New Mexico Environment Department

DOE Oversight & Monitoring Program

1994 Annual Performance Report

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(505) 827-4254

1994
Annual Performance Report
for
Environmental Oversight and Monitoring at
Department of Energy Facilities in New Mexico

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EXECUTIVE SUMMARY

Introduction

The New Mexico Environment Department Oversight and Monitoring Program allows the State of New Mexico environmental oversight and monitoring at Department of Energy facilities. The program is made possible by an agreement that exists between the DOE and the State of New Mexico called the Agreement-in-Principle (AIP), which will be up for renewal in 1995.

1994 was a productive year for the DOE Oversight and Monitoring Program. AIP staff collected a large quantity of air, effluent, ground water, surface water, biota and soil samples at and around the four New Mexico DOE facilities. Evaluations of sampling results, where already available, are included in the following report. AIP staff also collected samples at environmental restoration sites, evaluated investigation plans and activities, and continued development of channels for meaningful and timely communication with facility personnel. The AIP Program provided information to the public on environmental programs at DOE facilities through public meetings, newsletters and technical reports.

Air Quality

In 1994 the Environmental Surveillance Section of the AIP Program continued its ambient-air monitoring programs and environmental radiation monitoring in the communities surrounding Los Alamos National Laboratory and Sandia National Laboratories. Four air monitors are located in the vicinity of Los Alamos and four are located near Kirtland Air Force Base. Data from the monitoring program is used to verify either actual monitoring data or predictive modeling of doses to surrounding communities. The AIP Program has initiated the process of upgrading the monitoring network with monitors which will better facilitate comparisons with air monitoring data from Los Alamos and also allow for additional sampling devices to monitor for radioactive gases such as iodine and tritium.

Off-site dose rates based on modeling of radionuclide emissions monitoring have been verified for the major emission sources at all four DOE facilities. AIP Program staff use the U.S. Environmental Protection Agency's Compliance Assessment Program (CAP88) computer model for this purpose.

Water Quality

AIP staff are continuing to develop an updated conceptual hydrogeological model for both Los Alamos National Laboratory and Sandia National Laboratories. Milestones completed toward this objective include preparation of site-wide water-level maps, construction of geological cross sections of the Pajarito Plateau, development of a water quality data base and the drilling of two boreholes at Sandia National Laboratories that will provide much needed information. Knowledge of the hydrogeology of these two facilities will promote a more thorough understanding of the ground water issues at the facilities.

An area of major concentration for AIP staff in 1994 was the study of aquatic life in the perennial reaches of interrupted streams at LANL. Biological monitoring of these aquatic communities can reveal the existence of physical or chemical induced stress. The information gathered will be valuable in the determination of applicable water quality standards.

AIP staff also increased their monitoring of stormwater quality at Sandia National Laboratories in 1994. Stormwater sampling monitors for contaminants carried along in stormwater runoff in areas that may otherwise be dry. Preliminary data from 1994 sampling found no significant impact of stormwater runoff from the Laboratories.

Environmental Restoration and Waste Management

In 1994, the AIP staff increased monitoring of site investigation and sampling activities at both Los Alamos National Laboratory and Sandia National Laboratories. Staff evaluated proposals for Voluntary Corrective Measures, received sampling and analysis for Environmental Restoration sites and split samples at high priority locations.

During the year, AIP staff also provided comments on the Site-Wide Hydrogeologic Characterization reports from Los Alamos National Laboratory and Sandia National Laboratories. Staff provided comments on framework documents for corrective action at both facilities, and reviewed 16 RCRA Facility Investigation Workplans.

Staff worked with Sandia National Laboratories to prioritize 12 Operable Units and more than 2000 sites at Los Alamos National Laboratory. Los Alamos National Laboratory AIP staff also developed an independent

ranking system, emphasizing disposal areas and firing sites. AIP staff at Los Alamos National Laboratory received an inventory of hazardous waste generation/storage locations, reviewed the Waste Stream Characterization Program, and monitored DOE plans for long-term storage of TRU-waste.

Emergency Response

The AIP Program participated in statewide emergency response exercises throughout the year. AIP staff also developed and executed an agreement between the Environment Department and the Department of Public Safety (DPS). The agreement will support a staff member at DPS who will assist NMED in meeting the objectives relative to emergency response planning.

INTRODUCTION AND GENERAL

Introduction

In October 1990 an Agreement-in-Principle (AIP) was entered into between the U.S. Department of Energy (DOE) and the State of New Mexico for the purpose of supporting State oversight activities at DOE facilities in New Mexico. The State's lead agency for the Agreement is the New Mexico Environment Department (NMED). DOE has agreed to provide the State with resources over a five year period to support State activities in environmental oversight, monitoring, access and emergency response to ensure compliance with applicable federal, state, and local laws at Los Alamos National Laboratory (LANL), Sandia National Laboratories (SNL), the Waste Isolation Pilot Plant (WIPP), and the Inhalation Toxicology Research Institute (ITRI). The agreement is designed to assure the citizens of New Mexico that public health, safety and the environment are being protected through existing programs; DOE is in compliance with applicable laws and regulations; DOE has made substantial new commitments; cleanup and compliance activities have been prioritized; and a vigorous program of independent monitoring and oversight by the State is underway.

Attachment A, Section E, Paragraph 2 of the AIP states that the State will issue annual reports on the result of its oversight, monitoring and analysis activities, and State findings relating to the quality and

effectiveness of the facilities' environmental monitoring and surveillance programs. This report satisfies that requirement for 1994.

