans. Best management practice also suggests that management initiate actions to ensure compliance with audit schedules.

Finding: The internal audit program at ITRI does not adequately review environmental programs activities and does not set critical action response dates that are supported by management action.

Discussion: The HPO QA Plan states that the Internal Auditor is responsible for performing periodic audits of HPO programs and activities. A review of the Internal Audit schedule for FY 1990 to FY 1993 indicated that three audits focused on environmental activities of HPO had been performed during that period. Among the remaining scheduled audits for FY 1993 there is one scheduled on the NVO-325 (radioactive waste) program and one on packaging and transportation program. No documented audits of field environmental monitoring program activities were performed from FY 1990 to FY 1993, however there was a document review of the draft Environmental Monitoring Plan performed in FY 1992. The audits performed on HPO activities from FY 1990 to FY 1993 included a Hazardous Waste Management Limited Internal Audit, Fire Protection, Industrial Hygiene, Packaging and Transportation, NVO-325, and Health Physics. The lack of audits of ITRI's environmentally significant programs, such as environmental monitoring, poses a vulnerability to DOE in that nonconformances with requirements may exist that will impact the defensibility and validity of data and that these nonconformances may go undetected for significant periods of time.

Currently audits are not being conducted until the audit plans are reviewed by the auditee. This is to ensure that the Internal Auditor has included all applicable activities and operations of the auditee in the audit plan. However, the Internal Audit Program does not require that audit plan reviews be accomplished by a set date. The omission of audit plan review due dates has resulted in delays in performing audits, including a delay of four months for one audit (I-QA-7). Dates are set for submittal of corrective action responses during the audit closeout meeting but occasionally those dates are not met. These issues pose the potential for impinging on the independence of the internal auditor by affecting the Internal Auditor's independence from schedule.

HPO has issued Procedure AD-6 which requires that all HPO programs be audited no less frequently than every three years. The Internal Auditor is developing a computerized Internal Audit Risk Assessment program which will provide a prioritized listing of all

activities that require audits.

The apparent causal factors for this finding are policy implementation in that the requirements of DOE 5700.6C were not implemented for all HPO programs, risk in that the risk associated with potentially producing indefensible and invalid data for HPO environmental programs but not recognized, and design in that the internal audit program does not require firm dates for certain critical actions associated with audit activities.

3.7 RADIATION

3.7.1 Overview

The purpose of the radiation portion of the environmental audit is to evaluate current practices with regard to: applicable DOE Orders and guidances; internal procedures at the Inhalation Toxicology Research Institute (ITRI); and best management practices associated with radiological protection of the public and the environment. A list of radiological requirements, and guidelines used in this assessment is provided in Table 3-7.

The general approach of the radiation portion of the environmental assessment included the following activities: a review and inspection of site radiation sources; review of radioactive material control procedures; inspection of direct radiation monitoring locations; interviews with ITRI personnel; and a review of site documents and files.

Radiation protection of the public and the environment at ITRI has several components. One component is exposure to releases of radioactive constituents which is discussed in the media specific sections on air, surface water/drinking water, and groundwater. The other component, which is the subject of this section, is exposure to direct radiation. ITRI personnel use radioactive materials in activities conducted at ITRI. The radioactive materials include alpha, beta, and gamma emitting isotopes in gaseous, liquid, and solid forms. These materials have the potential to result in exposure of personnel to direct radiation. ITRI has programs and procedures which place controls on the purchase, possession, movement, use, and disposal of radioactive materials. ITRI has a personnel monitoring program which monitors exposure of ITRI employees and visitors. Additionally, ITRI maintains a gamma monitoring program. This program consists of 6 site perimeter locations which are monitored for gamma radiation using thermoluminescent dosimeters (TLDs). No radiation levels above site specific background levels are detected at the site boundary.

The programs and procedures in place for the control of radioactive materials used in activities conducted at ITRI appear to be sufficient from an environmental perspective. ITRI has documented a need for the gamma monitoring program in their EMP, however, these activities are not adequately reviewed with respect to changing facility operations and site conditions. In addition, present practices do not ensure the most effective and efficient gamma monitoring program design is in place which meets the goal and objectives identified in the ITRI EMP.

The radiation portion of the environmental audit identified no findings. There were general deficiencies noted with the environmental monitoring program which affect direct radiation monitoring and these are discussed in the Environmental Monitoring section of the audit report (see Findings ENV/CF-1 and 2).

TABLE 3-7
LIST OF RADIATION
REGULATIONS, REQUIREMENTS, AND GUIDELINES

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
DOE Order 5400.1	General Environmental Protection Program	DOE
DOE Order 5400.5	Radiation Protection of the Public and the Environment	DOE
DOE/EH-0173T	Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance	DOE

3.8 INACTIVE WASTE SITES

3.8.1 Overview

The purpose of the inactive waste sites (IWS) portion of the ITRI environmental audit was to evaluate the compliance status of their facilities relative to the identification and remediation of past hazardous substance release or disposal sites, and the reporting of inventories or releases of hazardous substances. The ITRI inactive waste sites were evaluated against applicable laws, regulations, and DOE Orders, including: the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and including the Emergency Planning and Community Right to Know Act (EPCRA or SARA Title III); the National Oil and Hazardous Substances Pollution Contingency Plan (NCP); and applicable DOE Orders. The specific regulations, requirements, and guidelines used for evaluating the inactive waste sites and related issues at ITRI are included in Table 3-8.

The general approach to the inactive waste sites audit included: onsite observation of site conditions; review of site documents and records; and interviews with ITRI, KAO, and AL personnel. The information gathered from these activities was then assessed against the applicable laws, regulations, and orders to evaluate the procedures used to identify inactive waste and hazardous substance release sites, the remediation of those sites once identified, and the procedures and performance of hazardous substances inventory and release reporting. This portion of the audit was coordinated with other audit team specialists, including Quality Assurance, Toxic and Chemical Materials, and Environmental Management.

Inactive waste sites at ITRI have been identified by numerous direct and indirect processes, including: the U. S. Air Force Installation Restoration Program Phase I - Records Search for Kirtland Air Force Base; the DOE/HQ 1987 Environmental Survey; a 1988 Preliminary Assessment prepared by AL; and the annual budget planning process (ITRI-309, ITRI-141, and ITRI-142). Through these means ITRI has identified three main environmental restoration projects now underway or in planning, and two new minor sites for which initial characterization is being planned for the coming months. Funding for the three environmental restoration projects was administered through the AL Environmental Restoration Project Office (ERPO), which, along with KAO, has provided technical review and oversight of these projects.

ITRI's three major environmental restoration projects are being undertaken to meet various regulatory requirements, including: New Mexico UST Regulations for the Diesel Oil Release sites, New Mexico Water Quality Control Commission (WQCC) requirements for the Wastewater Lagoons groundwater, NMED Solid Waste Management Regulations (SWMR) for the Lagoons sludge, and DOE 5400.5 and DOE 5820.2A for the Hot Ponds (including the Animal Burial Trenches). Although AL submitted a Preliminary Assessment (ITRI-143) for the EPA CERCLA Federal Facilities Docket in April 1988, Region 6 EPA notified DOE in July 1990 that ITRI's status at the time was "no further action" (ITRI-142 and ITRI-144). The only regulatory agreement presently in effect at the Site is the 1988 New Mexico Environment Department (NMED) Groundwater Protection and Remediation Bureau (GWPRB) Discharge Plan (DP-519), which was approved in June 1988 (ITRI-150). The approved Discharge Plan was based on ITRI's original September 1987 Discharge Plan, as supplemented by a series of correspondence between November 25, 1987 and May 26,

TABLE 3-8
LIST OF INACTIVE WASTE SITES
REGULATIONS, REQUIREMENTS, AND GUIDELINES

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
Executive Order 12580	Superfund Implementation	EPA
Public Law 99-499	Superfund Amendments and Reauthorization Act of 1986 (SARA), including Emergency Planning and Community Right-to-Know Act (EPCRA)	EPA
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan	EPA
40 CFR 302	Designation, Reportable Quantities, and Notification	EPA
40 CFR 355	Emergency Planning and Notification	EPA
40 CFR 370	Hazardous Chemical Reporting: Community Right-to-Know	EPA
43 CFR 11	Natural Resource Damage Assessments	DOI
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5400.4	Comprehensive Environmental Response, Compensation, and Liability Act Requirements	DOE
DOE 5500.1B	Emergency Management System	DOE
DOE 5500.2B	Emergency Categories, Classes, and Notification and Reporting Requirements	DOE
DOE 5500.3A	Planning and Preparedness for Operational Emergencies	DOE
DOE 5700.6C	Quality Assurance	DOE
EH-231-008/0991	Natural Resource Damage Assessment: Preassessment Screening and Integration with CERCLA ecological Evaluations	DOE

1988 (ITRI-149). The Discharge Plan required regular monitoring of the Wastewater Lagoons groundwater and was contingent upon ITRI's and AL's agreement to restore the aquifer to the standards of Section 3-103 of the State WQCC regulations if continued discharges to the lagoons resulted in violation of those standards (ITRI-146). Since approval in June 1988, the Discharge Plan has been subject to modification by supplemental correspondence as new data became available. For example, in April 1989 the NMED requested several items, including: closure of Lagoon 4; a lagoon sludge sampling plan; installation of an additional monitoring well west of the lagoons; and a lagoon closure plan 6 months prior to closure (ITRI-151). The same letter indicated the State's opinion that, at that time, groundwater remediation did not appear necessary if the lagoons are closed properly (ITRI-151). In response to that letter, AL voluntarily offered to propose an appropriate groundwater remediation plan during the lagoon closure period based on the available sampling results and the lagoon closure method selected (ITRI-312). There is an Agreement-in-Principle (AIP) between AL and NMED that provides for State oversight and information exchange, but does not stipulate specific technical or regulatory requirements (ITRI-153 and ITRI-168). ITRI and KAO are planning to meet with the State regulators in the near future to discuss Lagoon and Groundwater remediation plans.

Hazardous chemical inventory and release reports are handled jointly by HPO Unit staff and KAO personnel. A 1992 DOE/AL Emergency Management Appraisal found that the ITRI procedures did not adequately address environmental emergency reporting (ITRI-178 and ITRI-179). ITRI addressed this finding by issuing the new SOP number EM-10 on June 7, 1993 (ITRI-180 and 181). ITRI is responsible for compiling EPCRA-required chemical inventory and MSDS reports, which are submitted to the State and local emergency planning offices by KAO. File data indicate that these submittals have been late and may have been incomplete.

The focus of this audit was to evaluate the programmatic aspects of ITRI inactive waste sites and related activities rather than specific technical issues and procedures. In that context ITRI has made demonstrable progress toward environmental restoration, and to date has conducted those activities within budget. However, the audit identified some weaknesses relative to procedural matters required by DOE 5400.4 and by EPCRA. Two compliance findings and one best management practice finding were developed to address those concerns, as follows: IWS/CF-1 addresses DOE's requirements for ensuring that environmental restoration activities are not inconsistent with the NCP; IWS/CF-2 addresses EPCRA reporting requirements; and IWS/BMPF-1 addresses Natural Resource Damage Assessment determination requirements.

3.8.2 Compliance Findings

IWS/CF-1: CERCLA National Contingency Plan Requirements

Performance Objective: DOE 5400.4, Section 7a states that it is the policy of DOE to respond to releases and potentially imminent releases of hazardous substances in accordance with the provisions of CERCLA, as well as those of the NCP and Executive 12580, regardless of whether the facility is listed on the National Priorities List (NPL). DOE responses shall include both removal and/or remedial actions, as appropriate, to reduce adverse impacts on public health and the environment from releases regardless of whether the facility is listed on the NPL. In instances where corrective actions are carried out under other authorities, DOE needs to ensure that these corrective actions are not inconsistent with the NCP in order for them to satisfy CERCLA requirements (DOE 5400.4, Section 7c).

Finding: ITRI has not ensured that its current and planned environmental restoration activities are not inconsistent with CERCLA and the NCP as required by DOE 5400.4.

Discussion: ITRI currently has three significant environmental restoration projects planned or underway: Diesel Oil Release, ADS NO. ALIT-1013; Lagoons and Groundwater, ADS No. ALIT-1019; and Hot Ponds, ADS No. ALIT-1015 (ITRI-042, ITRI-043, ITRI-044). These projects are being undertaken to meet various objectives and regulatory drivers, as follows:

- The Diesel Oil Release remediation project has been undertaken to clean up diesel-contaminated soils and groundwater resulting from fuel releases in five areas within ITRI resulting from past equipment failure. Activities to date have included soil sampling, monitoring well installation, groundwater sampling and analysis, removal of all underground storage tanks (USTs), and installation of a soil venting/bioremediation system. The Diesel Oil remediation project is being conducted pursuant to the New Mexico UST Regulations, Part XII ("Corrective Action for Petroleum UST Systems").
- The six sanitary sewage lagoons, now out of service and dry, have caused elevated levels of nitrates and Total Dissolved Solids in the groundwater. In June 1988 the NMED Groundwater Protection and Remediation Bureau (GPRB) approved a Discharge Plan (DP-519) for the sewage lagoons subject to ITRI's prior agreement to restore the aquifer to State WQCC standards if continued or future discharges to the lagoons result in violating those standards (ITRI-148 and ITRI-150). The Discharge Plan required quarterly and annual sampling of the groundwater and lagoon sludge for various analyses, including: nitrates, total Kjeldahl nitrogen, volatile organic compounds, priority metals, and selected radionuclides, subject to modification by the State as necessary. Since 1988 to date, lagoon assessment activities have included installation of 16 monitoring wells and 7 piezometers, regular periodic sampling and analysis, and hydrogeologic studies. Further characterization of the nature and extent (vertical and horizontal) of lagoon contaminants (including radionuclides and leachable organic chemicals) was performed in the Fall of 1992 for the purpose of determining lagoon closure options (ITRI-282). Aquifer tests were

conducted west of the lagoons in April 1993 (ITRI-165). The Lagoons and Groundwater Assessment is being coordinated with the Diesel Oil Release Assessment to provide a comprehensive, site-wide groundwater monitoring program. ITRI's approach proposes to characterize and close the lagoons with respect to New Mexico Water Quality Control Commission (WQCC) requirements for groundwater, and with NMED Solid Waste Management Regulations (SWMR) with respect to the lagoon sludge. In April 1993 the NMED transferred the oversight and remediation authority for the Lagoon Discharge Plan DP-519 within the Groundwater Protection and Remediation Bureau (GWPRB) to the GWPRB's Remediation Section, and proposed modifications to the monitoring program (ITRI-163 and ITRI-164). ITRI and KAO plan to meet with the state regulators in the near future to discuss the Lagoon and Groundwater remediation plans.

- The Hot Ponds Assessment focuses on the closure of two concrete sumps used from 1963 to 1985 as holding ponds for low level radioactive liquid wastes from contaminated equipment cleanup rinsate and other miscellaneous lab waste. The Hot Pond sludge was removed in 1990. Prior to removal, the sludge was analyzed for cesium-137, various metals, pH, and ignitability. Sub-grade assessment work in 1991 included Geiger-Mueller surveys of concrete cores and radionuclide analyses of soil samples beneath the concrete. A gamma ray survey of the Hot Pond area was performed in May 1992. Further investigation of the Hot Ponds soils and waters has been conducted to determine whether radioactive contamination is confined to the concrete or whether it may have migrated into the subsurface and surrounding soil (ITRI-283 and ITRI-284). The Hot Ponds Assessment also includes investigation of the old animal burial trench located approximately 100 yards southeast of the Hot Ponds. There is the potential for subsurface radioactive contamination from this estimated 75,000-cubic-foot capacity trench, use of which is believed to have been discontinued by 1985. The assessment and closure of the Hot Ponds are being performed according to the requirements of DOE 5400.5 ("Radiation Protection of the Public and the Environment") and DOE 5820.2A ("Decommissioning of Radioactively Contaminated Facilities").

These projects have the common goal of characterizing and remediating environmental contamination from the respective ITRI sites. Although the application of different standards, criteria, and regulatory drivers is not necessarily inappropriate, it is apparent that ITRI intends to overlap the project activities, as evidenced, for example, by the use of a common Quality Assurance Project Plan. Therefore, these projects will necessarily involve interaction and compliance with different bureaus of the NMED that may have both overlapping and potentially competing objectives, requirements, and authorities. The opportunity exists for data and conclusions developed according to one set of requirements to be perceived as insufficient toward meeting other criteria.

DOE's requirement for ensuring that remediation is not inconsistent with the NCP is directed toward establishing a common set of technically sound, defensible criteria for environmental restoration at its facilities. DOE 5400.4, Section 7c cites the use of Interagency Agreements (IAGs) or Federal Facility Agreements (FFAs) as an efficient means of ensuring that procedures are not inconsistent with the NCP and establishing

which authority will be used, although the language of that order does not preclude the use of alternative approaches.

Currently the Lagoon Discharge Plan (DP-519), as supplemented and amended, is the only regulatory agreement ITRI has in place with the regulatory agencies. Although the Discharge Plan subjects ITRI to various State requirements, there is no language in the Discharge Plan and its supplements and amendments that ensures that the Lagoons and Groundwater activities are not inconsistent with the NCP. The Hot Ponds and the Diesel Fuel Release assessments are not specifically addressed by the Discharge Plan. The Agreement-in-Principle (AIP) between AL and NMED provides for State oversight and information exchange of ITRI's environmental restoration program, but does not stipulate technical or regulatory requirements. Although based on current data ITRI and KAO do not believe that there are onsite CERCLA-regulated hazardous substance releases or potential releases, there is no approved and documented position statement or strategic plan that addresses the extent to which the Lagoons and Groundwater activities are not inconsistent with the NCP.

The apparent causal factor for this finding is insufficient policy implementation relative to DOE 5400.4 requirements for ensuring that remediation is not inconsistent with the NCP, as well as what appears to be an insufficient assessment of the risks (e.g. technical adequacy, decision defensibility) associated with not ensuring that consistency.

IWS/CF-2: Emergency Planning and Community Right-to-Know Act (SARA Title III) Reporting

Performance Objective: DOE 5500.1B ("Emergency Management System") and DOE 5500.3A ("Planning and Preparedness for Operational Emergencies") both state DOE's policy to comply with the provisions of the Emergency Planning and Community Right-to-Know Act (EPCRA). Regulations at 40 CFR 370.21 that implement EPCRA require that beginning on or before September 24, 1988, non-manufacturing facilities submit Material Safety Data Sheets (MSDSs) for all Hazardous Chemicals on site in amounts of 10,000 or more pounds, and for all Extremely Hazardous Chemicals present in quantities of 500 or more pounds or the Threshold Planning Quantity (TPQ), whichever is lower, to the State Emergency Response Commission (SERC), to the Local Emergency Planning Committee (LEPC), and to the fire department with jurisdiction over the facility.

Supplemental MSDS submittals are required by 40 CFR 370.25 within 3 months following discovery of significant information or use of reportable substances not included on previously submitted MSDSs. Beginning on or before March 1, 1988 and by March 1 annually thereafter, Tier I or Tier II inventory forms are required to be submitted to the SERC, LEPC, and fire department for all Hazardous and Extremely Hazardous Chemicals present during the preceding calendar year in the same respective quantities as required for the MSDS submittals.

As defined in 40 CFR 355.20, Hazardous Chemicals do not include substances used in research laboratories or medical facilities under the direct supervision of technically qualified individuals. Extremely Hazardous Chemicals are those substances listed in Appendices A and B of 40 CFR 355.

Finding: ITRI's Emergency Planning and Community Right-to-Know report submittals for calendar years 1987 through 1992 have been incomplete and untimely relative to the requirements of 40 CFR Parts 355 and 370.

Discussion: A review of ITRI and KAO EPCRA (SARA Title III) reporting files revealed the following information:

- A September 14, 1987 Record of Telephone Conversation between AL and ITRI personnel indicated the opinions that ITRI did not have any non-research chemicals in excess of TPQs and that research chemicals used at ITRI that are listed per SARA are exempt from SARA requirements (ITRI-171).
- On July 9, 1991, KAO submitted an ITRI-prepared Tier I inventory form for calendar year 1990 and MSDSs for one Extremely Hazardous Chemical (hydrofluoric acid) and for propane and diesel fuel (ITRI-172 and ITRI-173).
- Tier II inventory forms prepared by ITRI for calendar years 1991 and 1992 were submitted by KAO to the SERC and LEPC on May 11, 1993 (ITRI-174 through 177).

Based on the available file information, it cannot be determined whether MSDSs were submitted for all listed Extremely Hazardous Chemicals used above TPQs at ITRI (*e.g.*, nitric acid and formaldehyde). It also can not be determined whether Tier I or Tier II

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reports were submitted for calendar years 1987 through 1989, nor whether any of the Tier I or II forms or MSDSs were submitted to the local fire department. KAO acknowledged in the transmittal letters that the submittals were late and that steps had been taken to assure future compliance with the March 1 deadlines. However, requirements and procedures for EPCRA reporting were not observed among the ITRI HPO Notices and SOPs.

The apparent causal factor for this finding is policy implementation since written procedures for complying with EPCRA reporting requirements were either not followed or available. Human factors were also associated with the late 1991 Tier II submittal in that tragic personal circumstances prevented the timely performance of duties by the responsible person at ITRI.

3.8.3 Best Management Practice Finding

IWS/BMPF-2: Natural Resource Damage Assessment Determination

Performance Objective: DOE 5400.4, Section 7g, states DOE's policy that where DOE determines that natural resources for which DOE has been granted trusteeship may have been potentially injured by a release, DOE will implement the Natural Resource Damage Assessment (NRDA) process consistent with the requirements set forth in 43 CFR 11. DOE Guidance (EH-231-008/0991) on the NRDA Preassessment Screen (PAS) recommends that in all instances involving potential natural resource injuries, DOE facilities should consider performing or coordinating a PAS. The assessment procedures at 43 CFR 11 are not mandatory, but must be used by Federal or State Trustees in order to obtain the "rebuttable presumption" contained in section 107(f)(2)(C) of CERCLA.

