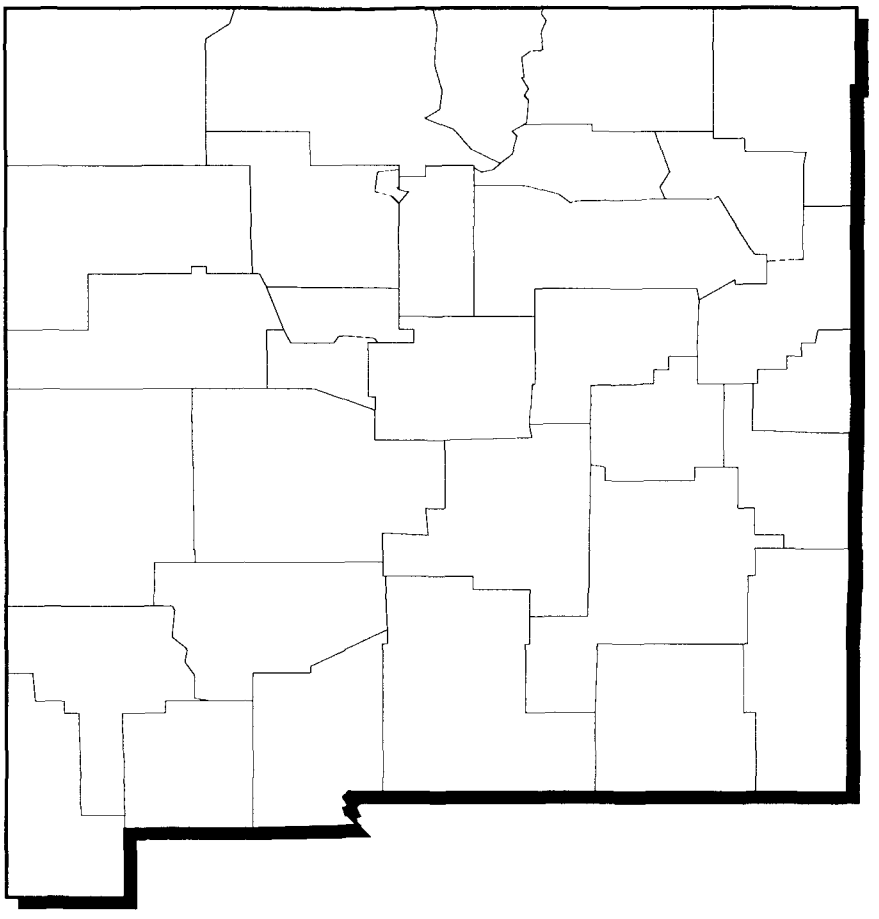
United States
Environmental Protection
Agency

Solid Waste And
Emergency Response
(5102 G)

EPA/540/R-93/029
December 1992
PB93-963230

SUPERFUND: Progress at National Priority List Sites



NEW MEXICO 1992 UPDATE

Publication #9200.5-731B
December 1992

NATIONAL PRIORITIES LIST SITES:

New Mexico

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Emergency & Remedial Response
Office of Program Management
Washington, DC 20460

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INTRODUCTION

A BRIEF OVERVIEW OF SUPERFUND

During the second half of the Twentieth Century, the environmental consequences of more than 100 years of industrialization in the United States became increasingly clear. Authors such as Rachel Carson wrote passionately about the often-hidden environmental effects of our modern society's widespread use of chemicals and other hazardous materials. Their audience was small at first, but gradually their message spread. Growing concern turned to action, as people learned more about the environment and began to act on their knowledge

The 1970s saw environmental issues burst onto the national scene and take hold in the national consciousness. The first Earth Day was observed in 1970, the year that the U.S. Environmental Protection Agency (EPA) was founded. By the end of the 1970s, Love Canal in New York and the Valley of the Drums in Kentucky had entered the popular lexicon as synonyms for pollution and environmental degradation.

Superfund Is Established

The industrialization that gave Americans the world's highest standard of living also created problems that only a national program could address. By 1980, the U.S. Congress had passed numerous environmental laws, implemented by the EPA, but many serious hazardous waste problems were slipping through the cracks.

Responding to growing concern about public health and environmental threats from uncontrolled releases of hazardous materials, the U.S. Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Popularly known as Superfund, CERCLA had one seemingly simple job—to uncover and clean up hazardous materials spills and contaminated sites.

A Big Job

Few in Congress, the EPA, the environmental community, or the general public knew in 1980 just how big the nation's hazardous materials problem is. Almost everyone thought that Superfund would be a short-lived program requiring relatively few resources to clean up at most a few hundred sites. They were quite mistaken.

As the EPA set to work finding sites and gauging their potential to harm people and the environment, the number of sites grew. Each discovery seemed to lead to another, and today almost 36,000 hazardous waste sites have been investigated as potential hazardous waste sites. They are catalogued in the EPA's computerized database, CERCLIS (for the Comprehensive Environmental Re-

sponse, Compensation, and Liability Information System).

The damage to public health and the environment that each site in CERCLIS might cause is evaluated; many sites have been referred to State and local governments for cleanup. The EPA lists the nation's most serious hazardous waste sites on the National Priorities List, or NPL. (These Superfund sites are eligible for federally-funded cleanup, but whenever possible the EPA makes polluters pay for the contamination they helped create.) The NPL now numbers 1,275 sites, with 50 to 100 added each year. By the end of the century, the NPL may reach as many as 2,100 sites.

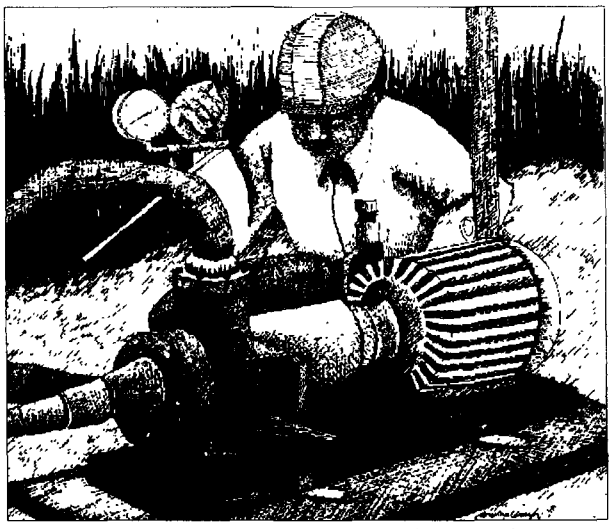
Superfund faces some of the most complex pollution problems ever encountered by an environmental program. Improperly stored or disposed chemicals and the soil they contaminate are one concern. More difficult to correct are the wetlands and bays, and the groundwater, lakes, and rivers often used for drinking water that are contaminated by chemicals spreading through the soil or mixing with storm water runoff. Toxic vapors contaminate the air at some sites, threatening the health of people living and working near by.

Superfund aims to control immediate public health and environmental threats by tackling the worst problems at the worst sites first. Wherever possible, Superfund officials use innovative treatment techniques—many developed or refined by the EPA—to correct hazardous materials problems once and for all. Many of the treatment techniques they use did not exist when the program was created.

The EPA Administrator had challenged Superfund to complete construction necessary for cleanup work at 130 NPL sites by the end of the 1992 federal fiscal year. By September 30, 1992, the end of fiscal year 1992, construction had been completed at a total of 149 NPL sites. Superfund is well on its way of meeting the Administrator's goal of completing construction at 200 NPL sites by the end of fiscal year 1993, and 650 sites by the end of fiscal year 2000.

Quick Cleanup at Non-NPL Sites

Long-standing hazardous waste sites are not Superfund's only concern. The EPA also responds to hazardous spills and other emergencies, hauling away chemicals for proper treatment or disposal. Superfund teams perform or supervise responses at rail and motor vehicle accidents, fires, and other emergencies involving hazardous substances. They also evacuate people living and working near by, if necessary, and provide clean drinking water to people whose own water is contaminated. Removal crews also post warning signs and take other precautions to keep people and animals away from hazardous substances.



Superfund employee prepares equipment for groundwater treatment.

Quick Cleanups, or Removals, are not limited to emergencies. When cleanup crews at contaminated sites find hazardous substances that immediately threaten people or the environment, they act right away to reduce the threat or to remove the chemicals outright. As the EPA implements the Superfund Accelerated Cleanup Model (SACM), more and more sites will undergo quick cleanups, and many of these will be cleaned up completely without ever being included on the NPL. (See "Streamlining Superfund: The Superfund Accelerated Cleanup Model.")

Some of Superfund's most significant gains in public health and environmental protection have been won by the removal program. As of March 31, 1992, the Emergency Response Program had logged more than 2,300 removal completions since Superfund was established.

Superfund employee removing drums from a Superfund site.

The Public's Role

Superfund is unique among federal programs in its commitment to citizen participation. Although the EPA is responsible for determining how dangerous a site is and how best to clean it up, the Agency relies on citizen input as it makes these decisions.

Community residents are often invaluable sources of information about a hazardous waste site, its current and previous owners, and the activities that took place there. Such information can be crucial to experts evaluating a site and its potential dangers.

Residents also comment on EPA cleanup plans by stating their concerns and preferences at public meetings and other forums and in formal, written comments to Agency proposals. The EPA takes these comments and concerns seriously, and has modified many proposals in response to local concerns. For, ultimately, it is the community and its citizens that will live with the results of the EPA's decisions and actions; it is only fair that citizens participate in the process.

A Commitment to Communication

The Superfund program is very serious about public outreach and communication. Community relations coordinators are assigned to each NPL site to help the public understand the potential hazards present, as well as the cleanup alternatives. Local information repositories, such as libraries or other public buildings, have been established near each NPL site to ensure that the public has an opportunity to review all relevant information and the proposed cleanup plans.

The individual State volumes contain summary fact sheets on NPL sites in each State and territory. Together, the fact sheets provide a concise report on site conditions and the progress made toward site cleanups as of March 1992. The EPA revises these volumes periodically to provide an up-to-date record of program activities. A glossary of key terms relating to hazardous waste management and Superfund site cleanup is provided at the back of this book.

INTRODUCTION

Superfund is, of course, a public program, and as such it belongs to everyone of us. This volume, along with other State volumes, comprises the EPA's report on Superfund progress to the program's owners for the year 1992.

STREAMLINING SUPERFUND: THE SUPERFUND ACCELERATED CLEANUP MODEL

Historically, critics and supporters alike have measured Superfund's progress by the number of hazardous waste sites deleted from the NPL. Although easy enough to tally, this approach is too narrow. It misses the major gains Superfund makes by reducing major risks at the nation's worst hazardous sites long before all clean-up work is done and the site deleted. It also ignores the Removal Program's contributions to meeting Superfund's twin mandates of maximizing public health and environmental protection.

Renewing Superfund's commitment to rapid protection from hazardous materials, the EPA is streamlining the program. The Superfund Accelerated Cleanup Model, or SACM, will take Early Actions, such as removing hazardous wastes or contaminated materials, while experts study the site. SACM also will combine similar site studies to reduce the time required to evaluate a site and its threats to people and the environment. This way, immediate public health and environmental threats will be addressed while long-term cleanups are being planned.

Emergencies such as train derailments and motor vehicle accidents will continue to be handled expeditiously. Teams of highly trained technicians will swing into action right away, coordinating the cleanup and removal of hazardous substances to ensure public safety as quickly as possible.

Breaking With Tradition

The traditional Superfund process begins with a lengthy phase of study and site assessment, but SACM will save time by combining separate, yet similar, activities. Each EPA Region will form a Decision Team of site managers, risk assessors, community relations coordinators, lawyers, and other experts to monitor the studies and quickly determine whether a site requires Early Action (taking less than five years), Long-term Action, or both.

While the site studies continue, the Decision Team will begin the short-term work required to correct immediate public health or environmental threats from the site. Besides removing hazardous materials, Early Actions include taking precautions to keep contaminants from moving off the site and restricting access to the site. Early Actions could eliminate most human risk from these sites, and Superfund will further focus its public participation and public information activities on site assessment and Early Action.

Long-Term Solutions

While Early Actions can correct many hazardous waste problems—and provide the bulk of public health and environmental protection—some contamination will take longer to correct. Cleanups of mining sites, wetlands, estuaries, and projects involving incineration of contaminants or restoration of groundwater can take far longer than the three to five years envisioned for Early Actions. Under SACM, these sites will be handled much as they are now.

Also under SACM, the EPA will continue its pursuit of potentially responsible parties who may have caused or contributed to site contamination. Expedited enforcement and procedures for negotiating potentially responsible party settlements will secure their participation. Superfund personnel will continue to oversee clean-up work performed by potentially responsible parties.

HOW SUPERFUND WORKS

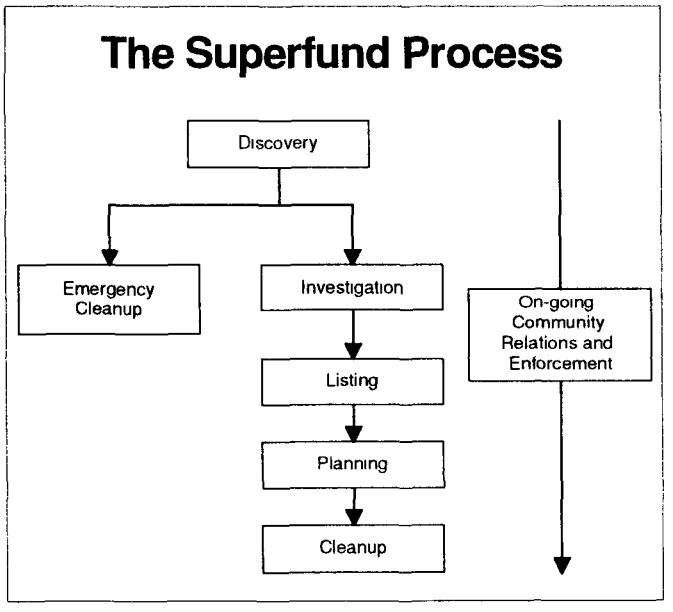
Each Superfund site presents a different set of complex problems. The same hazardous materials and chemicals often contaminate many sites, but the details of each site are different. Almost always, soil is contaminated with one or more chemicals. Their vapors may taint the air over and around the site. Contaminants may travel through the soil and reach underground aquifers which may be used for drinking water, or they may spread over the site to contaminate streams, ponds, and wetlands. The contaminating chemicals may interact with each other, presenting even more complicated cleanup problems.