Agreement and Grant Negotiations

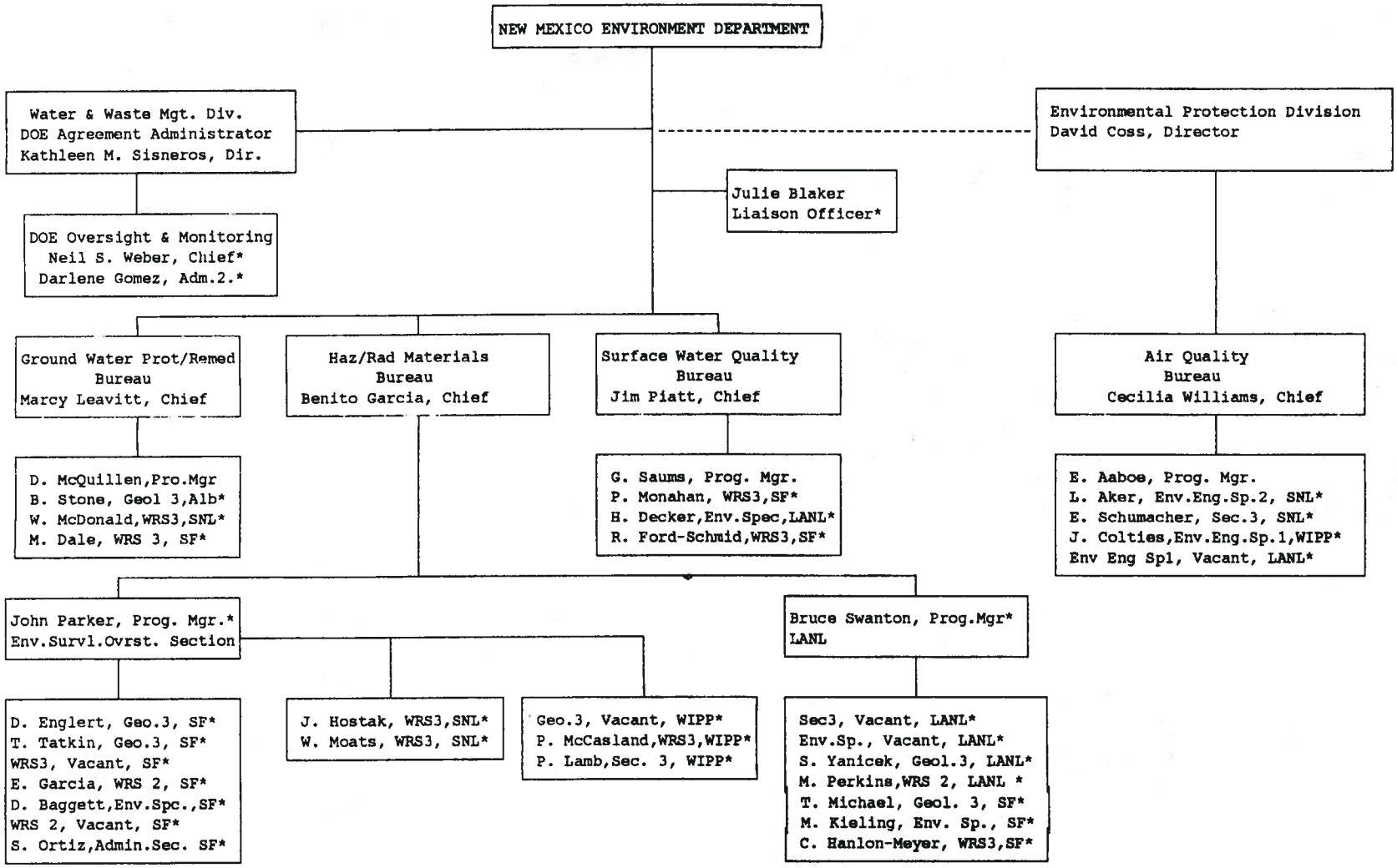
At the outset of the AIP, DOE agreed to provide the State with $14,754,000 over a five year period (October 1, 1990 through September 30, 1995) with the requirement that the State submit on an annual basis, not later than June 1 each year, a proposed work scope and cost estimates for work and services to be performed by the State under the Grant during the upcoming budget period. On June 15, 1994, NMED submitted to DOE a completed Financial Assistance Application Kit requesting funding for Year 5 (Federal Fiscal Year 95) in the amount of $3,208,185. On October 5, 1994 DOE notified NMED of its obligation and authorization of funds in the amount of $3,208,185 (consisting of $314,464 in carry over funds and $2,893,721 in new obligations) as executed by Amendment No. A005 to Grant No. DE-FG04-91AL65779.

Personnel and Administrative Issues

In order to meet the State's obligations under the AIP, NMED has hired staff which are fully funded by the AIP. Staff have been placed in four bureaus within the Department (the Hazardous and Radioactive Materials Bureau, the Surface Water Quality Bureau, the Air Quality Bureau, and the Ground Water Protection and Remediation Bureau). Staff hired under the AIP fulfill oversight and monitoring responsibilities and are located at "on-site" offices at the four DOE facilities in New Mexico and in Santa Fe. Figure 1 illustrates the organizational and hierarchical relationship of staff working in the AIP Program. At present, 6 vacancies exist. The State continues to experience difficulties in hiring and retaining staff at Los Alamos because of competitive salaries and benefits offered by LANL.

Eight additional Security Clearances (Q Clearances) have been issued to NMED staff members during 1994. Currently, clearances for three staff members are still in process by DOE.

DOE ENVIRONMENTAL OVERSIGHT AND MONITORING AGREEMENT



* Funded by DOE Agreement-in-Principle (AIP)

Figure 1
Organizational Chart

The State has been provided vehicles for use by the AIP staff in their monitoring and oversight activities. Twelve vehicles are being leased by NMED from the GSA Motor Pool in Albuquerque. Vehicles are stationed at WIPP, LANL, SNL/ITRI and Santa Fe.

Work Plan

Attachment A, Section E, Paragraph 1 of the AIP requires that the State prepare a plan for its independent oversight of programs for monitoring the environment at and in the vicinity of the facilities and for assessing compliance with applicable environmental laws and regulations. Additionally, the State is to provide this plan to DOE, the Environmental Protection Agency (EPA), other appropriate federal and state agencies, and affected local and tribal governments for review and consultation. NMED developed a Work Plan for its DOE Environmental Oversight and Monitoring activities, thus meeting its obligation of the aforementioned requirement. The Work Plan was finalized and provided to DOE on November 25, 1992. This Work Plan, which is general in nature, is still current.