Finding: DOE has not formally determined the need for implementing the Natural Resource Damage Assessment process consistent with DOE 5400.4, Section 7g and 43 CFR 11.

Discussion: ITRI currently has three significant environmental restoration projects planned or underway: Diesel Oil Release, ADS# ALIT-1013 (ITRI-044); Lagoons and Groundwater, ADS# ALIT-1019 (ITRI-043); and Hot Ponds, ADS# ALIT-1015 (ITRI-042). These projects are being undertaken to meet various objectives and regulatory drivers, as described in Inactive Waste Sites finding IWS/CF-1. Although these projects have the common goal of characterizing and remediating environmental contamination, they will necessarily involve interaction with different bureaus of the NMED. In addition, the National Contingency Plan (40 CFR 300.610) authorizes Indian tribes, as Natural Resource Trustees for their lands, to act (under CERCLA) when there is a threat to natural resources as a result of a hazardous substance.

The Assessment Plans for the three ITRI projects were prepared in 1992, and additional site characterization has been performed. To date, however, ITRI and KAO have made no formal determination of the need to incorporate and coordinate the technical and procedural requirements of 43 CFR 11 for assessing natural resource damages, or to incorporate any additional data collection requirements (e.g., ecological data) into the assessment and remediation processes. KAO has attempted, however, to involve the Isleta Pueblo (another natural resource trustee) in the ITRI environmental restoration planning and implementation processes (ITRI-166, 167, 169, 170, and 279 through 281). Best management practices suggest that a formal, documented determination of the need or applicability of implementing the Natural Resource Damage Assessment process be made, and that the PAS should be used as a tool for making that determination.

The apparent causal factor for this finding is insufficient policy implementation with respect to DOE 5400.4 requirements and related guidance for determining the need to implement the NRDA process consistent with 43 CFR 11 procedures.

3.9 ENVIRONMENTAL MONITORING

3.9.1 Overview

The purpose of the environmental monitoring portion of the environmental audit is to evaluate current practices with regard to: Federal, State, and local regulations; applicable DOE Orders; internal procedures at ITRI; and best management practices associated with environmental monitoring. A list of regulations, requirements, and guidelines used in this assessment is provided in Table 3-9. The Air, Surface Water/Drinking Water, Groundwater, and Radiation sections of this audit report list other regulation, requirements, and guidelines specific to those media.

The general approach of the environmental monitoring portion of the environmental assessment included the following activities: a review of potential release sources from the ITRI; an inspection and review of measurement and monitoring locations and practices; interviews with ITRI personnel; and a review of site documents and files.

The ITRI environmental monitoring program currently includes collection and/or measurement of air emissions, ambient air, liquid effluents, groundwater, soils, sediments, sewer sludge, vegetation samples and gamma radiation. The only monitoring activities which are required by regulations or permit requirements are those performed on liquid effluents, per the city of Albuquerque wastewater discharge permit No. 2178A, groundwater per 40 CFR Part 280 "Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)", and the New Mexico Environment Department discharge plan DP-519. All other environmental monitoring is being conducted in support of the ITRI Environmental Monitoring Plan (EMP) goal of ensuring that ITRI's operations do not adversely impact the environment and that all applicable Federal, state, and local environmental regulations are met, as stated in the EMP.

The Air, Surface Water/Drinking Water, Groundwater, and Radiation sections of this audit report discuss the potential sources of releases via various pathways to these media and specific sampling and monitoring required and performed on these environmental media. Soil and vegetation environmental monitoring activities involve sampling and analyzing soils for radiological constituents and the collection and archiving of vegetation samples.

Even though the majority of these monitoring activities are not required by any regulations or permits, ITRI has determined that they are desirable components of their Environmental Monitoring Program. Therefore, these activities should be adequately documented and performed in accordance with all DOE requirements applicable to environmental monitoring programs. The Air, Surface Water/Drinking Water, Groundwater, and Radiation sections of this audit report discuss the general condition of environmental monitoring activities for these media. The rationale and design criteria for soil, sediment, and vegetation monitoring programs' activities have not been adequately documented and therefore, a technically defensible review of their adequacy, appropriateness, and effectiveness was not possible.

ITRI has documented a need for the environmental monitoring activities they are conducting in their EMP, however, these activities are not adequately reviewed with respect to changing facility operations and site conditions. In addition, present practices

TABLE 3-9
LIST OF ENVIRONMENTAL MONITORING
REGULATIONS, REQUIREMENTS, AND GUIDELINES

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
DOE Order 5400.1	General Environmental Protection Program	DOE
DOE Order 5400.5	Radiation Protection of the Public and the Environment	DOE
DOE/EH-0173T	Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance	DOE
Wastewater Discharge	City of Albuquerque, Public Works Department, Wastewater Utility Division, Pretreatment Unit, Wastewater Discharge Permit # 2178A	City
Sewage Lagoons	New Mexico Environment Department, Groundwater Protection and Remediation Bureau, Remediation Section, Discharge Plan DP-519	State
40 CFR Part 280	Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)	EPA
40 CFR Part 61, Subpart H	National Emission Standards for Hazardous Air Pollutants; Radionuclides	EPA

do not ensure the most effective and efficient environmental monitoring program design is in place which meets the goal and objectives identified in the ITRI EMP.

The environmental monitoring portion of the environmental baseline audit identified two compliance findings. The compliance findings involve deficiencies in the EMP and inadequate mechanisms for the periodic review of environmental monitoring activities to determine their validity with respect to changing facility operations and/or location specific or site conditions.

3.9.2 Compliance Findings

ENV/CF-1: Environmental Monitoring Plan for the Inhalation Toxicology Research Institute (ITRI)

Performance Objective: DOE 5400.1, "General Environmental Protection Programs," requires that each facility prepare a written environmental monitoring plan (EMP). The plan is required to contain the rationale and design criteria for the monitoring program, extent and frequency of monitoring and measurements, procedures for laboratory analyses, quality assurance requirements, program implementation procedures, and direction for the preparation and disposition of reports. The EMP shall be approved by the appropriate Head of Field Organization or his/her designee.

Finding: The Inhalation Toxicology Research Institute (ITRI) EMP does not meet the requirements of DOE 5400.1 with respect to documentation of the environmental monitoring program.

Discussion: ITRI has an EMP which describes its environmental monitoring activities. The EMP was issued in February 1993. A review of the ITRI EMP revealed that it: 1) is approved by DOE Albuquerque Field Office (AL); 2) discusses a rationale for conducting or not conducting monitoring of media and gamma radiation; 3) documents the objective of the monitoring activities performed by ITRI; 4) establishes the extent and frequency of monitoring and measurement activities; 5) identifies and references procedures for sampling and laboratory analyses; 6) describes the applicable quality assurance requirements, and 7) identifies and references program implementation procedures (ITRI-073).

However, the following specific deficiencies with respect to the requirements contained in DOE 5400.1 were identified as follows:

- The rationale for the location and design of and constituents monitored/analyzed under the air emission monitoring program for radiological constituents are not documented nor are any supporting documents referenced.
- The rationale for the location and design of and constituents that may be or are monitored/analyzed under the groundwater, ambient air, sewer sludge, soil, and vegetation monitoring programs for both radiological and nonradiological constituents are not documented nor are any supporting documents referenced.
- The rationale for the design and monitoring locations of the gamma monitoring program are not documented nor are any supporting documents referenced.
- Directions for the preparation and disposition of reports is not documented nor are any procedures governing these activities referenced.

The apparent causal factors for this finding are inadequate policy implementation of DOE 5400.1 requirements into ITRI procedures and a lack of ITRI procedures covering the

preparation and content of the EMP. A contributing factor is ineffective appraisals/audits/reviews of the EMP for content with respect to the requirements contained in DOE 5400.1 by AL.

ENV/CF-2: Review of Environmental Monitoring Activities at the Inhalation Toxicology Research Institute (ITRI)

Performance Objective: DOE 5400.1, "General Environmental Protection Programs," requires that environmental monitoring plans (EMPs) be reviewed annually and updated as needed or every three years. The plan was to be completed and approved by the appropriate Head of Field Organization by November 9, 1991. The EMP is required to contain the rationale and design criteria for the monitoring program, extent and frequency of monitoring and measurements, procedures for laboratory analyses, quality assurance requirements, program implementation procedures, and direction for the preparation and disposition of reports.

Finding: Environmental monitoring activities are not adequately reviewed nor do procedures exist for conducting these reviews to determine the continued validity and appropriateness with respect to changing site conditions in accordance with the requirements of DOE 5400.1.

Discussion: The Inhalation Toxicology Research Institute (ITRI) has an EMP which describes the environmental monitoring activities. The EMP was approved by DOE Albuquerque Field Office (AL) in February 1993. Deficiencies were identified in a review of the EMP during this audit, which are pertinent to this finding (see Finding ENV/CF-1) (ITRI-073). The EMP is required to be reviewed annually and updated as needed or every three years. While the EMP was not approved until February 1993, the requirement for annual reviews became effective in November 1991. Interviews with ITRI Health Protection Operations (HPO) personnel indicated that they do not have procedures, a process, or mechanism covering the continual or periodic review of environmental activities nor are these reviews performed (I-A-2). These reviews are necessary to support the required review and/or revision of the ITRI EMP with respect to the continued validity of the elements contained in the EMP due to changes in facility operations or general and specific site conditions. Specific observed examples include:

- Ambient air monitoring station locations, design, and constituents monitored/analyzed which may no longer be effective for monitoring and/or measuring the potential impact to the public or environment resulting from ITRI operations. The original monitoring objective under which these programs may have been initiated may no longer be valid or the potentially impacted locations may have changed. As an example, the placement of the ambient air monitoring stations may not be conducive to effectively monitor the potential for contaminated soil resuspension from the now dry lagoons. Additionally, a review of the locations of these monitors appears to prevent the collection of representative or meaningful ambient air samples (see Finding A/CF-1).
- A gamma monitoring program which may no longer be a necessary component of the environmental monitoring activities to assess potential impacts to the public or environment resulting from ITRI operations. Interviews with ITRI HPO personnel indicated that the gamma radiation source, (radioactive waste stored in Building 9252), which had the potential to contribute to the ITRI site boundary dose and was the basis for establishment of a gamma monitoring program, is no longer stored at that

location (I-A-2). Additionally, interviews also indicated an instance where a post holding a thermoluminescent dosimeter (TLD) had fallen over and was left in that position for nearly one year before it was corrected (I-A-2). This situation resulted in the generation of data that was interpreted to be indicative of an increased direct radiation impact at that location. An examination of the area found no potential sources and resulted in the discovery of the fallen TLD. There was no evidence found that corrective action(s) initiated as a result of this incident resulted in development of a mechanism nor is a mechanism currently in place to prevent a repeat of this type of situation.

- Soil and vegetation sampling locations and constituents planned to be or are monitored/analyzed which may no longer be effective for monitoring and/or measuring the potential impact to the public or environment resulting from ITRI operations. The original monitoring objective under which these programs may have been initiated may no longer be valid or the potentially impacted locations may have changed. Again, as an example, the soil and vegetation sampling locations may not be conducive to effectively monitor potential contaminated soil resuspension from the now dry lagoons.

ITRI is in the process of implementing a self-assessment program which they feel will address this issue once it is completely implemented.

The apparent causal factors for this finding are inadequate policy implementation of DOE 5400.1 requirements into ITRI procedures and a lack of ITRI procedures covering the review and/or revision of the EMP. A contributing factor is inadequate appraisals/audits/reviews of environmental monitoring activities.

3.10. ENVIRONMENTAL MANAGEMENT

3.10.1 Overview

The environmental management portion of the baseline environmental audit evaluated the status and effectiveness of ITRI, DOE Albuquerque Operations Office (AL), DOE Kirtland Area Office (KAO), the DOE Office of the Assistant Secretary for Energy Research (ER), DOE Office of the Assistant Secretary for Environmental Restoration and Waste Management (EM) and the DOE Office of the Assistant Secretary for Defense Programs (DP) management as they relate to ensuring environmental regulatory compliance and implementing DOE's environmental protection policies and directives. The audit included an assessment of ITRI management effectiveness in: implementing environmental protection programs; line organization interactions with its environmental protection program; interfaces with AL, KAO, and ER; and, its implementation of DOE Orders. The specific performance objectives and criteria against which ITRI and the DOE line organizations were assessed included, in part, the management performance objectives and criteria from the Performance Objectives and Criteria for Conducting DOE Environmental Audits (DOE/EH-0229). Table 3-10 lists the DOE Orders and guidelines used in this audit to assess the functional relationships within and between DOE organizations and the ITRI, and the environmental program organization within the ITRI.

The general approach to the environmental management assessment included review of documents including policies, procedures, plans, training records, and correspondence. Interviews were conducted with representatives of ITRI, AL, KAO, DP, EM, and ER, and onsite inspections were performed. In addition, interaction with other team members took place on cross-cutting environmental management issues.

The DOE Headquarters Office of the Assistant Secretary for Energy Research (ER) is the Lead Cognizant Secretarial Officers (CSO) responsible for "landlord" activities at ITRI. The Office of Health and Environmental Research (OHER) within ER is tasked with supplying ITRI with programmatic guidance to the facility. DOE Headquarters Office of the Assistant Secretary for Defense Programs (DP) is the Lead CSO for most other DOE facilities under Albuquerque Operations Office (AL) which includes facilities under the Kirtland Area Office (KAO). ER, EM, and DP provide policy guidance, through the AL, with regard to DOE-wide ES&H programs. As such, AL is responsible and accountable for all ES&H oversight, guidance, and technical support activities at ITRI. Furthermore, KAO has been assigned by AL as the onsite representative responsible for both management and oversight of ITRI operations related to management systems and compliance assurance for environmental programs. These responsibilities include: obtaining and approving operating permits, including reports and follow up; coordinating with the EPA, state and local regulators; audits inspections and appraisals affecting ES&H activities, including tracking and closeout verification of findings; and, monitoring contractor management systems such as occurrence reporting, self-assessment, and conduct of operations program implementation (ITRI-090). At present, there is no formal agreement between ER and DP that sets forth specific DOE roles and responsibilities for supplying guidance on the implementation of DOE orders, guidance documents, and directives. As a result, there is occasional confusion on the part of ITRI management regarding the implementation of DOE requirements.

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TABLE 3-10
LIST OF ENVIRONMENTAL MANAGEMENT
REGULATIONS, REQUIREMENTS, AND GUIDELINES

Regulations/ Requirements/ Guidelines	Sections/Title	Authority
DOE Memorandum, July 31, 1990	Guidance on Environment, Safety, and Health (ES&H) Self-Assessment	DOE
DOE 5000.3B	Occurrence Reporting and Processing of Operations Information	DOE
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5400.3	Hazardous and Radioactive Mixed Waste Program	DOE
DOE 5480.1B	Environment, Safety, and Health Program for Department of Energy Operations	DOE
DOE 5480.19	Conduct of Operation Requirements for DOE Facilities	DOE
DOE 5482.1B	Environment, Safety, and Health Appraisal Program	DOE
DOE 5700.6C	Quality Assurance	DOE
ITRI Procedures and Manuals	See Appendix D	ITRI
HPO Procedures and Notices	See Appendix D	ITRI

Lovelace Biomedical and Environmental Research Institute, Inc. ITRI's status is defined as a Special Purpose Laboratory within ER. The mission of ITRI is to conduct basic and applied research. The Institute employs a matrix management system to conduct research however they employ a line management structure for support functions such as facility ES&H management and oversight.

With regard to environmental activities, the ITRI Director maintains the liaison with the DOE (ie., ER, AL, and KAO), receives DOE directives, and assigns responsibilities within ITRI to carry them out. Health Protection Operations (HPO) is the line support group tasked with all environmental monitoring and protection and waste management as well as various safety and health activities for ITRI, and its Head reports to the Director. These HPO responsibilities include, but are not limited to: tracking environmental action items; producing required reporting documents and planning documents; performing environmental and emissions monitoring; directing environmental restoration activities; review and approval of research protocols and construction designs; calibrating and maintaining pollution controls measurement equipment; and, developing the site environmental report. The Engineering and Facilities Unit is responsible for daily operations and maintenance of facility support systems which may impact the environment such as water, sewer, electrical, and air exchange systems and above-ground tanks and piping. They are also responsible for design and construction of new or remodeled facilities. The Quality Assurance (QA) Unit is responsible for the Site-wide QA Program with its day-to-day focus on quality issues within the research groups. However, the QA Manager does have review and approval over the HPO QA program plan. The independent oversight function for HPO is conducted by the ITRI Internal Auditor who reports to the Director.

From an environmental management perspective, the flow-down of directives from EM and ER to ITRI is inconsistent. Assignment of those directives within ITRI are generally adequate. However, the guidance on implementation of directives provided by ER and DP to ITRI is inconsistent and, at times, conflicting (see Finding EM/CF-1). This situation has lead to inadequate implementation of Self-Assessment requirements, and delays in the review and approval process for implementing plans for Conduct of Operations, Occurrence Reporting, and Quality Assurance orders. The inadequacy in receiving guidance on implementation appears to be the result from having a small ER-led facility operating within a DP-led Operations Office without a formal understanding of roles and responsibilities; and secondly, from the lack of a formal, proactive approach, by ITRI, to seek clarifying guidance, as evidence by their action regarding self-assessment and conduct of operations implementation.

Additionally, the inadequacy of environmental oversight by both DOE line management and ITRI has resulted in insufficient problem identification and resolution. KAO has performed oversight activities at ITRI, however, the process does not have the rigor and formality adequate to ensure quality improvement. On a positive note, KAO identified the oversight deficiency in their strategic planning document. KAO is actively initiating three actions to address this and other issues: developing a formal surveillance program; writing an operations manual; and defining and implementing their Facility Representative program.

ITRI has performed internal audits and self-assessment activities on HPO environmental functions, however, the scope and number of these activities has not been adequate. This appears to be the result of an analysis and prioritization process where the assumptions

regarding environmental risk where not adequate. This may have resulted in an inappropriate allocation of limited ITRI oversight resources.

The audit team identified four findings in the environmental management area: three compliance findings dealing with training, DOE roles and responsibilities, and conduct of operations; and, one best management finding on self-assessment.

3.9.2 Compliance Findings

EM/CF-1: DOE Responsibilities for Environmental Management

Performance Objective: DOE 5480.1B, "Environment, Safety, and Health Program for Department of Energy Operations" and DOE 5482.1B, "Environment, Safety, and Health Appraisal Program" require line management to be responsible for effective ES&H performance in their programs. Cognizant Secretarial Officers (CSOs) are assigned primary responsibility for ES&H programs, including establishing policy and program goals, providing clear and explicit delegations of authority and responsibilities, and performing program reviews to confirm effective ES&H implementation. Heads of Field Organizations are responsible for assuring that operations are carried out consistent with sound ES&H practices, and for conducting functional appraisals of contractor activities with sufficient scope and frequency to ensure effectiveness of ES&H activities.

Finding: ER is not adequately providing oversight and program direction at ITRI, in accordance with their responsibilities defined in DOE 5480.1B and DOE 5482.1B. AL and KAO have not documented a risk-based rationale to support their environmental oversight program and may not adequately be providing oversight at ITRI, in accordance with DOE 5480.1B.

Discussion: DP is the Lead CSO for most DOE operations located on Kirtland Air Force Base and directs its operations, at Kirtland, through AL and KAO. ER is the Lead CSO for ITRI and is responsible for "landlord" activities with the ER Office of Health and Environmental Research tasked with supplying programmatic guidance and oversight to the facility. To accomplish this, ER sends its directives to ITRI through AL and KAO. Even though AL is primarily a DP operations office, it is currently responsible for all ES&H oversight, guidance, and technical support activities, by the field, at ITRI. KAO is the onsite representative of AL and responsible for both the management and oversight of ITRI operations related to management systems and compliance assurance for environmental programs. In part, KAO responsibilities at ITRI include: conducting audits, inspections, and appraisals of ITRI environmental programs, including tracking and closeout verification of findings; and, monitoring ITRI management systems such as occurrence reporting, self-assessment, and conduct of operations program implementation (ITRI-090).

Headquarters

At present, there is no formal agreement between ER and DP that sets forth specific DOE roles and responsibilities for supplying guidance on the implementation of DOE Orders, guidance documents, and directives for ITRI. As a result, there is occasional confusion, on the part of ITRI management, regarding the applicability and implementation of certain DOE requirements sent by AL.

