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Uranium Mill Tailings

UMTRA

Remedial Action Project

Fiscal Year 1997 Annual Report to Stakeholders

December 31, 1997

U.S. Department of Energy
Office of Environmental Management
Washington, DC 20545

For more information about the UMTRA surface project, please write or call:

**Environmental Restoration Division
DOE Albuquerque Operations Office
P.O. Box 5400
Albuquerque, NM 87185-5400
(505) 845-4628**

For more information about the UMTRA groundwater project, please write or call:

**DOE Grand Junction Office
P.O. Box 2567
Grand Junction, CO 81502
(970) 248-7727**

Cover Photo:

***A trackhoe loads contaminated materials
into a haul truck at the Gunnison, Colo., site***

FY 1997 Annual Report to Stakeholders

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List of Acronyms

Acronym Definition

BLM	U.S. Bureau of Land Management
CAA	Custodial Access Agreement
CDPHE	Colorado Department of Public Health and Environment
CR/PIP	Cost Reduction/Productivity Improvement Program
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ES&H	Environment, Safety and Health
FY	Fiscal Year
GJO	DOE Grand Junction Office
LTSP	Long-Term Surveillance Plan
MACTEC-ERS	MACTEC Environmental Restoration Services
MK-F	MK-Ferguson Company
MOU	Memorandum of Understanding
NC	Slick Rock, Colo., North Continent Site
NEPA	National Environmental Policy Act
NRC	U.S. Nuclear Regulatory Commission
ORE	Operational Readiness Evaluation
OSHA	Occupational Safety and Health Administration
RAC	Remedial Action Contractor
RAP	Remedial Action Plan
RDC	Radon Daughter Concentration
RRM	Residual Radioactive Material
TAC	Technical Assistance Contractor
UC	Slick Rock, Colo., Union Carbide Site
UMTRA	Uranium Mill Tailings Remedial Action
UMTRCA	Uranium Mill Tailings Radiation Control Act of 1978
USACE	U.S. Army Corps of Engineers
VP	Vicinity Property
VPDMS	Vicinity Property Data Management System

Preface

The fiscal year (FY) 1997 annual report is the 19th report on the status of the U.S. Department of Energy's (DOE) Uranium Mill Tailings Remedial Action (UMTRA) Project. In 1978, Congress directed the DOE to assess and clean up contamination at 24 designated former uranium processing sites. The DOE is also responsible for cleaning up properties in the vicinity of the sites where wind and water erosion deposited tailings or people removed them from the site for use in construction or landscaping. Cleanup has been undertaken in cooperation with state governments and Indian tribes within whose boundaries the sites are located. It is being conducted in two phases: the surface project and the groundwater project. This report addresses specifics about the UMTRA surface project.

DOE's UMTRA surface project is one of the world's largest materials management project undertaken to reduce or eliminate risk to the general public from exposure to potentially hazardous and radioactive materials. With an estimated cost at completion of nearly \$1.5 billion for the surface project, DOE is responsible for encapsulating and isolating nearly one-fourth of all the uranium mill tailings generated in the United States (more than 42 million cubic yards). The UMTRA Project team has achieved an outstanding record for safety and mission accomplishment during the past 19 years. The project has maintained a national reputation for its cost efficiency and effective process management, and has earned international recognition for technological innovation.

The *FY 1997 Annual Report to Stakeholders* presents the progress which UMTRA Project team members made during the past year and the status of the UMTRA surface project as of Sept. 30, 1997. To date, the project has completed 20 of the 24 original sites, leaving work to be done at only two more sites – Maybell and Naturita, Colo. DOE, at the request of the state, plans to revoke the designation of the two North Dakota sites.

We hope you'll find this report informative.

Project History

As the UMTRA surface project moves toward completion next year, thousands of federal, state, tribal and contractor workers have participated in more than 19 years of UMTRA remediation work. This effort, the oldest environmental restoration project in DOE, has significantly reduced the threat to public health and the environment in nine western states and Pennsylvania.

The Beginnings

According to Dick Campbell, the first DOE project manager, "The seeds for the UMTRA Project were planted in the early 1970s when concern began to grow over the health hazards posed by mill tailings left from the production of uranium for the U.S. government.

"Attention to the perceived problem was first directed to the thousands of vicinity properties in the Grand Junction (Colo.) area, but the focus soon broadened to privately owned mill sites that had provided uranium in the 1950s for the U.S. weapons programs."

In 1972, a Congressional subcommittee conducted hearings to look at a possible cleanup program for Salt Lake City, Utah. As a result of those hearings, the committee authorized a comprehensive study of all potential cleanup sites, instead of piecemeal solutions.

Preliminary engineering evaluations of the sites were conducted during 1975. By 1977, the conclusion had been reached that a cleanup program was needed to alleviate potential health hazards from the former processing sites.

President Jimmy Carter was in the White House when DOE proposed legislation to Congress that would establish the UMTRA Project. Hearings were held in the House and Senate, with Congress passing the Uranium Mill Tailings Radia-

tion Control Act (UMTRCA) of 1978 in November of that year.

The law established a seven-year completion deadline for the project and outlined the funding formula for the cleanup. Participating states were responsible for 10 percent of the cost of remedial action, with the federal government paying the remaining 90 percent. The federal government was responsible for 100 percent of the cost for those sites located on tribal land.

UMTRCA also required that DOE keep site community stakeholders informed of UMTRA Project plans and activities, and involve them in key aspects of the decision-making process.

Twenty-two processing sites were originally earmarked for cleanup. These were Canonsburg, Pa.; Salt Lake City, Green River and Mexican Hat, Utah; Durango, Gunnison, Grand Junction, Rifle (two sites), Naturita, Slick Rock (two sites) and Maybell, Colo.; Riverton and Spook, Wyo.; Lakeview, Ore.; Shiprock and Ambrosia Lake, N.M.; Falls City, Texas; Tuba City and Monument Valley, Ariz.; and Lowman, Idaho.

Belfield and Bowman, N.D., and Baggs, Wyo., were later designated by the Secretary, but Baggs was subsequently dropped because it did not meet all of the UMTRCA requirements. Burrell, Pa., a major vicinity property associated with Canonsburg, saw cleanup resulting in development of a disposal site.

DOE Gets Organized

Passage of UMTRCA coincided with a culture change within DOE. In the old Atomic Energy Commission (AEC) days, construction projects were managed by headquarters with field organizations essentially carrying out instructions from Washington. When the Energy Research and Development Administration (ERDA) replaced

AEC in January 1975, project management techniques first developed by the U.S. Air Force for the intercontinental ballistic missile program were imported by the new ERDA leadership for use on major projects.

These changes continued when DOE replaced ERDA on October 1, 1977, and became the 12th cabinet-level department within the federal government.

In early 1979, one of the first steps taken at DOE headquarters was to transfer responsibility for cleanup of the mill tailings sites from its environmental organization to its nuclear energy organization. The next steps were to establish a formal project, form a project office within DOE's Albuquerque Operations Office, appoint a project manager and hire contractors to provide the expertise to actually conduct project operations.