Site specific Work Plans detailing specific activities and objectives were developed and finalized for WIPP and SNL/ITRI in August 1993 and November 1993, respectively.

GUIDANCE DEVELOPMENT

Umbrella Protocol - NMED/DOE

In order to provide general guidance for both NMED and DOE personnel involved in the AIP Program. The "Guidance Protocol for Implementation of the Environmental Oversight, Monitoring and Remediation Agreement at DOE Facilities in New Mexico" was developed and distributed to all staff in July 1992. The purpose of the document is twofold: (1) to establish an "umbrella" protocol that delineates procedures between DOE-AL and NMED for their effective interaction in fulfilling their respective responsibilities under the terms of the AIP, and (2) to provide guidance to DOE Area Offices and NMED "site representatives" in development of "site specific" protocols that establish procedures and guidelines for day-to-day operations between DOE/DOE Contractors and NMED. This protocol remained in effect during 1994.

Site Specific Protocols

Once the "Umbrella" Protocol was developed and distributed, each NMED site Point of Contact (POC) was directed to develop site specific protocols with their counterparts at the Kirtland Area Office (KAO), the Los Alamos Area Office (LAAO) and the WIPP Project Site Office (WPSO). The Site Specific Protocol for WIPP was developed, finalized and distributed to staff in 1992. The protocol for KAO was finalized and distributed to staff in February 1993. The protocol for LAAO is still in draft form.

ENVIRONMENTAL MONITORING, RESTORATION AND WASTE MANAGEMENT

General

In 1994 environmental sampling activities were conducted including the sampling of surface water, ground water, sediments, and biota at SNL, LANL and WIPP. Staff continued oversight of environmental monitoring activities such as monitoring well drilling and construction and sample collection.

Sampling and Analysis Plans (SAPs) were developed for all 1994 environmental surveillance activities. Each major sampling event had an SAP developed to reflect the data quality objectives, sampling methodology, the number of environmental samples to be obtained, the Quality Assurance / Quality Control (QA/QC) to be performed, the criteria for sampling site location selection and the health and safety provisions delineated in the Hazard and Evaluation Plan.

Analytical Technologies Incorporated (ATI), Pace and Lockheed Analytical Laboratories were selected from the respondents to a request for proposals to provide analytical services. The New Mexico Scientific Laboratory Division will be used to analyze selected samples for quality assurance. ATI, Lockheed and Pace each sent representatives to Santa Fe to make presentations on the available analytical services and field questions.

The ambient air monitoring program at LANL and SNL continued. Filter exchanges were made bi-weekly, counted in-house for gross beta and submitted for radiochemical analysis by an analytical laboratory.

Staff continue to tabulate the gross beta counts and radiochemical results, in order to establish trends and monitor for elevated readings.

Plans to upgrade current air monitors were completed. The replacement monitors selected will provide enhanced comparability to LANL monitoring data as well as allow for additional sampling devices to monitor for radioactive isotopes such as tritium or iodine.

The thermoluminescent dosimetry program at SNL, LANL, and WIPP continued. This program measures levels of penetrating radiation in the environment. Dosimeters are co-located with facility dosimeters at LANL and SNL, and independently deployed at WIPP. The lead containers (pigs) used to store control dosimeters were replaced with pigs with thicker lead shields. This should limit the control dosimeters exposures to the desired levels and thereby produce more accurate net readings for the chips deployed in the environment.

A national electronic mail system, called LISEN, was implemented during 1994. The system was initiated by NMED AIP staff, and is designed to provide a format for the communication of activities and for the discussion of issues of concern to state and tribal technical/management personnel who are involved with DOE cleanup oversight.

Timely exchange of data continues to be an unresolved issue. Publication of data in the environmental surveillance reports can take as much as two years or more. A memorandum from Tracy Loughead, DOE-AL, was sent to all DOE Area Office AIP-POCs reminding them that DOE has committed to release of environmental data within 90 days of receipt from the analytical laboratory. However, the term "release" has been interpreted to signify that AIP staff can be allowed access to view data but not possess or release the data, and this only after such data has been verified, with no restrictions on the time taken for verification.

Additional obstacles to the timely release of data exist which are specific to each facility. For example, LANL environmental surveillance sample analysis data are often not available for viewing due to their reliance on an in-house analytical laboratory which is behind schedule. Some analyses are taking more than a year to complete. NMED and LANL are therefore unable to conduct a follow-up investigation when an anomalously high level of contamination is reported. A dialog has been initiated with DOE and LANL regarding this issue.

Staff have begun to access facility database and geographical information systems at DOE facilities. The LANL FIMAD system is now accessible by a workstation provided by LANL at the White Rock-AIP office. Staff at SNL and WIPP are investigating similar facility database access arrangements.

A computer graphics workstation was purchased for use in the AIP offices in Santa Fe. The workstation will allow for import/export of map data (GIS "coverages") from/to the NMED GIS server and possibly the LANL and SNL GIS facilities.

The development of a data base for environmental monitoring data derived from AIP sampling activities was initiated. A data base platform has been selected, and a data base shell has been created on the NMED Oracle database manager which resides on a mini-computer with networked hubs in two locations in Albuquerque and Santa Fe. The database will accommodate eventual integration into a Geographical Information Systems (GIS).

Surface water quality data from NMED sampling in 1992 and 1993 at LANL, SNL and WIPP was compiled and a draft report has been prepared which is undergoing internal review.

LANL OVERSIGHT

General Oversight Activities

AIP staff participated in a series of meetings concerning the Ground Water Protection Management Program Plan proposal at LANL. Input by AIP staff resulted in an accelerated and expanded proposal from LANL, including investigation of alluvial and perched aquifers, abandonment of old test wells and construction of new main aquifer wells.

AIP staff are continuing to develop an updated conceptual hydrogeological model for the site. Milestones completed toward this objective include preparation of a site-wide water-level map, construction of geological cross sections of the Pajarito Plateau and development of a water quality data base.