As Lead CSO, ER has primary responsibility for all programs at ITRI. As such, ER is responsible for establishing policy and program goals, providing clear and explicit delegations of authority and responsibilities, and performing program reviews to confirm effective program implementation. ER appears to do an admirable job in performing these functions for the conduct of research, at ITRI, however this audit indicates ER has not devoted sufficient attention to ITRI environmental programs. The examples used to reach this conclusion are given below:

- ER did not supply either adequate and/or timely guidance on Self-assessment program implementation, DOE 5480.19 (Conduct of Operations), and DOE 5700.6C (Quality Assurance).
- ER has not supplied any guidance, which supplemented the July 31, 1990 Secretarial memorandum, to ITRI on the implementation of a Self-assessment (SA) program. ER representatives did visit ITRI and complemented the site on their program (I-EM-16 and I-EM-17); however, the present ITRI SA program is not complete or fully implemented (see Finding EM/BMPF-1)
- DOE 5700.6C became effective in August 1991 and required QA Program and Implementation Plan (QAP) within 180 days to the CSO for approval. ITRI was sent a November 1991 ER draft guidance document for implementation of DOE 5700.6C, on January 23, 1992, for review and comment. ITRI used this draft document as the primary reference for developing of their site-wide QAP, in February 1992. The final ER guidance was distributed in May 1992 (ITRI-085) which was two months after the required QA plans were to be submitted for CSO approval. However, according to ITRI, the ER guidance resulted in no substantive changes when issued as the ER/DOE "Implementation Plan for DOE 5700.6C Quality Assurances cited above (i.e., May 1992). The ITRI plan was forwarded to ER-8 through AL and DP-60, in July 1992 (ITRI-084). The ER did comment on the ITRI QAP but did not provide written approval. The QAP was approved by default since the 180 days to approve the plan had passed (ITRI-082).
- ER is not ensuring a clear and explicit delegation of authorities and responsibilities for environmental programs, at ITRI. ITRI management has been confused as to whether DP guidance on DOE Orders applies to them (I-EM-17). This has been particularly true for orders appearing to relate to nuclear facilities (ie., DOE 5480.19)(I-EM-21). Interviews with DP-65 and KAO recognize ER as having responsibility for ITRI guidance and oversight (I-EM-1 and I-EM-12). However, ER-73 stated it was acceptable, in their view, that DP, through AL, take the lead on policy implementation for environmental issues at ITRI (I-EM-4). They believe that this approach is only objectionable when DP requests put a burden on the ITRI budget at which point case-by-case discussions between the Program Offices could alleviate the problem.
- ER has not performed sufficient environmental program reviews to confirm effective implementation. In February 1993, ER-73 conducted its first management appraisal of ITRI ES&H programs. There were no previous formal audits or appraisals conducted at ITRI and presently the appraisal program is being reconsidered due to changes in HQ role on oversight (I-EM-4). The reason for the lack of ER oversight at ITRI is that ER considers the facility as small and does not present any significant environmental risk (I-EM-4).

Field and Area Offices

AL and KAO, as field organizations, are responsible for assuring that ITRI operations are consistent with sound environmental practices; and, that appraisals of ITRI are conducted with sufficient scope and frequency to ensure the effectiveness of environmental activities. This audit indicates that AL and KAO are deficient in these responsibilities to ITRI environmental programs. The examples used to reach this conclusion are given below:

- Present practices, at KAO and AL, neither require ITRI to submit written implementation plans for new DOE orders or Federal, state or local regulations, unless specified in those requirements, nor do they have a formal guidance process by which consensus can be reached on policy application and/or implementation. In addition, KAO and AL only provide guidance upon request. Sound practices would suggest that KAO and AL take a proactive management approach to ensure proper interpretation or appropriate implementation of requirements, at ITRI, and assure that environmental compliance and monitoring operations are consistent with requirements (I-EM-8, I-EM-9, and I-EM-12).
- In February 1991, ITRI submitted its draft Conduct of Operations summary report to AL for review and approval, as required by ER-8 guidance (ITRI-091 and ITRI-092). ITRI has not received any response from AL. However, there is also no documentation to indicate that ITRI actively pursued follow-up action (I-EM-21). In addition, ITRI also submitted its Occurrence Reporting implementation plan to AL (I-EM-14) without response (I-EM-21). There is question about present implementation of these programs by KAO staff (I-EM-10) on occurrence reporting and by AL staff (I-EM-15) and the audit team on conduct of operations; however, until ITRI receives responses from AL no formal implementation plan is in place to assess as part of this audit.
- Neither KAO or AL conduct appraisals of ITRI with sufficient scope and frequency to ensure effectiveness of environmental activities. KAO has no formal oversight program for ITRI environmental programs that requires reporting or corrective actions that would ensure commitments for improvement (I-EM-8, I-EM-9, and I-EM-12). The system is informal and inconsistently applied by the KAO staff. Formal oversight is required by AL documents Organization, Authorities, and Functions - AL 1120 (ITRI-089) and Environment, Safety and Health Responsibilities within Albuquerque Operations Office (ITRI-090). KAO has recognized the problem (I-EM-12) and addressed it in their strategic planning document (ITRI-098). They are developing two programs to resolve the issue; a formal surveillance program and the Facility Representative program. AL has two organizations that oversee ITRI environmental programs. The Waste Management Branch does an annual surveillance of a narrow technical focus, and both a mid- and end-year budgetary review on waste management program efficiency (I-EM-13). The Environmental Protection Division (EPD) has not had a viable internal oversight program, at ITRI, due to losses in staff support. The appraisal program was re-established, in 1992, and EPD has scheduled one audit per year, at ITRI, but not in all environmental media. One audit on

water issues was scheduled and completed this year (I-EM-18).

KAO and AL staff stated that their reason for having such a limited oversight program for ITRI environmental programs was that: within the complex of sites for which AL and KAO have responsibility, ITRI is a small facility with no significant environmental problems; and, priorities dictate resources be allocated to sites with higher potential risks (I-EM-12). This view has also been expressed by ITRI.

The apparent causal factors for this finding are policy implementation, in that ER, AL, and KAO are not adequately implementing their oversight role as required by DOE Orders; barriers and controls, because no formal agreements are in place for operating ITRI under multiple program offices; and, risk, in that ER, AL, KAO, and ITRI may not have adequately considered the potential environmental liabilities associated with a small facility like ITRI.

EM/CF-2: Environmental Training Program

Performance Objective: DOE 5700.6C, "Quality Assurance", requires that personnel be trained to ensure that they are capable of performing their assigned work; specific qualification requirements be established for specific job categories; and that all records pertaining to quality be specified and maintained.

Finding: ITRI does not have a comprehensive, formal training program that identifies the job-specific, environmental training needs of all employees and that provides for consistent documentation.

Discussion: At ITRI, training comes both internally from institute-wide training, group and unit meetings, and project/protocol-specific sessions; and, externally from DOE and commercial courses, as well as professional meetings and conferences. The training program at ITRI is a decentralized process that is based on the needs and requirements of research groups and support units with the content of individual employee training plans dependent on the group and unit managers (I-EM-5).

The problems associated with the decentralized approach developed by ITRI that effect the quality of environmental training are:

- ITRI management has not implemented a site-wide requirement for performing job training analysis that would identify environmental training needs commensurate with task responsibilities (I-EM-5 and I-EM-17), as required by Criterion 2 of DOE 5700.6C; and,
- ITRI has not established specific requirements for developing individual training records and a consistent approach toward recordkeeping (I-EM-17), as required by Criterion 4 of DOE 5700.6C.

As a result, there has been no consistent training of staff by line managers on applicable environmental HPO Notices and no formal, consistent, and auditable record of their training on environmental requirements.

From a positive prospective, the HPO does have a formal procedure (ITRI-064) which clearly defines HPO job functions, identifies minimum job training requirements to achieve quality, and has documented all formal and on-the-job training. In addition, ITRI management is aware of these program deficiencies but has yet to decide on the most appropriate way to address these issues in other line organizations.

The apparent causal factor for this finding appear to be policy implementation, in that the quality aspects of the environmental training program are not fully implemented.

EM/CF-3: Conduct of Operations Implementation

Performance Objective: DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities", requires that conformance to the order be documented. ER-8 "Guidance For Implementation of DOE 5480.19, Conduct of Operations Requirements for DOE Facilities," requires that a summary document be developed that addresses each element of the order and that:

- Indicates whether a specific guideline applies to a facility;
- Indicates where and how each of the guidelines in the order are applied within existing policies and procedures; and
- Identifies any deviation or exemptions from the guidelines.

This summary document was to be approved by AL and sent to ER-8 by January 1, 1991.

Finding: There is no approved Conduct of Operations program presently in place at ITRI for environmental management.

Discussion: DOE 5480.19 took effect in July 1990, with DP guidance being sent to AL in September 1990 and then to ITRI two weeks later (ITRI-096). ER issued guidance on November 5, 1990 detailing the content of a summary document and requiring its submittal to ER by January 1, 1991. ITRI took the initiative to make personal contacts with ER colleagues at the Chicago Operations Office (CH) and were sent a copy of a submittal from another ER site. The accompanying message stated that the example was "not a direct response to the ER Guidance" and was to be used for a "headstart" on their document preparation (ITRI-093). In addition, ITRI site staff attended two DOE-sponsored training courses on DOE 5480.19 implementation.

ITRI prepared and submitted a draft summary document to AL on February 21, 1991 (ITRI-092). A review of the draft summary document submitted to AL shows that ITRI did not adequately respond to the Order requirements or to the ER-8 guidance. The ITRI draft summary document lacked an element-by-element delineation of: the applicability of each element to ITRI; how each element is addressed by existing ITRI policies or procedures; and, deviations or exemptions from the guidelines. In addition, a comparison of the ITRI submittal with the example sent by CH indicates that ITRI only varied from that document in detailing minor site-specific information.

ITRI has not received approval from either ER or AL since the submittal was made in 1991 (I-EM-21). However, the site has not formally requested comment or approval of their summary document.

The lack of an approved Conduct of Operations program plan has had an effect on environmental programs at ITRI as seen both in the surface water area (see Finding SW/CF-2) and in the waste management area (see Finding WM/CF-5). In addition, the lack of procedures is a cross-cutting issue that reflects on the formality of operations as well; however, they have been addressed as quality assurance issues during this audit.

The apparent causal factor for this finding is policy implementation in that, ITRI

documentation does not meet requirements of DCL Order and ER guidance; and, AL has neither commented or approved the document, since February 1991, as required.

3.10.3 Best Management Practice Finding

EM/BMPF-1: Self-Assessment Program

Performance Objective: The Secretary of Energy's guidance of July 31, 1990 states that in establishing a comprehensive Self-Assessment (SA) program, that program should: regularly evaluate all aspects of environmental performance; operate under a formal charter and standardized procedures; utilize, integrate, and input results, where appropriate, of the occurrence reporting system, the contractor's oversight activities, and other performance indicators; and, embody formal systems to track corrective actions, trend findings, conduct root cause analysis, and incorporate lessons learned.

Finding: The ITRI self-assessment program has not been fully developed or adequately implemented.

Discussion: The Secretary of Energy's guidance of July 31, 1990 mandated the establishment of SA programs that build on existing programs to ensure the continual improvement of ES&H programs throughout the DOE complex. In Chapter I of DOE 5480.19, "Conduct of Operations", required that self-assessments be part of the checks and balances in any operating program. KAO received the Secretary of Energy's guidance from AL, on September 14, 1990, and transmitted it to ITRI on November 1, 1990. On April 19, 1991, ITRI began actively developing a comprehensive SA program that would encompass all aspects of the ES&H program. The task of Manager for the SA program was assigned based on the requirements of organizational independence and integral knowledge of Institute operations. The SA program that they have developed has included the rigorous review of a vast array of potential performance indicators including applicable government regulations, DOE Orders and guidance documents, audit manuals, and national consensus and industry standards. They have completed an elimination process to determine the appropriate "assessment elements" and have evaluated the risks to ITRI in establishing a priority system for inspections. However, the ITRI program, as constituted by the ITRI SA Program Management Team, is incomplete. The following aspects have not been incorporated as part of the SA program, as presented in the Draft SA program document (ITRI-094):

- Establishment of a formal program charter and standard operating procedures which specify requirements and roles and responsibilities;
- Utilization, integration, and inclusion of results, where appropriate, from the occurrence reporting system, the present ITRI audit/surveillance activities, external audits/appraisals/reviews; and,
- Establishment of formal systems for tracking corrective actions, analyzing trends and recurring findings, conducting root cause analysis, and incorporating lessons learned.

In addition, the SA program is not being adequately implemented in that it is not regularly evaluating all aspects of environmental performance and it does not include line organization staff in the setting of appropriate performance indicators (I-EM-16 and I-EM-17). During the two years the program has been in development, they have completed thirteen facility inspections with four of them in the environmental arena

(I-EM-16). The balance of the program assessments have been conducted in group discussions by the Self-Assessment Program Management Team. All the activities in establishing the SA program have been accomplished by the Self-Assessment Program Management Team which is comprised of ITRI executive and line management (I-EM-16).

The apparent causal factors appear to be policy implementation, in that ITRI did not meet the requirements of the July 31, 1990 guidance; and resources, in that funds, specifically requested to support self-assessment appraisals, were not provided.

APPENDICES

APPENDIX A

BIOGRAPHICAL SKETCHES OF THE ENVIRONMENTAL AUDIT TEAM

APPENDIX A:

BIOGRAPHICAL SKETCHES OF THE ASSESSMENT TEAM

NAME: Frank B. Russo

AREA OF RESP: Team Leader

ASSOCIATION: U. S. Department of Energy, Office of Environmental Audit

EXPERIENCE: 17 Years

- U. S. Department of Energy, Office of Environmental Audit
 - Deputy Office Director. Responsible for assisting the Director in managing a program of independent internal environmental audits of DOE facilities.
 - Technical Specialist for the ES&H Progress Assessment of Fernald Environmental Management Project. Responsible for the conduct of a programmatic assessment of Fernald's Environmental Restoration Program.
 - Participated in the environmental audit of the West Valley Demonstration Project, Bonneville Power Administration, Laboratory for Energy-Related Health Research, Environmental Measurements Laboratory, Southwestern Power Administration, Fernald Reaudit, and the Savannah River ES&H Progress Assessment.
- U. S. Department of Energy, Office of Environmental Compliance
 - Director of the Nuclear Materials Compliance Division. Responsible for managing environmental compliance oversight and technical assistance activities at DOE nuclear materials production facilities and research laboratories.
- U. S. Environmental Protection Agency, Office of Waste Programs Enforcement
 - Chief of the Compliance Branch. Responsible for national implementation of enforcement program under CERCLA.
- U. S. Environmental Protection Agency
 - Plant Pathologist. Responsible for compliance and enforcement activities under FIFRA and TSCA.

EDUCATION: M.S., Plant Pathology, Rutgers University
B.S., Forestry, Rutgers University

NAME: Richard S. Green
AREA OF RESP: Deputy Team Leader
ASSOCIATION: U.S. Department of Energy
EXPERIENCE: 20 Years

- U.S. Department of Energy, Office of Environmental Audit
 - Deputy Team Leader responsible for conducting audit activities and providing guidance, direction, and assistance to a multidisciplinary group of professionals performing environmental auditing activities at DOE facilities.
 - Served as the Deputy Environmental Team Leader for the Fermilab Tiger Team Assessment, the CEBAF Environmental Management Assessment, and as Environmental Specialist for the EM-20 sponsored INEL Agreement-in-Principle Review.
- U.S. Department of Energy, Office of Environmental Compliance
 - Compliance Coordinator responsible for conducting independent oversight of environmental compliance activities at the Savannah River Site.
- U.S. Environmental Protection Agency, Office of Waste Programs Enforcement
 - Environmental Protection Specialist (EPS) responsible for providing assistance in technical case development to EPA Region 6 and conducting oversight of Region 6 enforcement lead Superfund sites.
- U.S. Environmental Protection Agency, Office of Compliance Monitoring
 - EPS responsible for the development of Toxic Substances Control Act (TSCA)/Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) enforcement penalty policies and monitoring strategies, and for the revisions to the TSCA and FIFRA Good Laboratory Practice Regulations.
- U.S. Environmental Protection Agency, Office of Toxic Substances
 - EPS responsible for the management of multidisciplinary groups of professionals tasked to assess the risks and the appropriate regulatory dispositions of chemical substances subject to TSCA.
- U.S. Environmental Protection Agency, Office of Pesticide Programs
 - EPS responsible for the management of multidisciplinary groups of technical professionals tasked to assess insecticide products subject to the FIFRA registration process.

EDUCATION: B.S., Entomology, University of Maryland

NAME: David M. Wunsch

AREA OF RESP: Audit Team Coordinator and Environmental Management

ASSOCIATION: Brown & Root Environmental

EXPERIENCE: 14 Years

- Brown & Root Environmental
 - Environmental Subteam Contractor Coordinator, Quality Assurance (QA) Specialist, Toxic and Chemical Materials Specialist, or Special Assistant on six DOE Tiger Team Assessments and the Nevada Test Site Progress Assessment.
 - Contractor Coordinator and QA/Management Specialist on eight DOE environmental audits and appraisals.
 - Technical Specialist on a variety of DOE QA and Self-Assessment (SA) tasks including development of QA/SA programs, plans, and implementing procedures.
 - Plan, manage, and conduct environmental, management, and laboratory quality control assessments and audits of government and commercial facilities.
- EA Engineering, Science, and Technology, Inc.
 - Manager of Analytical Services. Responsible for the daily operations of an environmental chemistry laboratory of 41 people including budgeting, planning, scheduling, and personnel actions. Coordination of QA compliance activities for laboratory participation in: seven state certification programs; approvals from four Department of Defense environmental programs; and the EPA Contract Laboratory Program.
- University of Maryland Medical School
 - Laboratory Supervisor. Responsible for managing a biomedical research and clinical laboratory of 10 staff and graduate students including daily operations, Quality Assurance/Quality Control, laboratory safety, and medical and radiological waste management.

EDUCATION: M.B.A., Management, Loyola College
M.S., Pharmacology, New York Medical College
M.Sc., Applied Physiology, University of Guelph
B.S., Animal Sciences, Rutgers University

OTHER: Member of ASQC and NY Academy of Sciences
Certified NQA-1 Lead Auditor

NAME: Christine (Toni) A. Boggio

AREA OF RESP: Administrative and Report Generation Support

ASSOCIATION: META, Inc.

EXPERIENCE: 5 Years

- META, Inc.
 - Information Processing Specialist. Provides administrative support for the Department of Energy, Office of Environmental Audits (EH-24).
- U.S. Department of Energy, Office of Environmental Restoration and Waste Management
 - Analyzed and presented data requiring the extraction of information from a variety of prescribed sources. Searched files, reports and other documentation of designated topics to verify materials.
 - Performed analyses and presentations of data pertaining to personnel, travel, security, procurement, and requisition following strictly prescribed procedures. Accompanied higher graded staff and specialists in meetings to gain knowledge of management structure.
- U.S. Department of Energy, Office of Oil and Gas
 - Analyzed and presented data concerning natural gas surveys. Responsible for reconciling data when discrepancies occurred. Contacted companies throughout the U.S. to discuss and resolve the discrepancies.
- U.S. Department of Energy, Office of New Production Reactors
 - Prepared specific portions of studies dealing with the Office of Business Management. Extracted data from sources and compiled briefs of facts and findings. Assisted specialists in numerous administrative tasks.

EDUCATION: B.A., Mathematics, Syracuse University

NAME: George V. Gartseff

AREA OF RESP: Inactive Waste Sites and Groundwater

ASSOCIATION: Brown & Root Environmental

EXPERIENCE: 19 Years

- Brown & Root Environmental
 - Managed five CERCLA-driven Remedial Investigations/Feasibility Studies, including two Superfund National Priorities List sites, two U.S. Air Force bases, and one commercial chemical plant.
 - CERCLA specialist on Tiger Team environmental audit of the Hanford Reservation. Evaluated quality assurance/quality control issues during Tiger Team audit of the Pantex Plant, and provided technical evaluations of CERCLA/SARA Title III, TSCA, and underground storage tanks issues for the Tiger Team Audit of the Western Area Power Administration.
 - For the multidisciplinary Environmental Survey Program, assessed solid waste management practices with respect to RCRA and CERCLA and bulk fuel and chemical storage at the Pantex Plant; surveyed active chemical, radioactive, and solid waste management practices at the Pinellas Plant and the Sandia National Laboratories in Albuquerque.
 - Managed RCRA facilities investigation of a wastewater spray irrigation system and other solid waste management units for a synthetic fibers plant.
 - Conducted RCRA facilities assessments at industrial facilities on behalf of the EPA RCRA Enforcement Branch.
- Advanced Sciences, Inc.
 - Participated in management restructuring and forward planning activities for the Feed Materials Production Center RI/FS. Directed initial activities for data base file verification and data validation.
- Ecology & Environment, Inc.
 - Participated in environmental assessments of several Department of Defense Installations, focusing on hazardous materials management practices.
 - Led and participated in preliminary assessments and site investigations of hazardous waste generating and disposal sites in five EPA Regions as part of the EPA Field Investigation Team (FIT) Program.

EDUCATION: M.P.H., Epidemiology, University of Alabama in Birmingham
B.S., Biological Sciences (Microbiology), Auburn University

Name: Donald C. Habib

Area of Resp: Waste Management

Association: Brown & Root Environmental

Experience: 11 Years

- **Brown & Root Environmental**

- Principal Engineer. Perform a broad range of regulatory compliance and waste management related projects, including assessments and audits. Served as a waste management or RCRA specialist on assessments/audits of approximately 20 facilities in the last six years, including seven DOE Tiger Team Assessments as well as other DOE assessments and other government and commercial/industrial facilities.
- RCRA experience includes audits and assessments, developing permit applications, performing regulatory impact analyses, developing and providing regulatory training, reviewing RFI work plans and similar documents, and performing RFAs and RFIs.
- Mixed waste experience includes assisting in the preparation of the DOE-wide LDR Case-by-Case Extension Application for Radioactive Mixed Wastes, performing compliance studies for mixed wastes, and other DOE projects for DOE's Office of Environmental Audit, Environmental Compliance, Environmental Guidance, and Environmental Restoration and Waste Management.
- Other radioactive waste management experience includes projects for several commercial nuclear power plants, including studies and engineering projects on radioactive waste solidification and volume reduction systems and shallow land burial facilities.
- Currently providing technical support to DOE's Uranium Enrichment Program, providing oversight to DOE's two UE facilities in Paducah, Kentucky, and Piketon, Ohio, on waste management and compliance issues.