DOE's first UMTRA Project Office was set up during 1979 in the basement of the Albuquerque Operations Office at Kirtland AFB, N.M.. In April 1982, DOE moved its project office to an

Albuquerque office building, collocating with its new technical assistance contractor (TAC).

DOE moved back to Kirtland AFB in March 1997. They started with only three federal employees and grew to a staff of 25 during the height of the project.

Contractor Selection

The decision to use two separate contractors – a remedial action contractor (RAC) and a technical assistance contractor – can be traced back to 1979. DOE decided on two prime contractors as part of the acquisition strategy it submitted to headquarters before setting up the UMTRA Project Office. The concept was designed to allow for a checks and balances approach, particularly in the areas of design, cost and schedule. Sandia National Laboratories served as the interim TAC until the formal selection process was completed.

The RAC's responsibilities included detailed engineering for remedial action; remedial action construction and inspection; and on-site health,

Project Managers Through the Years

A number of skilled managers have led the DOE project office, TAC and RAC since the UMTRA Project opened its offices in Albuquerque in 1979. These leaders were:

DOE Project Office

1979 – Richard Campbell
1983 – James Morley
1985 – John Themelis
1987 – James Anderson
1988 – W. John Arthur III
1989 – Mark Matthews
1992 – Al Chernoff
1994 – Chuck Cormier
1995 – Rich Sena
1997 – George Rael

TAC

1982 – Krish Krishnan
1985 – Roger Williams
1986 – Don Dubois
1989 – Steve Hill
1991 – Ned Larson
1992 – Roger Nelson
1995 – Larry Pinkel

RAC

1983 – Pete Miller
1984 – Russell Hopkins
1986 – Jim Oldham
1992 – Bob Lawrence
1997 – Rob Cooney

safety, radiation and environmental monitoring.

The TAC was responsible for site characterization, the National Environmental Policy Act process, conceptual site design, final design reviews, health and safety programs, quality assurance, public information and participation, and cost and schedule control.

Jacobs Engineering Group was awarded the technical assistance contract in November 1981. Roy F. Weston, Inc., and Sergeant, Hauskins and Beckwith (now AGRA Earth and Environmental) were named subcontractors. Geraghty & Miller, Inc., joined the TAC as a subcontractor in 1991.

In March 1983, MK-Ferguson Company was awarded the remedial action contract. MK has used competitively awarded, fixed-unit-price construction subcontracts for all sites except Salt Lake City, which was remediated by the state, and the vicinity property (VP) cleanup in Grand Junction, Colo.

DOE's Grand Junction Projects Office (renamed the Grand Junction Office in 1996) managed the large VP cleanup in Grand Junction through its contractor, Bendix Field Engineering Corp. Chem-Nuclear Geotech (later RUST Geotech) replaced Bendix in October 1986, and MACTEC Environmental Restoration Services replaced RUST in August 1996. Another UMTRA Project contractor, the Oak Ridge National Laboratory, performed VP inclusion surveys and independent VP cleanup verification.

Technology Development

In early 1980, the UMTRA Project initiated a comprehensive technology development program. This program continued some work begun in previous years under other DOE sponsorship, and added new tasks to cover previously unexplored facets of the tailings disposal problem.

Five areas of technology were identified and included cover technology, liner technology, measurements and monitoring, tailings condi-

tioning and basic studies. These research programs continued through fiscal year 1984 and provided substantial knowledge of the potential for groundwater contamination, performance of radon barriers and the optimum design for disposal cell covers.

First Cooperative Agreement

A cooperative agreement was executed between DOE and the Commonwealth of Pennsylvania during 1980. This was the first of such agreements between the Department and the affected states and Indian tribes for each UMTRA site.

EPA Establishes Standards

Environmental Protection Agency (EPA) standards for the UMTRA Project were submitted to the Office of Management and Budget in September 1982. Formal publication of these standards on March 7, 1983, cleared the way for DOE to begin remedial action at the designated processing sites. It also started the clock for the seven-year period authorized for completion of the project. DOE's authority to perform remedial action was set to expire on March 6, 1990.

The U.S. Court of Appeals for the 10th Circuit remanded the groundwater provisions of the standards in September 1985. The court instructed EPA to replace qualitative recommendations with quantitative standards similar to those for UMTRCA Title II sites still in operation. EPA published its proposed replacement provisions in September 1987. Final standards were published in 1995.

Remediation Begins

Remedial action began at the first UMTRA site – Canonsburg, Pa. – on Oct. 7, 1983. In addition, 52 VPs were cleaned up during the year in Salt Lake City, Canonsburg and Grand Junction. Also that year, the Oak Ridge National Laboratory was designated the UMTRA Project inclusion survey contractor and opened a field office in Grand Junction to provide easier access to western state VPs.

During 1984, DOE designated 8,156 vicinity

properties for inclusion in the UMTRA Project. This action, completed in compliance with a consent order filed in U.S. District Court, identified all known potential VPs as of Feb. 2.

Vicinity property remediation work continued to pick up pace during 1984 with 118 new starts at four different locations, and 69 completions. The numbers increased to 319 new starts and 161 completions during 1985. This work continued to accelerate as the project prepared for the upcoming peak engineering and construction years.

Remedial action began at the Shiprock, N.M., site in October 1984, Tuba City, Ariz. (Phase I – which included the demolition of buildings and site preparation activities) in January 1985 and at Salt Lake City in February. Cleanup work at Canonsburg was completed in December.

During 1986, two sites were started and one was completed. Remediation started at the Lakeview, Ore., site in June and at Durango, Colo. in October. Cleanup work at the Shiprock site was completed in October. In addition, Phase I remediation was completed at Tuba City in February.

Phase I cleanup of the Mexican Hat, Utah, site was started in July 1987 and completed that October. The project also initiated Phase I remediation of the Ambrosia Lake, N.M., site in July.

UMTRCA Extended

On Sept. 23, 1988, Congress passed the UMTRA Amendments Act of 1988. This legislation

extended DOE's cleanup authority by more than four years to September 30, 1994. In extending UMTRCA, Congress recognized that:

- EPA standards were more stringent than expected,
- the project was more complex to administer than expected,
- budget constraints made it impractical for DOE to seek or obtain the large annual appropriations required to complete remediation within the original authorization period and

An early view of the Vitro processing site at Salt Lake City, which remained in operation through 1968. Remediation of the site began in early 1985 and was completed in mid-1989.

- the states needed more time to appropriate their 10 percent cost share.

The Act also permitted groundwater compliance without time constraint "...given the uncertainties surrounding the groundwater restoration problem."

During 1988, the UMTRA Project started clean-up of six additional sites: Tuba City (Phase II) in January; Riverton, Wyo., in March; the two sites at Rifle, Colo. (Phase I), in September; Green River, Utah, in November; and Grand Junction, Colo., in December.

1989 marked the beginning of remediation at three UMTRA sites and the completion of four others. Startups included Spook, Wyo., in April; Monument Valley, Ariz., in May; and Grand Junction (Phase II) in December. Completed sites were Salt Lake City in June, Spook in September, Lakeview in October and Green River in December. In addition, Phase I cleanup of the Ambrosia Lake site was complete in April and Phase I of the two Rifle sites in September.