DOE committed to providing a comprehensive listing of hydrogeological projects ongoing at LANL. This is needed because, in addition to the projects conducted for regulatory compliance purposes, knowledge of ongoing basic research on the hydrogeology of the Pajarito Plateau in disparate programs at LANL will promote a more thorough understanding of the site.

AIP staff proposed the consolidation of LANL's environmental surveillance data with their environmental restoration data. At present the FIMAD system at LANL, which contains all the GIS coverages which NMED has access to, does not contain any environmental surveillance data.

AIP staff reviewed the draft Standard Operating Procedures (SOP) of the LANL AIRNET program. The SOP has been revised to enable use of the AIRNET ambient air-monitoring network as a means of confirming the predicted dose to the public derived from modeling of radionuclide emissions. Comments were transmitted to DOE regarding perceived deficiencies within the draft SOP.

The 1994 Environmental Surveillance Report from LANL reported that trace levels of plutonium were detected in ambient air monitors at six locations surrounding LANL in 1992. A meeting was held with DOE/LANL and later the matter was discussed with concerned citizens at a public meeting on environmental monitoring issues at LANL. There does not appear to be an adequate explanation for the readings, which were substantially below EPA maximum permissible concentration levels for the general public.

Based in part on public input provided during the public information meeting, NMED is proposing to develop a "real-time" radiation monitoring network. Placement, number and monitor type are being investigated. Public input on the proposal is being sought at a public meeting to be held in January 1995.

Several meetings with LANL and DOE were held on the status of two U.S EPA Notices of Noncompliance (NON) with National Environmental Standards for Hazardous Air Pollutants (NESHAP) regulations. Schedules of upgrades and other measures to bring LANL into compliance were provided to AIP staff.

Comments were provided to LANL regarding the relationship of the Site Wide Hydrogeologic Characterization studies and the facility's Hazardous and Solid Waste Amendments permit.

AIP staff observed a gas pipeline excavation in Los Alamos Canyon and raised concerns regarding impacts on the riparian habitat. These concerns were brought to DOE and LANL representatives and further activities in the immediate area were halted.

Sampling Activities

Samples were collected from approximately 50 environmental surveillance stations at LANL, five independent stations and five stations at San Ildefonso Pueblo. Sample matrixes included ground water, surface water, sediments and food stuffs. No soil samples were acquired in 1994. The stations sampled were selected from regional, perimeter, on-site, and special study locations of potential off-site contaminant pathways. A brief summary of the sampling activities follows:

- LANL production wells PM-3, PM-4, G-1a, OW-4, and WCG were sampled for radionuclides and low-level tritium.

- Five new alluvial monitoring wells were sampled for metals and radionuclides.

- Follow-up sampling of test well DT-5A (TA-49) was undertaken in conjunction with LANL. Samples taken from the well last year had high levels of lead. Mechanical elements within the well thought to be a possible source of contamination were replaced and the well was resampled after extensive purging. Not all analytical results have been received, therefore, the investigation concerning possible contamination of the main aquifer at this location continues.

- Streams and springs in the canyons bisecting the Pajarito Plateau continued to be monitored by NMED during 1994. In addition, storm water and snowmelt runoff were sampled. Elevated levels of metals have been found in stormwater runoff below hillsides which have been identified as having contamination under the Environmental Restoration Program.

- AIP staff continued their study of aquatic life in the perennial reaches of interrupted streams at LANL. Biological monitoring of these aquatic communities can reveal the existence of physical or chemical induced stress. The information gathered will be valuable in the determination of applicable water quality standards.

- In 1994, two White Rock Canyon environmental sampling and surveillance trips were conducted. The first trip was in the spring and the second trip was in the fall. Water, sediment, periphyton and invertebrate samples were obtained from selected springs and streams. Eleven springs below the Pajarito Plateau along the Rio Grande River in White Rock Canyon were sampled. Samples were analyzed for general water chemistry, nutrients, heavy metals, and radionuclides.

- Samples were taken from ten National Pollution Discharge Elimination System (NPDES) permitted outfalls which were discharging when visited by NMED staff. Twenty five additional outfalls were visited which were not discharging. Analysis received at the time this report was written fall within prescribed levels in the NPDES permit.

Analytical results of sampling activity in 1994 at LANL presented no unexpected concerns. Samples taken below active or historical discharge points were elevated in certain parameters measured, yet levels declined at sampling locations further downgradient of the discharge points and levels at perimeter stations were found to be consistent with regional background. Radionuclide analysis of water samples taken from the San Ildefonso Pueblo Community Well, Otawi House, Basalt and La Mesilla Springs were slightly above regional background. However none of these samples exceeded published DOE derived concentration guidelines (DCGs) or EPA standards.

Environmental Restoration Oversight

Environmental Restoration (ER) sites at the national laboratories are those places where waste disposal may have occurred prior to the creation of the federal hazardous waste laws in 1980. Many of the sites result from activities during the Cold War and many involve radioactive or mixed radioactive/chemical wastes. One of the major accomplishments of the DOE EM Oversight program at LANL this year has been the ranking and prioritization of individual disposal sites in order for the AIP Program to focus on the most serious sites among the more than 2000 that exist in LANL's ER program.

In order to rank these sites the AIP Program had first to gain a high level of knowledge about the entire ER program at LANL, and this entailed review of 23 'operable unit' workplans, each detailing the

history, available data and results-to-date of the possible disposal sites within its boundaries. Thirteen of these workplans were reviewed during 1994 and comments were provided to DOE and EPA. These workplans contain DOE/LANL's proposals for 'site assessment': the process of determining the location and concentrations of contaminants at a site in order to determine whether the levels are such that cleanup will be necessary.

DOE/LANL, NMED/AIP Program staff and EPA jointly developed a site prioritization system based on immediate hazard to human health or the ecology during 1993. These agency representatives applied the prioritization system during 1994. NMED/AIP's site review initiative, completed in 1994, now prioritizes all high-risk sites as rated by this ranking system and, in addition, the AIP's program's priority sites include all 'material disposal areas' and all 'firing sites.'