Superfund's cleanup process is arduous and exacting. It requires the best efforts of hundreds of experts in science and engineering, public health, administration and management, law, and many other fields.

The average NPL site takes from seven to ten years to work its way through the system, from discovery to the start of long-term cleanup. Actual cleanup work can take years, decades if contaminated groundwater must be treated. Of course, imminent threats to public health or the environment are corrected right away.

The diagram to the right presents a simplified view of the cleanup process. The major steps in the Superfund process are:

- Site discovery and investigation to identify contaminants and determine whether emergency action is required;
- Emergency site work such as removing contaminants for proper treatment or disposal, and securing the site to keep people and animals away, if warranted by conditions at the site;
- Site evaluation to determine how people living and working nearby, and the environment, may be exposed to site contaminants;
- Detailed studies to determine whether conditions are serious enough to add the site to the National Priorities List of sites eligible for federally funded cleanup under Superfund;
- Selection, design, and implementation of a cleanup plan, after a thorough review of the most effective cleanup options, given site conditions, contaminants present, and their potential threat to public health or the environment.
- Follow-up to ensure that the cleanup work done at the site continues to be effective over the long term.



From the earliest stages, EPA investigators work hard to identify those responsible for the contamination. As their responsibility is established, the EPA negotiates with these "responsible parties" to pay for cleaning up the problem they helped create. This "enforcement first" policy saves Superfund Trust Fund monies for use in cleanups where the responsible parties cannot be identified, or where they are unable to fund cleanup work.

THE VOLUME

How to Use the State Book

The site fact sheets presented in this book are comprehensive summaries that cover a broad range of information. The fact sheets describe hazardous waste sites on the NPL and their locations, as well as the conditions leading to their listing ("Site Description"). The summaries list the types of contaminants that have been discovered and related threats to public and ecological health ("Threats and Contaminants"). "Cleanup Approach" presents an overview of the cleanup activities completed, underway, or planned. The fact sheets conclude with a brief synopsis of how much progress has been made in protecting public health and the environment. The summaries also pinpoint other actions, such as legal efforts to involve polluters responsible for site contamination and community concerns.

The fact sheets are arranged in alphabetical order by site name. Because site cleanup is a dynamic and gradual process, all site information is accurate as of the date shown on the bottom of each page. Progress always is being made at NPL sites, and the EPA periodically will update the site fact sheets to reflect recent actions and will publish updated State volumes. The following two pages show a generic fact sheet and briefly describe the information under each section.

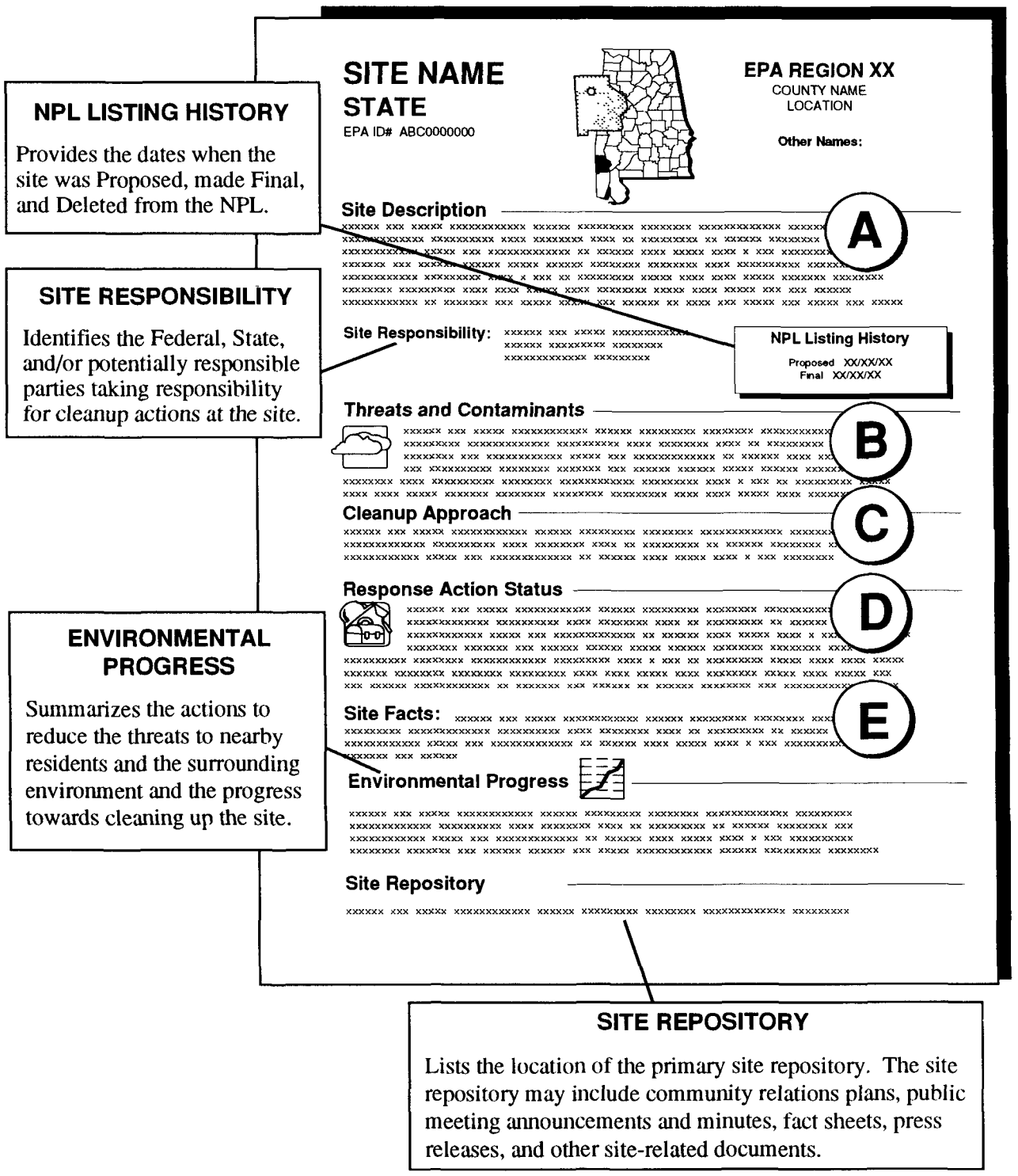
How Can You Use This State Book?

You can use this book to keep informed about the sites that concern you, particularly ones close to home. The EPA is committed to involving the public in the decision making process associated with hazardous waste cleanup. The Agency solicits input from area residents in communities affected by Superfund sites. Citizens are likely to be affected not only by hazardous site conditions, but also by the remedies that combat them. Site cleanups take many forms and can affect communities in different ways. Local traffic may be rerouted, residents may be relocated, temporary water supplies may be necessary.

Definitive information on a site can help citizens sift through alternatives and make decisions. To make good choices, you must know what the threats are and how the EPA intends to clean up the site. You must understand the cleanup alternatives being proposed for site cleanup and how residents may be affected by each one. You also need to have some idea of how your community intends to use the site in the future, and you need to know what the community can realistically expect once the cleanup is complete.

The EPA wants to develop cleanup methods that meet community needs, but the Agency only can take local concerns into account if it understands what they are. Information must travel both ways in order for cleanups to be effective and satisfactory. Please take this opportunity to learn more, become involved, and assure that hazardous waste cleanup at "your" site considers your community's concerns.

THE VOLUME


SITE NAME
STATE
EPA ID# ABC0000000
EPA REGION XX
COUNTY NAME
LOCATION
Other Names:
Site Description
A
Site Responsibility:
NPL Listing History
Proposed XX/XX/XX
Final XX/XX/XX
Threats and Contaminants
B
Cleanup Approach
C
Response Action Status
D
Site Facts:
E
Environmental Progress
Site Repository
NPL LISTING HISTORY
Provides the dates when the site was Proposed, made Final, and Deleted from the NPL.
SITE RESPONSIBILITY
Identifies the Federal, State, and/or potentially responsible parties taking responsibility for cleanup actions at the site.
ENVIRONMENTAL PROGRESS
Summarizes the actions to reduce the threats to nearby residents and the surrounding environment and the progress towards cleaning up the site.
SITE REPOSITORY
Lists the location of the primary site repository. The site repository may include community relations plans, public meeting announcements and minutes, fact sheets, press releases, and other site-related documents.

A

SITE DESCRIPTION

This section describes the location and history of the site. It includes descriptions of the most recent activities and past actions at the site that have contributed to the contamination. Population estimates, land usages, and nearby resources give readers background on the local setting surrounding the site.

B

THREATS AND CONTAMINANTS

The major chemical categories of site contamination are noted, as well as which environmental resources are affected. Icons representing each of the affected resources (may include air, groundwater, surface water, soil, and contamination to environmentally sensitive areas) are included in the margins of this section. Potential threats to residents and the surrounding environments arising from the site contamination also are described.

C

CLEANUP APPROACH

This section contains a brief overview of how the site is being cleaned up.

D

RESPONSE ACTION STATUS

Specific actions that have been accomplished or will be undertaken to clean up the site are described here. Cleanup activities at NPL sites are divided into separate phases, depending on the complexity and required actions at the site. Two major types of cleanup activities often are described: initial, immediate, or emergency actions to quickly remove or reduce imminent threats to the community and surrounding areas; and long-term remedial phases directed at final cleanup at the site. Each stage of the cleanup strategy is presented in this section of the summary. Icons representing the stage of the cleanup process (initial actions, site investigations, EPA selection of the cleanup remedy, engineering design phase, cleanup activities underway, and completed cleanup) are located in the margin next to each activity description.

E

SITE FACTS

Additional information on activities and events at the site are included in this section. Often details on legal or administrative actions taken by the EPA to achieve site cleanup or other facts pertaining to community involvement with the site cleanup process are reported here.

THE VOLUME

The "icons," or symbols, accompanying the text allow the reader to see at a glance which environmental resources are affected and the status of cleanup activities at the site.

Icons in the Threats and Contaminants Section

Contaminated *Groundwater* resources in the vicinity or underlying the site. (Groundwater is often used as a drinking water source.)

Contaminated *Surface Water and Sediments* on or near the site. (These include lakes, ponds, streams, and rivers.)

Contaminated *Air* in the vicinity of the site. (Air pollution usually is periodic and involves contaminated dust particles or hazardous gas emissions.)

Contaminated *Soil and Sludges* on or near the site. (This contamination category may include bulk or other surface hazardous wastes found on the site.)

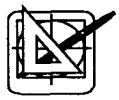
Threatened or contaminated *Environmentally Sensitive Areas* in the vicinity of the site. (Examples include wetlands and coastal areas or critical habitats.)

Icons in the Response Action Status Section

Initial, Immediate, or Emergency Actions have been taken or are underway to eliminate immediate threats at the site.

Site Studies at the site to determine the nature and extent of contamination are planned or underway.

Remedy Selected indicates that site investigations have been concluded, and the EPA has selected a final cleanup remedy for the site or part of the site.

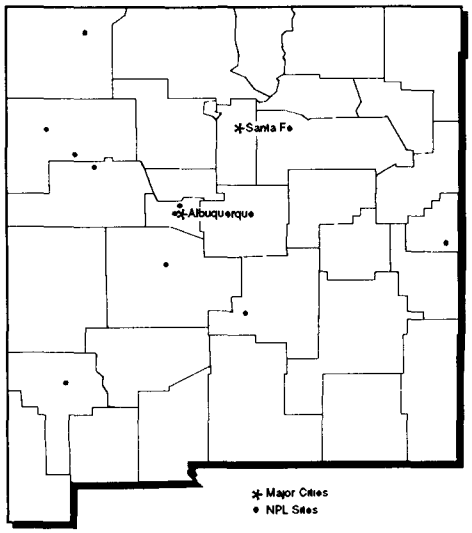


Remedy Design means that engineers are preparing specifications and drawings for the selected cleanup technologies.

Cleanup Ongoing indicates that the selected cleanup remedies for the contaminated site, or part of the site, currently are underway.

Cleanup Complete shows that all cleanup goals have been achieved for the contaminated site or part of the site.

A SUMMARY OF THE STATE PROGRAM



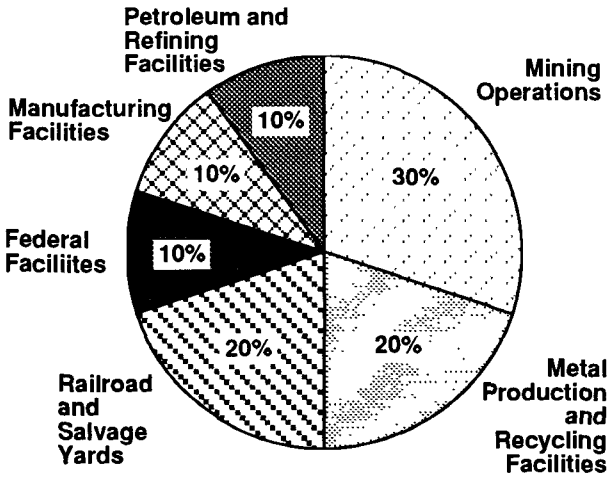
Superfund Activities in New Mexico

The State of New Mexico is located within EPA Region 6, which includes the five south central States. The State covers 121,335 square miles. According to the 1990 Census, New Mexico experienced a 16 percent increase in population between 1980 and 1990, and is ranked thirty-seventh in U.S. population with approximately 1,515,000 residents.