Funding Delays

In February 1990, funding restrictions forced DOE to suspend remediation activities at the Monument Valley, Ariz., site as well as at nearby Mexican Hat, Utah. Construction subcontracts were terminated by MK-Ferguson at both locations.

Cleanup work was completed at two other sites during 1990. Tuba City, Ariz., was finished in April and Riverton, Wyo., was completed in September.

Groundwater Project Begins

The groundwater restoration phase of the UMTRA Project began on April 1, 1991. This effort began with definition of the planning documents needed to carry out groundwater restoration at uranium mill and VP sites. The project's groundwater phase was started as a separate major system acquisition project with a distinct line item in the federal budget. This decision was taken in light of its anticipated longevity beyond the surface phase and anticipated cost of more than \$1 billion.

1991 also marked the start of surface remediation at the Lowman, Idaho, site in April and the beginning of Phase I cleanup at the Gunnison, Colo., site in September. Remediation was

completed at the Durango, Colo., site in May.

The UMTRA Project received its first processing site certification from the U.S. Nuclear Regulatory Commission (NRC) during May 1991. NRC concurred with DOE's certification that the Shiprock, N.M., site was complete and in compliance with EPA standards.

Jacobs Engineering Group Inc., the UMTRA TAC, was competitively awarded a follow-on contract on April 1, 1991, that covered a basic two-year period with three one-year options.

1992 was a busy year for the project with cleanup activity starting at five sites, restarting at two others and finishing up at one. Startups included the Falls City, Texas, site in January; the two sites at Rifle, Colo., in April; Gunnison, Colo., in June; and Ambrosia Lake, N.M. (Phase II) in October.

Remediation efforts were restarted at Mexican Hat, Utah, and Monument Valley, Ariz., in September, and cleanup efforts were completed at Lowman, Idaho, in June.

On Oct. 24, 1992, Congress passed a bill to once again extend UMTRCA from Sept. 30, 1994, to Sept. 30, 1996. This provided two of the four additional years DOE had requested to complete the surface phase of the project.

NRC Licenses First Site

In September 1993, Spook, Wyo., became the first UMTRA disposal site licensed by the NRC. The disposal cell was brought under the Commission's general license for UMTRA Project sites after acceptance of the Spook long-term surveillance plan.

Substantial progress was also made during the year toward completion of a draft Programmatic Environmental Impact Statement (PEIS) for the UMTRA groundwater project. A DOE/TAC team conducted six community assessments and 17 scoping meetings in UMTRA communities in eight states during the year to help define the

content of the PEIS. More than 500 public comments were recorded during this process.

Following scoping, an implementation plan was developed which included a discussion of, and response to, the scoping comments as well as an outline for the draft PEIS. Finally, an internal draft PEIS was prepared.

1994 was another busy year for the UMTRA surface project with one new site start and three completions.

Phase I remediation started at Naturita, Colo., in May with demolition of structures at the former processing site. This work was completed in November.

Cleanup of the mill site at Monument Valley, Ariz., was completed in March with the relocation of 900 thousand cubic yards of radioactive material to the nearby Mexican Hat disposal cell at Halchita, Utah. Remediation was also completed at Falls City, Texas, in June and at the Grand Junction, Colo., processing site in August.

The Grand Junction disposal cell at Cheney Reservoir remained open to accept radioactive material from ongoing VP remediation efforts.

During September 1994, the NRC licensed the second UMTRA disposal site at Lowman, Idaho.

CR/PIP Earns Awards

The UMTRA Project was singled out for national recognition of its Cost Reduction/Productivity Improvement Program during 1994.

It was named one of

three DOE recipients of Vice President Al Gore's National Performance Review Hammer Award in September, marking the project's outstanding cost savings record and efforts to streamline and reinvent government.

In October, Secretary of Energy Hazel O'Leary presented the DOE Quality Team Award to the project during ceremonies in Washington. This award recognized the UMTRA team's cost savings of nearly \$60 million between 1988 and 1994.

The project saw remediation start at three sites during 1995 and the completion of three others.

Cleanup began at the two Slick Rock, Colo., sites in March and at the Maybell, Colo., site in May. And work was completed at Mexican Hat, Utah, in February, at Ambrosia Lake, N.M., in July and at Gunnison, Colo., in December.

The disposal site at Lakeview, Ore., was licensed by the NRC during September 1995. And on Oct. 18th, DOE celebrated the successful cleanup of the 4,000th vicinity property in Grand Junction, Colo.

On Jan. 11, 1995, the EPA published its final

Members of the UMTRA team show off the Hammer Award presented to the project by Vice President Al Gore.

standards for groundwater cleanup in the *Federal Register*. In developing the final standards, EPA used detailed information provided by DOE for 17 of the 24 sites covered under Title I of UMTRCA.

Public hearings for the draft groundwater PEIS were completed by UMTRA team members in July; a Notice of Availability was published in the *Federal Register* inviting public review of the document. In August, the Albuquerque Operations Office's Environmental Restoration Division (ERD) chartered an independent technical review of the groundwater phase of the UMTRA Project. The purpose of the review, which was conducted in September, was to evaluate the technical and business practices

used by DOE as compared to commercial practices.

On Oct. 1, 1995, DOE reassigned responsibility for the UMTRA Groundwater Project from ERD in Albuquerque to its Grand Junction Projects Office in Grand Junction, Colo.

During 1996, the UMTRA Project completed four sites and started its last site cleanup effort.

Phase II remediation was completed at the two Rifle, Colo., sites in October and at the two Slick Rock, Colo., sites in December. And Phase II cleanup work began at the last UMTRA site – Naturita, Colo. – in June.

The NRC licensed four disposal sites during 1996: Canonsburg, Pa., in January; Shiprock, N.M., and Durango, Colo., in September; and Tuba City, Ariz., in November.

Jacobs Engineering Group Inc., the UMTRA TAC, received a 30-month contract extension from DOE on April 1. This contract permitted the TAC to continue operations in support of the project until Sept. 30, 1998.

On Oct. 9, 1996, President Clinton signed a bill which once again amended the Uranium Mill Tailings Radiation Control Act of 1978, extending the authority of the Secretary of Energy to conduct remedial action until Sept. 30, 1998. The law also authorized operation of the Cheney disposal cell near Grand Junction, Colo., for the receipt and disposal of radioactive material from processing sites, and of byproduct material from property near the uranium milling site at Monticello, Utah, until the cell is filled or Sept. 30, 2023, whichever comes first.

During May 1997, the UMTRA Project sponsored a Lessons Learned Workshop as a forum for exchanging technical and management lessons learned during the project. Some 100 people attended the two-day workshop, which was held in Albuquerque.