Education: B.S., Chemical Engineering, Massachusetts Institute of Technology

NAME: Ernest C. Harr Jr.

AREA OF RESP: Air and Radiation

ASSOCIATION: Brown & Root Environmental

EXPERIENCE: 15 Years

- Brown & Root Environmental
 - Consulting Environmental Scientist. Served as Radiation, Environmental Monitoring, and Soils/Sediments/Biota Specialist on Environmental Surveys, Tiger Team Assessments, and Progress Assessments of the Idaho National Engineering Laboratory, Oak Ridge National Laboratory, Laboratory for Energy-Related Health Research, Lawrence Berkeley Laboratory, Stanford Linear Accelerator Center, Ames Laboratory, Princeton Plasma Physics Laboratory, Fernald Environmental Management Project, Mound Plant, Brookhaven National Laboratory, Hanford Site, and Pantex Plant. Served as air and environmental monitoring specialist on the Environmental Baseline Audit of the Coal-Fired Flow Facility. Participated in the development of audit checklists for the DOE Headquarters Environmental Audit Program and DOE Tiger Team trends analysis. Participated in the development of the Self-Assessment Program and Quality Assurance Program for the Naval Petroleum and Oil Shale Reserves and their management and operating contractor.
- U.S. Department of Energy, Office of Environmental Oversight (EM-22)
 - Environmental Protection Specialist. Assessed the technical adequacy as well as the quality assurance aspects of environmental management (EM) programs/projects. Areas of review included program/project objectives, methodology and/or process for achieving objectives, technical validity of methodology/process, application of appropriate quality assurance principles, recordkeeping practices, and auditability of the program/project. Served as lead auditor for EM DOE Headquarters and Field Office audits.

EDUCATION: B.S., Zoology, University of Maryland

OTHER: NQA-1 Lead Auditor, 1992
Registered Environmental Assessor, State of California, 1992

NAME: Michael J. Johnson

AREA OF RESP: Auditor in Training

ASSOCIATION: DOE-CH, Environmental Measurements Laboratory

EXPERIENCE: 12 Years

- U.S. Department of Energy
 - Prepares and reviews documents used in the creation and implementation of the EM-563 (LMD) Assessment Program. Also plans, coordinates and acts as Team Leader in LMD Assessments of laboratory and field activities.
- New Jersey Laboratories
 - Responsible for all laboratory quality assurance/quality control, developing organic, inorganic and wet chemical procedures, personnel evaluations, data review and internal assessments. Responsible for interfacing with state and Federal regulators. Extensive client and supplier interfacing, as well as, outside contractor evaluations for contractual compliance.
- All-Test Laboratory
 - Responsible for all laboratory quality assurance/quality control, data review, and development of standard operating procedures. Developed many analytical methodologies for organic and inorganic analytes using wet methods, atomic absorption, GC and GC/MS.

EDUCATION: M.S., Environmental Sciences, City University of New York,
In process.
B.A., Chemical and Zoology, Drew University

OTHER: Section Chairman, Environmental Sampling and Screening Procedures
Subcommittee, ASTM D-34.01 on Waste Management

Member, Environmental Regulation Performance Standards,
Subcommittee ASTM E-50 Environmental Assessment

Name: Mark D. Notich

Area of Resp: Surface Water and Programmatic Quality Assurance

Association: Brown & Root Environmental

Experience: 15 Years

- **Brown & Root Environmental**

- Environmental Monitoring and Quality Assurance technical specialist for DOE Progress Assessment at Bookhaven National Laboratory and the Pantex Plant.
- Environment Subteam Coordinator on Tiger Team Assessments at the Y-12 Plant, Pinellas Plant, Hanford Site, and Lawrence Berkeley Laboratory. Responsible for the technical and administrative management of contractor personnel on the Environmental Subteam. Served as a Special Assistant to the Environment Subteam Leader for the Tiger Team Assessment at the Morgantown Energy Technology Center.
- Quality Assurance/Toxic Substances Control Act (QA/TSCA) technical specialist for Tiger Team Assessments at the Rocky Flats Plant and the Feed Materials Production Center. Also served as a QA/TSCA technical specialist for the Environmental Audit of the Bonneville Power Authority Ross Complex.
- Served as QA/TSCA Technical Specialist for the HQ Environmental Surveys at Argonne National Laboratory, Oak Ridge National Laboratory, the Morgantown Energy Technology Center, the Pittsburgh Energy Technology Center, and the Naval Petroleum Reserves in California.
- Project Manager for the development of the Quality Assurance and Self-Assessment Programs for DOE's Office of Naval Petroleum and Oil Shale Reserves - Colorado, Utah, and Wyoming. Responsible for developing the program manuals, checklists, procedures, and implementation plans.
- Project Scientist for the separation of Spill Prevention Control and Countermeasures (SPCC) Plans for government and private clients in accordance with Clean Water Act regulations. Participated in the development and presentation of technical courses concerning the Safe Drinking Water Act and stormwater discharge permit requirements for DOE and contractor personnel.

Education: B.S., Chemistry, University of Maryland

NAME: David G. Olson

AREA OF RESP: Toxic and Chemical Materials and Quality Assurance

ASSOCIATION: Brown & Root Environmental

EXPERIENCE: 27 Years

- Brown & Root Environmental
 - EPA Emergency Environmental Response Unit. Supervisor of Environmental Laboratory. BRE staff Environmental Scientist, DOE site Survey and compliance assessment; and Oak Ridge Y-12 Plant, Kansas City Plant, Pinellas Plant, Hanford Site, Princeton Plasma Physics, and Oak Ridge National Laboratory Tiger Team Specialist; and TSCA/FIFRA/QA specialist in DOE pre-Tiger Team self-assessment of the Strategic Petroleum Reserve, New Orleans.
- Swindell Dressler Corporation
 - Environmental Analytical Chemist. Supervisor of water and waste water analysis laboratory. Audited client laboratories for conformance with analytical methodology quality assurance requirements. Audited client air/water sampling protocols and sample taking for conformance with USEPA and state regulations.
- U.S. Army Chemical Research Center
 - Physical Chemist Assistant UV spectrophotometer methodology development.

EDUCATION: B.S., Chemistry, Duquesne University

NAME: Helen C. Walters

AREA OF RESP: Administration

ASSOCIATION: META, Inc.

EXPERIENCE: 25 Years

- META, Inc.
 - Administrator. Provided administrative support for DOE on 10 Tiger Team Assessments, four Environmental Audits and two Environmental Management Assessments. Provides administrative support for final Tiger Team and environmental and management audit reports.
 - Provided support for production of the Self-Assessment Training course for the Office of Special Projects (EH-5).
 - Provided support for production of the Seminar on Radiological Concepts training course for the Office of Environmental Audit (EH-24).
 - Assisted in production of the draft Administrative Support Procedures and Guidance for the Office of Environmental Audit.
- Cate & Associates, Chartered
 - Administrator. Served as Executive Assistant with administrative responsibilities for filing estate accounting in excess of \$125,000 to the Commissioner of Accounts; liaison with attorneys and the courts with regards to these accounts; and handled accounts receivable and payable.
- National Council of Farmer Cooperatives
 - Administrator. Responsible for administration of financial and human resources for a staff of 13 professional and 13 support staff. Duties in the area of finance included the preparation and oversight of an annual operating budget of \$2.5 million with reporting responsibility to a committee composed of board members. Duties in the area of human resources included hiring and training of all support staff, and developing and coordinating employee benefits packages. Responsible for accommodating 65 employees in newly constructed, 17,000-square-foot office space.

EDUCATION: B.S., Business, Kent State University

APPENDIX B

ENVIRONMENTAL AUDIT PLAN

**Plan for the
DOE Environmental Audit
of the
Inhalation Toxicology Research Institute
Albuquerque, New Mexico**

**U.S. Department of Energy
Office of Environmental Audit**

June 1993

**PLAN FOR THE DOE ENVIRONMENTAL AUDIT
INHALATION TOXICOLOGY RESEARCH INSTITUTE (ITRI)**

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PLAN FOR THE DOE ENVIRONMENTAL AUDIT
OF THE
INHALATION TOXICOLOGY RESEARCH INSTITUTE (ITRI)
ALBUQUERQUE, NEW MEXICO
JUNE 1993

1.0 INTRODUCTION

DOE 5482.1B, "Environment, Safety and Health Appraisal Program," establishes the mission of EH-24 to provide comprehensive, independent oversight of Department-wide environmental programs on behalf of the Secretary of Energy. The ultimate goal of EH-24 is enhancement of environmental protection and minimization of risk to public health and the environment. EH-24 accomplishes its mission utilizing systematic and periodic evaluations of the Department's environmental programs within the organizations.

The purpose of the environmental audit of the Inhalation Toxicology Research Institute (ITRI) is to provide the Secretary with information on the current environmental regulatory compliance status and associated vulnerabilities, root causes for noncompliance, adequacy of environmental management programs, and response actions to address the identified problem areas.

The scope of the ITRI environmental audit is comprehensive, covering all environmental media and applicable Federal, state, and local regulations, requirements, and best management practice. The environmental disciplines to be addressed in this audit include; air; surface water/drinking water; groundwater; waste management; toxic and chemical materials; quality assurance; radiation; and inactive waste sites. The audit also addresses the performance of environmental management functions, including the oversight of ITRI by the Kirtland Area Office (KAO), Albuquerque Operations Office (ALO), DOE Headquarters (HQ) Energy Research (ER) and Environmental Restoration and Waste Management (EM) Program Offices.

2.0 ENVIRONMENTAL AUDIT IMPLEMENTATION

The environmental audit of ITRI will be conducted by a team managed by a Team Leader and a Deputy Team Leader from the DOE's Office of Environmental Audit (EH-24), technical specialists from Brown and Root Environmental (BRE), and an administrator from Maria Elena Toraño Associates (META). The names and responsibilities are listed below:

Frank B. Russo	DOE	Team Leader
Richard S. Green	DOE	Deputy Team Leader
David M. Wunsch	BRE	Team Coordinator/Environmental Management
David G. Olson	BRE	Toxic and Chemical Materials/Quality Assurance
Donald C. Habib	BRE	Waste Management
Ernest C. Harr, Jr.	BRE	Radiation/Air
George Gartseff	BRE	Inactive Waste Sites/Groundwater
Mark D. Notich	BRE	Surface Water/Quality Assurance Programmatic
Helen C. Walters	META	Administrator
Toni Boggio	META	Administrative Support
Michael J. Johnson	DOE/EML-NY	Auditor in Training

2.1 PRE-AUDIT ACTIVITIES

Pre-audit activities for the ITRI environmental audit included the issuance of an introduction and information request memorandum, a pre-audit site visit, and initial review of documentation which was sent to the environmental audit team by ITRI as a result of the information request memorandum.

A pre-audit site visit was conducted on April 19-20, 1993 by the DOE Team Leader, Deputy Team Leader, Team Coordinator and Administrator. The purpose of the pre-audit visit was to become familiar with the site, to review information being supplied and request additional information, and to coordinate plans for the upcoming audit with DOE and contractor personnel.

This environmental audit plan is based upon the information received by the environmental audit team as of May 27, 1993.

2.2 ONSITE ACTIVITIES AND REPORTS

The onsite activities for the environmental audit will take place from June 14 to approximately June 25, 1993. Onsite activities will include field inspections, file/record reviews, and interviews with site and regulatory personnel. The preliminary schedule for the audit is shown in the Schedule of Onsite Activities (Appendix B). The schedule will be modified as needed during the early part of the onsite environmental audit. Any and all modifications to the agenda will be coordinated with the principal contacts from ITRI and DOE. ITRI is requested to identify, as soon as possible, any facility activities such as sampling, spill response, or inspections which may occur during the audit so that team members may observe the operations.

During the first week of the audit, a daily debriefing with site/facility personnel will be held each afternoon at 4:30 p.m., at which time team specialists will describe their activities and identify issues that may develop into findings. A factual accuracy review of all findings will begin during the second week of the audit.

A closeout briefing will be conducted at the conclusion of the onsite activities. Findings from the environmental audit will be presented. The date provided in the schedule for the closeout briefing is tentative and will be finalized during the audit. A draft report containing the findings will be provided to the Albuquerque Operations Office (ALO), Kirtland Area Office (KAO), Energy Research (ER) Environmental Restoration and Waste Management (EM), and Inhalation Toxicology Research Institute (ITRI) for their review and comment.

2.3 POST-SITE ACTIVITIES

Following the onsite activities, ITRI will have the opportunity to submit final comments on the draft audit report. After reviewing these comments, EH-24 will issue a final report. ITRI will be responsible for preparing an action plan which will be reviewed by EH-24 and forwarded for approval by EH. The following is a tentative schedule for completion of these post-site activities.

July 9, 1993	Site/PSO comments on draft report due
July 23, 1993	EH-24 final audit report to printing
August 6, 1993	Site/PSO provides draft action plan (6 weeks after closeout)
August 20, 1993	EH-24 comments on draft action plan
September 23, 1993	Site/PSO provides final action plan (4 weeks following receipt of final report)

3.0 AIR

3.1 ISSUE IDENTIFICATION

The air-related environmental audit activities involve an assessment of facility-wide air emissions, emission control, emission and ambient air monitoring procedures and equipment, and acquisition and processing of emission and ambient air quality data. Areas of particular interest are the potentials for process emissions of carcinogens, organic vapors, inorganic compounds, radionuclides, and air toxics. Operational and procedural practices associated with emission control equipment will be evaluated. Compliance with the City of Albuquerque Environmental Health Department/Air Pollution Control Division, Albuquerque/Bernalillo County Air Quality Control regulations, National Emission Standards for Hazardous Air Pollutants (NESHAPs) requirements, and DOE Order requirements will also be assessed. In particular, the emission, ambient air monitoring and review, and control of potential sources of emissions will be reviewed.

The general approach to the assessment will involve a review of existing air permits, operating procedures, emission test procedures and reports, and other relevant documents to identify significant sources of air emissions. Following the document review, a physical inspection of significant processes or operations, emissions control, and monitoring equipment will be accomplished. Additionally, documentation applicable to the design of the emission monitoring system will be reviewed. The assessment will result in a determination of whether emission monitoring activities are adequate to characterize the environmental impact of facility operation and the defensibility of the collected data.

The assessment of the ambient air monitoring system will involve inspection of the ambient samplers and meteorological equipment, and review of procedures and documentation applicable to the design of the ambient air monitoring system, data acquisition, calibration, data validation, and data processing. The primary emphasis will be an assessment of these procedures to characterize the environmental impact of facility operation and the defensibility of the collected data.

3.2 RECORDS REQUIRED

Documents and files to be reviewed during the audit include, but will not be limited to, the following:

- Air permits;
- Source and source emission inventories;
- Environmental monitoring reports;
- Ambient air dispersion calculations;
- Air monitoring program documentation:
 - Sampling location rationale and documentation,
 - Sample collection procedures,
 - Constituent sampling rationale and documentation,

- Calibration procedures and records,
 - Ambient air monitoring data, and
 - Maintenance procedures and records;
- Meteorological monitoring program documentation:
 - Meteorological tower location rationale and documentation,
 - Sample collection procedures,
 - Calibration procedures and records, and
 - Maintenance procedures and records;
- Reports on accidental releases of airborne substances;
- Description/documentation on existing and proposed add-on emission controls and ventilation system drawings;
- Operating and testing/maintenance procedures for control equipment
- Air related correspondence with regulatory agencies; and
- Stack monitoring/sampling program documentation:
 - Sampling location rationale and documentation,
 - Calibration procedures and records, and
 - Maintenance procedures and records.

4.0 SURFACE WATER/DRINKING WATER

4.1 ISSUE IDENTIFICATION

The surface water/drinking water portion of the ITRI environmental audit will address the discharge of wastewater to all waters on or beneath the surface of the ground, and methods taken to ensure that the potable water supplied to the facility is kept free of contamination.

The audit will review the potential for contamination of wastewaters by metals and organics as well as review of the present conditions of wastewater control, collection, and treatment. Liquid waste treatment, collection, and handling equipment will be examined, and operating and maintenance records will be reviewed. The audit will review current discharge permits, permits to construct or operate, and discharge monitoring reports to assess compliance with the requirements. The audit will also address any dredge and fill permits granted under Section 404 of the Clean Water Act (CWA), including onsite inspection of any fill material placed in potential wetland areas.

The drinking water distribution system at ITRI will be reviewed for compliance with applicable requirements of the Safe Drinking Water Act (SDWA), as well as DOE and state requirements regarding backflow prevention or cross-connection control.

The audit will include identification of discharges to surface waters or groundwater which may not be addressed in permits or other documents. Copies of standard operating procedures (SOPs), operating log books, and maintenance records will be reviewed with respect to wastewater monitoring and discharge systems. Sampling and analytical practices will be observed to determine how closely SOPs are being followed. Interviews with managers and operators of processes, monitoring equipment, and treatment systems will be conducted in order to determine compliance with written procedures.

A walkthrough of the ITRI site will be made to observe normal runoff containment practices and the activities for the treatment and disposal of wastewaters. Spill prevention provisions for petroleum products and hazardous material storage areas will be reviewed, along with ITRI's procedures for reporting spills.

4.2 RECORDS REQUIRED

Documents and files to be reviewed as part of the audit include, but will not be limited to, the following:

- Recent analytical data from monitoring of wastewater releases to determine compliance with applicable pretreatment requirements;
- Notices of violations (NOVs) relating to wastewater releases;
- Original City of Albuquerque Wastewater Discharge Permit application and subsequent renewal applications;
- Applications for permits to connect to public wastewater treatment facilities;

- Stormwater Discharge permit applications;
- Discharge monitoring reports;
- SOPs for wastewater collection, secondary containment inspection and dewatering, sampling and analysis, cross-connection control, and backflow preventer inspection and maintenance;
- Monitoring equipment maintenance and calibration records;
- Detailed drawings of sanitary, process, and storm sewers;
- Detailed drawings of wastewater treatment systems, including sanitary sewage septic tanks, chemical laboratory neutralization tank or pit, retention ponds, and subsurface drain fields;
- Piping drawings of domestic, fire, process, and wastewater systems;
- Spill Prevention Control and Countermeasures (SPCC) Plan;
- Records of inspections, analyses of accumulated liquids, and operation of drainage valves associated with secondary containment structures;
- Recent analytical data from drinking water samples;
- Unusual Occurrence Reports;
- Other records as determined onsite.

5.0 GROUNDWATER

5.1 ISSUE IDENTIFICATION

The groundwater portion of the environmental audit will involve the evaluation of both the programmatic and technical status of groundwater protection and monitoring as they relate to applicable regulations, best management practices, and DOE Orders. Applicable regulations include New Mexico regulations pertaining to water resources and regulations developed as part of both the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) programs by the U.S. Environmental Protection Agency (EPA).

An evaluation of previous studies of the site hydrogeology, determination of the status of ongoing studies and investigations will be included in the audit. The adequacy of existing monitoring and characterization efforts will be determined by comparison to existing regulations, DOE Orders, and best management practices. In addition to a document review, visits will be made to areas of interest to observe field conditions, monitoring well construction and location, well purging and sampling techniques, and field quality assurance/quality control (QA/QC) procedures. Discussions will be held with site personnel who have responsibilities for groundwater protection, remedial action, and monitoring well sampling. Procedures and permits for well abandonment will be reviewed.

5.2 RECORDS REQUIRED

Documents and records to be reviewed as part of the audit include, but will not be limited to, the following:

- Data/maps concerning subsurface geology and hydrology;
- Groundwater Protection Management Plan documents or guidance and applicable updates;
- Groundwater Monitoring Plan including sampling procedures and analytical protocols;
- Recent chemical analytical data for soil and groundwater samples;
- Rationale/justification for monitoring well placement and installation;
- Well construction as-built diagrams and well/boring locations;
- Well abandonment procedures and permits;
- Current or historic groundwater discharge or well construction permits; and
- Any additional hydrogeologic or geologic investigation reports.

6.0 WASTE MANAGEMENT

6.1 ISSUE IDENTIFICATION

This portion of the environmental audit will evaluate the management of solid, hazardous, radioactive, and mixed wastes, including accumulation, labeling, characterization, transportation and disposal, with respect to the requirements of DOE Orders, Federal and state regulations, and best management practices. In addition, this portion of the audit will evaluate the operation, management, and closure of regulated underground storage tanks (USTs) with respect to applicable RCRA regulations.

Specific issues to be investigated include, but are not limited to, the following:

- Characterization of wastes with respect to hazardous and radioactive constituents;
- Waste segregation systems and controls;
- Manifesting and tracking of wastes;
- Satellite accumulation and less-than-90-day storage areas for hazardous and mixed wastes;
- Waste accumulation, collection, treatment, and disposal practices;
- Evaluation of offsite treatment, disposal, and recycling vendors;
- Waste minimization activities and plans;
- Training of hazardous and mixed waste handlers, generators, and other personnel;
- Permits and notifications;
- Emergency planning; and
- Recordkeeping practices pertaining to waste management and underground storage tanks.