The Hazardous Waste Act of 1988 provides the State with the authority to compel polluters to clean up Superfund sites. In practice, the State sends a notice of violation to polluters, allowing time for compliance. If the polluters are unwilling to participate in cleanup activities, the State has the option of imposing civil penalties or serving an injunction on the polluters. While the State cannot conduct long-term cleanup activities itself, it does have the authority to perform emergency response and removal actions and then recover the cost of these activities from polluters at a later time. The 1988 Act also created the Hazardous Waste Emergency Fund to finance site-related activities, including emergency response actions, investigations and designs for removal actions, and the 10 percent contribution from the State required by the Federal Superfund program. Appropriations, bonds, money recovered from polluters, penalties, and fines make up the fund. Currently, 10 sites in the State of New Mexico have been listed as final on the NPL. No new sites have been proposed for listing in 1992.

The New Mexico Environment Department
implements the Superfund Program in the State of New Mexico

Activities responsible for hazardous waste contamination in the State of New Mexico include:



Facts about the 10 NPL sites in New Mexico:

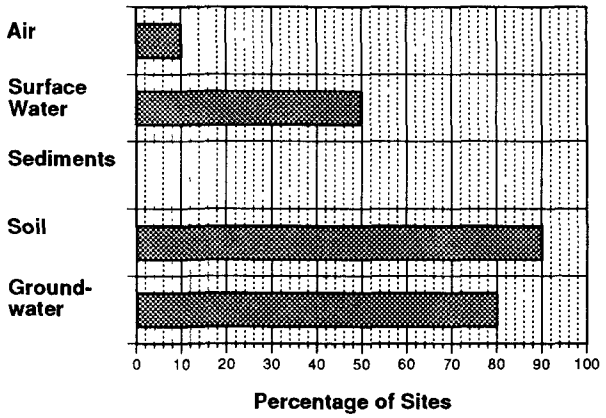
Immediate Actions (such as removing hazardous substances or restricting site access) were performed at seven sites.

No site endangers sensitive environments.

Six sites are located near residential areas.

Most Sites Have Multiple Contaminants and Contaminated Media:

Media Contaminated at Sites



Contaminants Found at Sites

	Percentage of Sites
Heavy Metals	60%
VOCs	30%
Radiation	20%
Other*	20%
PCBs	10%
Pesticides/Herbicides	10%
Petrochemicals/Explosives	10%

*Other contaminants include cyanide and Flouride

The Potentially Responsible Party Pays...

In the State of New Mexico, potentially responsible parties are paying for or conducting cleanup activities at five sites.

For Further Information on NPL Sites and Hazardous Waste Programs in the State of New Mexico Please Contact:

☎	EPA Region 6 Office of External Affairs, Community Relations	For information concerning community involvement	(214) 655-2200
☎	National Response Center	To report a hazardous waste emergency	(800) 424-8802
☎	The Environment Department: Groundwater Protection and Remediation Bureau, Superfund Section	For information about the State's responsibility in the Superfund Program	(505) 827-0078
☎	EPA Region 6 Hazardous Waste Management Division	For information about the Regional Superfund Program	(214) 655-6740
☎	EPA Superfund Hotline	For information about the Federal Superfund Program	(800) 424-9068

THE NPL REPORT

PROGRESS TO DATE

The following Progress Report lists all sites currently on, or deleted from, the NPL and briefly summarizes the status of activities for each site at the time this report was prepared. The steps in the Superfund cleanup process are arrayed across the top of the chart, and each site's progress through these steps is represented by an arrow (⇨) indicating the current stage of cleanup.

Large and complex sites often are organized into several cleanup stages. For example, separate cleanup efforts may be required to address the source of the contamination, hazardous substances in the groundwater, and surface water pollution, or to clean up different areas of a large site. In such cases, the chart portrays cleanup progress at the site's *most advanced* stage, reflecting the status of site activities rather than administrative accomplishments.

⇨ An arrow in the "Initial Response" category indicates that an emergency cleanup, immediate action, or initial action has been completed or currently is underway. Emergency or initial actions are taken as an interim measure to provide immediate relief from exposure to hazardous site conditions or to stabilize a site to prevent further contamination.

⇨ A final arrow in the "Site Studies" category indicates that an investigation to determine the nature and extent of the contamination at the site currently is ongoing or planned.

⇨ A final arrow in the "Remedy Selection" category means that the EPA has selected the final cleanup strategy for the site. At the few sites where the EPA has determined that initial response actions have eliminated site contamination, or that any remaining contamination will be naturally dispersed without further cleanup activities, a "No Action" remedy has been selected. In these cases, the arrows are discontinued at the "Remedy Selection" step and resume in the "Construction Complete" category.

⇨ A final arrow at the "Remedial Design" stage indicates that engineers currently are designing the technical specifications for the selected cleanup remedies and technologies.

⇨ A final arrow in the "Cleanup Ongoing" column means that final cleanup actions have been started at the site and currently are underway.

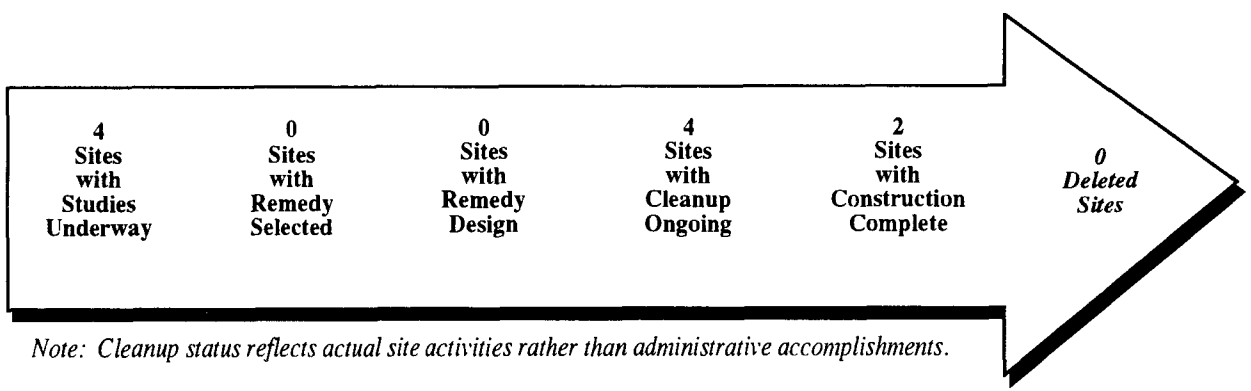
⇨ A final arrow in the "Construction Complete" category is used only when all phases of the site cleanup plan have been performed, and the EPA has determined that no additional construction actions are required at the site. Some sites in this category currently may be undergoing long-term operation and maintenance or monitoring to ensure that the cleanup actions continue to protect human health and the environment.

✓ A check in the "Deleted" category indicates that the site cleanup has met all human health and environmental goals and that the EPA has deleted the site from the NPL.

Further information on the activities and progress at each site is given in the site "Fact Sheets" published in this volume.

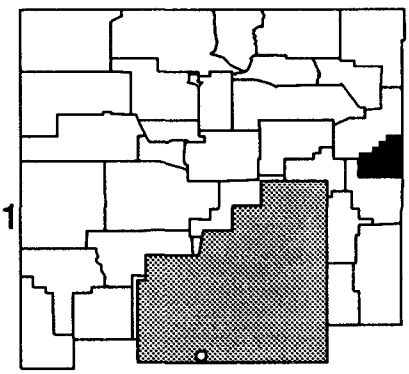
Progress Toward Cleanup at NPL Sites in the State of New Mexico

Site Name	County	NPL	Date	Initial Response	Site Studies	Remedy Selected	Remedy Design	Cleanup Ongoing	Construction Complete	Deleted
AT & SF SITE (CLOVIS)	CURRY	Final	09/08/83		⇨	⇨	⇨	⇨		
CAL WEST METALS (USSBA)	SOCORRO	Final	03/31/89		⇨					
CIMARRON MINING CORP.	LINCOLN	Final	10/26/89	⇨	⇨	⇨	⇨	⇨	⇨	
CLEVELAND MILL	GRANT	Final	03/31/89		⇨					
HOMESTAKE MINING COMPANY	CIBOLA	Final	09/08/83	⇨	⇨	⇨	⇨	⇨		
LEE ACRES LANDFILL (USDOI)	SAN JUAN	Final	08/30/90	⇨	⇨					
PAGANO SALVAGE	VALENCIA	Final	10/26/89	⇨	⇨	⇨			⇨	
PREWITT ABANDONED REFINERY	MCKINLEY	Final	08/30/90	⇨	⇨					
SOUTH VALLEY	BERNALILLO	Final	09/08/83	⇨	⇨	⇨	⇨	⇨		
UNITED NUCLEAR CORPORATION	MCKINLEY	Final	09/08/83	⇨	⇨	⇨	⇨	⇨		



Note: Cleanup status reflects actual site activities rather than administrative accomplishments.

AT&SF (CLOVIS)
NEW MEXICO
EPA ID# NMD043158591



EPA REGION 6
Curry County
South of the AT&SF Railway switching yard in Clovis

Other Names:
Clovis Site

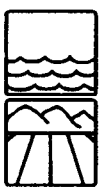
Site Description

The AT&SF (Clovis) site comprises an approximately 26-acre area. For nearly 90 years, Santa Fe Lake, sometimes referred to as Playa Lake, has received the wastewater discharge from the Atchison, Topeka, and Santa Fe (AT&SF) railway operations. The type of wastes changed over the years, but in the mid-1950s, AT&SF began washing hopper cars at its nearby switching and repair yard. Cars hauling potash, cement, fertilizer, grain, and coke were cleaned, and the wastewater was piped to the lake. On-site industrial water wells were shut down due to contamination in the mid-1970s. The hopper car washing facility was closed in 1982. The area surrounding the site is rural, but 31,000 people live nearby. The lake is currently fenced off from public access. The closest residences are 2,000 feet away, and the nearest drinking water well is 1,200 feet from the site.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/23/81
Final Date: 09/08/83

Threats and Contaminants



The sediments and surface water in Santa Fe Lake are contaminated with metals, fluoride, and petroleum hydrocarbons. Contaminants found in on-site soil include petroleum hydrocarbons and phenols. The aquifer that extends under the lake is the source of drinking water for the town of Clovis. Although contamination of the groundwater has not occurred, migration of contaminants from the lake is possible, if the source of contamination is not removed. Possible threats include eating, drinking, coming in direct contact with, or inhaling the contaminated materials.

Cleanup Approach

This site is being addressed in a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Entire Site: The remedies selected for the site include building a dike and ditch system to prevent rain water from running onto the site; evaporating lake waters and the resulting residues, along with cleaning up the sediment; excavating sediments and treating them on site with biodegradation, an innovative technology that uses microorganisms to degrade contaminants; covering the treated area with a plastic liner and vegetated soil cap to prevent any remaining contaminants from migrating; and treating underlying soils to encourage growth of the microorganisms that break down contaminants. Results of continuous groundwater monitoring have indicated that contamination from the site has not occurred. Construction of the selected cleanup remedy is now underway. The potentially responsible parties are taking the lead on all site investigations and cleanup activities, under monitoring by the EPA. The dike and ditch system construction was completed in 1990. A fence has been installed surrounding the site. Biodegradation of the sediments is expected to begin in mid-1992.

Site Facts: The EPA filed an Administrative Order in 1983 with the site owners to conduct necessary studies and cleanup.

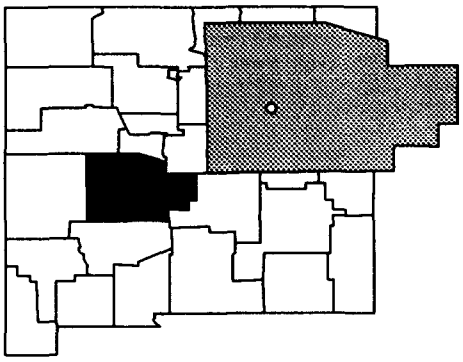
Environmental Progress

After adding the AT&SF (Clovis) site to the NPL, the EPA assessed site conditions and determined that the site did not pose an immediate threat to nearby residents and the environment. Construction of a dike and ditch system to prevent migration of contaminants from the site and installation of a fence have reduced the potential of contact with contaminants while soil and sediment cleanup occurs at the site.

Site Repository

Clovis-Carver Public Library, Fourth & Mitchell Streets, Clovis, NM 88108

CAL WEST METALS (USSBA)
NEW MEXICO
EPA ID# NMD097960272



EPA REGION 6
Socorro County
1/2 mile north of Lemitar

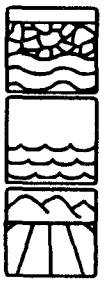
Site Description

Cal West Metals (USSBA) is situated on 12 1/2 acres of a 44-acre site and served as a lead-recovery facility. From 1979 to 1981, approximately 20,000 auto batteries were stripped of lead. From 1982 to 1984, Cal West Metals conducted research and development on various aspects of raw materials recovery. In 1985, the company reworked the waste piles from battery recycling to recover lead. The owners abandoned the site when the recovery process ceased to be profitable. The Small Business Administration (SBA) foreclosed on and took ownership of the site in October 1985. Piles of battery pieces and an evaporation pond remain on site. The State detected lead in on-site monitoring wells and in the sediment in drainage pathways from the site. In 1986, the metal was found on surface soils 400 feet downwind from the site. Approximately 1,000 people get drinking water from public and private wells within a 3-mile radius. Six hundred acres of food and forage crops are irrigated with surface water within 3 miles downstream of the site.