Material Disposal Areas, or MDAs, are pits or shafts in which wastes have been buried under clean soil. The prioritization system agreed upon by the EPA, the State and the DOE was based on immediate hazard: sites with hazardous materials on the surface. MDAs should not and do not rank high in this system as they present no immediate danger, but their danger to the environment or to public health over the long term may still be significant. For this reason, the AIP Program has added all MDAs to the list of its high priority sites.

Likewise, all firing sites have been added to this high priority list. Firing sites range from tens to hundreds of acres over which depleted uranium, lead and beryllium has been explosively disbursed during years of weapons research. Depleted uranium, or 'DU', is a low-level radiological hazard and is at least as dangerous due to its chemical toxicity. The plans for assessment of the firing sites were written by contractors and reviewed by EPA, our NMED/AIP staff, and by DOE itself, but it wasn't until after all of these reviews were complete that NMED/AIP staff realized that the data from the site assessments might not tell us what we needed to know: whether a site, or areas within a site, needed to be cleaned up. Several meetings on this subject have been held and the AIP Program is working closely with DOE/LANL to ensure that the site assessments done at firing sites provides the information needed to make dependable decisions.

Over the coming years, DOE/LANL will be submitting hundreds of reports to the State which will include chemical data on the thousands of potential disposal sites at LANL and plans for further work. In the past such reports have varied widely in terms of content, format and adequacy of detail. NMED/AIP staff at LANL have developed detailed

format and contents recommendations which DOE/LANL will use in formulating guidelines for all of these reports. The objective is clear and concise information, presented in such a way as to be both complete and concise; reports which facilitate rapid regulatory review, comment and, hopefully, approval.

The NMED/AIP-initiated national ER electronic communications system received added support from DOE this year and the effort to broaden the availability of 'best ideas' in the ER cleanup program continued.

Waste Management Oversight

AIP staff received an inventory of waste generation/storage locations at LANL and prepared draft protocols for site visits to determine if releases are occurring.

Reports of LANL's Waste Stream Characterization Program were reviewed for compliance with the U.S. EPA NPDES permit. Waste Stream Characterization reports verify proper identification of all waste streams at LANL.

AIP staff determined that the DOE and LANL have a task force in existence to evaluate the long-term viability of DOE's TRU-waste disposal facilities, including LANL. The task force is called the Peer Review Panel, and AIP staff will be included in reports and communications of the panel.

Quality Assurance

Internal QA/QC procedures for environmental monitoring activities were reviewed in 1994. The procedures are intended to maintain data quality objectives and to develop uniform methodologies to compare DOE facility data with NMED data. The development of sampling and analysis plans (SAPs) will clearly define QA/QC specifications to be followed in the collection of samples and outline data quality objectives.

Statistical methodologies for comparisons between facility data and NMED data are being examined to improve on comparison and trend analysis techniques. A set of appropriate statistical designs is being developed for use in several commonly encountered scenarios.

AIP staff provided recommendations to LANL's Biological Resource Evaluation Team (ESH-20) regarding standardization of their site selection process. The recommendations were used by ESH-20 to modify their sampling plans which will facilitate inter-canyon comparisons.

Recalculation of doses to the public from a proposed waste drum facility at TA-54 were undertaken as part of a review of an application by LANL submitted to EPA. The facility will be used for excavation, cleaning, inspection and storage of drums containing TRU-mixed waste. Expected emission rates reported in the application were used to model the dose. Dose calculations performed by staff were in substantial agreement with those reported by LANL in the application to EPA.

SNL/ITRI OVERSIGHT

General Oversight Activities

AIP staff completed a study on the Kirtland Air Force Base (KAFB) area background water-quality, of which SNL is a tenant. Historical data from several sources was compiled for future comparison with NMED split sampling data. Split samples of cores from the drilling of new monitor wells and from drilling at Environmental Restoration sites were delivered to the New Mexico Bureau of Mines and Mineral Resources for major and trace metals analysis by X-ray Fluorescence methods. Tabulation of data is complete and a draft report is in preparation.

The AIP Program drilled two boreholes, one of which was completed as a monitor well, on Isleta Pueblo land adjacent to ITRI. AIP funds were used for this activity which was undertaken to determine whether ground water contamination from ITRI lagoons is migrating off-site to Isleta Pueblo Land. Data from the drilling activity strongly indicates that ITRI's hydrogeologic model is in need of revision; however, sampling results have not indicated contamination.

As part of the RCRA Corrective Action process, SNL is required to issue an annual summary of the current knowledge of the installation-wide hydrogeological environment. The summary is called the Sitewide Hydrogeologic Characterization Report (SWHC). This report was reviewed and comments were submitted to the facility and to the EPA

after meeting with SNL-SWHC Task Leaders. Comments stated that the document should provide information that can be used to relate sources of contamination to pathways and rates of migration, as determined by local and regional hydraulic gradients and aquifer characteristics. Also, the document should be a useful reference for the public and oversight staff.

In order to determine the extent of site investigation or cleanup, it is necessary to have an accurate estimate of background concentrations of naturally occurring materials. SNL has proposed an approach to determining these concentrations in a draft document. AIP staff have begun evaluating the SNL approach and will provide comments to NMED RCRA staff and the EPA.

A computer terminal has been loaned to the AIP office at SNL. The purpose of the terminal is to allow access by AIP staff to the SNL Environmental Restoration (ER) database. The terminal has not yet been linked to the ER database.

AIP staff have configured a graphics workstation which was initially used to support the background water-quality investigation. In addition, staff will use the system to construct maps and diagrams of water quality for project analysis.

AIP staff oversaw various aspects of the Thermal Enhanced Vapor Extraction System (TEVES) Research and Development Project. The project is designed to test an enhanced method of recovery of organic solvents from soil at the Chemical Waste Landfill (CWL).

AIP staff finalized two reports on ground water monitoring systems at SNL and published the reports after receiving DOE comments.