UMTRA Project Achievements

As DOE's oldest and most successful environmental restoration project, UMTRA has developed an outstanding record of accomplishments during the past 19 years. These include:

- 20 sites completed; two in final construction
- 11 sites licensed by the NRC
- 39.6 million cubic yard of material stabilized
- 22.07 million truck miles driven
- 5,222 vicinity properties cleaned up
- OSHA recordable injury rate of 1.6 (70 percent below 1996 DOE construction rate)
- \$75.63 million saved through the CR/PIP program
- Honored with Vice President Al Gore's National Performance Review "Hammer Award"
- Recognized with DOE's Quality Team Award

In July 1997, DOE determined that cleanup was not required at the two UMTRA sites at Belfield and Bowman, N.D. In June, it completed an environmental assessment and a Finding of No Significant Impact (FONSI) in compliance with the National Environmental Policy Act. The FONSI supported a decision to revoke the sites' designation and this action is currently underway. This action was taken at the request of the state of North Dakota because of minimal public support, limited state funding and the very small risk to the public and the environment. Once complete, this action will reduce the number of UMTRA sites from 24 to 22.

The NRC licensed four sites through the end of fiscal year 1997, bringing the total licensed to 11. These were Falls City, Texas, in July; Gunnison,

Colo., in September; and Mexican Hat and Salt Lake City, Utah, in September. In addition, the NRC certified the processing sites at Grand Junction, Colo., and Monument Valley, Ariz. during the year.

Surface Project Completion

Construction continues at the two final UMTRA sites: Maybell and Naturita, Colo. MK-Ferguson continues work on the disposal cell cover at Maybell. At Naturita, the RAC is currently completing the disposal cell at nearby Uravan and will continue to backfill the processing site with clean soil.

By September 1998, all 22 sites will be remediated and 16 of 18 disposal cells are scheduled to be licensed by the NRC.

Introduction

Uranium ore has been mined in significant quantities in the United States for more than 40 years. Initially, private companies mined the ore for federal government use in national defense programs. After the 1950s, the development of commercial nuclear power created a need for uranium to fuel nuclear power plants.

When the mills shut down, the operators left behind large piles of uranium mill tailings, the sand-like material that remains after extracting the uranium from the ore. The tailings contain 85 percent of the radioactivity present in the

unprocessed uranium ore and small concentrations of naturally occurring radioactive materials that decay to radium and produce radon, a radioactive gas.

Long-term exposure to radon may pose a potential health hazard. To reduce the potential health hazard associated with the mill tailings, Congress passed Public Law 95-604, the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, 42 USC 7901 et seq. The bill was enacted to clean up inactive uranium mill sites abandoned by the late 1960s. Sites still in operation after 1978 remained the responsibility of their private

Figure 1
UMTRA Project Site Locations

owners. Congress gave DOE responsibility for carrying out the UMTRA Project at 24 abandoned sites. In 1979, DOE formed the UMTRA Project Office and assigned it to its Albuquerque Field Office.

The processing sites (Figure 1) are located in 10 states: Arizona, Colorado, Idaho, New Mexico, North Dakota, Oregon, Pennsylvania, Texas, Utah and Wyoming. In addition, a 1983 amendment to the UMTRCA gave the UMTRA Project responsibility for cleaning up vicinity properties near Edgemont, S.D. The former uranium mill site in Edgemont was remediated in the late-1980s by the Tennessee Valley Authority.

The UMTRCA also called for the EPA to establish remedial action standards. Congress directed the NRC to provide consultation and concurrence in the type of remedial action performed. Before surface remedial action, the DOE must comply with the requirements of the National Environmental Policy Act and perform detailed studies of the environmental impacts that remedial action would have at each site.

The purpose of remedial action is to minimize or eliminate potential hazards to human health and the environment resulting from exposure of the public to tailings and residual radioactive materials (RRM) at the former processing sites and at contaminated VPs. A VP is a property in the vicinity of the designated mill site that has been contaminated with mill tailings. These materials were transported to the VP by wind or erosion, or by people removing the tailings for use as construction materials.

The surface phase of the UMTRA Project involves isolating the tailings and other RRM in engineered disposal cells where the materials will be isolated from the environment for 200 to 1,000 years. Once the contaminants have been removed from the former processing sites and VPs, the sites are restored to their former condition. During the groundwater phase, DOE, through its Grand Junction Office (GJO), will ensure that groundwater contaminated by the

former processing sites is in compliance with EPA standards.

The UMTRA Project achieved new milestones in FY 1997, completing surface remedial action at the 19th and 20th of the original 24 UMTRA Project sites – both at Slick Rock, Colo. By the end of FY 1997, the project team was continuing work at the Maybell and Naturita, Colo., sites.

Major FY 1997 Accomplishments

As of Sept. 30, 1997, surface cleanup of former uranium processing sites was complete at 20 of the 24 designated UMTRA sites. Remedial action is in progress at the two final sites in Colorado – Maybell and Naturita.

All remedial action activities related to the two North Dakota sites – Belfield and Bowman – were suspended several years ago following a request by the state that these two sites not be remediated. DOE prepared an environmental assessment and FONSI on its proposed action to not perform the cleanup, completing both in mid-June. Once this action is complete, the two sites' designation will be revoked.

Here is a partial list of other UMTRA surface project accomplishments during the past fiscal year:

- UMTRCA was extended by Congress until Sept. 30, 1998.
- Completed remediation at the two Rifle sites in October 1996 and at the two Slick Rock sites in December.
- Obtained NRC licensing for the Tuba City, Falls City, Gunnison, Mexican Hat and Salt Lake City disposal sites.
- Obtained NRC certification for the former processing sites at Grand Junction and Monument Valley.

- Conducted an UMTRA Lessons Learned Workshop in May to exchange technical and management lessons learned during the life of the project.

- Completed 5,222 of 5,335 VPs eligible for remedial action under the UMTRA Project.

- Saved \$1.43 million through the Cost Reduction/Productivity Improvement Program (CR/PIP). The UMTRA Project has saved a total of \$75.63 million since the beginning of the program.

Program Issues and Activities

Program Planning

On Oct. 9, 1996, President Clinton signed a bill (Public Law No. 104-259) extending the end date of the UMTRCA. The law extended the authority of the secretary of energy to perform remedial action by two fiscal years through Sept. 30, 1998.

It also authorized the secretary to continue to operate the Cheney disposal cell near Grand Junction, Colo., for the receipt and disposal of RRM from former processing sites and byproduct materials from properties in the vicinity of the former uranium milling site in Monticello, Utah. DOE was given the authority to operate the Cheney cell until it has been filled to its design capacity (4.5 million cubic yards), or Sept. 30, 2023, whichever comes first.

Additionally the bill authorizes the DOE to eliminate the deed annotation requirement for VPs subjected to cleanup, if the state in which the VPs are located has programs that adequately notify prospective purchasers of the former condition of the property.

The amount of contaminated material to be remediated and handled at active or recently completed UMTRA Project sites is shown in Figure 2. Following completion of surface remedial action, all sites except Grand Junction will be licensed and transferred to the GJO Long-Term Surveillance Program by the end of FY 1999. The Cheney disposal cell will be transferred to GJO to manage the acceptance of waste, operations and maintenance, and eventual closure.

UMTRA Project site	Total material to be remediated (cubic yards)	Total volume to be handled (cubic yards)	Material handled as of 9/30/97 (cubic yards)	FY 1997 material handled (cubic yards)
Maybell	4,100,000	*1,028,000	1,025,361	3,150
Naturita	783,607	783,607	765,888	644,407
Rifle (2 sites)	3,731,839	3,731,839	3,731,839	0
Slick Rock (2 sites)	750,759	750,759	750,759	7,106
Completed sites	33,382,060	25,587,444	25,587,444	0
Total	42,748,265	31,881,649	31,861,291	654,663

* Maybell tailings are being consolidated in their present location.