Site Responsibility: The site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 03/31/89

Threats and Contaminants



Lead from the battery recovery operation has been found in groundwater and site sediments. Elevated levels of lead also are found in soils. Individuals coming in direct contact with, or accidentally ingesting contaminated groundwater, soils, or sediments may be at risk.

Cleanup Approach

This site is being addressed in a long-term remedial phase that is directed at cleanup of the entire site.

Response Action Status

Entire Site: In 1990, the EPA began studies to determine the nature and extent of lead contamination at the site and the potential for groundwater contamination. The studies are scheduled for completion in mid-1992, and a final cleanup remedy is expected to be selected later that year.

Site Facts: Beginning in 1987, the EPA sought to have the site properly closed under the Resource Conservation and Recovery Act (RCRA). In May 1990, the EPA sent Special Notice Letters to the SBA and other potentially responsible parties. In July 1990, the EPA negotiated a Federal Facilities Agreement with the SBA.

Environmental Progress

Following listing of the Cal West Metals (USSBA) site on the NPL, the EPA assessed the site conditions and determined that it presently poses no immediate threat to public health or the environment while further studies into cleanup alternatives are being conducted.

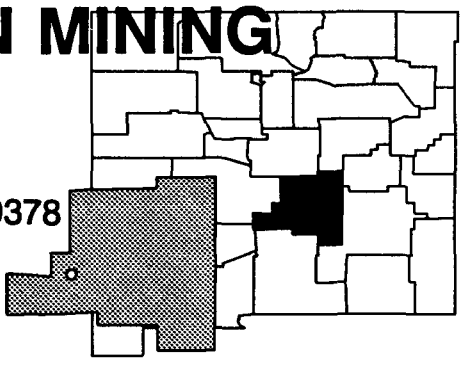
Site Repository

Not established.

CIMARRON MINING CORP.

NEW MEXICO

EPA ID# NMD980749378



EPA REGION 6
Lincoln County
Carrizozo

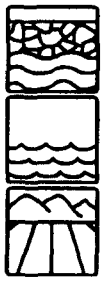
Site Description

From 1979 to 1982, the Cimarron Mining Corp. site operated as a metal recovery mill using a solution of cyanide salt and metal stripper. The site covers approximately 10 acres. Before 1979, gold was extracted, using cyanide. Both processes generated a liquid waste containing cyanide and heavy metals. The facility was operated without the required permits, and the State cited the company for environmental violations in 1982. Cimarron Mining filed for bankruptcy in 1983, and the following year an inspection revealed two cyanide solution tanks, a discharge pit, an impoundment, an uncovered pile of mine tailings, and a drum storage area. In 1990, the Sierra Blanca property, located approximately 3/4 mile south of the Cimarron Mining Corp. site, was incorporated into cleanup actions at the Cimarron Mining Corp. site. Covering approximately 10 acres, it operated as a precious metals recovery mill. The process resulted in a lead-contaminated slurry, which was disposed of in open pits. Approximately 1,000 people obtain drinking water from 29 municipal wells within 3 miles of the site. The nearest municipal well is about 2 miles away from the Cimarron Mining Corp. area and 1/2 mile from the Sierra Blanca mill area. Wells also are used to irrigate food crops.

Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 10/26/89

Threats and Contaminants



The groundwater, surface water, sediments, and soil were found to contain cyanide and heavy metals. The levels of cyanide on the site potentially were toxic to people, and direct contact with or accidental ingestion of wastes and contaminated soils posed a health risk prior to cleanup. The deeper aquifer used for drinking water could have become contaminated if treatment of the groundwater had not occurred. There was an exposure potential from breathing airborne dust. Several process tanks and soil and sediments in the discharge pits associated with the Sierra Blanca Site contained lead and arsenic. The site is fenced and is 300 yards south of a public recreation area.

Cleanup Approach

The site is being addressed in three stages: immediate actions and two long-term remedial phases focusing on cleanup of the Cimarron Mining Corp. mill area and the Sierra Blanca mill area.

Response Action Status

Immediate Actions: In 1987, the site was fenced, and warning signs were posted to alert the nearby community of contaminated site conditions.

Cimarron Mining Corp. Mill Area: In 1990, the EPA completed an investigation into the nature and extent of contamination at the metal recovery site. This study defined the contamination and recommended various cleanup alternatives. The selected remedy involves extracting shallow groundwater, with discharge to a local wastewater treatment facility. Engineering designs and the construction of the groundwater pumping system were completed in early 1992, and operation began in mid-1992. Groundwater treatment will continue until established cleanup goals are met.

Sierra Blanca Mill Area: An investigation into the nature and extent of contamination at the Sierra Blanca property, a former processing area related to Cimarron Mining Corp. operations, began in 1990. Final cleanup remedies were selected in 1991 calling for consolidation, solidification, and on-site disposal of lead contaminated soils. In late 1991, construction of this remedy was completed. Two additional monitoring wells were installed, and cleanup was completed in 1992.

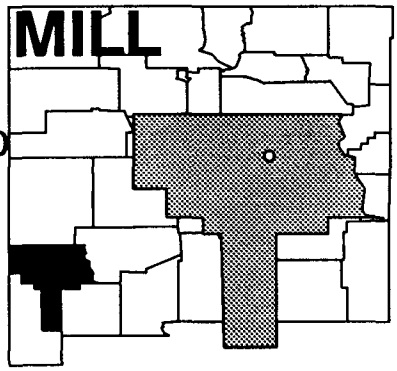
Environmental Progress

Constructing a fence to limit access, extracting and treating groundwater, and cleaning up contaminated soils have reduced the threats to the public and the environment at the Cimarron Mining Corp. site.

Site Repository

Carrizozo City Hall, 100 Fifth Street, Carrizozo, NM 88301

CLEVELAND MILL
NEW MEXICO
EPA ID# NMD981155930



EPA REGION 6
Grant County
5 miles northeast of Silver City

Site Description

The abandoned 10-acre Cleveland Mill site was used as a metal mine and mill. The site has a long history of mining activity, going back to 1910. Approximately 12,000 cubic yards of mine tailings are piled on the site. Tailings were piped from the mill to the steeply sloping side of a small valley and were left uncovered, unstabilized, and unlined. Approximately 1,200 area residents draw drinking water from private wells within 3 miles of the site. A site investigation revealed that runoff from the facility has acidified Little Walnut Creek and has contaminated it with metals. The creek and downstream waters are used for recreation.

Site Responsibility: The site is being addressed through Federal and State actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 03/31/89

Threats and Contaminants

The groundwater, soil, and surface water of Little Walnut Creek are contaminated with heavy metals including lead, silver, zinc, copper, and arsenic. The tailings and polluted surface water are in areas that recharge the shallow aquifer. Water moves downward from the coarse, permeable shallow aquifer toward the bedrock aquifer. There is a possibility that drinking water might become tainted from the groundwater contamination. Direct contact with the unrestricted tailings piles and contact with surface waters could present a threat to human health.

Cleanup Approach

The site is being addressed in a long-term remedial phase focusing on contamination at the entire site.

Response Action Status

Entire Site: The EPA is conducting an investigation into the nature and extent of contamination at the site. The investigation will define the contaminants of concern, will recommend alternatives for soil and surface cleanup at the site, and is expected to be completed in 1993. The study also will determine if river sediments have been contaminated.

Site Facts: A 1987 search for potentially responsible parties identified eight businesses and four individuals. Special Notice Letters were sent to these parties in December 1989.

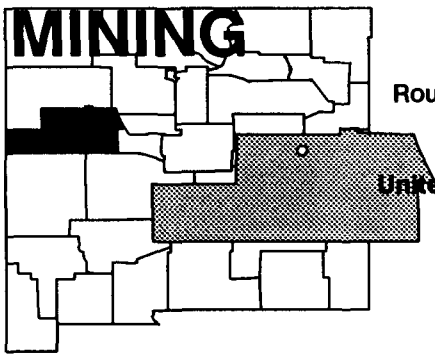
Environmental Progress

After adding the Cleveland Mills site to the NPL, the EPA has conducted an evaluation and determined that there currently are no immediate actions required while awaiting the results of the investigation and decisions on the cleanup alternatives for the site.

Site Repository

Not established.

HOMESTAKE MINING COMPANY
NEW MEXICO
EPA ID# NMD007860935



EPA REGION 6
Cibola County
Route 53 north of Milan and Grants

Other Names:
United Nuclear Homestake Partners
UNC/Homestake

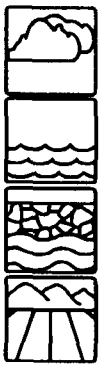
Site Description

The Homestake Mining Company site is a uranium mill on standby status, largely operational since 1958. More than 22 million tons of mine tailings have been piled over 245 acres of ground; the pile now rises to 100 feet. Although there are private wells in the area of the site, they have not been used since the company installed alternate water supplies in 1985. Public wells have not been found to be contaminated. Approximately 200 people live within a mile of the tailings piles. The nearest home and private drinking wells are 3,000 feet from the edge of the nearest tailings pile. Seepage from the site's tailings piles has polluted a shallow aquifer and parts of the Upper Chinle aquifer that provided water to four subdivisions 1/2 to 2 miles away.

Site Responsibility: This site is being addressed through Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/23/81
Final Date: 09/08/83

Threats and Contaminants

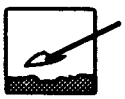


Alkaline mill tailings on site are emitting radon gas. Wind-blown particulates containing lead, radium, and uranium are transported via the air. Radium has entered surface water from these mill tailings. These tailings also seep sulfate, sodium, molybdenum, selenium, and uranium into the groundwater. The shallow aquifer has been contaminated, but this threat has been circumvented by a new water supply to the area's residents. Studies of elevated radon levels in homes near the mill found that the gas is coming from nearby soils rather than from the site itself. Off-site soil contamination has been consolidated on site and will continue to be cleaned up should wind dispersion of tailings occur. Inhalation or accidental consumption of contaminated dust is a potential threat, as is eating food contaminated by radioactive dust.

Cleanup Approach

The site is being addressed in three stages: initial actions and two long-term remedial phases focusing on cleanup of radon and mine tailings.

Response Action Status



Initial Actions: In 1985, Homestake Mining Company arranged to have the Milan water system extended to residents of the four subdivisions near the mill, paying hookup and water charges for 10 years. The company is collecting contaminated water from the shallow and the Upper Chinle aquifers and is injecting water from the deeper aquifer in an effort to flush and improve the water quality of contaminated zones. The EPA and Homestake Mining Company helped affected homeowners to measure radon levels in their homes and in ambient outdoor air and to identify methods for reducing the indoor levels. The efforts have been largely successful in flushing previously contaminated off-site zones, and seepage has been contained on site.

Radon: Evaluation of the completed site investigation revealed that the mill and its tailings do not significantly contribute to radon levels in the subdivisions. The EPA has concluded that local soils are the principal source of radon and that no further action is required at the site. Homestake Mining Company conducted off-site monitoring and concluded that radon levels are below regulatory concern.

Mine Tailings: The tailings piles will be dewatered as part of the corrective action program. The Nuclear Regulatory Commission (NRC) issued Homestake Mining Company a Source Material License in 1986 and since has required the company to delineate the areal extent of windblown tailings off site. Radiological survey data identified affected areas that subsequently were cleaned up to regulatory levels as part of a land cleanup program. Contamination is now confined to the site. Homestake also has submitted a long-term site reclamation and closure plan to the NRC, which has been approved for implementation. Efforts to stabilize and dewater the tailings have begun, under NRC and State of New Mexico guidance. Monitoring of air emissions from the site indicates that particulate radiation levels are within New Mexico State guidelines.

Site Facts: A Consent Decree was signed in 1983 and an Administrative Order was signed by Homestake Mining Company in 1987 to perform cleanup activities at the site. Homestake Mining Company is updating residents on progress and conditions at the site. The EPA is attempting to sign a Memorandum of Understanding with the NRC for cleanup of the site. The site will remain on the NPL until cleanup is completed.

Environmental Progress

The initial actions have provided a safe drinking water supply while studies have determined that site contamination is not contributing to elevated indoor radon levels found in some area homes. Efforts to stabilize mill tailings are underway at the Homestake Mining Company site.

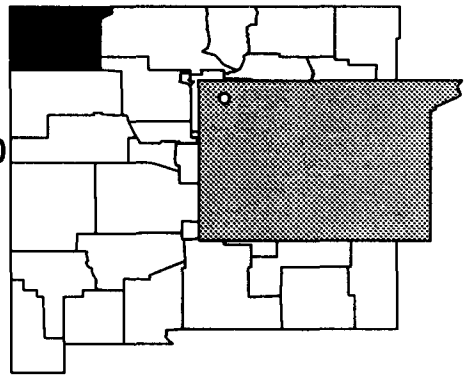
Site Repository 

New Mexico State University, Grants Library, 1500 Third Street, Grants, NM 87020

LEE ACRES LANDFILL (USDOI)

NEW MEXICO

EPA ID# NMD980750020



EPA REGION 6

San Juan County
Farmington

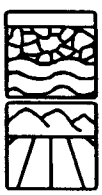
Site Description

The Lee Acres Landfill, a Federal facility site, covers 40 acres of public land in San Juan County. In 1962, the Bureau of Land Management (BLM) leased 20 acres to San Juan County to operate a county landfill. The lease was renewed in 1981, with another 20 acres added to the County's lease. The landfill consists of an undetermined number of solid waste trenches and four unlined waste lagoons, including water produced from oil and gas field operations, waste oil, spent acids, chlorinated organic solvents, and septage. The Lee Acres residential subdivision and the Giant Industries refinery are nearby. Approximately 400 residents use shallow alluvial groundwater within 3 miles of the site. During a rain storm in 1985, a dike broke on one of the lagoons, resulting in wastes entering an arroyo that feeds the San Juan River, a recreational area near the site.