6.2 RECORDS REQUIRED

Documents and files to be reviewed as part of the audit will include, but will not be limited to, the following:

- Written policies and procedures relating to waste management activities including waste management plans, waste minimization plans, internal procedures, and other guidance documents;
- Waste generation and characterization documentation;

- **Waste storage, treatment, and disposal records;**
- **Regulatory permits, applications, exclusions, waivers, reports, plans, agreements, or other submittals related to waste management activities;**
- **Emergency response and cleanup procedures and records;**
- **Any inspection reports or notices of violation from the state or the U.S. Environmental Protection Agency (EPA) related to hazardous waste management activities;**
- **Any internal audits or assessments of ITRI's waste management program;**
- **Waste management training records;**
- **Last 3 years of manifests;**
- **Any liability audits that have been conducted for offsite waste disposal or transportation contractors; and**
- **UST operation and closure records.**

7.0 TOXIC AND CHEMICAL MATERIALS

7.1 ISSUE IDENTIFICATION

The toxic and chemical materials portion of the environmental audit will address the management and use of raw materials and chemical materials with reference to their handling, storage, and disposal. Primary emphasis will be given to the substances regulated by the Toxic Substances Control Act (TSCA) and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Any storage tanks used for chemicals, as well as drum storage and dispensing facilities, will also be included in the assessment. Information obtained will be evaluated to assess whether the management and control of toxic and chemical materials are in compliance with Federal, state, and local regulations and pertinent DOE Orders. In addition, for those situations not covered by regulations, the concept of best management practice (BMP) will be applied to prevent or minimize releases of toxic substances to the environment.

The management of electrical and hydraulic equipment which may contain polychlorinated biphenyl (PCB) or PCB-contaminated fluids will be review during the audit. Toxic and chemical materials (including oil) purchase and usage records will be reviewed. Areas where these materials are stored and used will be visited and handling procedures evaluated.

Uses of pesticides (herbicides, insecticides, and rodenticide) to control weeds, for wood preservation, and pest control will be reviewed. If activities are conducted by subcontractors, oversight will be evaluated.

7.2 RECORD REQUIRED

Documents and files to be review as part of the audit include, but may not be limited to, the following:

- Toxic substances labeling and tracking system;
- Procedures for procurement, handling, control, use, and management of toxic substances;
- Electrical equipment inventory;
- Special procedures involving handling, storage, use, and disposal of chlorofluoroalkanes (freons) and chloro-organic solvents;
- Audits or inspection reports pertaining to the toxic substances program and environmental monitoring program; and
- Contracts/specifications associated with pesticide application.

8.0 QUALITY ASSURANCE

8.1 ISSUE IDENTIFICATION

The quality assurance (QA) portion of the environmental assessment will evaluate current programmatic and environmental monitoring QA programs in place at ITRI. Programmatic aspects of QA will be reviewed to ensure that QA policy is being followed and documented. Environmental monitoring QA aspects such as sampling and analysis will be reviewed to ensure that scientifically valid and defensible data is being produced.

Specific issues concerning programmatic QA that will be addressed include QA policy development, training, work control processes, audit/surveillance programs, procedure development and control, corrective action programs, tracking/trending activities, and document control. In addition, the effectiveness of Kirtland Area Office (KAO) oversight of QA programs will be reviewed. Specific issues concerning environmental monitoring QA that will be addressed include sampling and analysis procedures for environmental samples; contractor and subcontractor laboratory procedures; oversight of contractor and subcontractor laboratories; personnel training; and chain-of-custody procedures.

8.2 RECORDS REQUIRED

Part of the assessment will consist of a review of pertinent documents and files. This will include documents not previously reviewed or received, individual files, and documents which have not been identified at this time. Some documents and files to be reviewed during the audit include, but are not limited to, the following:

- QA policy implementation plans;
- QA work control plans;
- QA training policies and procedures;
- QA corrective action plans;
- Trending/tracking documents and information;
- QA plans for any supporting analytical laboratories;
- Environmental sampling, analysis, and sample disposal procedures used by contractor(s);
- QA audits by DOE contractor(s) and subcontractor(s) conducting environmental sampling and analysis;
- QA plans, manuals, and implementing procedures for any environmental surveillance programs;
- Summaries of results of QA sample analysis (conducted by ITRI or subcontractors) of external performance evaluation samples;

- **Procedures and QA requirements for acceptance of offsite sampling and analysis contractor(s) and subcontractor(s);**
- **Data validation procedures used for ITRI projects; and**
- **Other records as identified onsite.**

9.0 RADIATION

9.1 ISSUE IDENTIFICATION

The radiation portion of the assessment will begin with an identification of potential sources of radioactive materials and materials which may contain radiological constituents. This will include an evaluation of the control and monitoring of sealed sources. Based on this initial analysis, the rationale for the level of effort being conducted for this portion of the monitoring program, the selection of sampling/monitoring locations, and the selection of radiological constituents being analyzed/monitored will be reviewed as appropriate. This review will include an evaluation of the atmospheric, liquid, and terrestrial pathways analyses. Additionally, environmental monitoring and personnel protection activities and the controlling protocols will be evaluated. This will include observation of sampling/monitoring activities, smear surveys, and swipe tests, as appropriate, laboratory analyses of the samples, and recordkeeping/reporting practices. Radioactive material/source controls and tracking practices will also be evaluated. The audit will assess if the documentation and practices support a conclusion that the radiation portion of the environmental monitoring program is adequate, appropriate, and effective. The assessment will be based on the observations and reviews of the activities and documents discussed above, and their conformance to the policies and requirements contained in applicable regulations, DOE Orders, ALO, KAO, and ITRI policies, programs, and procedures.

9.2 RECORDS REQUIRED

Documents and files to be reviewed as part of the audit include, but will not be limited to, the following:

- Identification and listing of radiological materials/sources program descriptions;
- Identification and list of radiological materials/sources protocols;
- Identification and listing of radiological materials/sources records;
- Radioactive material/source controls and tracking program description;
- Radioactive material/source controls and tracking records;
- Environmental monitoring plans;
- Environmental protection plans;
- Environmental monitoring reports;
- Environmental monitoring quality assurance/quality control program descriptions and protocols;

- **Environmental monitoring/sampling protocols;**
- **Laboratory analysis protocols; and**
- **Laboratory sample analysis records.**

10.0 INACTIVE WASTE SITES

10.1 ISSUE IDENTIFICATION

The inactive waste sites portion of the environmental audit will assess the compliance status of the facilities relative to the identification of past disposal sites and the identification and location of spills/releases of hazardous materials or wastes. The compliance evaluation will be made based on requirements specified in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA); the National Contingency Plan (NCP); the Natural Resource Trusteeship under CERCLA; the corrective action provisions of the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984; the Emergency Planning and Community Right-to-Know Act (EPCRA) under Title III of SARA; and various applicable DOE Orders, including DOE 5400.4 for CERCLA compliance requirements, Executive Order 12580 (Superfund Implementation), and DOE 5000.3A on Occurrence Reporting. The definition of a release under CERCLA includes any spilling, leaking, discharging, injecting, escaping, leaching, dumping, or dispensing into the environment (including the abandonment or discarding of barrels, containers, or other closed receptacles) of any CERCLA hazardous substance.

The general approach to the inactive waste sites portion of the environmental audit will be to evaluate the procedures for identification of inactive waste sites or past spill/release sites, and how such sites were managed once identified. Of particular concern will be past spills/releases/disposal of hazardous substances in excess of reportable quantities. In addition, there will be efforts to ascertain the quantities of hazardous materials in use and any corresponding requirements for public reporting (i.e., SARA Title III) based on the materials and quantities present.

10.2 RECORDS REQUIRED

Because the main focus of the inactive waste sites portion of the environmental audit is on past practices or events, the audit effort will focus on record review and personnel interviews, supplemented by first-hand observations of known or potential spill/release/disposal sites. The types of records to be reviewed will include, but are not limited to, the following:

- Any permits or compliance agreements addressing past practices;
- Previous environmental audit or inspection reports from outside agencies or internal efforts;
- Preliminary Assessment (PA) and/or Site Inspection (SI) reports, if applicable;
- Historical site maps and aerial photos;
- Work plans or sampling plans for current or planned investigative activities;
- Environmental Protection Implementation Plans;

- **Notifications or emergency planning submittal to local public authorities;**
- **Real property and site development planning records associated with environmental assessment; and**
- **Agreements with utilities who have equipment on ITRI property that relate to maintenance, spill response, cleanup actions, and removal.**

11.0 ENVIRONMENTAL MANAGEMENT

11.1 ISSUE IDENTIFICATION

The environmental management portion of the audit will include an assessment of the overall policies and procedures implemented to ensure conformance with Federal, state, and local statutes and regulations, DOE Orders, and Secretary of Energy Notices (SENs). The principal focus will be to assess if there is a sufficient management understanding and oversight of environmental protection programs, and an effective communication of these programs to managers and staff. Management practices will also be reviewed against commonly accepted best management practices. Internal occurrence reporting, self-assessment activities, and DOE oversight of the environmental compliance process are critical elements of environmental management and will also be evaluated as part of this audit.

The general approach to the audit will include reviews of ITRI's environmental protection program, policies, and procedures documentation and interviews with personnel at the Albuquerque Operations Office (ALO) DOE Headquarters (HQ), Kirtland Area Office (KAO), and ITRI, who are responsible for implementation of environmental protection programs. The environmental management portion of the audit will concentrate on the organizational and procedural arrangements by which all applicable regulations, DOE Orders, Secretarial Notices, and best management practices are implemented. Of particular interest will be determining if formal arrangements are in place to comply with the above, and if these formal arrangements are part of the informal routine of the operation. Also of interest will be the interagency relationships that determine/oversee or facilitate compliance.

Specific areas of interest will be the effectiveness of management: meeting the intent of DOE environmental policies; translating the DOE policies into a useable implementation program; communicating the environmental program to the staff; and establishing a reasonable oversight program to ensure the staff, DOE consultants, and contractors are satisfying the program objectives.

11.2 RECORDS REQUIRED

Documents and files to be reviewed during the audit include, but will not be limited to, the following:

- Environmental Protection Implementation Programs;
- ITRI environmental policies and internal documents;
- Environmental compliance audit reports;
- Internal documents relative to audit findings;
- Long-Range Environmental Plan;
- Self-Assessment Reports, internal appraisals, and corrective action plans;

- **Standards for the preparation, review, approval, maintenance, and control of environmental compliance procedures and documents;**
- **Directives and procedures for implementing environmental programs;**
- **Position descriptions;**
- **Environmental compliance program training; and**
- **Other records as determined onsite.**

APPENDIX C

ENVIRONMENTAL AUDIT TEAM SCHEDULE OF ONSITE ACTIVITIES

ENVIRONMENTAL AUDIT TEAM SCHEDULE OF ONSITE ACTIVITIES

C-1

**ENVIRONMENTAL AUDIT TEAM
SCHEDULE OF ONSITE ACTIVITIES (continued)**

Week 1	Mon. 6/14/93	Tues. 6/15/93	Wed. 6/16/93	Thurs. 6/17/93	Fri. 6/18/93	Sat. 6/19/93
M. Notch am	<ul style="list-style-type: none"> • Orientation • Site tour • Meeting with Counterparts 	<ul style="list-style-type: none"> • Interview -J. Lopez Plant Engineer 	<ul style="list-style-type: none"> • Interview -Review documents 	<ul style="list-style-type: none"> • Interviews -E. Bankey Internal Auditor -J. Thompson HEAD-HPO • Review Documents 	<ul style="list-style-type: none"> • Interview -D. Harris QA Officer/ Manager • Review Documents • Overview and Findings Development 	<ul style="list-style-type: none"> • Review Documents • Overview and Findings Development
pm	<ul style="list-style-type: none"> • Interviews -J. Lopez Plant Engineer -G. Saiz Plant Technician -D. Griego Plant Technician 	<ul style="list-style-type: none"> • Interviews -D. Biswell Sampling Technician -S. Umschler Safety Engineer -J. Thompson HEAD-HPO 	<ul style="list-style-type: none"> • Interviews -J. Lopez Engineering Manager -J. Mauderly Director-ITRI -R. Jones Associate Director-ITRI -C. Hobbs Assistant Director-ITRI 	<ul style="list-style-type: none"> • Review Documents 	<ul style="list-style-type: none"> • Review Documents 	<ul style="list-style-type: none"> • Review Documents • Overview and Findings Development

ENVIRONMENTAL AUDIT TEAM

Week 1	Mon. 6/14/93	Tues. 6/15/93	Wed. 6/16/93	Thurs. 6/17/93	Fri. 6/18/93	Sat. 6/19/93
G. Gartseff am	• Orientation	• Interview	• Interviews	• Interviews	• Interviews	• Review Documents
Groundwater	• Site tour	-M. Hall Industrial Hygienist	-A. Grace Environmental Restoration Coordinator	-A. Grace Environmental Restoration Coordinator	-C. Soden Environmental Protection Division Director	• Overview and Findings Development
Inactive Waste Sites	• Meeting with Counterparts		-W. Casadevall Geologist (PRC)	-J. Thompson Manager, Health Protection	-J. Cornier Installation Manager	
	• Interviews		Environmental Management, Inc.)		-M. Hall Industrial Hygienist	
	-J. Thompson Manager, Health Protection					
	-A. Grace Environmental Restoration Coordinator					
		• Interviews	• Interviews	• Interviews	• Interview	• Review Documents
pm		-S. Lacy General Engineer	-G. Fleenor Emergency Manager	-R. Jones Associate Director	-J. Johnsen Physical Scientist	• Overview and Findings Development
		-J. Johnsen Physical Scientist	-J. Gould Environmental Restoration Program Manager	-W. Schleyer Health Physicist	• Review Documents	
		-J. Brooks Facility Representative	-S. Umshler Safety Engineer			

**ENVIRONMENTAL AUDIT TEAM
SCHEDULE OF ONSITE ACTIVITIES (continued)**

Week 1	Mon. 6/14/93	Tues. 6/15/93	Wed. 6/16/93	Thurs. 6/17/93	Fri. 6/18/93	Sat. 6/19/93
D. Habib	am					
Waste Management	<ul style="list-style-type: none"> • Orientation • Site tour • Meeting with Counterparts 	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -S. Umschler KAO Engineer -M. Hall HPO Hazardous Waste Specialist -J. Lackey HPO Technician • Tour of Waste Management Facilities • Records Review 	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -J. Thompson Head, HPO -M. Hall Environmental Specialist • Records Review 	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -S. Umschler Environmental Engineer -J. Lackey Technician, HPO • Records Review 	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -M. Hall Environmental Specialist -J. Lackey Technician, HPO • Records Review 	<ul style="list-style-type: none"> • Write Findings and Overview
	pm					
	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -A. Grace ER/WM FYP Coordinator -J. Thompson HPO Manager -M. Hall HPO Hazardous Waste Specialist • Records Review 	<ul style="list-style-type: none"> • Interview <ul style="list-style-type: none"> -M. Hall HPO Hazardous Waste Specialist • Records Review 	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -B. Smith Histology Supervisor -G. Kelly Staff Scientist -J. Waide Senior Research Technologist -J. Hogan Necropsy Section Supervisor • Tour of Waste Generating Areas in Laboratories • Records Review 	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -J. Thompson Head, HPO -E. Bankey Internal Auditor -E. Horst NMED RCRA Program Manager • Records Review 	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -J. Thompson Head, HPO -J. Johnsen Physical Scientist -M. Bange Chief, Waste Management Branch • Records Review 	<ul style="list-style-type: none"> • Write Findings and Overview

**ENVIRONMENTAL AUDIT TEAM
SCHEDULE OF ONSITE ACTIVITIES (continued)**

Week 1	Mon. 6/14/93	Tues. 6/15/93	Wed. 6/16/93	Thurs. 6/17/93	Fri. 6/18/93	Sat. 6/19/93
D. Olson am Toxic and Chemical Materials Environmental Monitoring Quality Assurance	<ul style="list-style-type: none"> • Orientation • Site tour • Meeting with Counterparts 	<ul style="list-style-type: none"> • Interviews -P. Kaplan Property Mgmt. Supervisor -K. Ahlert Technical Specialist -J. Lopez Engineering Manager -T. Ahlert QA Assistant 	<ul style="list-style-type: none"> • Interview -A. Grace Environmental Protection Coordinator -W. Casadevall Geologist 	<ul style="list-style-type: none"> • Interview -A. Grace Environmental Protection Coordinator • Records Review 	<ul style="list-style-type: none"> • Interview -S. Batson Chief Animal Care Technologist • Records Review 	<ul style="list-style-type: none"> • Write Overview and Findings
pm	<ul style="list-style-type: none"> • Interview -M. Hall Environmental Engineer 	<ul style="list-style-type: none"> • Interview -W. Schleyer Health Physicist • Records Review 	<ul style="list-style-type: none"> • Interview -A. Grace Environmental Protection Coordinator -W. Casadevall Geologist • Records Review 	<ul style="list-style-type: none"> • Interview -J. Lopez Engineering Manager • Records Review 	<ul style="list-style-type: none"> • Interview -A. Grace Environmental Protection Coordinator 	<ul style="list-style-type: none"> • Write Overview and Findings

**ENVIRONMENTAL AUDIT TEAM
SCHEDULE OF ONSITE ACTIVITIES (continued)**

Week 1	Mon. 6/14/93	Tues. 6/15/93	Wed. 6/16/93	Thurs. 6/17/93	Fri. 6/18/93	Sat. 6/19/93
D. Wunsch Environmental Management	<ul style="list-style-type: none"> • Orientation • Site tour • Meeting with Counterparts • Setup offices 	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -K. Aragon Budget Officer -J. Thompson Head, HPO 	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -K. Carlson Area Office Manager/ G. Lasker Branch Chief, Environment, Safety, Health, and Compliance -M. Bange Branch Chief, Waste Management/ M. Williams ITRI Program Engineer -D. Pellegrino Site Liaison -J. Munoz Division Chief, Quality Performance/ F. Davis Assessment Quality Engineer 	Offsite	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> -C. Soden Director, Environmental Protection Division -J. Cormier Installation Manager • Records Review 	<ul style="list-style-type: none"> • Write Overview and Findings

**ENVIRONMENTAL AUDIT TEAM
SCHEDULE OF ONSITE ACTIVITIES (continued)**

Week 1	Mon. 6/14/93	Tues. 6/15/93	Wed. 6/16/93	Thurs. 6/17/93	Fri. 6/18/93	Sat. 6/19/93
D. Wunsch pm Environmental Management	<ul style="list-style-type: none"> Interview -C. Hobbs Assistant Director 	<ul style="list-style-type: none"> Interviews -S. Lacy Environmental Engineer -J. Johnsen Physical Scientist -R. Lybarger Physical Scientist/ A. Herrbach Safety and Occupational Health Manager/ P. Boehme Health Physicist -J. Brooks ITRI Facility Representative 	<ul style="list-style-type: none"> Interviews -J. Lopez Engineering Manager -J. Lopez Engineering Manager/ J. Mauderly Director/ J. Thompson Head, HPO/ R. Jones Associate Director/ C. Hobbs Assistant Director 	Offsite	<ul style="list-style-type: none"> Interview -D. Harris QA Manager -R. Jones Associate Director -J. Mauderly Director/ J. Thompson Head HPO/ C. Hobbs Assistant Director 	<ul style="list-style-type: none"> Records Review • Write Overview and Findings

**ENVIRONMENTAL AUDIT TEAM
SCHEDULE OF ONSITE ACTIVITIES (continued)**

Week 1	Mon. 6/14/93	Tues. 6/15/93	Wed. 6/16/93	Thurs. 6/17/93	Fri. 6/18/93	Sat. 6/19/93
M. Johnson Auditor in Training	am • Site Orientation Site tour	• Interviews - Team with D. Olson	• Interviews - Team with D. Olson and M. Notich	• Interviews - Team with D. Habib	• Document review	• Document review
pm	• Interviews - Team with D. Wunsch	• Interviews - Team with M. Notich	• Interviews - Team with D. Olson - Team with G. Gartseff	• Document review	• Document review	• Document Review

**ENVIRONMENTAL AUDIT TEAM
SCHEDULE OF ONSITE ACTIVITIES (continued)**

Week 2	Mon. 6/21/93	Tues. 6/22/93	Weds. 6/23/93	Thurs. 6/24/93	Fri. 6/25/93
Audit Team	am				
	<ul style="list-style-type: none"> • Develop overviews/ findings 	<ul style="list-style-type: none"> • FAR(s) <ul style="list-style-type: none"> — Air — Surfacewater/ Drinking Water — Toxic and Chemical Materials — Groundwater — Radiation — Quality Assurance — Environmental Monitoring • FAR(s) Packages to Site <ul style="list-style-type: none"> — Inactive Waste Sites — Waste Management — Environmental Management 	<ul style="list-style-type: none"> • Incorporation of FAR comments 	<ul style="list-style-type: none"> • Prepare Draft Report for printing 	<ul style="list-style-type: none"> • Closeout
	<ul style="list-style-type: none"> • FAR Package(s) to Site <ul style="list-style-type: none"> — Air — SurfaceWater/ Drinking Water — Toxic and Chemical Materials — Groundwater — Radiation — Quality Assurance — Environmental Monitoring 	<ul style="list-style-type: none"> • FAR(s) <ul style="list-style-type: none"> — Inactive Waste Sites — Waste Management — Environmental Management • Incorporation of FAR comments 	<ul style="list-style-type: none"> • Draft summary of Environmental Audit Findings, Key Findings, and Causal Factors 	<ul style="list-style-type: none"> • Draft Report to printing • Prepare for Closeout 	

APPENDIX D

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM

APPENDIX D:

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-001	Letter re: SEN-37-92 Annual Report on Waste Generation and Waste Minimization Progress	J. Mauderly	ITRI	M. Bange	3/12/93
ITRI-002	Letter re: Waste Minimization Goals for Fiscal Year 1993	J. Mauderly	ITRI	J. Johnsen	11/25/92
ITRI-003	Spill Prevention and Response Plan	J. Thompson J. Lopez R. McClellan	ITRI	Not indicated	1/87
ITRI-004	Letter re: Process Waste Assessment	J. Mauderly	ITRI	T. Hyde	8/16/91
ITRI-005	Safety and Health Planning Report	Not indicated	ITRI	Not indicated	2/15/93
ITRI-006	Letter re: Air Quality Permit #222	S. Goel	City of Albuquerque	M. Chavez	5/10/89
ITRI-007	Memorandum re: Response to Comments to Process Waste Assessment Plan for Inhalation Toxicology Research Institute (ITRI)	T. Hyde	KAO	J. Mauderly	10/8/91
ITRI-008	Training Data Base Printout	Not indicated	HPO	Not indicated	4/2/93
ITRI-009	Health Protection Manual, Part I ITRI Safety and Health Program	Not indicated	HPO	Not indicated	Not indicated
ITRI-010	MOU Between the U.S. Department of Energy and the New Mexico Department of Public Safety Concerning Mutual Assistance and Emergency Management	Not indicated	DOE/NM Department of Public Safety	Not indicated	Not indicated
ITRI-011	FAX: Occurrence Reports over the last three years	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-012	Draft 1991 Waste Management Site Plan for DOE-Sponsored Lovelace Biomedical and Environmental Research Institute	Not indicated	Not indicated	Not indicated	12/90

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-013	Hazardous Waste Implementation Plan	J. Thompson	ITRI	Not indicated	11/30/83
ITRI-014	1992 Annual Report on Waste Generation and Waste Minimization Progress as Required by SEN-37-92 and DOE Order 5400.1	Not indicated	ITRI	KAO	3/12/93
ITRI-015	Waste Minimization and Pollution Prevention Awareness Program	Not indicated	ITRI	Not indicated	7/91
ITRI-016	Waste Minimization/Pollution Prevention Goals and Objectives for Fiscal Year 1993	Not indicated	ITRI	Not indicated	1993
ITRI-017	Environmental Protection Program Implementation Plan	J. Thompson	ITRI	Not indicated	11/10/92 11/9/93
ITRI-018	Letter re: Compliance Evaluation Inspection NM 3890116129	B. Hamilton	NM Health and Environment Department	A. Gonzales	6/7/88
ITRI-019	Letter re: RCRA Compliance Evaluation Inspection by NM EID, April 21, 1988	A. Gonzales	KAO	R. McClellan	7/14/88
ITRI-020	Disposal Description for TSCA Waste	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-021	Names and Locations of Past and Present TSDFs	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-022	Location Map Showing Above/Below Ground Storage Tanks	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-023	Corporate Oversight Appraisals/Audits Conducted in the last two years	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-024	Management Procedures for the Distribution and Implementation of DOE ES&H Orders	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-025	Enclosure 2 Required Analysis and Methods Diesel Oil Release Areas	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-026	Enclosure 2 (Continued) Hot Ponds Soil and Concrete Sample Analytes and Analytical Methods	Not indicated	Not indicated	Not indicated	Not indicated

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-027	Enclosure 2 (Continued) Required Analysis and Methods Lagoon Sludge and Sitedwide Groundwater	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-028	Enclosure 3 Number of Samples Expected for Fiscal Year 1993	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-029	Map and Description of All Active and Inactive Solid Wastes	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-030	Drawings showing the location of outfalls, sampling location, treatment/storage facilities and sources of wastes being treated/stored	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-031	Complete sewer and storm drain layout plan	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-032	RCRA Emergency/Contingency Plan	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-033	Final Draft Site Environment Report for Calendar Year 1991	W. Bennett J. Thompson A. Shankar	ITRI	Not indicated	6/92
ITRI-034	Specifications for Trash Removal Service	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-035	Summary of Environmental Permits and Registrations	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-036	Waste Minimization/Pollution Prevention Goals and Objectives Fiscal Year 1993	Not indicated	ITRI	Not indicated	Not indicated
ITRI-037	Memorandum re: Memorandum of Understanding with the State of New Mexico	K. Carlson	KAO	B. Twining J. Stout S. Rogers G. Carroll S. Chapman J. Hoyal J. Bellows A. Hunt	3/29/92
ITRI-038	ITRI's 1992 Waste Minimization and Pollution Prevention Awareness Plan	Not indicated	Not indicated	Not indicated	Not indicated

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-039	Procedures for Ordering Laboratory Services	G. Grace	ITRI	G. Allen	3/22/93
ITRI-040	Fiscal Year 1993 Site Specific Plan	Not indicated	ITRI	AL/EM	Not indicated
ITRI-041	Environmental, Safety, and Health Management Appraisal of the Inhalation Toxicology Research Institute	Not indicated	DOE/ER	ITRI	4/16/93
ITRI-042	Assessment Plan Hot Ponds ADS #ALIT-1015	Not indicated	ITRI	DOE	9/92
ITRI-043	Assessment Plan Lagoons and Groundwater ADS #ALIT-1019	Not indicated	ITRI	DOE	10/92
ITRI-044	Assessment Plan Diesel Oil Release ADS #ALIT-1013	Not indicated	ITRI	DOE	5/92
ITRI-045	Health Protection Notice - re: ITRI Hazard Communication Program	Not indicated	ITRI/HPO	Not indicated	5/7/86
ITRI-046	ITRI SOP No. 0569, Procedure for Pest Control at ITRI	S. Batson	LATG	ITRI	6/11/91
ITRI-047	Letter enclosing "Notification of PCB Activity" Form	A. Chernoff	DOE/AL	EPA	4/19/90
ITRI-048	ES&H Management Appraisal of the Inhalation Toxicology Research Institute (ITRI) conducted February 17-19, 1993	Not indicated	Not indicated	J. Mauderly	4/29/93
ITRI-049	Enclosure 4 Quality Assurance Plan	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-050	Inhalation Toxicology Research Institute Process Waste Assessment Plan	Not indicated	ITRI	Not indicated	8/91
ITRI-051	Groundwater Monitoring HOP SOP No. EM-8	Not indicated	Not indicated	Not indicated	10/7/92
ITRI-052	Monitoring and Calibration of Radionuclide Stack Samples and Environmental Air Samplers, HOP SOP No. EM-5	Not indicated	ITRI/HPO	Not indicated	1/2/92
ITRI-053	Radioactive Waste Management and Certification, HPO SOP WM-5	Not indicated	ITRI/HPO	Not indicated	11/15/91

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-054	Environmental Restoration Program Ground Water Protection Management Program Plan	Not indicated	AL/ER	Not indicated	9/90
ITRI-055	Shipping Radioactive Material HPO SOP No. HP-19	Not indicated	ITRI/HPO	Not indicated	2/20/93
ITRI-056	Hazardous Waste Management Disposal HPO SOP NO. WM-2	Not indicated	ITRI/HPO	Not indicated	10/15/91
ITRI-057	Quality Assurance Plan, Revision No. 2	J. Thompson	ITRI/HPO	Not indicated	11/26/90
ITRI-058	Letter re: Review of the Mixed Waste Stream Data for EM-331	J. Thompson	ITRI	B. Heath	12/14/92
ITRI-059	Site Wide Quality Assurance Program	D. Harris	ITRI	Not indicated	4/92
ITRI-060	Radioactive Waste Management Implementation Plan	A. Shanker	ITRI	Not indicated	4/7/89
ITRI-061	Letter re: Discharge of radioactive waste materials into the Albuquerque sewers and eventually into the Rio Grande	M. Guerrero	Peoples' Emergency Response Committee	H. O'Leary	2/18/93
ITRI-062	Letter re: Comments on the Preliminary Report of the City of Albuquerque Radioactive Waste Discharge Policy Study Group, March 1993	J. Mauderly	ITRI	W. Westmoreland	4/5/93
ITRI-063	Radiation Along the Rio Grande	D. Cano	Not indicated	Not indicated	1992
ITRI-064	Hazardous Materials and Waste Worker Training, HOP SOP No. WM-4	Not indicated	ITRI/HPO	Not indicated	4/2/93
ITRI-065	Letter re: Review of Preliminary Report on the Impact of Discharge of Low Level Radioactive Waste into the City Sanitary Sewer System	W. Westmoreland	City of Albuquerque	J. Thompson	3/1/93
ITRI-066	ITRI Site Environmental Monitoring Report 1989	A. Shanker J. Thompson	ITRI	Not indicated	1989
ITRI-067	Site Environmental Report for Calendar Year 1989	A. Shanker J. Thompson	ITRI	Not indicated	5/90

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-068	Site Environmental Report for Calendar Year 1990	A. Shanker J. Thompson	ITRI	Not indicated	5/91
ITRI-069	Site Environmental Monitoring Report - 1990	A. Shanker J. Thompson	ITRI	Not indicated	1990
ITRI-070	Letter re: Review of a Registration Application for the Six Existing Diesel Fuel/Propane Fired Boilers Located in Building 9201	A. Chernoff	AL	S. Goel	4/10/89
ITRI-071	Letter re: Registration of Six Existing Diesel Fuel/Propane Boilers at ITRI	Not indicated	ITRI	A. Chernoff	4/5/89
ITRI-072	Letter re: Waste Management Site Plan, 1991	J. Mauderly	ITRI	A. Chernoff	11/19/90
ITRI-073	Environmental Monitoring Plan	Not indicated	ITRI	Not indicated	2/93
ITRI-074	Letter re: Clean Air Act Amendments for Development of Operating Permit Programs	C. Williams	NM Environment Department	Not indicated	6/2/93
ITRI-075	Ambient Air Quality Standards and Air Quality Control Regulations for Albuquerque/Bernalillo County	Not indicated	Albuquerque - Bernalillo County Air Quality Control Board	Not indicated	11/92
ITRI-076	Inhalation Toxicology Research Institute Health Protection Notices	Not indicated	ITRI	Not indicated	Various
ITRI-077	AD-3 Health Protection Operations Unit Procedures	Not indicated	HPO	Not indicated	2/12/93
ITRI-078	AD-5 Protocol and SOP Review	Not indicated	HPO	Not indicated	5/13/93
ITRI-079	EM-9 Pesticide Control Program	Not indicated	HPO	Not indicated	5/12/93
ITRI-080	Kirtland Area Office ESHCB Surveillance Matrix for Calendar Year 1993	Not indicated	KAO	Not indicated	1993
ITRI-081	AI Submittal of the Quality Assurance Program and Implementation Plan for ITRI	J. Hines	AL	J. Maher	10/14/92

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-082	Quality Assurance Program (QAP) for the Inhalation Toxicology Research Institute (ITRI)	J. Hines	AL	K. Carlson	5/7/93
ITRI-083	Memorandum re: Transmittal of DOE Order 5700.6C Implementation Guide for Research	B. Twining	AL	J. Bellows S. Hecker K. Carlson A. Narath J. Mauderly J. Morley D. Michel	7/15/92
ITRI-084	Memorandum re: AL Submittal of the Quality Assurance Program for ITRI	B. Twining	AL	R. Hahn D. Rhodes	7/20/92
ITRI-085	Memorandum re: DOE Order 5700.6C Implementation Guide for Research	W. Happer	DOE-ER-8	Distribution	5/11/92
ITRI-086	Memorandum re: Quality Assurance Review Report for ITRI	J. Hines	AL	C. Carlson	11/23/92
ITRI-087	Quality Assurance Assistance Review Report	Not indicated	AL	Not indicated	10/19-23/92
ITRI-088	ES&H Proposal Summary Checklist	Not indicated	ITRI	Not indicated	Not indicated
ITRI-089	Organization, Authorities, and Functions AL 1120, Distribution of Functions within the Kirtland Area Office	Not indicated	KAO	Not indicated	1/17/91
ITRI-090	Environment, Safety and Health Responsibilities within the Albuquerque Operations Office	Not indicated	AL	Not indicated	4/15/91
ITRI-091	Memorandum re: Guidance for Implementation of DOE 5480.19, Conduct of Operations Requirements for DOE Facilities	J. Decker	DOE	B. Twining D. Goldman J. La Grone J. Wagoner D. Pearman P. Kaspar	11/5/90

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-092	Draft letter re: Conduct of Operations Requirements for DOE Facilities - DOE Order 5480.19	J. Mauderly	ITRI	A. Chernoff	2/21/91
ITRI-093	Fax cover sheet - Letter regarding Conduct of Operations Requirements for DOE Facilities DOE Order 5480.19 (9113)	C. Pietri	CH	B. Jones	12/5/90
ITRI-094	Draft ITRI Self-Assessment Program	Not indicated	ITRI	Not indicated	6/15/93
ITRI-095	Letter re: ITRI is not Included on the List of Department Facilities that are not Subject to the Quarterly Reporting Requirements of the Performance Indicator (PI) Program	R. Eicher	DOE	J. Mauderly	9/24/91
ITRI-096	Memorandum re: Implementation of Department of Energy 5480.19 Conduct of Operations Requirements for Department of Energy Facilities	H. Bohannon	AL	P. Stanford P. Brewer J. Mauderly K. Jones	9/28/90
ITRI-097	Letter re: Conduct of Operations Within the "Safe Operating Envelope"	J. Thompson	ITRI	T. Hyde	10/22/90
ITRI-098	Strategic Plan	Not indicated	KAO	Not indicated	4/30/93
ITRI-099	ITRI Diesel Oil Release Assessment Program, Hydrogeologic Investigation Report	Not indicated	PRC Environmental Management, Inc.	Not indicated	5/18/93
ITRI-100	ITRI Non-Radioactive Waste Profile Sheet	Not Indicated	ITRI	Not indicated	11/92
ITRI-101	HPO SOP No. AD-5, Protocol and SOP Review	J. Thompson	ITRI	Not indicated	5/13/93
ITRI-102	NMED UST Removal Inspection Form for Removal of 1 Area 1 USTs	Not Indicated	NMED	Not indicated	12/92
ITRI-103	ITRI Waste Facility Inspection Form	Not indicated	ITRI	Not indicated	None
ITRI-104	ITRI Waste Facility Inspection Log for 9264 & 9269	Not indicated	ITRI	Not indicated	1989-1993
ITRI-105	ITRI Waste Inventory Log for 9264 & 9269	Not indicated	ITRI	Not indicated	1989-1993

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-106	Waste Scintillation Liquor Inventory	Not indicated	ITRI	Not indicated	1989-1993
ITRI-107	KAO Correspondence File on EM Moratorium	Not indicated	KAO	Not indicated	1991-1993
ITRI-108	ITRI Draft Contingency Plan	Not indicated	ITRI	Not indicated	6/93
ITRI-109	Waste Management Procedure Manual	J. Thompson	ITRI	Not indicated	1993
ITRI-110	Analysis of Interim Status Requirements	Sue Umshler	KAO	Not indicated	1991
ITRI-111	Waste Stream Vendor Profiles File	Not indicated	ITRI	Not indicated	1989-1993
ITRI-112	Waste Shipment Manifest File	Not indicated	ITRI	Not indicated	1989-1993
ITRI-113	Personnel Training File	Not indicated	ITRI	Not indicated	1991-1993
ITRI-114	Memorandum re: Response to Comments on the Inhalation Toxicology Research Institute Mixed Waste Identification and Shipping Procedures	O. Critchfield	AL	P. Siebach	11/27/91
ITRI-115	Memorandum re: Approval of Environmental Monitoring Plan for the Inhalation Toxicology Research Institute	C. Soden	AL	K. Carlson	6/11/93
ITRI-116	Comments from EM-331, Headquarters on Inhalation Toxicology Institute Procedures Submitted to Them for Lifting the Shipping Moratorium on Resource Conservation Recovery Administration and Toxic Substance Control Act Wastes	T. Hyde	AL	J. Mauderly	9/19/91
ITRI-117	Revised Procedure Package for the Inhalation Toxicology Research Institute and Request for Lifting the EM-331 Order to Cease Shipments from Radiation Areas	T. Hyde	AL	K. Carlson	8/6/91
ITRI-118	Sandia National Laboratories Wastewater Sampling Plan	Not indicated	International Technology Corporation	Sandia National Laboratories	10/92

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-119	Wastewater Monitoring Monthly Report	M. Garcia	International Technology Corporation	ITRI	3/93
ITRI-120	Inhalation Toxicology Research Institute Organization Chart	Not indicated	ITRI	Not indicated	11/92
ITRI-121	Notice of Seminar No. 021, Environmental Quality Audit Techniques for Commercial, Government, and Nuclear Industries	Not indicated	Quality Systems Development	Not indicated	4/12-16/93
ITRI-122	Inhalation Toxicology Research Institute Internal Audits Conducted During FY 1990-FY 1993	Not indicated	Not indicated	Not indicated	FY 1990-1993
ITRI-123	Internal Audit Assessment, Individual Factors of Risk Exposure/Potential Risk Factors	Not indicated	Not indicated	Not indicated	6/14/93
ITRI-124	Blank Corrective Action Request Form	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-125	Letter re: Discharge Permit #2178A - Inhalation Toxicology Research Institute	W. Westmoreland	City of Albuquerque	C. Carlson	5/21/92
ITRI-126	Preliminary Report of the City of Albuquerque Radioactive Waste Discharge Policy Study Group	Not indicated	City of Albuquerque	Not indicated	3/93
ITRI-127	Announcement of Public Presentation re: Why Albuquerque can Limit Sewer Dumping Despite Federal Preemption	Not indicated	Not indicated	Not indicated	4/21/93
ITRI-128	Memorandum re: Quality Assurance Assistance Review Report for ITRI	J. Hines	AL	K. Carlson	11/23/92
ITRI-129	Memorandum re: Water Programs Appraisal, January 19-22, 1993 the Inhalation Toxicology Research Institute (ITRI) and City of Albuquerque Acceptance of Quarterly, Wastewater Report	G. Laskar	KAO	J. Mauderly	3/22/93
ITRI-130	Position Description for Internal Auditor	J. Mauderly	ITRI	Not indicated	1/91

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-131	Revised Site Wide Quality Assurance Program Implementation Plan for DOE Order 5700.6C	Not indicated	ITRI	Not indicated	10/92
ITRI-132	Spill Prevention, Control, and Countermeasures Plan (SPCC)	Not indicated	ITRI	Not indicated	6/93
ITRI-133	Inhalation Toxicology Research Institute Internal Audit Plan for Health Physics	E. Bankey	ITRI	Not indicated	2/24/93
ITRI-134	Inhalation Toxicology Research Institute Internal Audit Plan for Occupational Medical Program	E. Bankey	ITRI	Not indicated	4/23/93
ITRI-135	DOE Standard Implementation Guide for Quality Assurance Programs for Basic and Applied Research	Not indicated	DOE	Not indicated	6/92
ITRI-136	KAO Correspondence file on RCRA Part A	Not indicated	KAO	Not indicated	1991-1993
ITRI-137	Compilation of ITRI Maps	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-138	General Description of ITRI Site and Facilities	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-139	Aerial Surveys (Especially Historical Survey Showing Disturbed Areas, Construction	Not indicated	Not indicated	Not indicated	Not indicated
ITRI-140	Memorandum re: Monthly Inspections of Emergency Spill Control Equipment	M. Hall	Not indicated	All Health Protection Operations Technicians	6/1/93
ITRI-141	Installation Restoration Program, Phase I: Kirtland AFB	Not Indicated	Engineering-Science	USAF	9/81
ITRI-142	Letter re: CERCLA 103(c) Notification for DOE's ITRI Facility	J. Themelis	AL	S. Turner	4/14/88
ITRI-143	Potential Hazardous Waste Site Identification and Preliminary Assessment	R. Sena	AL	Not indicated	3/17/88
ITRI-144	Letter re: Status of ITRI with U.S. EPA Region Superfund Section	J. Harill	EPA	J. O. Johnsen	7/27/90
ITRI-145	HPO SPO NO. EM-8 Groundwater Monitoring	Not indicated	ITRI	Not indicated	10/7/92

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-146	Letter re: Agreement to Restore the Aquifer to the Standards of Section 3-103 of the WQCC Regulations	A. Gonzales	State of New Mexico	R. Mitzelfelt	2/25/88
ITRI-147	Letter re: Monitoring of ITRI Lagoons for Discharge Plan DP-519	R. McClellan	ITRI	A. Gonzales	5/25/88
ITRI-148	Letter re: To Accept the Monitoring requirements of the Discharge Plan (DP-519)	H. Bohannon	State of New Mexico	A. Gonzales	5/26/88
ITRI-149	New Mexico Environmental Improvement Division Discharge Plan Application - Part A	Not indicated	ITRI	Not indicated	9/14/78
ITRI-150	Discharge Plan (DP-519) Approval	R. Mitzelfelt	New Mexico Health and Environment Department	A. Gonzales	6/6/88
ITRI-151	Comments re: To Define EID's Position on Short-Term Use of Sewage Lagoons at the Lovelace Facility.	C. Ardito	New Mexico Health and Environment Department	A. Chernoff	4/7/89
ITRI-152	ITRI Lagoon Hydrogeological Study	Not indicated	ITRI	Not indicated	9/90
ITRI-153	Environmental Oversight and Monitoring Agreement; Between DOE and the State of New Mexico	Not indicated	DOE, State of New Mexico	Not indicated	10/22/90
ITRI-154	Monitoring Well Installation-Summary Report	Not indicated	PRC	ITRI	2/10/92
ITRI-155	Letter re: Recommendations for ITRI Ground Water Sampling Procedures	W. Moats	State of New Mexico	ITRI	6/4/92
ITRI-156	DOE/AL's Internal Review of ITRI Lagoons and Groundwater Assessment	J. Levings	AL	ITRI	5/29/92
ITRI-157	Hot Ponds Assessment Plan, ITRI, Internal Review	L. Ekman	EH-221	KAO	4/9/92
ITRI-158	ITRI's Responses to the DOE Hot Pond Assessment Plan Review Comments	G. Grace	ITRI	K. Carlson	5/14/92