Figure 2
Contaminated Material Handled

Although surface remedial action at the Grand Junction former processing site was completed in FY 1994 and tailings from more than 4,000 VPs in the Grand Junction area were cleaned up, some ongoing VP cleanup continues in Mesa County. Contaminated materials from those properties are being transported to the Cheney disposal cell, and VP restoration is scheduled to be completed during FY 1998.

The state of North Dakota requested that the UMTRCA designations be revoked for the Belfield and Bowman sites. DOE responded by preparing an environmental assessment in compliance with the National Environmental Policy Act. DOE determined that this proposed action would have no significant impact to public health and the environment, and published a FONSI during June 1997. DOE headquarters is proceeding to revoke the designation of the sites in the spring of 1998.

Figure 3 is the remedial action completion schedule for the remaining sites under the surface phase of the UMTRA Project.

During FY 1997, remedial action at four more sites – two at Rifle and two at Slick Rock – was completed, bringing the total to 20. In

addition, five sites were licensed by the NRC, bringing the total to 11, and three additional sites – Falls City, Shiprock and Tuba City – were transferred to GJO as part of DOE's Long-Term Surveillance Program, bringing the total number to eight.

Figure 4 shows the actual or planned working dates for obtaining NRC certification for UMTRA processing sites and licensing for disposal sites. It also includes actual and projected dates for transfer of those sites to GJO for the Long-Term Surveillance Program.

Project Cost

The estimated total cost of the surface phase of the UMTRA Project is \$1.486 billion. This includes federal funding of approximately \$1.385 billion and approximately \$101 million provided by the affected states. Federal funding through Sept. 30, 1997, is \$1.327 billion. Federal funding for the remainder of the project is estimated to be \$58.1 million; \$35.7 million for FY 1998 and \$22.4 million for FY 1999.

Figure 5 shows surface project funding by planning element. Surface project funding by site is provided in Figure 6.

UMTRA Project site (construction in progress)	FY 1996				FY 1997				FY 1998				FY 1999			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Grand Junction disposal site																
Grand Junction VPs																
Naturita																
Maybell																

- NOTES:
1. VP remedial action is included with the processing sites, except for the Grand Junction site.
 2. The Grand Junction disposal site is complete except for reception of VP material and final cell closure. It could remain open until September 30, 2023. As of April 1998, operations and maintenance of the disposal cell will be transferred to GJO and operated under separate authority.
 3. The Belfield and Bowman sites are not shown because they are expected to be removed from the UMTRCA site list and not remediated.

Figure 3
Remedial Action Completion Schedule

UMTRA Project disposal site*	NRC concurrence w/DOE certification	General license in effect	Site transfer to DOE GJO
Ambrosia Lake	May 1997	December 1997	January 1998
Burrell	May 1994	May 1994	September 1994
Canonsburg	August 1995	January 1996	April 1996
Durango	June 1996	September 1996	September 1996
Falls City	April 1997	July 1997	August 1997
Grand Junction**	November 1996	September 2023	April 1998
Green River	July 1992	February 1998	March 1998
Gunnison	September 1997	September 1997	October 1997
Lakeview	September 1993	September 1995	September 1995
Lowman	September 1994	October 1994	March 1995
Maybell	April 1999	April 1999	April 1999
Mexican Hat	September 1997	September 1997	November 1997
Naturita	February 1999	February 1999	February 1999
Rifle	February 1998	February 1998	March 1998
Riverton	January 1995	N/A	N/A
Salt Lake City	August 1997	September 1997	October 1997
Shiprock	May 1991	September 1996	November 1996
Slick Rock	March 1998	March 1998	April 1998
Spook	March 1992	September 1993	April 1994
Tuba City	April 1996	November 1996	November 1996

* Not all processing sites have a separate disposal site since some disposal cells have been combined. Dates are based on the *UMTRA Surface Project Status Report* as of September 30, 1997.

** This certification only covers the former processing site due to the extension of disposal cell operations.

Figure 4
Certification and Licensing Schedule

Planning element	Through FY 1996 (000s)	FY 1997 (000s)
Planning and design development	91,038	836
Engineering	120,089	864
Environment, safety & health	24,240	300
Technology development	16,424	0
Site acquisition	15,232	104
Remedial action	859,215	42,242
Surveillance & monitoring	9,319	474
Technical & management support	239,034	5,003
Total funding	1,374,591	49,823
Federal share	1,281,722	45,548
States' share	92,869	4,275

Figure 5
Surface Project Funding
by Planning Element

UMTRA Project site	Through FY 1996 (000s)	FY 1997 (000s)
Ambrosia Lake	39,834	192
Belfield	9,462	(22)
Bowman	556	0
Canonsburg	47,974	8
Durango	69,656	(362)
Edgemont	5,552	0
Falls City	56,671	60
Grand Junction	495,736	3,660
Green River	23,209	262
Gunnison	61,952	1,227
Lakeview	33,073	(6)
Lowman	19,197	(102)
Maybell	36,506	6,498
Mexican Hat	54,652	184
Monument Valley	23,961	200
Naturita	38,103	21,407
Rifle (2 sites)	101,290	14,538
Riverton	49,116	(22)
Salt Lake City	93,072	419
Shiprock	23,947	62
Slick Rock (2 sites)	47,935	1,601
Spook	10,512	(34)
Tuba City	32,623	53
Total funding	1,374,591	49,823
Federal share	1,281,722	45,548
States' share	92,869	4,275

NOTE: A site with negative funding obligations indicates a contractor has returned funding assigned to that site upon or near site completion. The returned funding is reobligated to another site and/or contractor.

Figure 6
Surface Project Funding by Site

Contractors

Jacobs Engineering Group Inc.

Jacobs Engineering Group Inc. is the technical assistance contractor (TAC) for the surface project. The TAC supports DOE by providing technical and management support to the UMTRA Project and develops the conceptual design for remedial action at UMTRA Project sites. The TAC is also DOE's contractor for planning and design development; NEPA compliance documentation; environment, safety and health (ES&H) compliance; quality assurance; public affairs support; and long-term surveillance planning for disposal sites.

MK-Ferguson Company

The principal remedial action contractor (RAC) for the surface phase of the UMTRA Project is MK-Ferguson (MK-F) Company. MK-F is responsible for engineering and final design of remedial action, ES&H procedures, managing construction activities and conducting remedial action. The RAC has awarded subcontracts for remedial action at all former mill sites (except Salt Lake City, which was managed by the state of Utah) and all VPs except Grand Junction and Edgemont.

MACTEC Environmental Restoration Services

MACTEC Environmental Restoration Services (MACTEC-ERS) is the RAC for engineering design and remedial action for VPs at Grand Junction. In addition, MACTEC-ERS is responsible for radiological data acquisition for VP site characterization.

Oak Ridge National Laboratory

Another UMTRA Project contractor, Oak Ridge National

Laboratory, Oak Ridge, Tenn., performs VP inclusion surveys and independent VP cleanup verification.