Site Responsibility: This site is being addressed through Federal, State, and County actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 08/30/90

Threats and Contaminants



The groundwater and solid waste sludge are contaminated with volatile organic compounds (VOCs) including dichloroethane and benzene. Contaminants were found in a residential well, presenting the potential of exposure to nearby residents who obtain their water from the shallow groundwater.

Cleanup Approach

The site is being addressed in two stages: initial actions and a long-term remedial phase concentrating on cleanup of the entire site.

Response Action Status

Initial Actions: In 1985, the Governor called the National Guard to secure the site perimeter while the BLM ordered the County to fill in the lagoons and fence the site. The New Mexico Environmental Improvements Division (NMEID) hired a contractor to treat the lagoon contents with ferric chloride to prevent further release of gases. The County subsequently filled in the four lagoons. An alternative water supply was found in 1986, and hookups were completed in 1987. A total of 31 groundwater monitoring wells and piezometers were installed around the landfill by BLM contractors in 1987; five additional wells were installed in 1989.

Entire Site: The BLM began preliminary studies at the site in 1989. Plans for studies into the nature and extent of the contamination and possible cleanup alternatives are undergoing review and revision by the EPA. However, the EPA will not be involved until the Federal Facility Agreement is signed, which is presently being negotiated with the Department of Interior (DOI). The U.S. Geological Survey will be included in the review process. NMEID requested that Lee Acres be reclassified as a non-Federal facility because the groundwater contamination may stem from the Giant Refinery as well as from the landfill. The site may be divided into several phases of cleanup when the Federal Facility Agreement is signed.

Site Facts: The EPA is currently drafting an Interagency Agreement for support of site cleanup.

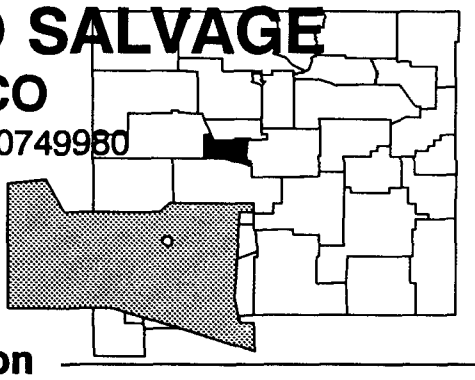
Environmental Progress

Fencing of the site and treatment of the lagoons, as well as the other activities on the Lee Acres Landfill (USDOI) site, have reduced the potential for exposure to contaminants while the site awaits further cleanup activities.

Site Repository

Farmington Public Library, 100 West Broadway Street, Farmington, NM 87401

PAGANO SALVAGE
NEW MEXICO
EPA ID# NMD980749980



EPA REGION 6
Valencia County
1 mile southeast of Los Lunas

Other Names:
Waste Electric Transformer #4

Site Description

The 1 1/4-acre Pagano Salvage site housed a metal salvage facility. In 1983, the operators bought electric transformers and capacitors containing polychlorinated biphenyls (PCB) oils from a U.S. Department of Energy facility in Albuquerque. They then removed the oil, poured it over insulated wire, and burned off the insulation to recover the wire. Burning occurred on unprotected ground at several locations. Soil sampling in 1985 and 1987 showed PCB and pesticide contamination to a depth of 4 feet. PCBs were still being found in soils in 1988, as well as in nearby Otero Drain and in some fish tissue. There is a fence around three sides of the site. An irrigation ditch runs along the rear of the site. About 11,000 people obtain drinking water from public and private wells within 3 miles of the site. Surface water near the site is used to irrigate croplands.

Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 10/26/89

Threats and Contaminants

The soil contained high concentrations of PCBs and pesticides including DDT and DDE. Groundwater at the site is shallow (about 5 feet), and the soil consists of very permeable alluvial deposits. These conditions could have facilitated movement of contaminants into groundwater, thereby posing a potential for contamination of the drinking water supply. However, monitoring of the groundwater has shown no contamination. Additionally, crops and locally raised foodstuffs could have been vulnerable to contamination if they had been irrigated with contaminated water.

Cleanup Approach

This site is being through emergency actions; further investigations showed that no other cleanup actions are required.

Response Action Status

Emergency Actions: In response to immediate threats to the nearby public, the EPA excavated about 5,100 cubic yards of contaminated soil and debris in 1989 and moved it to an approved facility.

Entire Site: An investigation of the remaining portions of the site was conducted in 1990 to determine the extent and nature of site contamination and to identify technologies for cleanup. This investigation revealed that the earlier emergency actions had removed all contamination at the site and that no further action was required. At the request of the State of New Mexico, the EPA sampled the site monitoring wells periodically to assure that no groundwater contamination had occurred. Results from the sampling revealed no contamination of the groundwater. The site is scheduled to be deleted from the NPL in late 1992.

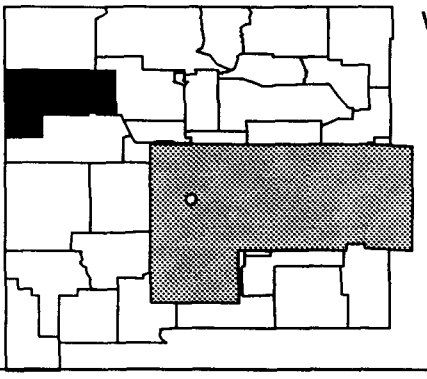
Environmental Progress

With the emergency removal of contaminated soils and debris, the EPA has removed the sources of contamination and eliminated the potential for exposure to hazardous materials on the site. Based on site investigation results, the EPA concluded that no further cleanup actions are required at the site, which were confirmed by periodic monitoring of the groundwater.

Site Repository

Los Lunas Public Library, 460 Main Street, Los Lunas, NM 87031

PREWITT ABANDONED REFINERY
NEW MEXICO
EPA ID# NMD980622773



REGION 6
McKinley County
West of Prewitt on U.S. Hwy. 65

Other Names:
Petroleum Products Refinery
Prewitt Tar Pits

Site Description

The Prewitt Abandoned Refinery site, situated on 75 acres, was run under several different operators from the early 1940s to 1965. The Navajo Indian Tribe has owned the property since 1966. The site consists of two tracts: Tract A (68 acres) bears the ruins of the refinery, waste pits, tank bases, and rubble from removed equipment, and Tract B (7 acres) includes two major spill areas and the remains of a pump lift station. In 1982, the New Mexico Environmental Improvement Division detected benzene in a nearby private well and, in 1986, detected benzene and xylenes in an on-site well to a depth of 17 feet. About 1,600 people draw from the public and private wells within 3 miles of the site.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 08/30/90

Threats and Contaminants

The groundwater is contaminated with lead and volatile organic compounds (VOCs) including xylene and toluene. Possible hazards include direct contact with or ingestion of contaminated groundwater. Contamination of residential wells adjacent to the site has been recorded. One well has been closed, and a second has become contaminated.

Cleanup Approach

This site is being addressed in two stages: immediate actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Immediate Actions: Under agreements with the EPA, former owners of the refinery have begun activities to reduce immediate threats posed by the site. In 1989, they built a security fence and began treating well water to remove contamination, protecting nearby residents from contaminants. In 1990, an alternate water supply was provided to residents, and a carbon filtration system was installed.

Entire Site: The former owners began an extensive investigation to explore the nature and extent of the contamination in 1989. This study, conducted under EPA supervision, was completed in 1992. The EPA is expected to select the final cleanup remedies for the site in late 1992, with actual site cleanup scheduled to begin in 1993.

Site Facts: In 1989, an Administrative Order was issued to parties potentially responsible for the site contamination to fence the site and to treat contaminated water wells. Also, in 1989, an Administrative Order was signed with potentially responsible parties to conduct an investigation to determine the nature and extent of contamination and to identify alternatives for cleanup.

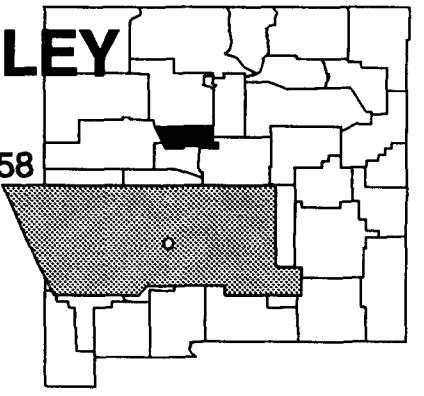
Environmental Progress

By fencing the site and treating the contaminated well water, the nearby residents are being protected from contaminants, making the Prewitt Abandoned Refinery site safer while cleanup activities are being planned.

Site Repository

Prewitt Fire House, Highway 66, Prewitt, NM 87045

SOUTH VALLEY
NEW MEXICO
EPA ID# NMD980745558



EPA REGION 6
Bernalillo County
Albuquerque

Other Names:
South Valley PCB Tank Site

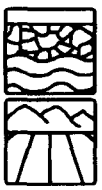
Site Description

The South Valley site encompasses approximately 1 square mile, with a number of industrial properties owned and operated by different organizations forming the site. Industrial development in South Valley began in the 1950s, including metal parts manufacturing. By the 1960s, organic chemicals were being handled in the area. Presently, petroleum fuels and various other organic chemicals are stored and handled within the area. The main activity on the Duke City property is the repackaging of petroleum and related automotive products, including antifreeze, diesel fuel, gasoline, and methanol. The Whitfield property was in operation until 1986, as a delivery truck base for shipping bulk jet fuel, diesel fuel, asphalt, caustic soda, nitric acid, and sulfuric acid products. The Edmunds Street property, located in the southeastern corner of the site, was the location of several chemical and solvent distribution operations. Another contaminated area surrounds the SJ-6 municipal water well, which was shut down in 1980 due to the continual detection of low levels of solvents. In 1951, the Atomic Energy Commission conducted machining of metal parts, plating, and welding on the western portion of the site. In 1967, the Air Force took over the property and converted the plant into an aircraft engine manufacturing plant operated by General Electric. General Electric then bought the plant in 1983, and currently produces aircraft engine parts. South Valley has been designated as the State's highest priority site for cleanup due to the presence of potentially high concentrations of hazardous substances in the groundwater near the City of San Jose's well field. Several aquifers underlie the site. Approximately 70,000 people in Albuquerque are served by the San Jose reservoir system. A residential district of 590 people lies just to the north of the General Electric facility.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 07/23/82
Final Date: 09/08/83

Threats and Contaminants



The groundwater and soil are contaminated with volatile organic compounds (VOCs) including toluene and xylenes. The groundwater, which is contaminated with up to 47 compounds, has migrated into Albuquerque's sole source aquifer. Thirteen off-site wells have shown contamination. All these wells are now closed. Because of the gardens and livestock nearby, the food chain is at risk. Groundwater on site is not currently in use. Direct contact with contaminants and inhalation of vapors also are threats to on-site workers. Workers at Chevron, Texaco, and Duke City are most susceptible to the contamination, because these sites have the greatest surface soil contamination.

Cleanup Approach

This site is being addressed in five stages: initial actions and four long-term remedial phases focusing on groundwater treatment near municipal well SJ-6, groundwater treatment at the Edmunds Street Groundwater, cleanup of Edmunds Street Sources, and cleanup of contaminants at the General Electric property.

Response Action Status

Initial Action: In 1984, the EPA removed 3,450 gallons of contaminated oil and 63,580 pounds of contaminated soil and debris, along with a 48,140-pound tanker. All materials were disposed of off site. The excavated areas were then backfilled and graded. A new well was installed by the EPA in 1988 to replace the capacity of the contaminated municipal well SJ-6.

Groundwater: In order to address the groundwater contamination in the vicinity of municipal well SJ-6, the EPA has given the potentially responsible parties the responsibility of removing and disposing of 100 yards of contaminated sediments at the base of the SJ-6 borehole, sealing abandoned wells, monitoring the groundwater, and putting up restrictions to site access. To date, 16 wells have been plugged that could be a conduit for contamination to reach the deep aquifer. Four additional wells will be plugged once access agreements are obtained. All actions are underway and are scheduled to be completed in late 1992. Cleanup at adjacent areas of the site, as well as these source control measures, will reduce the plume concentrations to below State health criteria within 5 years. Federal health criteria already are being attained.

Edmunds Street Groundwater: The parties responsible for this area of contamination are pumping and treating the groundwater by air stripping. The treated water is being injected into the aquifer via an infiltration gallery. Groundwater and air monitoring also is underway. These actions are scheduled for completion in late 1992.

Edmunds Street Sources: Based on studies by the parties potentially responsible for sources of contamination at the Edmunds Street property, the EPA determined in 1989 that no further cleanup actions were required to address these sources of site contamination. The initial actions performed at the site have removed the contamination sources.