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-159	Description of Any Significant Changes, During the Past Three Years in Manufacturing Processes or Equipment, New Sewer Line Connection or Construction	Not indicated	ITRI	Not indicated	6/92-8/92
ITRI-160	Responses to the Lagoons and Groundwater Assessment Plan Comments for DOE	M. Hyde	Lamb Associates	G. Grace	9/18/92
ITRI-161	Transmittal of Final Lagoons and Groundwater Assessment Plan	G. Grace	ITRI	K. Carlson	10/20/92
ITRI-162	Suggested Modifications of the ITRI Ground-Water Monitoring Program	B. Everett	PRC	G. Grace	3/31/93
ITRI-163	Transfer of DP-519 to Remediation Section	D. McQuillan	State of New Mexico	K. Carlson	4/9/93
ITRI-164	Modification of Groundwater Monitoring for Discharge Plan, DP-519	G. Laskar	KAO	J. Mauderly	4/23/93
ITRI-165	Preliminary Results from Aquifer Tests Conducted at the ITRI Facility	B. Everett	PRC	G. Grace	4/93
ITRI-166	Letter re: Regarding Ground Water Monitoring Activities	K. Carlson	KAO	C. Mills	9/17/92
ITRI-167	Letter re: To advise Gov. Lucero that ITRI is an Assessment Program related to Sanitary Lagoons	K. Carlson	KAO	A. Lucero	12/28/92
ITRI-168	Site Specific Protocol re: Environmental Oversight and Monitoring Agreement	Not indicated	New Mexico Environmental Dept. and KAO	ITRI/SNLNM	1/6/93
ITRI-169	Letter re: Transmittals of ITRI Groundwater Monitoring Data	K. Carlson	KAO	J. Espinosa	1/22/93
ITRI-170	Letter re: Comments on ITRI Groundwater Data	S. Mills	DOI	K. Carlson	1/28/93
ITRI-171	Record of Telephone Confirmation	J. Estrada	DOE/AL	J. Thompson	9/15/87

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-172	1990 Section 312 Tier One Emergency and Hazardous Chemical Inventory	A. Chernoff	KAO	J. Waddles	7/9/91
ITRI-173	Emergency and Hazardous Chemical Inventory; Calendar Year 1990	A. Chernoff	KAO/DOE/AL	Not indicated	7/9/91
ITRI-174	Transmittal of 1991 and 1992 Tier Two Forms	K. Carlson	KAO	J. Steaden	5/11/93
ITRI-175	Transmittal of 1991 and 1992 Tier Two Forms	K. Carlson	KAO	K. Lough	5/11/93
ITRI-176	Tier Two Emergency and Hazardous Chemical Inventory; Calendar Year 1992	J. Mauderly	KAO	K. Carlson	1/1/92 - 12/1/92
ITRI-177	Tier Two Emergency and Hazardous Chemical Inventory; Calendar Year 1991	J. Mauderly	KAO	K. Carlson	1/1/91 - 12/1/91
ITRI-178	Emergency Management Appraisal of the ITRI	H. Bohannon	KAO	J. Mauderly	5/29/92
ITRI-179	DOE/AL Transmittal of Formal Findings - Emergency Management Appraisal of the ITRI Research Institute (July 14, 1992 - July 16, 1992)	G. Carroll	AL	K. Carlson	8/14/92
ITRI-180	Response to the Emergency Management Appraisal of the ITRI (July 14, 1992 - July, 16 1992)	G. Carroll	ITRI	K. Carlson	10/12/92
ITRI-181	Health Protection Operations Procedures; EM-10 Environmental Release Reporting	Not indicated	ITRI	Not indicated	6/7/93
ITRI-182	Emergency Plan	J. Thompson	ITRI	Not indicated	6/89
ITRI-183	Studies of Wastewater and Sludge Disposal Wastewater Treatability, waste Characterization or Other Similar Tests	Not indicated	ITRI	Not indicated	10/92
ITRI-184	Piping and Instrumentation Diagrams of Waste Treatment Facilities	Not indicated	ITRI	Not indicated	Not indicated
ITRI-185	Description of Operation and Waste Treatment Facilities, Including All Applicable Standard Operating Procedures	Not indicated	ITRI	Not indicated	Not indicated

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-186	Block-Flow diagrams of Waste Treatment Facilities	Not indicated	ITRI	Not indicated	11/23/92
ITRI-187	Current Site Map of All Monitoring Wells	Not indicated	ITRI	Not indicated	Not indicated
ITRI-188	Annual Groundwater Monitoring Reports for RCRA Units at the Site	J. Mauderly	ITRI	A. Chernoff	4/17/90
ITRI-189	Site Specific Reports Performed under DOE Orders for Environmental Groundwater Monitoring and CERLA Assessment	Not indicated	ITRI	Not indicated	FY 1993
ITRI-190	Reports on Site Wide Geology and Hydrogeology that Includes Physical and Chemical Parameters Analyzed	Not indicated	ITRI	Not indicated	Not indicated
ITRI-191	Network Diagram of Five Year Plan Tasks and Progress	G. Grace	ITRI	Not indicated	1/93
ITRI-192	Contracts of Any Properties Exceeded Since 1989	Not indicated	ITRI	Not indicated	Not indicated
ITRI-193	Annual Site Environmental Monitoring Reports for the Previous Three Years	A. Shankar J. Thompson	ITRI	Not indicated	5/90
ITRI-194	Contractor Incident/Accident Report (i.e., Unusual Occurrence Reports)	Not indicated	ITRI	Not indicated	Not indicated
ITRI-195	List of Buildings and Managers	Not indicated	ITRI	Not indicated	Not indicated
ITRI-196	Topographic Maps of the Facility	Not indicated	ITRI	Not indicated	Not indicated
ITRI-197	Process Description	Not indicated	ITRI	Not indicated	Not indicated
ITRI-198	Description of Operation	Not indicated	ITRI	Not indicated	Not indicated
ITRI-199	History of Operations	Not indicated	ITRI	Not indicated	Not indicated
ITRI-200	Description of Ambient Air Sampler Network, Siting Criteria, Operational Procedures and Maintenance/Calibration Procedures/Records	Not indicated	ITRI	Not indicated	Not indicated

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-201	Description of Meteorological Monitoring System and Data Acquisition System, and Maintenance/Calibration Procedures/Records	Not indicated	ITRI	Not indicated	Not indicated
ITRI-202	Print-out from the Tracking System for Followup on Deficiencies or Recommendations relating to BMP/SPCC Items	Not indicated	ITRI	Not indicated	Not indicated
ITRI-203	List and Location for Ongoing Projects that could Affect Oil/Hazardous Substances Storage Piping or Spill Response	Not indicated	ITRI	Not indicated	5/93
ITRI-204	SPCC Plan and/or Best Management Practices (EMP) Plan	Not indicated	ITRI	Not indicated	1/87
ITRI-205	Inspection and Maintenance Records of Backflow Prevention Devices	C. Starr	Viking II, Inc.	W. Beierman	11/15/92
ITRI-206	Reports Sent to Local, State and Federal Agencies as the Result of Drinking Water Regulations	Not indicated	ITRI	Not indicated	Not indicated
ITRI-207	List of Personnel Certified to Inspect, Test, and Repair Backflow Prevention Devices	C. Starr	Viking, Inc.	Not indicated	Not indicated
ITRI-208	Backflow Prevention/Cross Connection Control Program and Standard Operating Procedures	Not indicated	ITRI	Not indicated	1/93
ITRI-209	Organic and Inorganic Drinking Water Quality Data	J. Essey	Kramer & Associates	J. Thompson	9/4/90
ITRI-210	Standard Operating Procedures Pertaining to Potable Water Treatment and Distribution	Not indicated	ITRI	Not indicated	Not indicated
ITRI-211	List of Personnel Certified to Operate a Potable Water Treatment Plant and/or Distribution System	Not indicated	ITRI	Not indicated	Not indicated
ITRI-212	Descriptions of Environmental Sampling Training Programs and Training Courses Used by the Onsite Personnel and Offsite Contractors	Not indicated	ITRI	Not indicated	Not indicated

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-213	List of Personnel Certified to Operate Either Industrial or Sanitary WWTP	Not indicated	ITRI	Not indicated	Not indicated
ITRI-214	Local, State and Federal Regulatory Agency Reports of Compliance Inspection within the Last Three Years	Not indicated	ITRI	Not indicated	Not indicated
ITRI-215	List of Onsite Personnel and Offsite Contractors Used for Environmental Monitoring	Not indicated	ITRI	Not indicated	Not indicated
ITRI-216	Permit to Install, and Applications for Permits to Install	Not indicated	ITRI	Not indicated	Not indicated
ITRI-217	Progress/Status Reports Provided to Regulatory Agencies as Required by Regulatory/Enforcement Actions	Not indicated	ITRI	Not indicated	Not indicated
ITRI-218	Description of Maintenance and Calibration Procedures for Liquid Effluent Process and Monitoring Equipment Including All Applicable Standard Operating Procedures	Not indicated	ITRI	Not indicated	10/92
ITRI-219	Description of the Environmental Monitoring Program - Onsite Nonhazardous Solid Waste Disposal sites	Not indicated	ITRI	Not indicated	Not indicated
ITRI-220	Facility Source Terms for at Least the Last 10 Years	J. Mauderly	ITRI	K. Carlson	4/10/93
ITRI-221	Description of Current Nonhazardous Solid Waste Management Practices	Not indicated	ITRI	Not indicated	Not indicated
ITRI-222	DOE Order 5820.2 Radioactive Waste Implementation Plan and Radioactive Waste Management Plan	J. Mauderly	ITRI	A. Chernoff	11/19/90
ITRI-223	DOE Order 5820.2A Hazardous Waste Management Plan	J. Thompson	ITRI	Not indicated	11/30/83

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-224	Documents Pertaining to the Identification of Onsite and Offsite Areas That may be Contaminated with CERCLA Hazardous Substances/RCRA Hazardous Waste	J. Themelis	ES&H, Kirtland AFB	Various	9/88
ITRI-225	Documents Pertaining to CERCLA Response Actions, and RCRA Corrective Actions and Closures	Not indicated	ITRI	Not indicated	Not indicated
ITRI-226	Reports Pertaining to Past Spills or Other Accidental Releases, Including Those Which Exceeded CERCLA Reportable Quantities	Not indicated	ITRI	Not indicated	Not indicated
ITRI-227	NESHAPs Notification of Startup of New Sources	A. Chernoff	AL	S. Goal	5/8/90
ITRI-228	NESHAPs Applications for Approval of Construction of New Sources	S. Goel	City of Albuquerque	M. Chavez	5/10/89
ITRI-229	Dose Modeling Methodology, Results with Supporting Data/Calculations	Not indicated	EPA	Not indicated	Not indicated
ITRI-230	Site Specific Meteorological Data and Air Quality Data	Not indicated	ITRI	Not indicated	Not indicated
ITRI-231	Description of Stack Monitoring/Sampling program, Quality Assurance Program Analytical Procedures, Calibration Procedures, and Data	Not indicated	ITRI	Not indicated	Not indicated
ITRI-232	Description of Source Emission Controls Applied at the Complex Type of Air Contaminants Controlled, and Data Verifying Effectiveness of Emissions Control	Not indicated	ITRI	Not indicated	Not indicated
ITRI-233	Complete Source and Source Emissions Inventory for the Complex	J. Mauderly	ITRI	K. Carlson	4/1/93
ITRI-234	List of Pesticides Onsite Storage Facilities, and the Names of Approved Internal and External Applications	J. Thompson	ITRI	W. Beierman	5/20/93

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-235	Reports Pertaining to Decommissioning and Decontaminating On-Site Facilities	A. Chernoff	AL	L. Maestas	2/6/91
ITRI-236	List of Off and On Site Disposal Operations Where Asbestos Has Been Disposed of Within the Last 10 Years	D. Herrera	Environmental Specialists, Inc.	J. Lopez	11/19/92
ITRI-237	List of Demolition projects Completed in the Last Five Years That Involve Friable Asbestos	Not indicated	ITRI	Not indicated	Not indicated
ITRI-238	List of Buildings Containing Asbestos Materials and Interior of Exterior Pipelines with Asbestos Insulation	A. Robichaux	ITRI	Not indicated	7/90
ITRI-239	Information on Off-Site TSD of PCB Material	S. Sanders	Aptus	J. Thompson	11/14/91
ITRI-240	All Inspection Records for PCB Transformer, PCB Fluid Storage Areas, and PCB Waste Storage Areas for the Past Two Years	Not indicated	ITRI	Not indicated	Not indicated
ITRI-241	All PCB Spill Cleanup Records for the Past Two Years	Not indicated	ITRI	Not indicated	Not indicated
ITRI-242	Description and Standard Procedures for PCB Leak and Spill Cleanup	Not indicated	ITRI	J. Thompson	Not indicated
ITRI-243	All Internal TSCA-Related Audits Completed in the Past Two years and Notices of Noncompliance Derived from Any Federal, State, or Local Site Inspection/Audits	Not indicated	ITRI	Not indicated	Not indicated
ITRI-244	All Standard Operating Procedures associated with PCB Handling, Storage, and Use	Not indicated	ITRI	Not indicated	Not indicated
ITRI-245	Past Five Years of PCB Annual Reports	A. Chernoff	AL	Not indicated	4/19/90
ITRI-246	Location of all PCBs Containing Equipment, Fluids, and Contaminated Items Currently Used or Stored at the Facility	J. Mauderly	ITRI	A. Chernoff	7/13/90

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-247	Description of All Treatment, Storage, and Disposal Operations for All Toxic Substances	Not indicated	ITRI	Not indicated	Not indicated
ITRI-248	Plans and Procedures on Purchase, Use, and Hazard Information for Toxic Substances	Not indicated	ITRI	Not indicated	Not indicated
ITRI-249	List of Toxic Substances Currently/Previously Used at the Facility	Not indicated	ITRI	Not indicated	Not indicated
ITRI-250	Current Inventory of Toxic Substances Maintained at the Facility	Not indicated	ITRI	Not indicated	Not indicated
ITRI-251	Regulatory Agency Inspections/Audit	A. Gonzales	ITRI	Not indicated	6/14/93
ITRI-252	Preparation of Plans to Comply with DOE Order 5400.1	A. Chernoff	AL	J. Themelis M. Zamorski	2/13/90
ITRI-253	Hazardous Waste Training Program, Position Descriptions, and Training Records	Not indicated	ITRI	Not indicated	Not indicated
ITRI-254	Procedures for Hazardous Waste Generation, Accumulation, Onsite Transport and Offsite Transport	Not indicated	ITRI	Not indicated	Not indicated
ITRI-255	TSD Facility Operational and Inspection Procedures and Records	Not indicated	ITRI	Not indicated	Not indicated
ITRI-256	Hazardous Waste Analysis Plan	J. Mauderly	ITRI	T. Hyde	8/16/91
ITRI-257	Historical Inventory of Hazardous, Radioactive or Mixed Waste	Not indicated	ITRI	Not indicated	Not indicated
ITRI-258	RCRA Part B Permit Applications Submitted Since 1986 and Part B Permit If Received	Not indicated	ITRI	Not indicated	Not indicated
ITRI-259	At Least the Last Three years of Radiological Environmental Monitoring Reports for Both Onsite and Offsite Locations	Not indicated	ITRI	Not indicated	Not indicated
ITRI-260	Facility Source Terms Used for Radiological Monitoring Program Design	Not indicated	ITRI	Not indicated	Not indicated

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-261	Proposal Approved and Under Consideration for Program Augmentation	Not indicated	ITRI	Not indicated	Not indicated
ITRI-262	Information on the Calculation of Radiological Doses	Not indicated	ITRI	Not indicated	Not indicated
ITRI-263	MSDS Submittal to SEPC, LEPC, and Fire Departments	Not indicated	ITRI	Not indicated	Not indicated
ITRI-264	Documentation of Title III Spill reporting Procedures, Followup Reports, Reporting Logs	Not indicated	ITRI	Not indicated	Not indicated
ITRI-265	Notification of a Facility Emergency Coordinator	J. Thompson	ITRI	Not indicated	6/89
ITRI-266	Notification to SEPC that the Facility is Complying with Title III	A. Chernoff	AL	K. Lough	7/9/91
ITRI-267	Plans to Comply with New UST Regulations	Not indicated	ITRI	Not indicated	Not indicated
ITRI-268	Tank Inventory Report to EPA	Not indicated	ITRI	Not indicated	Not indicated
ITRI-269	A List of Storage Tank Capabilities, Fabrication, Materials, Product or Chemical Inventory Date of Installation	Not indicated	ITRI	Not indicated	Not indicated
ITRI-270	QA-QC Procedures for Reviewing Environmental Monitoring Reports Prior to Submission	Not indicated	ITRI	Not indicated	Not indicated
ITRI-271	List of All Environmental Monitoring Parameters and Responsible Analytical Laboratories Associated with their Analyses.	Not indicated	ITRI	Not indicated	Not indicated
ITRI-272	Tier I and Tier II Forms for 1990, 1991, and 1992	K. Carlson	AL	K. Lough	5/11/93
ITRI-273	EPA Form R and Backup Documentation of Information for 1990 and 1991	Not indicated	ITRI	Not indicated	Not indicated
ITRI-274	Shipping Records	Not indicated	ITRI	Not indicated	Not indicated
ITRI-275	Package Testing Results	D. Edling R. Hopkins R. Williams	DOE	J. Torres	4/15/87

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-276	Notification Records and Precautions	Not indicated	ITRI	Not indicated	Not indicated
ITRI-277	Waste Acceptance Criteria	Not indicated	ITRI	Not indicated	Not indicated
ITRI-278	Design Specifications and Certifications for Package	Not indicated	ITRI	Not indicated	Not indicated
ITRI-279	Request to Meet with Isleta Pueblo and BIA on Groundwater	K. Carlson	AL	A. Lucero	4/2/92
ITRI-280	Confirmation of Meetings with Isleta Pueblo and BIA on Groundwater Studies	K. Carlson	AL	A. Lucero	4/24/92
ITRI-281	Transmittal of Certain Documents Requested in May 19, 1992 Meeting	K. Carlson	AL	A. Lucero	5/29/92
ITRI-282	Lagoon Sludge Assessment	Not indicated	PRC	Not indicated	4/19/93
ITRI-283	Summary Package for Radiochemistry and Metal Analyses	Not indicated	Lockheed	Not indicated	4/23/93
ITRI-284	Summary Package for Hot Ponds Boreholes and Decon Water Barrels	Not indicated	Lockheed	Not indicated	3/22/93
ITRI-285	Record of Identification/Markups	Not indicated	ITRI	Not indicated	Not indicated
ITRI-286	Labeling/Placarding Records Information	Not indicated	ITRI	Not indicated	Not indicated
ITRI-287	Records for Exceptions Opted	Not indicated	ITRI	Not indicated	Not indicated
ITRI-288	Plans and Procedures for Shipments	Not indicated	ITRI	Not indicated	Not indicated
ITRI-289	Organization Charts and Description of Responsibilities for Overall Facility Management and Environmental Programs for DOE and Contractor	Not indicated	ITRI	Not indicated	Not indicated
ITRI-290	Mission/Function Statements of All Organizational Units for DOE and Contractor	Not indicated	ITRI	Not indicated	Not indicated

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-291	Staffing Plans and Any Analyses Relating to Staffing, Especially with Respect to Environmental Activities, for the Past Three Years	Not indicated	ITRI	Not indicated	Not indicated
ITRI-292	Summary of Recruitment Statistics	Not indicated	ITRI	Not indicated	Not indicated
ITRI-293	Planning Documents to Implement Mission/Function of Each Organizational Unit	Not indicated	ITRI	Not indicated	Not indicated
ITRI-294	Management Procedures for the Distribution and Implementation of DOE ES&H Orders	Not indicated	ITRI	Not indicated	Not indicated
ITRI-295	Award Fee Packages for the Past Two Years	Not indicated	ITRI	Not indicated	Not indicated
ITRI-296	Corporate Oversight Appraisals/Audits Conducted in the Last Two Years	Not indicated	ITRI	Not indicated	8/27/91
ITRI-297	Budget Summaries, Including Requests and Authorizations for the Past Three Years with an ES&H Breakdown	Not indicated	ITRI	Not indicated	Not indicated
ITRI-298	Description of Training Programs and Procedures for the Implementation of those Programs	Not indicated	ITRI	Not indicated	4/2/93
ITRI-299	Generic Documents Generated to Track/Monitor Environmental Compliance Issues	Not indicated	ITRI	Not indicated	FY 1993
ITRI-300	Memorandum re: Cessation of Hazardous Waste Shipments	J. Thompson	HPO	Distribution	6/22/93
ITRI-301	ES&H Requirements and Responsibility Sections of Contract with Facility Operator	Not indicated	ITRI	Not indicated	2/15/93
ITRI-302	MOU/MOAs Regarding Environmental Compliance/Oversight Support	K. Carlson	ITRI	Various	3/29/92
ITRI-303	Individual Development Plans and Performance Standards for ES&H Personnel and Line Managers	Not indicated	ITRI	Not indicated	Not indicated
ITRI-304	Quality Assurance Program Manual for the Facility	Not indicated	ITRI	Not indicated	Not indicated