Environment, Safety and Health

Continued emphasis on effective ES&H programs supported the UMTRA Project's progress toward its goal of completing all remaining mill tailing sites by the end of FY 1998. These included mature ES&H procedures, internal and external ES&H audits, operational readiness reviews, in-house and external training classes, use of standard operating procedures, good record keeping and lessons learned. The results of the continued ES&H awareness included:

- An Occupational Safety and Health Adminis-

ES&H inspectors from DOE and the TAC review safety practices at the Grand Junction, Colo., disposal cell to ensure compliance with federal, state and local regulations.

Workers wash down a haul truck before it departs the Naturita, Colo., processing site for the disposal cell at Uravan. This process ensures that radioactive material is kept off of public roadways.

tration (OSHA) recordable injury rate of 1.8 through September 1997, which is 66 percent below the 1996 DOE construction rate of 5.3.

- An OSHA lost workday rate of 0.4 through September 1997, which is 33 percent lower than the same period last year and 83 percent below the 1996 DOE construction rate of 2.4.

Operational Readiness Evaluations (OREs) were conducted at the Maybell and Naturita sites, the Cheney disposal cell near Grand Junction and for the Grand Junction VPs. The ORE team recommended both pre-start and post-start items, and made recommendations of corrective actions. The DOE ES&H manager's approval was required before work began at the sites.

An ORE of site operations and a haul ORE were conducted at the Naturita site in March 1997. An ORE of site operations and the radon barrier pug mill were conducted at the Maybell site during July 1997. An ORE was also conducted prior to remediation and haul of commingled waste from

VPs in Grand Junction to the Cheney disposal cell.

DOE performed ES&H audits at Naturita, Maybell, the Cheney disposal cell in Grand Junction, the Clive, Utah, disposal cell, Tuba City and the commingled waste VPs in Grand Junction. The audit team observed operations, programs and procedures at the sites for adherence to company policy and federal, state and local regulations. If the team makes an observation, its members determine whether to categorize it as a finding (violation of federal, state or local code) or allow it to remain as an observation. The findings and observations are transmitted by DOE to the RAC in a final audit report. A finding requires a corrective action response from the RAC; an observation does not usually require a written response.

Joint DOE-TAC audit teams made seven visits to operating sites during the fiscal year. Site visits are conducted similar to audits, but focus more on assisting the RAC in managing its ES&H

programs. Safety observations made during the visits are corrected on the spot and discussed with site management during daily and final closeout sessions. Formal reports are not developed, but overall site conditions are documented in correspondence between DOE and RAC management.

During FY 1997, UMTRA Project independent review teams conducted 18 programmatic audits of the RAC's ES&H and radiological programs. These included 12 health and safety audits, three environmental audits and three radiological audits. Any conditions discovered to be contrary to quality and UMTRA Project requirements were addressed and corrected.

Quality Assurance

Independent reviewers from the DOE and TAC conducted five quality assurance in-process surveillance visits to RAC construction activities at active UMTRA Project sites during FY 1997. They also conducted four OREs at active UMTRA Project sites prior to the RAC's start-up of a particular phase of construction. Problems identified during the audits, surveillance visits and OREs were addressed and corrected. Corrective actions implemented resulted in increased effectiveness and quality of operations.

DOE also performed a final closeout inspection of the now-completed Rifle and Slick Rock sites.

Heavy equipment operators excavate contaminated soil at the Madam Curie area of Slick Rock's North Continent site. The 1911 Nobel Prize in Chemistry recipient mined uranium in this area of Colorado prior to discovering the chemical elements radium and polonium.

Public Affairs

The UMTRA Project continued to conduct an aggressive public affairs program designed to keep affected stakeholders – citizens, elected and appointed public officials, and members of the news media – informed about the project's activities and involved in its decision-making process.

Project-dedicated public affairs practitioners provided project management with professional support that included public affairs planning and counsel, news media relations, employee information, community relations, public participation and communication training.

During FY 1997, public affairs activities were highlighted by closing ceremonies for the two Slick Rock sites in December 1996 and extensive support to the UMTRA

Lessons Learned Workshop in May 1997.

Public affairs support also included responding to 64 stakeholder inquiries received directly from members of the public, responding to seven inquiries from the news media, distribution of 14 news releases covering a wide variety of subjects such as site closings, site updates, project milestones and the release of documents required by the NEPA process.

Other activities included regular publication of *UMTRA Update*, the UMTRA Project's quarterly employee newsletter; production of public affairs plans, fact sheets and videos; and preparation of displays for public exhibition. Public affairs also supported three community outreach activities in support of Navajo Nation stakeholders.

The TAC public affairs department earned one award from the New Mexico Chapter of the Public Relations Society of America as part of its annual "El Conquistador Awards" program. The project's FY 1996 annual video report, "The Long Haul," earned a second place award in the state-wide competition.

Cost Reduction Program

DOE's Cost Reduction/Productivity Improvement Program (CR/PIP) is a formal, but voluntary, suggestion program through which all project employees may suggest better or more efficient ways to do the job. The program saves taxpayers' money, improves the quality of the environment, empowers employees, and recognizes their creativity and teamwork.

In 1988, the UMTRA Project began using the CR/PIP to encourage everyone involved with the Project to develop ideas to save money, avoid costs and improve productivity, and to submit those ideas to management for evaluation and potential implementation. Since that time, the CR/PIP has realized a net benefit to the Project of more than \$75.63 million, including more than \$1.4 million during FY 1997.

During FY 1997, UMTRA Project employees from DOE, the TAC and RAC submitted 87 suggestions, exceeding their participation goal by six percent.

Surface Project Status

Vicinity Property Program

A VP is a residence, commercial building or open land area where uranium tailings were used as construction materials, or where tailings were transported and deposited away from the processing site by wind or water erosion.

The VP program continued simultaneously with mill site cleanup activities at Maybell and Naturita. Construction activities at Grand Junction were all VP related. The number of inclusions (VPs eligible for remedial action under the UMTRA Project) increased to 5,335 as new properties were identified. Remedial action was completed at 54 VPs, with 133 certified as complete in FY 1997. A site-by-site summary of VP activities is presented in Figure 7.

In FY 1996, the UMTRA Project Team and the state of Colorado reviewed and approved strategies to investigate, and if necessary remediate, 150 properties found with marginal radon levels (between .02 and .03 working level).

During FY 1997, radon levels were reduced on 44 properties. Of the 67 properties remaining to be closed out, simple fixes need to be performed on two properties, radon detectors will be placed to remeasure the radon concentrations on 34 properties and 34 properties are awaiting Colorado Department of Public Health and the Environment (CDPHE) review and concurrence that no further action be performed.

DOE concluded its study of properties that may have been inadvertently excluded from the

The foundation of a home in Naturita, Colo., is removed by workers as part of UMTRA's vicinity property program. Thirty-six of 52 VPs identified in the town have been cleaned up to date.