General Electric Property: Four hazardous waste storage areas and contaminated groundwater around the General Electric property will be addressed by the potentially responsible parties. The remedies selected are installing soil vapor extraction wells and extracting contaminants from the soil with vacuum pressure. Groundwater extraction wells in both the shallow and the deep aquifer will be installed. Extracted water will be treated by air stripping followed by carbon adsorption and reinjection of treated water into the aquifers. The soil vapor extraction systems have been installed at the north and south end of the General Electric plant. The final design of the shallow groundwater extraction wells are underway. The deep aquifer drilling is taking place to define the horizontal and vertical extent of the contaminated plume. The initial design of the deep aquifer remedy is expected to be completed in late 1992. The soil vapor extracation system and treatment of shallow groundwater are scheduled to be completed in 1994. Treatment of the deep groundwater is expected to take a few years longer.

Site Facts: Groundwater was first suspected to be contaminated in 1978, when peculiar tastes and odors were noted by users of a private well on the Edmunds Street property. Investigations into the General Electric property were conducted from 1984 to 1988 by the Air Force under a Memorandum of Understanding with the EPA. In 1989, a Unilateral Administrative Order was issued to General Electric.

Environmental Progress

Through the immediate removal of contaminated oil, soil, and debris, the installation of a new well, and the ongoing treatment of remaining contaminated soil, the EPA has reduced possible hazardous exposures at the South Valley site while groundwater extraction and treatment are being planned.

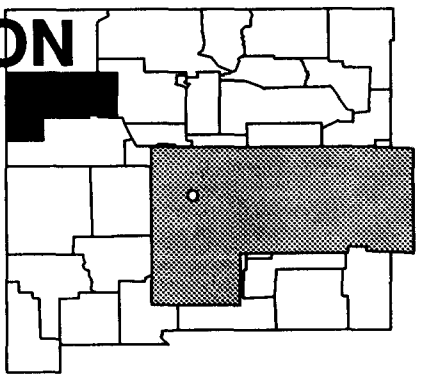
Site Repository

Albuquerque Public Library, 501 Copper Avenue, Northwest, Albuquerque, NM 87102

UNITED NUCLEAR CORPORATION

NEW MEXICO

EPA ID# NMD030443303



EPA REGION 6

McKinley County
Church Rock,
17 miles northeast of Gallup

Other Names:
UNC Mining and Milling
Church Rock Mill

Site Description

The United Nuclear Corporation site operated as a State-licensed uranium mill from 1977 to 1982. It includes a 25-acre ore-processing mill and a 100-acre unlined mine tailings pond area. Approximately 3 1/2 million tons of tailings were pumped to disposal ponds by 1982. In 1979, a dam breach released about 23 million gallons of tailings and pond water to Pipeline Canyon Arroyo and the Rio Puerco. While the site damage was repaired, attention was focused on groundwater contamination resulting from tailings seepage and wastewater discharge. Three aquifers are contaminated; the alluvial, the Upper Gallup Zone 3, and the Upper Gallup Zone 1. The mill ceased operations in 1982. In 1986, the Nuclear Regulatory Commission (NRC) took over licensing authority for the site. The surrounding area is sparsely populated, with the nearest residence located 1 1/2 miles from the site. A Navajo Indian Reservation lies 1/2 mile to the north of the site. Four water wells are within a 4-mile radius, the nearest being 2 miles northeast of the site; however, nearby residents generally have used bottled water for drinking, since the well water had a bad taste.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/23/81
Final Date: 09/08/83

Threats and Contaminants

The groundwater, soil, and surface water are contaminated with radioactive elements, sulfate, aluminum, ammonia, and iron from mining wastes. Possible health threats include accidental ingestion of, inhalation of, or direct contact with the contaminants. The Upper Gallup aquifer is contaminated by seepage from the tailings ponds.

Cleanup Approach

This site is being addressed in two stages: immediate actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Immediate Actions: The potentially responsible parties repaired the dam breach that dumped 23 million gallons of tailings and pond water into the Rio Puerco in 1979. The parties also constructed a groundwater pumping system that withdrew groundwater from the aquifers underlying the site and sent it to an on-site borrow pit for evaporation. Also, they conducted tailings neutralization from 1979 to 1982. A pond evaporation system was installed in 1989, as well as a cluster of pumping wells, to augment the groundwater treatment system.

Entire Site: In 1988, the EPA finished an intensive investigation of site contaminants and potential cleanup strategies. The selected remedies include: a monitoring program that will detect any spreading or intensification of the contamination at and beyond the border of the tailings disposal area; operation of existing seepage extraction systems in the Upper Gallup aquifers; containment and removal of contaminated groundwater in the alluvial and Upper Gallup sandstone using existing and additional wells; evaporation of groundwater removed from aquifers outside the disposal area, using evaporation ponds supplemented with mist or spray systems to speed evaporation; and a performance and evaluation program to determine water level and contaminant reductions in each aquifer, and the extent and duration of pumping actually required outside the tailings disposal area. The EPA and the NRC are managing separate phases of the site's cleanup. Both are managing cleanup of groundwater outside the disposal area. In 1991, the NRC disassembled the mill, disposed of the debris in Borrow Pit #2, and covered the pit with 3 to 4 feet of fill. The area where the mill was disassembled was regraded and an interim soil cover was placed over it. The NRC is also responsible for the removal of contaminated groundwater and reclamation of the mill site. The potentially responsible parties are performing the work under Federal supervision. Cleanup activities are scheduled for completion in 1997.

Site Facts: In 1989, the EPA issued an Administrative Order to the potentially responsible parties, requiring them to perform groundwater cleanup activities.

Environmental Progress

The initial actions performed at the United Nuclear Corporation site have stabilized the mine tailings and have protected the Rio Puerco from further contamination spills. Groundwater treatment is underway, reducing contamination levels while further cleanup activities are being completed.

Site Repository

Gallup Public Library, 115 West Hill Avenue, Gallup, NM 87301

GLOSSARY

Terms Used in the NPL Book

This glossary defines terms used throughout the NPL Volumes. The terms and abbreviations contained in this glossary apply specifically to work performed under the Superfund program in the context of hazardous waste management. These terms may have other meanings when used in a different context. A table of common toxic chemicals found at NPL sites, their sources, and their potential threats is located on page G-15

Acids: Substances, characterized by low pH (less than 7.0), that are used in chemical manufacturing. Acids in high concentration can be very corrosive and react with many inorganic and organic substances. These reactions possibly may create toxic compounds or release heavy metal contaminants that remain in the environment long after the acid is neutralized.

Administrative Order On Consent: A legal and enforceable agreement between the EPA and the parties potentially responsible for site contamination. Under the terms of the Order, the potentially responsible parties (PRPs) agree to perform or pay for site studies or cleanups. It also describes the oversight rules, responsibilities, and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. This Order is signed by PRPs and the government; it does not require approval by a judge.

Administrative Order [Unilateral]: A legally binding document issued by the EPA, directing the parties potentially responsible to perform site cleanups or studies (generally, the EPA does not issue Unilateral Orders for site studies). This type of Order is not signed by the PRPs and does not require approval by a judge.

Aeration: A process that promotes breakdown of contaminants in soil or water by exposing them to air.

Agency for Toxic Substances and Disease Registry (ATSDR): The Federal agency within the U.S. Public Health Service charged with carrying out the health-related responsibilities of CERCLA.

Air Stripping: A process whereby volatile organic chemicals (VOCs) are removed from contaminated material by forcing a stream of air through the contaminated material in a pressurized vessel. The contaminants are evaporated into the air stream. The air may be further treated before it is released into the atmosphere.

Ambient Air: Any unconfined part of the atmosphere. Refers to the air that may be inhaled by workers or residents in the vicinity of contaminated air sources.

Applicable or Relevant and Appropriate Requirements (ARARs): Federal, State, or local laws which apply to Superfund activities at NPL sites. Both emergency and long-term actions must comply with these laws or provide sound reasons for allowing a waiver. ARARs must be identified for each site relative to the characteristics of the site, the substances found at the site, or the cleanup alternatives being considered for the site.

GLOSSARY

Aquifer: An underground layer of rock, sand, or gravel capable of storing water within cracks and pore spaces, or between grains. When water contained within an aquifer is of sufficient quantity and quality, it can be tapped and used for drinking or other purposes. The water contained in the aquifer is called groundwater. A "sole source aquifer" supplies 50 percent or more of the drinking water of an area.

Artesian (Well): A well made by drilling into the earth until water is reached, which, due to internal pressure, flows up like a fountain.

Asbestos: A mineral fiber that can pollute air or water and is known to cause cancer or asbestosis when inhaled.

Attenuation: The naturally occurring process by which a compound is reduced in concentration over time through adsorption, degradation, dilution, or transformation.

Background Level: The amount of a substance typically found in the air, water, or soil from natural, as opposed to human, sources.

Baghouse Dust: Dust accumulated in removing particulates from the air by passing it through cloth bags in an enclosure.

Bases: Substances characterized by high pH (greater than 7.0), which tend to be corrosive in chemical reactions. When bases are mixed with acids, they neutralize each other, forming salts.

Berm: A ledge, wall, or a mound of earth used to prevent the migration of contaminants.

Bioaccumulate: The process by which some contaminants or toxic chemicals gradually collect and increase in concentration in living tissue, such as in plants, fish, or people, as they breathe contaminated air, drink contaminated water, or eat contaminated food.

Biological Treatment: The use of bacteria or other microbial organisms to break down toxic organic materials into carbon dioxide and water.

Bioremediation: A cleanup process using naturally occurring or specially cultivated microorganisms to digest contaminants and break them down into non-hazardous components.

Bog: A type of wetland that is covered with peat moss deposits. Bogs depend primarily on moisture from the air for their water source, are usually acidic, and are rich in plant residue [see Wetland].

Boom: A floating device used to contain oil floating on a body of water or to restrict the potential overflow of waste liquids from containment structures.

Borehole: A hole that is drilled into the ground and used to sample soil or ground-water.

Borrow Pit: An excavated area where soil, sand, or gravel has been dug up for use elsewhere.

Cap: A layer of material, such as clay or a synthetic material, used to prevent rainwater from penetrating and spreading contaminated materials. The surface of the cap generally is mounded or sloped so water will drain off.

Carbon Adsorption: A treatment system in which contaminants are removed from groundwater and surface water by forcing water through tanks containing activated carbon, a specially treated material that attracts and holds or retains contaminants.

Carbon Disulfide: A degreasing agent formerly used extensively for parts washing. This compound has both inorganic and organic

properties, which increase cleaning efficiency. However, these properties also cause chemical reactions that increase the hazard to human health and the environment.

Carbon Treatment: [see Carbon Adsorption].

Cell: In solid waste disposal, one of a series of holes in a landfill where waste is dumped, compacted, and covered with layers of dirt.

CERCLA: [see Comprehensive Environmental Response, Compensation, and Liability Act].

Characterization: The sampling, monitoring, and analysis of a site to determine the extent and nature of toxic releases. Characterization provides the basis for acquiring the necessary technical information to develop, screen, analyze, and select appropriate cleanup techniques.

Chemical Fixation: The use of chemicals to bind contaminants, thereby reducing the potential for leaching or other movement.

Chromated Copper Arsenate: An insecticide/herbicide formed from salts of three toxic metals: copper, chromium, and arsenic. This salt is used extensively as a wood preservative in pressure-treating operations. It is highly toxic and water-soluble, making it a relatively mobile contaminant in the environment.

Cleanup: Actions taken to eliminate a release or threat of release of a hazardous substance. The term "cleanup" sometimes is used interchangeably with the terms remedial action, removal action, response action, or corrective action.

Closure: The process by which a landfill stops accepting wastes and is shut down under Federal guidelines that ensure the protection of the public and the environment.

Comment Period: A specific interval during which the public can review and comment on various documents and EPA actions related to site cleanup. For example, a comment period is provided when the EPA proposes to add sites to the NPL. Also, there is minimum 3-week comment period for community members to review and comment on the remedy proposed to clean up a site.

Community Relations: The EPA effort to establish and maintain two-way communication with the public. The goals of community relations programs include creating an understanding of EPA programs and related actions, assuring public input into decision-making processes related to affected communities, and making certain that the Agency is aware of, and responsive to, public concerns. Specific community relations activities are required in relation to Superfund cleanup actions [see Comment Period].

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): Congress enacted the CERCLA, known as Superfund, in 1980 to respond directly to hazardous waste problems that may pose a threat to the public health and the environment. The EPA administers the Superfund program.

Confluence: The place where two bodies of water, such as streams or rivers, come together.

Confined Aquifer: An aquifer in which groundwater is confined under pressure that is significantly greater than atmospheric pressure.

Consent Decree: A legal document, approved and issued by a judge, formalizing an agreement between the EPA and the parties potentially responsible for site contamination. The decree describes cleanup actions that the potentially responsible parties are required to perform, or the costs incurred by the government that the parties will reimburse, and the roles, responsibilities, and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. If a settlement between the EPA and a potentially responsible party includes cleanup actions, it must be in the form of a Consent Decree. A Consent Decree is subject to a public comment period.

Consent Order: [see Administrative Order on Consent].

Containment: The process of enclosing or containing hazardous substances in a structure, typically in a pond or a lagoon, to prevent the migration of contaminants into the environment.

Contaminant: Any physical, chemical, biological, or radiological material or substance whose quantity, location, or nature produces undesirable health or environmental effects.

Contingency Plan: A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or other accident that releases toxic chemicals, hazardous wastes, or radioactive materials into the environment.

Cooperative Agreement: A contract between the EPA and the States, wherein a State agrees to manage or monitor certain site cleanup responsibilities and other activities on a cost-sharing basis.

Cost Recovery: A legal process by which potentially responsible parties can be required to pay back the Superfund program for money it spends on any cleanup actions [see Potentially Responsible Parties].