Split samples of sediment and vegetation from routinely monitored locations at KAFB were obtained in conjunction with SNL staff.

Sampling Activities

As described under General Oversight Activities, a study of the Kirtland Air Force Base area background water quality is being conducted. Samples from area springs, water production wells, and ground water monitoring wells have been collected and analyzed for a number of water chemical parameters. In addition, samples from cores collected during the drilling of monitoring wells and samples of sediments and

rock materials were collected and delivered to the New Mexico Bureau of Mines and Mineral Resources for major and trace metals analysis by X-ray fluorescence methods. Tabulation of data is complete and a draft report is in preparation.

As part of the investigation into the nature and extent of contamination or potential contamination at Environmental Restoration sites, SNL collects samples of environmental media, particularly soil and water. AIP staff evaluate sample and analysis plans at these sites, and in some cases, split samples in order to verify analytical laboratory results. Ground water samples were split at monitoring wells associated with the Mixed Waste Landfill, the Chemical Waste Landfill, the Liquid Waste Disposal System, the underground storage tank (UST) removal site and Technical Area II. Samples collected at the Liquid Waste Disposal System monitoring wells provided early confirmation of levels of trichloroethane in excess of drinking water standards.

Sampling of ground water monitoring wells at ITRI provided results for gross alpha and gross beta radiation analyses which were the highest ever encountered in ground water at ITRI. The well with the high levels of radioactive contamination; P-4, was resampled by NMED and DOE contractors and the results of this sampling confirmed the high values.

Runoff from five separate storm water runoff events was monitored at SNL. Samples were obtained from permanent sampling stations and split with SNL. Sanitary/industrial wastewater from SNL was also sampled.

Environmental Restoration Oversight

The Environmental Restoration (ER) Project at SNL is designed to locate, characterize, and cleanup approximately 200 contaminated or potentially contaminated sites on Kirtland Air Force Base. One of the AIP Program objectives is to monitor these ER activities. In order to accomplish this, AIP staff 1) maintains communication with Sandia ER personnel, particularly at the Task Leader level, 2) reviews work and sample plans to determine if the plans meet characterization objectives, 3) monitors cleanup of sites to see if cleanup criteria are being met, 4) splits environmental samples with SNL to provide independent verification of data results, 5) provides technical input to NMED RCRA Programs and the EPA regarding decisions such as No Further Action designations, and 6) evaluates investigation or cleanup decision criteria.

In order to understand and monitor these activities, communication must be maintained with responsible SNL personnel. At the ER site level, the responsible SNL person is the Task Leader. During the year, AIP staff have met regularly with SNL Task Leaders in order to exchange technical information. This communication has resulted in improved understanding by NMED of characterization or cleanup activities underway at SNL.

For the purposes of Corrective Action, contaminated or potentially contaminated sites are grouped by SNL into 12 Operable Units. As part of the required investigation process, SNL is required to develop workplans for the characterization of sites within the units. To date, SNL has received approval from the EPA for workplans at three Operable Units: Mixed Waste Landfill, Liquid Waste Disposal System, and Technical Areas 3/5. A fourth unit, Septic Tanks and Drainfields, is under review. AIP staff reviewed the workplans submitted by SNL and provided technical comments to NMED RCRA Programs and to the EPA. One Operable Unit, Underground Storage Tanks, was removed from the RCRA Corrective Action process by SNL because the tanks are regulated by the authority of the NMED Underground Storage Tank Bureau. AIP staff are in the process of assembling documentation to assure that the tank sites have been properly closed or remediated. Workplans for the remaining seven units have either not been submitted by SNL or are being reviewed by NMED/EPA. As part of their monitoring of SNL Environmental Restoration sites, AIP staff have prepared a summary in spreadsheet form to be used to keep a running summary of activities at each site as it proceeds through the Corrective Action process.

The Program Implementation Plan is the document that sets out the general framework for investigation of sites under RCRA Corrective Action. This document was reviewed by AIP staff. Concerns centered on the proposed application of risk-based action levels instead of background concentrations or detection limits to the determination of the extent of contamination at ER sites.

For the purpose of allocating resources, SNL has developed a system for prioritizing contaminated or potentially contaminated sites within the framework of Operable Units. The process uses a system of ranking sites by estimating risk, evaluating pathways, and identifying potential receptors. The information generated by this process is presented to a Site Ranking Team, which uses this information, along with interviews with Task Leaders, and site visits to develop a Site Ranking for each Operable Unit. 1994's Team consisted of representatives of the public, an NMED representative from AIP, a representative from the EPA, as

well as representatives of SNL and the DOE. At the conclusion of the process, five units were placed in the high priority category, beginning with the investigation of trichloroethane in ground water near the Liquid Waste Disposal System, followed by Technical Area I, Technical Area II, Tijeras Arroyo, and the Foothills Test Area. Staff also evaluated EPA's proposed Corrective Action Management Unit (CAMU) administrative procedures for their relationship to site prioritization.

Quality Assurance

AIP staff verified SNL and ITRI public dose exposure calculations by independently running EPA's Compliance Assessment Program (CAP88) computer model on a micro computer.

Draft procedures were reviewed and commented on by AIP staff for estimating diffuse/fugitive air emissions of radionuclides, especially as they apply to remediation activities at SNL.

WIPP OVERSIGHT ACTIVITIES

General

Oversight staff observed the drilling and completion of six new monitor wells at the WIPP site. Split samples of drill cuttings were recovered and archived for future analysis. When the drilling program was in the planning stages, oversight staff coordinated with EPA on technical recommendations regarding well placement, drilling, construction and logging methods.

An environmental radiation monitoring network was maintained throughout the year. Thermo-luminescent dosimeters were exchanged on a quarterly basis. The dosimeters were deployed at locations where Westinghouse previously had monitors before that program was discontinued.

Comments were provided to DOE on the Compliance Status Report (CSR) which summarizes the current status of the WIPP performance assessment studies.