UMTRA Project site	Properties included in VP program		Remedial action completed		Properties certified clean	
	FY 1997	To date	FY 1997	To date	FY 1997	To date
Ambrosia Lake	0	5	0	5	0	4
Belfield	0	7	0	0	0	0
Bowman	0	1	0	0	0	0
Canonsburg	0	163	0	163	0	160
Durango	0	129	0	129	1	127
Edgemont	0	137	0	135	0	129
Falls City	0	13	0	13	4	13
Grand Junction	14	4,301	32	4,229	101	3,884
Grand Junction VP dovetails*	0	115	0	110	0	105
Green River	0	17	0	17	0	17
Gunnison	0	12	0	12	1	5
Lakeview	0	8	0	8	0	8
Lowman	0	38	0	38	1	36
Maybell	0	13	4	8	1	2
Mexican Hat	0	11	0	11	0	9
Monument Valley	0	4	0	4	0	4
Naturita	7	52	18	36	7	19
Rifle	0	113	0	113	3	101
Riverton	0	42	0	42	0	41
Salt Lake City	0	119	0	119	1	119
Shiprock	0	15	0	15	0	15
Slick Rock	0	17	0	13	13	16
Spook	0	2	0	1	0	1
Tuba City	0	1	0	1	0	1
Total	21	5,335	54	5,222	133	4,816
% Complete		100.0		97.9		90.3

* Dovetails are VPs remediated under the Grand Junction Remedial Action Program.

NOTES: 1. "FY 1997" figures for "Remedial Action Completed" are based on milestones reported by the contractor.
2. "FY 1997" and "To date" figures are based on the Vicinity Properties Data Management System (VPDMS).
3. Changes in data from FY 1996 report are due to ongoing VPDMS validation activities, reversals, or closeouts.
4. "Remedial action completed" includes "no action" radiological engineering assessments.

Figure 7
Vicinity Property Activity Summary

UMTRA Project vicinity property program. More than five percent of the first 100 properties sampled for radon exceeded .02 working level, so DOE initiated a second round of sampling. Only 13 owners consented to taking measurements and none of these properties were above .02 working level. The study was finalized with the conclusion that DOE's inclusion/exclusion practices were sufficient to meet the intent of the standards.

At some vicinity properties in Grand Junction, RRM was found commingled with hazardous wastes that are regulated under the Resource Conservation and Recovery Act (RCRA). DOE initiated the remediation of commingled waste properties during FY 1996. Treatment was completed on five properties during FY 1997 with more than 20,000 tons of material successfully treated. Only a small quantity of commingled waste on one property remains to be treated in FY 1998.

Vicinity property remediation efforts were also completed at American Auto Salvage, a suspected commingled waste property. A total of 132,000 cubic yards of RRM were removed from the property. This completion was marked by a ceremony involving DOE, the city of Grand Junction and the Mesa County Riverfront Commission.

Long-Term Radon Management

The DOE anticipates that RRM will be encountered during the course of new construction in Grand Junction and other communities associated with the UMTRA Project after DOE's authorization to perform remedial action under UMTCA expires on Sept. 30, 1998. The state of Colorado approved legislation allowing the CDPHE to participate in the long-term management of uranium tailings in Colorado communities.

Construction crews break up the gym floor of the Nucla Elementary School in Naturita, Colo. The gym qualified as an UMTRA vicinity property because uranium mill tailings were used in its original construction.

Real Estate Acquisition

Real estate activities during FY 1997 included the transfer of title for the Salt Lake City, Green River and Falls City sites from the states involved to the federal government. Completion of these actions led to the licensing of the Salt Lake City and Falls City sites by the NRC. The Green River site is expected to be licensed in 1998.

Other UMTRA Project real estate actions during

FY 1997 included:

- Continuing the title transfer process at the Ambrosia Lake disposal cell site. The state of New Mexico, DOE and the U.S. Army Corps of Engineers are actively working the actions required to clear title.
- Purchasing the Upper Bubank repository from Umetco Mineral Corporation for use as a disposal cell for the Naturita site.

Status of Designated Sites

Ambrosia Lake, N.M.

The UMTRA Project team completed remedial action at Ambrosia Lake in FY 1995. In FY 1996, DOE submitted the final Long-Term Surveillance Plan (LTSP) to the NRC for its concurrence. In addition, the NRC reviewed the draft completion report for the site and returned it to DOE for revision.

The state of New Mexico is in the process of finalizing the transfer of title to the federal government. The site is expected to be licensed in early 1998.

Belfield and Bowman, N.D.

The state of North Dakota requested that DOE remove its two sites from the list of sites identified for remedial action. This action was taken because of minimal public support, the very small risk to the public and the environment, and because the state did not have the necessary appropriations to pay for its share of remedial action.

DOE prepared an environmental assessment and FONSI, completing both in June.

A *Federal Register* notice on revoking the two sites' designation was published on March 17, 1998. Revocation is scheduled to become effective in mid-May 1998.

Canonsburg, Pa.

Remedial action at the Canonsburg site was completed in 1985. The residual radioactive material (RRM) at the Burrell Township site, a large Canonsburg VP, was stabilized in a separate disposal cell in 1987. The NRC licensed the Burrell site in 1994. The Canonsburg final LTSP was submitted to NRC in December 1995 and the site was licensed by the NRC in January 1996. Responsibility for the site was transferred to GJO in April 1996.

Durango, Colo.

Cleanup of the former uranium processing site in Durango consisted of transporting all RRM to an isolated disposal site at Bodo Canyon, Colo., and was completed in May 1991. The site was licensed by NRC in September 1996 and responsibility for the site was transferred to GJO in September 1996.

The mill building foundation and other debris bake in the sun after being uncovered during preliminary excavations at the Maybell, Colo., processing site.

Edgemont, S.D.

DOE was not required to conduct remedial action at the former processing site in Edgemont. All the RRM from the former processing site was stabilized on site by the owners prior to enactment of the UMTRCA. The UMTRCA was amended in 1978, however, to include cleanup of all VPs contaminated with tailings from the Edgemont site. DOE remediated all VPs in Edgemont prior to FY 1992. To date, the NRC has certified 129 of the 135 VPs requiring certification. Two properties will not be cleaned because their owners refuse to participate in the program.

Falls City, Texas

Remediation at Falls City began in 1992 and was completed in July 1994. The NRC completed its review of the completion report and long-term surveillance plan (LTSP), and licensed the disposal site in July 1997. Responsi-

bility for the site was transferred to GJO in August 1997.

Grand Junction, Colo.

Remedial action at the former Climax mill site in Grand Junction was started in late 1988. With the completion of remedial action and restoration of the former processing site in FY 1994, all remaining Grand Junction activities focused on remediation of the VPs.

DOE responded to NRC comments on the completion report and received certification of the processing site in November 1996.

At the Cheney disposal cell, efforts focused on finalizing the plan for the investigation of the paleochannel adjacent to the cell. DOE also initiated licensing activities for Cheney using a phased approach. The first phase completion report, delivered to the NRC in February 1997, documented activities through August 1994. The

A bulldozer pushes tailings toward a conveyor for loading aboard a haul truck at one of the Slick Rock, Colo., UMTRA sites. The material was then transported to the nearby Burro Canyon cell.

second phase report, a post-UMTRA Project activity performed by GJO, will cover the remaining long-term radon management activities through cell closure.