Cover: Vegetation or other material placed over a landfill or other waste material. It can be designed to reduce movement of water into the waste and to prevent erosion that could cause the movement of contaminants.

Creosotes: Chemicals used in wood preserving operations and produced by distillation of tar, including polycyclic aromatic hydrocarbons and polynuclear aromatic hydrocarbons [see PAHs and PNAs]. Contaminating sediments, soils, and surface water, creosotes may cause skin ulcerations and cancer through prolonged exposure.

Culvert: A pipe used for drainage under a road, railroad track, path, or through an embankment.

Decommission: To revoke a license to operate and take out of service.

Degradation: The process by which a chemical is reduced to a less complex form.

Degrease: To remove grease from wastes, soils, or chemicals, usually using solvents.

Deletion: A site is eligible for deletion from the NPL when Superfund response actions at the site are complete. A site is deleted from the NPL when a notice is published in the Federal Register.

De minimis: This legal phrase pertains to settlements with parties who contributed small amounts of hazardous waste to a site. This process allows the EPA to settle with small, or *de minimis* contributors, as a single group rather than as individuals, saving time, money, and effort.

Dewater: To remove water from wastes, soils, or chemicals.

Dike: A low wall that can act as a barrier to prevent a spill from spreading.

Dioxin: An organic chemical by-product of pesticide manufacture which is known to be one of the most toxic man-made chemicals.

Disposal: Final placement or destruction of toxic, radioactive, or other wastes; surplus or banned pesticides or other chemicals; polluted soils; and drums containing hazardous materials. Disposal may be accomplished through the use of approved secure landfills, surface impoundments, land farming, deep well injection, or incineration.

Downgradient: A downward hydrologic slope that causes groundwater to move toward lower elevations. Therefore, wells *downgradient* of a contaminated groundwater source are prone to receiving pollutants.

Ecological Assessment: A study of the impact of man-made or natural activity on living creatures and their environment.

Effluent: Wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

Emission: Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities.

Emulsifiers: Substances that help in mixing materials that do not normally mix; e.g., oil and water.

Endangerment Assessment: A study conducted to determine the risks posed to public health or the environment by contamination at NPL sites. The EPA or the State conducts the study when a legal action is to be taken to direct the potentially responsible parties to clean up a site or pay for the cleanup. An endangerment assessment supplements an investigation of the site hazards.

Enforcement: EPA, State, or local legal actions taken against parties to facilitate settlements; to compel compliance with laws, rules, regulations, or agreements; or to obtain penalties or criminal sanctions for violations. Enforcement procedures may vary, depending on the specific requirements of different environmental laws and related regulatory requirements. Under CERCLA, for example, the EPA will seek to require potentially responsible parties to clean up a Superfund site or pay for the cleanup [see Cost Recovery].

Erosion: The wearing away of land surface by wind or water. Erosion occurs naturally from weather or surface runoff, but can be intensified by such land-related practices as farming, residential or industrial development, road building, or timber-cutting. Erosion may spread surface contamination to off-site locations.

Estuary (estuarine): Areas where fresh water from rivers and salt water from nearshore ocean waters are mixed. These areas may include bays, mouths of rivers, salt marshes, and lagoons. These water ecosystems shelter and feed marine life, birds, and wildlife.

Evaporation Ponds: Areas where sewage sludge or other watery wastes are dumped and allowed to dry out.

Feasibility Study: The analysis of the potential cleanup alternatives for a site. The feasibility study usually starts as soon as the remedial investigation is underway. In this volume, the feasibility study is referred to as a site study [see also Remedial Investigation].

Filtration: A treatment process for removing solid (particulate) matter from water by passing the water through sand, activated carbon, or a man-made filter. The process is often used to remove particles that contain contaminants.

Flood Plain: An area along a river, formed from sediment deposited by floods. Flood plains periodically are innundated by natural floods, which can spread contamination.

Flue Gas: The air that is emitted from a chimney after combustion in the burner occurs. The gas can include nitrogen oxides, carbon oxides, water vapor, sulfur oxides, particles, and many chemical pollutants.

Fly Ash: Non-combustible residue that results from the combustion of flue gases. It can include nitrogen oxides, carbon oxides, water vapor, sulfur oxides, as well as many other chemical pollutants.

French Drain System: A crushed rock drain system constructed of perforated pipes, which is used to drain and disperse wastewater.

Gasification (coal): The conversion of soft coal into gas for use as a fuel.

General Notice Letter: [See Notice Letter].

Generator: A facility that emits pollutants into the air or releases hazardous wastes into water or soil.

Good Faith Offer: A voluntary offer, generally in response to a Special Notice letter, made by a potentially responsible party, consisting of a written proposal demonstrating a potentially responsible party's qualifications and willingness to perform a site study or cleanup.

Groundwater: Water that fills pores in soils or openings in rocks to the point of saturation. In aquifers, groundwater occurs in sufficient quantities for use as drinking and irrigation water and other purposes.

Groundwater Quality Assessment: The process of analyzing the chemical characteristics of groundwater to determine whether any hazardous materials exist.

Halogens: Reactive non-metals, such as chlorine and bromine. Halogens are very good oxidizing agents and, therefore, have many industrial uses. They are rarely found by themselves; however, many chemicals such as polychlorinated biphenyls (PCBs), some volatile organic compounds (VOCs), and dioxin are reactive because of the presence of halogens.

Hazard Ranking System (HRS): The principal screening tool used by the EPA to evaluate relative risks to public health and the environment associated with abandoned or uncontrolled hazardous waste sites. The HRS calculates a score based on the potential of hazardous substances spreading from the site through the air, surface water, or groundwater and on other factors such as nearby population. The HRS score is the primary factor in deciding if the site should be on the NPL.

Hazardous Waste: By-products of society that can pose a substantial present or potential hazard to human health and the environment when improperly managed. Hazardous waste possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

Heavy Metals: Metallic elements with high atomic weights, such as arsenic, lead, mercury, and cadmium. Heavy metals are very hazardous even at low concentrations and tend to accumulate in the food chain.

Herbicide: A chemical pesticide designed to control or destroy plants, weeds, or grasses.

Hot Spot: An area or vicinity of a site containing exceptionally high levels of contamination.

Hydrocarbons: Chemical compounds that consist entirely of hydrogen and carbon.

Hydrology: The properties, distribution, and circulation of water.

Hydrogeology: The geology of groundwater, with particular emphasis on the chemistry and movement of water.

Impoundment: A body of water or sludge confined by a dam, dike, floodgate, or other barrier.

Incineration: A group of treatment technologies involving destruction of waste by controlled burning at high temperatures, e.g., burning sludge to reduce the remaining residues to a non-burnable ash that can be disposed of safely on land, in some waters, or in underground locations.

Infiltration: The movement of water or other liquid down through soil from precipitation (rain or snow) or from application of wastewater to the land surface.

Influent: Water, wastewater, or other liquid flowing into a reservoir, basin, or treatment plant.

Injection Well: A well into which waste fluids are placed, under pressure, for purposes of disposal.

Inorganic Chemicals: Chemical substances of mineral origin, not of basic carbon structure.

Installation Restoration Program: The specially funded program established in 1978 under which the Department of Defense has been identifying and evaluating its hazardous waste sites and controlling the migration of hazardous contaminants from those sites.

Intake: The source from where a water supply is drawn, such as from a river or water body.

Interagency Agreement: A written agreement between the EPA and a Federal agency that has the lead for site cleanup activities, setting forth the roles and responsibilities of the agencies for performing and overseeing the activities. States often are parties to interagency agreements.

Interim (Permit) Status: Conditions under which hazardous waste treatment, storage, and disposal facilities, that were operating when regulations under the RCRA became final in 1980, are temporarily allowed by the EPA to continue to operate while awaiting denial or issuance of a permanent permit. The facility must comply with certain regulations to maintain interim status.

Lagoon: A shallow pond or liquid waste containment structure. Lagoons typically are used for the storage of wastewaters, sludges, liquid wastes, or spent nuclear fuel.

Landfarm: To apply waste to land or incorporate waste into the surface soil, such as fertilizer or soil conditioner. This practice commonly is used for disposal of composted wastes and sludges.

Landfill: A disposal facility where waste is placed in or on land. *Sanitary* landfills are disposal sites for non-hazardous solid wastes. The waste is spread in layers, compacted to the smallest practical volume, and covered with soil at the end of each operating day. Secure *chemical* landfills are disposal sites for hazardous waste. They are designed to minimize the chance of release of hazardous substances into the environment [see Resource Conservation and Recovery Act].

Leach, Leaching [v.t.]: The process by which soluble chemical components are dissolved and carried through soil by water or some other percolating liquid.

Leachate [n]: The liquid that trickles through or drains from waste, carrying soluble components from the waste.

Leachate Collection System: A system that gathers liquid that has leaked into a landfill or other waste disposal area and pumps it to the surface for treatment.

Liner: A relatively impermeable barrier designed to prevent leachate (waste residue) from leaking from a landfill. Liner materials include plastic and dense clay.

Long-term Remedial Phase: Distinct, often incremental, steps that are taken to solve site pollution problems. Depending on the complexity, site cleanup activities can be separated into several of these phases.

Long-term Response Action: An action which requires a continuous period of on-site activity before cleanup goals are achieved. These actions typically include the extraction and treatment of groundwater and monitoring actions.

Marsh: A type of wetland that does not contain peat moss deposits and is dominated by vegetation. Marshes may be either fresh or saltwater and tidal or non-tidal [see Wetland].

Migration: The movement of oil, gas, contaminants, water, or other liquids through porous and permeable soils or rock.

Mill Tailings: [See Mine Tailings].

Mine Tailings: A fine, sandy residue left from mining operations. Tailings often contain high concentrations of lead, uranium, and arsenic or other heavy metals.

Mitigation: Actions taken to improve site conditions by limiting, reducing, or controlling toxicity and contamination sources.

Modeling: A technique using a mathematical or physical representation of a system or theory that tests the effects that changes on system components have on the overall performance of the system.

Monitoring Wells: Special wells drilled at specific locations within, or surrounding, a hazardous waste site where groundwater can be sampled at selected depths and studied to obtain such information as the direction in which groundwater flows and the types and amounts of contaminates present.

National Priorities List (NPL): The EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term cleanup under Superfund. The EPA is required to update the NPL at least once a year.

Natural Attenuation: [See Attenuation].

Neutrals: Organic compounds that have a relatively neutral pH, complex structure and, due to their organic bases, are easily absorbed into the environment. Water is the most commonly known neutral, however, naphthalene, pyrene, and trichlorobenzene also are examples of neutrals.

Nitroaromatics: Common components of explosive materials, which will explode if activated by very high temperatures or pressures; 2,4,6-Trinitrotoluene (TNT) is a nitroaromatic.

Notice Letter: A General Notice Letter notifies the parties potentially responsible for site contamination of their possible liability. A Special Notice Letter begins a 60-day formal period of negotiation during which the EPA is not allowed to start work at a site or initiate enforcement actions against potentially responsible parties, although the EPA may undertake certain investigatory and planning activities.

The 60-day period may be extended if the EPA receives a good faith offer from the PRPs within that period. [See also Good Faith Offer].

On-Scene Coordinator (OSC): The predesignated EPA, Coast Guard, or Department of Defense official who coordinates and directs Superfund removal actions or Clean Water Act oil- or hazardous-spill corrective actions.

Operation and Maintenance: Activities conducted at a site after a cleanup action is completed to ensure that the cleanup or containment system is functioning properly.

Organic Chemicals/Compounds: Chemical substances containing mainly carbon, hydrogen, and oxygen.

Outfall: The place where wastewater is discharged into receiving waters.

Overpacking: Process used for isolating large volumes of waste by jacketing or encapsulating waste to prevent further spread or leakage of contaminating materials. Leaking drums may be contained within oversized barrels as an interim measure prior to removal and final disposal.

Pentachlorophenol (PCP): A synthetic, modified petrochemical that may be used as a wood preservative because of its toxicity to termites and fungi. It is a common component of creosotes and can cause cancer.

Perched (groundwater): Groundwater separated from another underlying body of groundwater by a confining layer, often clay or rock.

Percolation: The downward flow or filtering of water or other liquids through subsurface rock or soil layers, usually continuing downward to groundwater.

Pesticide: A substance or mixture of substances intended to prevent, destroy, or repel any pest. If misused, pesticides can accumulate in the foodchain and contaminate the environment.

Petrochemicals: Chemical substances produced from petroleum in refinery operations and as fuel oil residues. These include fluoranthene, chrysene, mineral spirits, and refined oils. Petrochemicals are the bases from which volatile organic compounds (VOCs), plastics, and many pesticides are made. These chemical substances often are toxic to humans and the environment.

Phenols: Organic compounds that are used in plastics manufacturing and are by-products of petroleum refining, tanning, textile, dye, and resin manufacturing. Phenols are highly poisonous.

Physical Chemical Separation: The treatment process of adding a chemical to a substance to separate the compounds for further treatment or disposal.

Pilot Testing: A small-scale test of a proposed treatment system in the field to determine its ability to clean up specific contaminants.

Plugging: The process of stopping the flow of water, oil, or gas into or out of the ground through a borehole or well penetrating the ground.

Plume: A body of contaminated groundwater flowing from a specific source. The movement of the groundwater is influenced by such factors as local groundwater flow patterns, the character of the aquifer in which groundwater is contained, and the density of contaminants [see Migration].

Pollution: Generally, the presence of matter or energy whose nature, location, or quantity produces undesired health or environmental effects.