Comments were provided to DOE on the 1992 WIPP Performance Assessment. Comments focused on possible additional ground water

migration pathways, subsidence potential related to dissolution of evaporite deposits, and subsidence potential related secondary and tertiary oil and gas recovery adjacent to the facility boundary.

Staff attended a detailed overview of the WIPP Performance Assessment (PA) computer codes. The WIPP PA utilizes a system of computer codes to certify compliance with the EPA's long term disposal standards. The system of codes consists of individual, interconnecting computer models of aspects pertinent to the long term performance of the repository such as modeling of transmissivity of the Culebra Formation above the repository. AIP staff worked closely with EPA and stakeholders to oversee the WIPP PA.

A report entitled "Assessment of Off-Site Radioactivity Surveillance Systems" was completed in partial fulfillment of a deliverable derived from the AIP. A press release announcing the availability of the report and summarizing its conclusions was released.

Staff attended a series of technical exchange meetings between EPA and DOE which were meant to facilitate the regulatory actions required of EPA under the Land Withdrawal Act, long term radioactive disposal standards (40 CFR 191) and the land disposal restrictions (40 CFR 268). Participation in these meetings enhanced the knowledge of AIP staff regarding critical issues surrounding the WIPP project.

Staff also attended a series of stakeholder involvement meetings on the WIPP project. Another series of meetings on the System Prioritization Method were attended.

Sampling Activities

Ground water, surface water, biota and sediment samples were obtained from the radiological baseline locations. Split samples were taken to be analyzed for gross alpha, gross beta, gamma spectroscopy and specific actinides. Results reported to date from the above samples are consistent with the extensive amount of background data already compiled by the WIPP project for the region.

Station A air monitoring filters were exchanged on a monthly basis throughout the year. Filters collected over a calendar quarter were composited and counted for gross beta radiation.

Quality Assurance

Ongoing AIP Program quality assurance (QA) activities at WIPP include monitoring radionuclide emission rates and verifying off-site dose rates using qualified computer air dispersion modeling programs and performance of quality assurance audits on contractor personnel performing regularly scheduled functional tests. AIP staff also:

- Collect and preserve pertinent data in historical files.
- Monitor internal and external laboratory QA programs.
- Monitor meteorological and ambient air data.
- Monitor bi-weekly volatile organic compound canister exchanges.
- Monitor quarterly thermoluminescent detector exchanges and readings.
- Monitor continuous air monitoring data, exchange filters at the fixed air sampler at Station A daily.
- Exchange filters at the various low volume air samplers bi-monthly.

Waste Management/ Waste Characterization

- AIP staff reviewed the draft disposal phase Quality Assurance Program Plan for waste characterization of waste destined for WIPP.
- Additionally, AIP staff continued efforts to stay informed about the Peer Review Process, the administrative vehicle designed to determine the long-term effectiveness of storage measures for buried transuranic waste.

EMERGENCY RESPONSE PLANNING

AIP staff developed and executed an agreement between the Environment Department and the Department of Public Safety (DPS). The agreement will support a single FTE at DPS which will assist NMED in meeting the objectives relative to emergency response planning.

AIP staff attended the LANL "Winterex '94" hazardous materials exercise on January 13, 1993. The State of New Mexico and LANL were hosts to the following observers: EPA, NM DPS Advanced Training Bureau, and the NM Department of Health's Emergency Medical Services Bureau.

AIP staff attended the HazMat Drill 94-DR-001 at SNL on March 1, 1994. The functional drill was for certification of HazMat Teams and emergency response interface with the KAFB, Albuquerque Ambulance Service, and the Department of Energy.

AIP staff participated in an Exercise Design Development meeting at the SNL Emergency Operation Center to discuss objective, scope, and purpose for the Hazmat Drill, High Voltage Drill, Earthquake Functional Drill, and the Earthquake Exercise The objective is to work with the City of Albuquerque, the State of NM, KAFB, and the Department of Energy in planning and in performance of exercises.

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Additional emergency response planning/oversight activities are summarized below:

- AIP staff reviewed the Winterex '93 emergency response exercise at LANL.

- AIP staff observed several of the Eddy County Local Emergency Planning Committee meetings.

- AIP staff observed Exercise Porcupine at LANL and reviewed the DOE report on the exercise which was deemed to be an accurate description of its successes and shortcomings.

- AIP staff suggested and obtained agreement on improvements to the communication system used during emergency response activities at LANL.

- AIP staff formed an ongoing cooperative relationship with the ER Management Center at LANL so that AIP will be formally notified of all emergency response exercises.

PUBLIC INFORMATION/ PUBLIC RELATIONS

General

A general informational pamphlet describing the NMED DOE Oversight Program was published and distributed to the public during 1994.

Additionally, the first issue of *Environmental Report*,: a NMED AIP newsletter was published during the year. This newsletter will be published 3-4 times a year and will focus on technical issues of public interest at each of the facilities.

AIP staff issued a press release concerning availability of NMED reports on the Ground-Water Monitoring programs at the SNL Chemical Waste and Mixed Waste Landfills.

AIP staff demonstrated a remote sampling system trailer to New Mexico Water Camp Students. The Water Camp, which brings students age 14-19 together for one week to learn about water issues in New Mexico is hosted by the Santa Fe County Extension Service.

Reports

As a management tool and to facilitate the development of an annual report, each NMED bureau participating in the AIP Program submits quarterly reports to the Director of the Water and Waste Management Division and to the DOE Oversight Chief, describing significant activities and accomplishment during the three month reporting period. These reports are utilized as internal documents only.

Additionally, NMED prepares and submits to DOE Headquarters on a quarterly basis, an AIP Implementation Report describing scope of work, objectives, accomplishments and significant issues.

As required by the AIP, NMED submits an Annual Performance Report for environmental monitoring and oversight at DOE facilities in New Mexico. The 1993 Annual Report was submitted on February 8, 1994. This document satisfies the requirement for the 1994 Annual Report.

The report, Assessment of Off-Site Radioactivity Surveillance Systems at WIPP was released.

The report, Review of Ground-Water Monitoring at Sandia National Laboratories' Mixed Waste Landfill was released.