Green River, Utah

Cleanup of the Green River site began in November 1988 and was completed in December 1989. The state of Utah transferred the site to the federal government, and the Department of the Army and DOE entered into a temporary boundary agreement.

DOE has also been working with the state to finalize a proposed groundwater protection strategy. The LTSP will be completed and the site licensed during 1998.

Gunnison, Colo.

DOE completed remedial action construction at Gunnison in December 1995, and the disposal cell was licensed by the NRC in September 1997. Activities during FY 1997 included coordinating wetlands monitoring and wildlife mitigation studies with the U.S. Army Corps of Engineers and the Bureau of Land Management.

Lakeview, Ore.

Cleanup of the Lakeview site began in June 1986 and was completed in October 1989. In September 1995, the NRC licensed the disposal site and the UMTRA Project team transferred responsibility for the site to GJO.

Lowman, Idaho

Surface remedial action at Lowman was completed in June 1992. The NRC licensed

A Caterpillar scraper places clean fill for the south berm of the Maybell, Colo., disposal cell.

the disposal site in October 1994. Responsibility for the site was transferred from Albuquerque to GJO in March 1995.

Maybell, Colo.

Construction activities continued at the Maybell site with completion of the excavation of contaminated materials, and placement of the radon barrier and frost protection. The remaining portion of the frost protection, bedding material and rock cover will be placed on the disposal cell during FY 1998.

DOE initiated licensing activities at Maybell using a phased approach. The first completion report will document activities through placement of the frost protection layer. The second completion report will document placement of both the bedding layer and the rock cover. The first phase report will be sent to the NRC for review in early FY 1998; the second phase will be finalized in FY 1999 following completion of site construction.

The initial version of the LTSP will be submitted to the NRC in FY 1998, and the document will be finalized in FY 1999 following the completion of remedial action.

The state of Colorado transferred the land title to

the federal government in June 1997. The NRC is scheduled to certify the completion report, approve the LTSP and license the site in FY 1999. Responsibility for the site will also be transferred to GJO during FY 1999.

Mexican Hat, Utah, and Monument Valley, Ariz.

RRM from the Mexican Hat and Monument Valley sites were consolidated and encapsulated in a single disposal cell at the Mexican Hat site in Hachita, Utah. The Monument Valley surface remediation work was completed in March 1994 and the Mexican Hat cleanup was completed in February 1995. The disposal site was licensed by the NRC in September 1997.

Naturita, Colo.

Phase II of the remedial action in Naturita, which consists of the removal and relocation of contaminated materials from the former processing site to the disposal site at the Upper

Burbank Repository at Uravan, Colo., was started in June 1996.

The last of the contaminated materials should be removed from the former processing site in early FY 1998. Placement of the radon barrier, frost protection and bedding layers, and rock cover began in September 1997 and should be completed in early summer 1998. The backfill and reseedling of the former processing site will also start in FY 1998.

DOE is using a phased approach in its licensing activities for Naturita. The first completion report will cover verification of the remedial action at the processing site. The final report will cover all aspects of construction at the disposal cell. The first will be sent to the NRC for review in early FY 1998; the second will be finalized in late FY 1998 after completion of site remediation. The initial version of the LTSP will be submitted to the NRC in FY 1998 and will be finalized after completion of site construction.

A trackhoe clears a slurry line near Naturita's San Miguel River in southwestern Colorado.

The NRC is expected to license the site in early FY 1999. This will be followed by the transfer of site responsibility to GJO the same year.

Rifle, Colo.

Completion of remedial action construction activities at the two former processing sites in Rifle, which began in April 1992, occurred in October 1996. Licensing activities were initiated during FY 1997 with preparation of the completion report and LTSP and transmittal of the

A truck delivers bentonite to the radon barrier pugmill at Maybell, Colo. The mill was used to blend bentonite with fine-grained soil before placement over contaminated materials in the disposal cell.

documents to the NRC for review. The NRC is expected to license the site during FY 1998, followed by the transfer of site responsibility to GJO.

Riverton, Wyo.

Remedial action at the Riverton site began in May 1988 and was completed in September 1990. The RRM was removed and transported to a Title II site in Wyoming's Gas Hills district. Since DOE did not construct a disposal cell for the materials, the site does not require NRC licensing. In January 1995, however, the NRC agreed with DOE's certification that the site is free of mill-related contaminants.

Salt Lake City, Utah

Cleanup at the former Vitro processing site in Salt Lake City involved transporting the RRM by rail and truck to the Clive disposal site, located 85 miles west of the city. Remedial action was performed by the state of Utah. It was initiated in January 1985 and completed in May 1989.

The RAC repaired and replaced some of the riprap at the Clive disposal cell during FY 1997. All VP certifications were completed, and land annotation issues for the former processing site were resolved with the state. The deed for the disposal site was transferred to the federal government and the disposal site was licensed by the NRC in September 1997.

Shiprock, N.M.

Work at the Shiprock site began in October 1984 and was completed in November 1986 with all RRM stabilized in place in a disposal cell. The DOE-Navajo Nation custodial access agreement (CAA) for the site was signed in FY 1996. This documentation of perpetual access to tribal sites is necessary for NRC licensing of the sites for long-term surveillance activities. The cell was licensed by the NRC in September 1996; site responsibility was transferred to GJO in November of the same year.

Slick Rock, Colo.

All remedial action was completed at the two Slick Rock sites during FY 1997. Both the

North Continent and Union Carbide properties were remediated to standards and the disposal cell was constructed at nearby Burro Canyon. Licensing activities were initiated with preparation of the completion report and LTSP, and transmittal of these documents to the NRC for review.

During FY 1998, the NRC is scheduled to license the disposal cell and site responsibility will be transferred to GJO.

Spook, Wyo.

Cleanup of the Spook site in Converse County began in April 1989 and was completed that September. The NRC licensed the site in Sep-

tember 1993, making it the first UMTRA Project site to be brought under the NRC's general license. Site responsibility was transferred to GJO in April 1994.

Tuba City, Ariz.

Remedial action construction at the former Uranium processing site in Tuba City began in January 1988 and was completed in May 1990. NRC licensed the site in November 1996. Responsibility for the site was transferred to GJO the same month.

Note: The remediation start and completion dates for UMTRA Project sites is shown in Figure 8.

UMTRA Project Site	Remediation Started	Remediation Completed
Ambrosia Lake	July 1987	July 1995
Canonsburg	October 1983	December 1985
Durango	October 1986	May 1991
Falls City	January 1992	June 1994
Grand Junction	December 1988	August 1994
Green River	November 1988	December 1989
Gunnison	September 1991	December 1995
Lakeview	June 1986	October 1989
Lowman	April 1991	June 1992
Maybell	May 1995	
Mexican Hat	July 1987*	February 1995
Monument Valley	May 1989*	March 1994
Naturita	May 1994	
Rifle (2)	September 1988	October 1996
Riverton	March 1988	September 1990
Salt Lake City	February 1985	June 1989
Shiprock	October 1984	October 1986
Slick Rock (2)	March 1995	October 1996
Spook	April 1989	September 1989
Tuba City	January 1985	April 1990

* Remediation was suspended at these sites between 1980 and 1992 due to budget constraints.

Figure 8
Remedial Action Schedule