Polycyclic Aromatic Hydrocarbons or Polyaromatic Hydrocarbons (PAHs): PAHs, such as pyrene, are a group of highly reactive organic compounds found in motor oil. They are a common component of creosotes and can cause cancer.

Polychlorinated Biphenyls (PCBs): A group of toxic chemicals used for a variety of purposes including electrical applications, carbonless copy paper, adhesives, hydraulic fluids, microscope immersion oils, and caulking compounds. PCBs also are produced in certain combustion processes. PCBs are extremely persistent in the environment because they are very stable, non-reactive, and highly heat resistant. Chronic exposure to PCBs is believed to cause liver damage. It also is known to bioaccumulate in fatty tissues. PCB use and sale was banned in 1979 with the passage of the Toxic Substances Control Act.

Polynuclear Aromatic Hydrocarbons (PNAs): PNAs, such as naphthalene, and biphenyls, are a group of highly reactive organic compounds that are a common component of creosotes, which can be carcinogenic.

Polyvinyl Chloride (PVC): A plastic made from the gaseous substance vinyl chloride. PVC is used to make pipes, records, raincoats, and floor tiles. Health risks from high concentrations of vinyl chloride include liver cancer and lung cancer, as well as cancer of the lymphatic and nervous systems.

Potable Water: Water that is safe for drinking and cooking.

Potentially Responsible Parties (PRPs): Parties associated with a Superfund site who may be liable for the cost of remedying the release of hazardous substances. This may include owners or operators of the site or transporters who disposed of materials at the site. PRPs may admit liability, or liability may be determined by a court of law. PRPs may sign a Consent Decree or Administrative Order on Consent to participate in the site cleanup without admitting liability.

Precipitation: The removal of solids from liquid waste so that the solid and liquid portions can be disposed of safely; the removal of particles from airborne emissions. Electrochemical precipitation is the use of an anode or cathode to remove the hazardous chemicals. Chemical precipitation involves the addition of some substance to cause the solid portion to separate.

Preliminary Assessment: The process of collecting and reviewing available information about a known or suspected waste site or release to determine if a threat or potential threat exists.

Pump and Treat: A groundwater cleanup technique involving the extracting of contaminated groundwater from the subsurface and the removal of contaminants, using one of several treatment technologies.

Radionuclides: Elements, including radium and uranium-235 and -238, which break down and produce radioactive substances due to their unstable atomic structure. Some are man-made, and others are naturally occurring in the environment. Radon, the gaseous form of radium, decays to form alpha particle radiation, which cannot be absorbed through skin. However, it can be inhaled, which allows alpha particles to affect unprotected tissues directly and thus cause cancer. Radiation also occurs naturally through the breakdown of granite.

RCRA: [See Resource Conservation and Recovery Act].

Recharge Area: A land area where rainwater saturates the ground and soaks through the earth to reach an aquifer.

Record of Decision (ROD): A public document that explains which cleanup alternative(s) will be used to clean up sites listed on the NPL. It is based on information generated during the remedial investigation and feasibility study and consideration of public comments and community concerns.

Recovery Wells: Wells used to withdraw contaminants or contaminated groundwater.

Recycle: The process of minimizing waste generation by recovering usable products that might otherwise become waste.

Remedial Action (RA): The actual construction or implementation phase of a Superfund site cleanup following the remedial design [see Cleanup].

Remedial Design: A phase of site cleanup where engineers design the technical specifications for cleanup remedies and technologies.

Remedial Investigation: An in-depth study designed to gather the data necessary to determine the nature and extent of contamination at a Superfund site, establish the criteria for cleaning up the site, identify the preliminary alternatives for cleanup actions, and support the technical and cost analyses of the alternatives. The remedial investigation is usually done with the feasibility study. In this volume, the remedial investigation is referred to as a site study [see also Feasibility Study].

Remedial Project Manager (RPM): The EPA or State official responsible for overseeing cleanup actions at the site.

Remedy Selection: The selection of the final cleanup strategy for the site. At the few sites where the EPA has determined that initial response actions have eliminated site contamination, or that any remaining contamination will be naturally dispersed without further cleanup activities, a "No Action" remedy is selected [see Record of Decision].

Removal Action: Short-term immediate actions taken to address releases of hazardous substances [see Cleanup].

Residual: The amount of a pollutant remaining in the environment after a natural or technological process has taken place, e.g., the sludge remaining after initial wastewater treatment, or the particulates remaining in air after the air passes through a scrubber.

Resource Conservation and Recovery Act (RCRA): A Federal law that established a regulatory system to track hazardous substances from the time of generation to disposal. The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent new, uncontrolled hazardous waste sites.

Retention Pond: A small body of liquid used for disposing of wastes and containing overflow from production facilities. Sometimes retention ponds are used to expand the capacity of such structures as lagoons the store waste.

Runoff: The discharge of water over land into surface water. It can carry pollutants from the air and land and spread contaminants from its source.

Scrubber: An air pollution control device that uses a spray of water or reactant or a dry process to trap pollutants in emissions.

Sediment: The layer of soil, sand, and minerals at the bottom of surface waters such as streams, lakes, and rivers, that absorbs contaminants.

Seeps: Specific points where releases of liquid, usually leachate, form from waste disposal areas, particularly along the lower edges of landfills.

Seepage Pits: A hole, shaft, or cavity in the ground used for the storage of liquids, usually in the form of leachate, from waste disposal areas. The liquid gradually leaves the pit by moving through the surrounding soil.

Septage: Residue remaining in a septic tank after the treatment process.

Sinkhole: A hollow depression in the land surface in which drainage collects; associated with underground caves and passages that facilitate the movement of liquids.

Site Characterization: The technical process used to evaluate the nature and extent of environmental contamination, which is necessary for choosing and designing cleanup measures and monitoring their effectiveness.

Site Inspection: The collection of information from a hazardous waste site to determine the extent and severity of hazards posed by the site. It follows, and is more extensive than, a preliminary assessment. The purpose is to gather information necessary to score the site, using the Hazard Ranking System, and to determine if the site presents an immediate threat that requires a prompt removal action.

Slag: The fused refuse or dross separated from a metal in the process of smelting.

Sludge: Semi-solid residues from industrial or water treatment processes that may be contaminated with hazardous materials.

Slurry Wall: Barriers used to contain the flow of contaminated groundwater or subsurface liquids. Slurry walls are constructed by digging a trench around a contaminated area and filling the trench with an impermeable material that prevents water from passing through it. The groundwater or contaminated liquids trapped within the area surrounded by the slurry wall can be extracted and treated.

Smelter: A facility that melts or fuses ore, often with an accompanying chemical change, to separate the metal. Emissions from smelters are known to cause pollution.

Soil Gas: Gaseous elements and compounds that occur in the small spaces between particles of soil. Such gases can move through or leave the soil or rock, depending on changes in pressure.

Soil Vapor Extraction: A treatment process that uses vacuum wells to remove hazardous gases from soil.

Soil Washing: A water-based process for mechanically scrubbing soils in-place to remove undesirable materials. There are two approaches: dissolving or suspending them in the wash solution for later treatment by conventional methods, and concentrating them into a smaller volume of soil through simple particle size separation techniques [see Solvent Extraction].

Stabilization: The process of changing an active substance into inert, harmless material, or physical activities at a site that act to limit the further spread of contamination without actual reduction of toxicity.

Solidification/Stabilization: A chemical or physical reduction of the mobility of hazardous constituents. Mobility is reduced through the binding of hazardous constituents into a solid mass with low permeability and resistance to leaching.

Solvent: A substance capable of dissolving another substance to form a solution. The primary uses of industrial solvents are as cleaners for degreasing, in paints, and in pharmaceuticals. Many solvents are flammable and toxic to varying degrees.

Solvent Extraction: A means of separating hazardous contaminants from soils, sludges, and sediment, thereby reducing the volume of the hazardous waste that must be treated. It generally is used as one in a series of unit operations. An organic chemical is used to dissolve contaminants as opposed to water-based compounds, which usually are used in soil washing.

Sorption: The action of soaking up or attracting substances. It is used in many pollution control systems.

Special Notice Letter: [See Notice Letter].

Stillbottom: Residues left over from the process of recovering spent solvents.

Stripping: A process used to remove volatile contaminants from a substance [see Air Stripping].

Sumps: A pit or tank that catches liquid runoff for drainage or disposal.

Superfund: The program operated under the legislative authority of the CERCLA and Superfund Amendments and Reauthorization Act (SARA) to update and improve environmental laws. The program has the authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health, welfare, or the environment. The "Superfund" is a trust fund that finances cleanup actions at hazardous waste sites.

Surge Tanks: A holding structure used to absorb irregularities in flow of liquids, including liquid waste materials.

Swamp: A type of wetland that is dominated by woody vegetation and does not accumulate peat moss deposits. Swamps may be fresh or saltwater and tidal or non-tidal [see Wetlands].

Thermal Treatment: The use of heat to remove or destroy contaminants from soil.

Treatability Studies: Testing a treatment method on contaminated groundwater, soil, etc., to determine whether and how well the method will work.

Trichloroethylene (TCE): A stable, colorless liquid with a low boiling point. TCE has many industrial applications, including use as a solvent and as a metal degreasing agent. TCE may be toxic to people when inhaled, ingested, or through skin contact and can damage vital organs, especially the liver [see Volatile Organic Compounds].

Unilateral [Administrative] Order: [see Administrative Order].

Upgradient: An upward hydrologic slope; demarks areas that are higher than contaminated areas and, therefore, are not prone to contamination by the movement of polluted groundwater.

Vacuum Extraction: A technology used to remove volatile organic compounds (VOCs) from soils. Vacuum pumps are connected to a series of wells drilled to just above the water table. The wells are sealed tightly at the soil surface, and the vacuum established in the soil draws VOC-contaminated air from the soil pores into the well, as fresh air is drawn down from the surface of the soil.

Vegetated Soil Cap: A cap constructed with graded soils and seed for vegetative growth, to prevent erosion [see Cap].

Vitrification: The process of electrically melting wastes and soils or sludges to bind the waste in a glassy, solid material more durable than granite or marble and resistant to leaching.

Volatile Organic Compounds (VOCs): VOCs are manufactured as secondary petrochemicals. They include light alcohols, acetone, trichloroethylene, perchloroethylene, dichloroethylene, benzene, vinyl chloride, toluene, and methylene chloride. These potentially toxic chemicals are used as solvents, degreasers, paints, thinners, and fuels. Because of their volatile nature, they readily evaporate into the air, increasing the potential exposure to humans. Due to their low water solubility, environmental persistence, and widespread industrial use, they are commonly found in soil and groundwater.

Waste Treatment Plant: A facility that uses a series of tanks, screens, filters, and other treatment processes to remove pollutants from water.

Wastewater: The spent or used water from individual homes or industries.

Watershed: The land area that drains into a stream or other water body.

Water Table: The upper surface of the groundwater.

Weir: A barrier to divert water or other liquids.

Wetland: An area that is regularly saturated by surface or groundwater and, under normal circumstances, is capable of supporting vegetation typically adapted for life in saturated soil conditions. Wetlands are critical to sustaining many species of fish and wildlife. Wetlands generally include swamps, marshes, and bogs. Wetlands may be either coastal or inland. Coastal wetlands have salt or brackish (a mixture of salt and fresh) water, and most have tides, while inland wetlands are nontidal and freshwater. Coastal wetlands are an integral component of estuaries.

Wildlife Refuge: An area designated for the protection of wild animals, within which hunting and fishing are either prohibited or strictly controlled.

Some Common Contaminants at NPL Sites

Contaminant Category	Example Chemical Types	Sources	Potential Health Threats*
Heavy Metals	Arsenic, Barium, Beryllium, Cadmium, Cobalt, Copper, Chromium, Lead, Manganese, Mercury, Nickel, Silver, Selenium, Zinc	Electroplating, batteries, paint pigments, photography, smelting, thermometers, fluorescent lights, solvent recovery	Tumors, cancers, and kidney, brain, neurological, bone and liver damage
Volatile Organic Compounds (VOCs)	Trichloroethylene (TCE), Perchloroethylene (PCE), Acetone, Benzene, Ketone, Methyl chloride, Toluene, Vinyl Chloride, Dichlorethylene	Solvents and degreasers, gasoline octane enhancers, oils and paints, dry cleaning fluids, chemical manufacturing.	Cancers, kidney and liver damage, impairment of the nervous system resulting in sleepiness and headaches, leukemia
Pesticides/ Herbicides	Chlordane, DDT 4-4, DDE, Heptachlor, Aldrin, Endrin, Atrazine, Dieldrin, Toxaphene	Agricultural applications, pesticide and herbicide production	Various effects ranging from nausea to nervous disorders. Dioxin is a common by-product of the manufacture of pesticides and is both highly toxic and a suspected carcinogen.
Polychlorinated biphenyls (PCBs)	—	Electric transformers and capacitors, insulators and coolants, adhesives, caulking compounds, carbonless copy paper, hydraulic fluids.	Cancer and liver damage.
Creosotes	Polyaromatic hydrocarbons (PAHs), Polynuclear aromatics (PNAs), Phenolic Tars, Pentachlorophenol (PCP)	Wood preserving, fossil fuel combustion	Cancers and skin ulcerations with prolonged exposure
Radiation (Radionuclides)	Radium-226, Radon, Uranium-235, Uranium-238	Mine tailings, radium products, natural decay of granites	Cancer

Sources: *Toxic Chemicals—What They Are, How They Affect You (EPA, Region 5)*
Glossary of Environmental Terms (EPA, 1988)

**The potential for risk due to these contaminants is linked to a number of factors; for example, the length and level of exposure and environmental and health factors such as age.*

* U.S. G.P.O.:1993-341-835:81041