LIST OF SITE DOCUMENTS REVIEWED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Doc. No.	Title/Description	Author	Organization	Recipient	Doc. Date
ITRI-305	Standard Operating Procedures for Chain of Custody	Not indicated	ITRI	Not indicated	Not indicated
ITRI-306	List of Environmental Monitoring Parameters and Responsible Laboratories	Not indicated	ITRI	Not indicated	Not indicated
ITRI-307	Federal/State/Administrative and Civil Actions, Interagency Agreements, Federal Facility Compliance Agreements, Orders, Complaints Consent Decrees, Notice of Violations, Warnings, Notice of Permit Denial	A. Gonzales	ITRI	Not indicated	7/14/93
ITRI-308	Reports and Analyses for All Buildings that Contain Radioactive Material	Not indicated	ITRI	Not indicated	Not indicated
ITRI-309	Environmental Survey Preliminary Summary Report of the Defense Production Facilities	Not indicated	DOE	Not indicated	9/88
ITRI-310	Assessment Plan: Lagoons and Groundwater	Not indicated	ITRI	Not indicated	10/92
ITRI-311	Safety and Health Five-Year Plan	Not indicated	ITRI	Not indicated	2/93
ITRI-312	Memorandum re: Response to State's Requests of April 7, 1989	T. Hyde	State of New Mexico	A. Chernoff	4/21/89

APPENDIX E

LIST OF CONTACTS AND INTERVIEWS CONDUCTED BY THE ENVIRONMENTAL AUDIT TEAM

APPENDIX E:
LIST OF CONTACTS AND INTERVIEWS CONDUCTED BY THE ENVIRONMENTAL AUDIT TEAM

Ref. No.	Date	Auditor	Organization	Position	Topic
Air (A)					
I-A-1	6/14/93	E. Harr	KAO	Environmental, Safety, Health & Compliance Branch - Engineer	Air hazardous/radioactive monitoring (emission and ambient)
I-A-2	6/14/93	E. Harr	ITRI	Head, Health Protection Operations	Air hazardous/radioactive monitoring (emission, and ambient)
I-A-3	6/15/93	E. Harr	ITRI	Health Physicist, Health Protection Operations	Process for review of research projects for air issues
I-A-4	6/16/93	E. Harr	ITRI	Health Physicist, Health Protection Operations	Laboratory emission sources and controls and ambient air monitoring stations
I-A-5	6/16/93	E. Harr	ITRI	Technician, Health Protection Operations	Ambient and emission sample collection
I-A-6	6/16/93	E. Harr	KAO	Environmental Engineer	Air issues
I-A-7	6/17/93	E. Harr	KAO	Environmental Engineer	Air findings
I-A-8	6/17/93	E. Harr	AL	Environmental Scientist, EPD	Air findings
Surface Water (SW)					
I-SW-1	6/14/93	M. Notich	ITRI	Manager/Supervisor, Engineering and Facilities Unit	Cross connection/backflow prevention
I-SW-2	6/14/93	M. Notich	ITRI	Plant Technician	Cross connection/backflow prevention program
I-SW-3	6/14/93	M. Notich	ITRI	Plant Technician	Cross connection/backflow prevention program
I-SW-4	6/15/93	M. Notich	ITRI	Manager/Supervisor, Engineering and Facilities Unit	AST tour
I-SW-5	6/15/93	M. Notich	IT Corp.	Sampling Technician	Wastewater sampling
I-SW-6	6/15/93	M. Notich	KAO	Environmental Engineer	KAO oversight, sewer permit

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LIST OF CONTACTS AND INTERVIEWS CONDUCTED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Ref. No.	Date	Auditor	Organization	Position	Topic
I-SW-7	6/15/93	M. Notich	ITRI	Head, Health Protection Operations	Surface water issues
Groundwater (GW)					
I-GW-1	6/14/93	G. Gartseff	ITRI	Head, Health Protection Operations	Hot Ponds area monitoring wells
I-GW-2	6/14/93	G. Gartseff	ITRI	Environmental Restoration Coordinator	Hot Ponds area monitoring wells
I-GW-3	6/16/93	G. Gartseff	ITRI	Environmental Restoration Coordinator	Monitoring well sampling
I-GW-4	6/16/93	G. Gartseff	PRC	Geologist	Monitoring well sampling
I-GW-5	6/17/93	G. Gartseff	ITRI	Environmental Restoration Coordinator	Groundwater monitoring program
I-GW-6	6/17/93	G. Gartseff	ITRI	Head, Health Protection Operations	Groundwater monitoring analysis
Waste Management (WM)					
I-WM-1	6/14	D. Habib	ITRI	Environmental Restoration Coordinator	UST closure notifications
I-WM-2	6/14	D. Habib	ITRI	Head, Health Protection Operations	Waste minimization
			ITRI	Environmental Specialist, HPO	
I-WM-3	6/15	D. Habib	KAO	Environmental Engineer	Submittal of Part A, environmental
			ITRI	Environmental Specialist, HPO	
I-WM-4	6/15	D. Habib	ITRI	Technician, Health Protection Operations	Operation of RCRA Storage Facilities 9264 & 9469, Radwaste Storage Facility 9222, and Crematorium 9221
I-WM-5	6/15	D. Habib	ITRI	Environmental Specialist, HPO	Waste shipment manifests and evaluations of offsite facilities accepting ITRI wastes
I-WM-6	6/16	D. Habib	ITRI	Head, Health Protection Operations	Waste characterization and tracking
			ITRI	Environmental Specialist, HPO	
I-WM-7	6/16	D. Habib	ITRI	Histology Supervisor	Waste accumulation
I-WM-8	6/16	D. Habib	ITRI	Staff Scientist	Waste accumulation
I-WM-9	6/16	D. Habib	ITRI	Senior Research Technologist	Waste accumulation

LIST OF CONTACTS AND INTERVIEWS CONDUCTED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Ref. No.	Date	Auditor	Organization	Position	Topic
I-WM-10	7/16	D. Habib	ITRI	Necropsy Section Supervisor	Waste accumulation
I-WM-11	6/17	D. Habib	KAO	Environmental Engineer	Submittal of Part A and small quantity generator status
I-WM-12	6/17	D. Habib	ITRI	Technician, Health Protection Operations	Offsite shipments of hazardous waste
I-WM-13	6/17	D. Habib	ITRI	Head, Health Protection Operations	Waste accumulation, waste minimization, personnel training, research protocol and standard operating procedures review and approval, moratorium, scrap lead, interim status requirements
I-WM-14	6/17	D. Habib	ITRI	Internal Auditor	Audits of waste management program
I-WM-15	6/17	D. Habib	NMED	RCRA Program Manager	Dual status of ITRI as interim status and small quantity generator
I-WM-16	6/18	D. Habib	ITRI	Environmental Specialist, HPO	RCRA emergency response
I-WM-17	6/18	D. Habib	ITRI	Technician, Health Protection Operations	Personnel training
I-WM-18	6/18	D. Habib	KAO	Head, Health Protection Operations	Contingency plan distribution
I-WM-19	6/18	D. Habib	AL	Physical Scientist	DOE 5820.2A annual waste management plan
Toxic and Chemical Materials (TCM)					
I-TCM-1	6/14/93	D. Olson	ITRI	Environmental Specialist, HPO	Procurement/shipping of hazardous waste
I-TCM-2	6/15/93	D. Olson	ITRI	Property Management Supervisor	Chemical storage and shipping
I-TCM-3	6/15/93	D. Olson	ITRI	Technical Specialist, Analytical Section and Health Protection Operations	Chemical shipping
I-TCM-4	6/15/93	D. Olson	ITRI	Manager/Supervisor, Engineering and Facilities Unit	Maintenance chemical storage
I-TCM-5	6/15/93	D. Olson	ITRI	QA Assistant	Training records - HPO personnel

LIST OF CONTACTS AND INTERVIEWS CONDUCTED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Ref. No.	Date	Auditor	Organization	Position	Topic
I-TCM-6	6/15/93	D. Olson	ITRI	Health Physicist	Chemical lists - laboratory and work areas (shops)
I-TCM-7	6/17/93	D. Olson	ITRI	Manager/Supervisor, Engineering and Facilities Unit	Site pesticides/PBC programs
I-TCM-8	6/18/93	D. Olson	ITRI	Chief, Animal Care Technologist	Pesticides programs
			ITRI	Supervisor, Animal Care Unit	
Quality Assurance (QA)					
I-QA-1	6/16/93	M. Notich	ITRI	Manager/Supervisor, Engineering and Facilities Unit	Self-assessment
I-QA-2	6/16/93	M. Notich	ITRI	Director - ITRI	Programmatic quality assurance
I-QA-3	6/16/93	M. Notich	ITRI	Associate Director-ITRI	Programmatic quality assurance
I-QA-4	6/16/93	M. Notich	ITRI	Assistant Director-ITRI	Programmatic quality assurance
I-QA-5	6/16/93	D. Olson	ITRI	Environmental Protection Coordinator	Groundwater sampling
I-QA-6	6/16/93	D. Olson	PRC	Geologist	Groundwater sampling
I-QA-7	6/17/93	M. Notich	ITRI	Internal Auditor	Environmental programs auditing
I-QA-8	6/17/93	M. Notich	ITRI	Head, Health Protection Operations	Environmental programs auditing
I-QA-9	6/17/93	D. Olson	ITRI	Environmental Protection Coordinator	Analytical services procurement
I-QA-10	6/18/93	M. Notich	ITRI	Manager/Supervisor, QA Unit	QA program/procedures
I-QA-11	6/18/93	D. Olson	ITRI	Environmental Restoration Coordinator	Analytical services subcontracts
Radiation (R)					
I-RAD-1	6/15/93	E. Harr	ITRI	Health Physicist, Health Protection Operations	Radioactive material management and control
I-RAD-2	6/16/93	E. Harr	ITRI	Environmental Restoration Coordinator	Soil sampling
I-RAD-3	6/16/93	E. Harr	ITRI	Head, Health Protection Operations	Environmental monitoring moratorium
I-RAD-4	6/16/93	E. Harr	PRC	Soil Chemist	Soil sampling

LIST OF CONTACTS AND INTERVIEWS CONDUCTED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Ref. No.	Date	Auditor	Organization	Position	Topic
I-RAD-5	6/18/93	E. Harr	ITRI	Head, Health Protection Operations	Environmental monitoring moratorium
I-RAD-6	6/18/93	E. Harr	ITRI	Director, ITRI	Environmental monitoring moratorium
Inactive Waste Sites (IWS)					
I-IWS-1	6/14/93	G. Gartseff	ITRI	Head, Health Protection Operations	Diesel spill, lagoons, hot ponds
I-IWS-2	6/14/93	G. Gartseff	ITRI	Environmental Restoration Coordinator	Hot ponds
I-IWS-3	6/15/93	G. Gartseff	ITRI	Environmental Specialist, HPO	EPCRA reporting
I-IWS-4	6/15/93	G. Gartseff	KAO	General Engineer	KAO/ITRI interaction
I-IWS-5	6/15/93	G. Gartseff	KAO	Physical Scientist	EPCRA reporting, New Mexico AIP
I-IWS-6	6/15/93	G. Gartseff	KAO	Facility Representative	KAO/ITRI interaction, occurrence reporting
I-IWS-7	6/16/93	G. Gartseff	KAO	Emergency Manager	KAO/ITRI interaction, release reporting
I-IWS-8	6/16/93	G. Gartseff	KAO	Environmental Restoration Program Manager	ITRI environmental restoration activities
I-IWS-9	6/16/93	G. Gartseff	KAO	Safety Engineer	ITRI environmental restoration activities
I-IWS-10	6/17/93	G. Gartseff	ITRI	Environmental Restoration Coordinator	ITRI environmental restoration activities
I-IWS-11	6/17/93	G. Gartseff	ITRI	Head, Health Protection Operations	ITRI environmental restoration activities
I-IWS-12	6/17/93	G. Gartseff	ITRI	Associate Director	Environmental release reporting
I-IWS-13	6/17/93	G. Gartseff	ITRI	Health Physicist	Environmental release reporting
I-IWS-14	6/18/93	G. Gartseff	AL	Environmental Protection Division Director	AL/KAO/ITRI interaction, compliance oversight
I-IWS-15	6/18/93	G. Gartseff	AL	Installation Manager	AL/ITRI environmental restoration oversight and interaction
I-IWS-16	6/18/93	G. Gartseff	ITRI	Environmental Specialist, HPO	EPCRA notifications
I-IWS-17	6/18/93	G. Gartseff	KAO	Physical Scientist	NMED AIP, EPCRA notifications

LIST OF CONTACTS AND INTERVIEWS CONDUCTED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Ref. No.	Date	Auditor	Organization	Position	Topic
Environmental Management (EM)					
I-EM-1	6/8/93	D. Wunsch	DP-65	Acting Director for Research, Development, & Testing Facilities	Budgeting and ES&H responsibilities for ITRI
			DP-65	Sandia Site Action Team Leader	
I-EM-2	6/8/93	D. Wunsch	EM-452	Division Director	Environmental restoration at ITRI
			EM-452	Branch Chief	
I-EM-3	6/10/93	D. Wunsch	ER-72	Director, Health Effects & Life Science Research Division	Funding of ITRI by OHER
I-EM-4	6/10/93	D. Wunsch	ER-73	Environmental Protection Specialist	Environmental guidance and oversight
			ER-73	Safety & Health Manager	
I-EM-5	6/14/93	D. Wunsch	ITRI	Assistant Director	Implementation of environmental requirements
I-EM-6	6/15/93	D. Wunsch	ITRI	Budget Officer	ES&H checklist
I-EM-7	6/15/93	D. Wunsch	ITRI	Head, Health Protection Operations	Training
I-EM-8	6/15/93	D. Wunsch	KAO	Environmental Engineer	KAO roles and responsibilities for ITRI
I-EM-9	6/15/93	D. Wunsch	KAO	Physical Scientist	KAO roles and responsibilities for ITRI
I-EM-10	6/15/93	D. Wunsch	KAO	Physical Scientist	KAO roles and responsibilities for ITRI
			KAO	Safety & Occupational Health Manager	
			KAO	Health Physicist	
I-EM-11	6/15/93	D. Wunsch	KAO	ITRI Facility Representative	KAO roles and responsibilities for ITRI
I-EM-12	6/16/93	D. Wunsch	KAO	Area Office Manager	KAO roles and responsibilities for ITRI
			KAO	Branch Chief- Environment, Safety, Health, and Compliance	
I-EM-13	6/16/93	D. Wunsch	AL	Branch Chief - Waste Management	AL roles and responsibilities for ITRI

LIST OF CONTACTS AND INTERVIEWS CONDUCTED BY THE ENVIRONMENTAL AUDIT TEAM (continued)

Ref. No.	Date	Auditor	Organization	Position	Topic
			AL	ITRI Program Engineer	
I-EM-14	6/16/93	D. Wunsch	AL	Site Liaison	AL roles and responsibilities for ITRI
I-EM-15	6/16/93	D. Wunsch	AL	Division Chief - Quality Performance	AL roles and responsibilities for ITRI
			AL	Assessment Quality Engineer	
I-EM-16	6/16/93	D. Wunsch	ITRI	Manager/Supervisor, Engineering and Facilities Unit	Self-Assessment program
I-EM-17	6/16/93	D. Wunsch	ITRI	Manager/Supervisor, Engineering and Facilities Unit	Management systems for ITRI environmental operations and relationships with DOE
			ITRI	Director	
			ITRI	Head, Health Protection Operations	
			ITRI	Associate Director	
			ITRI	Assistant Director	
I-EM-18	6/18/93	D. Wunsch	AL-OESH	Director, Environmental Protection Division	AL OESH roles and responsibilities for ITRI
I-EM-19	6/18/93	D. Wunsch	AL-ERPO	Installation Manager	AL ERPO roles and responsibilities for ITRI
I-EM-20	6/18/93	D. Wunsch	ITRI	Manager/Supervisor, QA Unit	ITRI sitewide quality assurance plan & health protection operations implementation
I-EM-21	6/18/93	D. Wunsch	ITRI	Associate Director	Conduct of operations implementation plan
I-EM-22	6/18/93	D. Wunsch	ITRI	Director	Implementation of the DOE Waste moratorium at ITRI
			ITRI	Head, Health Protection Operations	
			ITRI	Assistant Director	

APPENDIX F

DEFINITIONS OF CAUSAL FACTORS AND CONTRIBUTING FACTORS

APPENDIX F:

DEFINITIONS OF CAUSAL AND CONTRIBUTING FACTORS

Causal Factor	Definition
Policy	Evaluate whether ineffective, outdated, or nonexistent policies contributed to the finding.
Policy Implementation	Ascertain whether written policies reflecting Federal, state, and local laws and regulations, codes, and standards were appropriately disseminated, implemented, and updated.
Procedures	Identify whether written procedures that have been prepared to effectively implement site policy, DOE Orders, and Federal, state, and local laws and regulations were a contributing factor to the finding. Determine whether unfamiliarity with, or unavailability of those procedures contributed to the finding.
Personnel	Identify whether the educational and work experience backgrounds for personnel holding responsible positions contributed to the finding. Determine whether the level of personnel knowledge about the technical and environmental aspects of their jobs contributed to the finding.
Resources	Ascertain whether the number of personnel or extramural resources available to a job were a contributing factor to the finding. Evaluate whether inadequacies in facilities and equipment were a contributing factor to the finding.
Training	Identify whether adequate personnel training on implementing site policy, DOE Orders, and Federal, state, and local laws and regulations was a contributing factor to the finding.

DEFINITIONS OF CAUSAL AND CONTRIBUTING FACTORS (continued)

Causal Factor	Definition
Change	Evaluate whether changes in site mission, function, operation, and established requirements, which rendered existing policies or procedures inadequate or inappropriate, were contributing factors to the finding. Evaluate whether the timeliness and effectiveness of changes to site and DOE policy, and the implementing procedures, were a contributing factor to the finding.
Risk	Evaluate whether the site personnel responsible for a situation contributing to a finding have assessed and were aware of the relative degree of risk involved in the action.
Design	Evaluate whether inadequate design of a system was a contributing factor to the finding.
Human Factors	Ascertain whether human factors, such as fatigue or deliberate circumvention of an environmental system, were contributing factors to the finding.
Barriers and Controls	Determine whether inadequacies in established barriers and controls, both administrative and physical, including operational readiness, routine inspections, and preventive maintenance, and/or a lack of these controls contributed to the finding.
Supervision	Identify whether ineffective supervisory controls for implementing policies, procedures, standards, laws, etc., were a contributing factor to the finding.
Quality Assurance/ Quality Control	Identify whether inadequacies in the quality assurance/quality control program were causal factors to the identified finding. This includes inadequate followup to previously identified findings.
CONTRIBUTING FACTOR Appraisals/Audits/Reviews	Determine whether ineffective or insufficient appraisals/ audits/reviews or oversight were contributing factors to the finding. These factors should only be used as <u>secondary</u> contributing factors to the finding.

APPENDIX G

LIST OF ACRONYMS AND ABBREVIATIONS

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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
A	Air
AL	Albuquerque Operations Office
AIP	Agreement-in-Principle
BMP	Best Management Practice
BMPF	Best Management Practice Finding
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR*	Code of Federal Regulations
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CSO	Cognizant Secretarial Officer
CWA	Clean Water Act
CY	Calendar Year
DOE*	U.S. Department of Energy
DOI	U.S. Department of Interior
DOT	U.S. Department of Transportation
DP	DOE Office of the Assistant Secretary for Defense Programs
EH	DOE Office of Environment, Safety and Health
EH-24	DOE Office of Environmental Audit
EM	Environmental Management
EMP	Environmental Monitoring Plan
ENV	Environmental Monitoring
EPA*	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EPIP	Environmental Protection Implementation Plan

* Indicates acronym is not defined or spelled out after the first usage in the body of the report.

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

Acronym/Abbreviation	Definition
ER	DOE Office of the Assistant Secretary for Energy Research
ERPO	Environmental Restoration Project Office
EPD	Environmental Protection Division
ES&H	Environment, Safety, and Health
FE	DOE Office of the Assistant Secretary for Fossil Energy
FFA	Federal Facility Agreement
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
GW	Groundwater
GPMP	Groundwater Management Protection Plan
GWPRB	Groundwater Protection and Remediation Bureau
HEPA	High Efficiency Particulate Air
HPO	Health Protection Operations
hp	Horsepower
HPPQAP	Health Protection Program Quality Assurance Plan
HQ	Headquarters
IAG	Interagency Agreement
ITRI	Inhalation Toxicology Research Institute
IWS	Inactive Waste Sites
KAO	Kirtland Area Office
LDR	Land Disposal Restriction
LEPC	Local Emergency Planning Committee
LLW	Low Level Waste
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
NCP	National Contingency Plan

* Indicates acronym is not defined or spelled out after the first usage in the body of the report.

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

Acronym/Abbreviation	Definition
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMED	New Mexico Environment Department
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NPC	National Oil and Hazardous Substances Pollution Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
OHER	Office of Health and Environmental Research
PCB	Polychlorinated Biphenyl
POC	Performance Objectives and Criteria
POTW	Publicly-Owned Treatment Works
QA	Quality Assurance
QAP	Quality Assurance Program and Implementation Plan
RAD	Radiation
RCRA	Resource Conservation and Recovery Act
RMMA	Radioactive Material Management Area
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SERC	State Emergency Response Commission
SNLNM	Sandia National Laboratory New Mexico
SO ₂	Sulfur Dioxide
SPCC	Spill Prevention Control and Countermeasures
SQG	Small Quantity Generator
SW	Surface Water/Drinking Water

* Indicates acronym is not defined or spelled out after the first usage in the body of the report.

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

Acronym/Abbreviation	Definition
SWMR	Solid Waste Management Regulations
SWQAPP	Site-Wide Quality Assurance Program Plan
TLD	Thermoluminescent Dosimeter
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TTO	Total Toxic Organic
TRU	Transuranic Waste
US	United States
UST	Underground Storage Tank
WM	Waste Management
WQCC	New Mexico Water Quality Control Commission
Xe-133	Xenon-133

* Indicates acronym is not defined or spelled out after the first usage in the body of the report.

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