The report, Review of Ground-Water Monitoring at Sandia National Laboratories' Chemical Waste Landfill was released.

Informational Meetings

AIP staff held a public meeting in Albuquerque at the South Broadway Cultural Center on Ground Water Issues at SNL/ITRI.

AIP staff hosted a public meeting to 1) solicit public involvement in DOE/LANL's site-wide ER ground water monitoring system proposal and 2) solicit public input on air monitoring issues at LANL. The meeting resulted in ongoing public involvement initiatives in which public representatives on both issues will meet to identify solutions to monitoring of both air and ground water.

AIP staff routinely attended DOE/SNL Environmental Restoration quarterly meetings, Kirtland Air Force Base/Bernalillo County Environmental Working Group, and Kirtland Groundwater Working Group meetings.

AIP staff attended the quarterly DOE/LANL Environmental Restoration meetings. Additional meetings which AIP staff participated in or attended are summarized below:

- AIP staff attended stakeholder forum on WIPP held in Carlsbad.
- The SNL Quarterly Public meeting and the Bernalillo County/Kirtland Air Force Base Environmental Working Group meeting was attended by AIP staff.
- AIP staff participated in SNL Site Ranking Team meetings.
- AIP staff attended the Secretary of Energy Advisory Board (Galvin Commission) meeting in Los Alamos. The purpose of the Board is to provide public input regarding the future mission of LANL.
- A presentation on New Mexico's AIP Program was made to the Los Alamos Accord Tribal Workshop sponsored by DOE.
- AIP staff attended DOE/SNL Public Awareness Working Group Meetings. Attendance at these meetings is important to attempt to develop some coordination between different entities at SNL conducting public awareness activities.

- A DOE public meeting on Defense Nuclear Facilities was attended by AIP staff.

AIP staff attended the Los Alamos Thyroid Cancer Study Public meeting in Los Alamos, New Mexico.

AIP staff attended the quarterly public information meetings sponsored by LANL and SNL/ITRI. These meetings provide the public an opportunity to be educated on DOE and DOE/contractor activities in environmental restoration and address concerns on the facilities operations.

Weekly meetings are held between NMED staff and DOE staff at WIPP. Bi-weekly meetings are held with NMED and LAAO staff. Monthly meetings are held with NMED staff and DOE/KOA staff. The purpose of these regularly scheduled meetings is to discuss upcoming activities, monitoring and sampling schedules and to provide an open line of communication between NMED on-site personnel and DOE Area Office staff.

In August 1994, a DOE/State Agreement-in-Principle Program Review Meeting sponsored by DOE/Headquarters was held in Knoxville, Tennessee and attended by more than 100 individuals representing 13 state AIP Programs, the DOE and DOE contractors. Four NMED staff attended and participated in panel discussions.

A schedule of bi-monthly meetings has been developed for NMED and DOE AIP staff. The purpose of the meetings is to discuss site specific technical issues, administrative matters and to provide an avenue for improved coordination between DOE and NMED. Six such meetings were held during 1994 and were attended by both NMED and DOE site Points-of Contact (POC's), a representative from each NMED Bureau involved in the AIP Program, the NMED DOE Oversight Program Chief and DOE/AL personnel responsible for administering the AIP.

Each year an annual meeting is scheduled between NMED and DOE to develop an integrated schedule and prioritization of clean-up, environmental restoration, environmental compliance and permitting activities for the upcoming year.

In October 1994, a retreat was held between NMED and DOE staff in order to commence negotiations on a new AIP and Grant after expiration of the current AIP in September of 1995.

TRAINING

Technical Training

AIP staff obtained training on the use of the MODFLOW Three Dimensional Aquifer Model in order to assist in a joint NMED - USGS project to model the hydrogeology of the Pajarito Plateau. This was a two-week course put on by the USGS at their National Training Center in Denver, Colorado.

In-house training was held on statistics. Course content included curve standardization, analysis of variance, regression analysis, and non-parametric designs. The training will assist staff in using statistical methods for the evaluation and verification of environmental data.

A short course on geochemistry offered by Los Alamos National Laboratory was attended by AIP staff. The course was conducted over four days and covered physical properties which influence the mobility of contaminates in the subsurface.

Additional training attended by AIP staff is summarized below.

- AIP staff attended training on performance assessment computer codes for WIPP.
- AIP staff attended the DOE Integrated Workshop in Golden, Colorado.
- International Ground Water Modeling Center short course on Principles and Applications of Aquifer Testing in Boulder, Colorado was taken by AIP staff.
- AIP staff attended the 1994 New Mexico Conference on the Environment in Albuquerque, New Mexico.
- A short course on Investigative Techniques Required to Characterize a Multi-Aquifer System presented by Environmental Education Enterprises in Austin, Texas was attended.
- A seminar presented by LANL and Neptune, Inc., on the application of compositing to investigation of ER sites was attended.

- AIP staff attended a field trip hosted by LANL on the geology and hydrogeology of the Pajarito Plateau.

- AIP staff attended presentations by SNL staff on a probabilistic approach to risk assessment and the application of a software tool called PRECIS.

- Presentations by SNL staff on the surface and subsurface geology of the KAFB area were attended.

- EPA Course on Sampling for Hazardous Materials was attended.

- AIP staff attended an in-house training on the measurement of hydrogeologic parameters.

- A geological familiarization tour of KAFB presented by SNL AIP Surveillance staff was attended.

- A short course on Statistics for Environmental Applications sponsored by the Technology Applications Program of SNL. Santa Fe, NM was attended.

- AIP staff attended a seminar on Landfill Capping in Arid Climates presented by SNL.

WORKER HEALTH AND SAFETY

Training of Staff

In accordance with the Health and Safety Program Plan AIP staff attended either the 40 Hour Hazardous Waste Worker or 8 Hour Refresher course. In addition, staff attended a First Aid and CPR course put on by the American Red Cross.

Employee baseline medical examinations were conducted under the medical surveillance contract for AIP staff who conduct work activities in the field.