

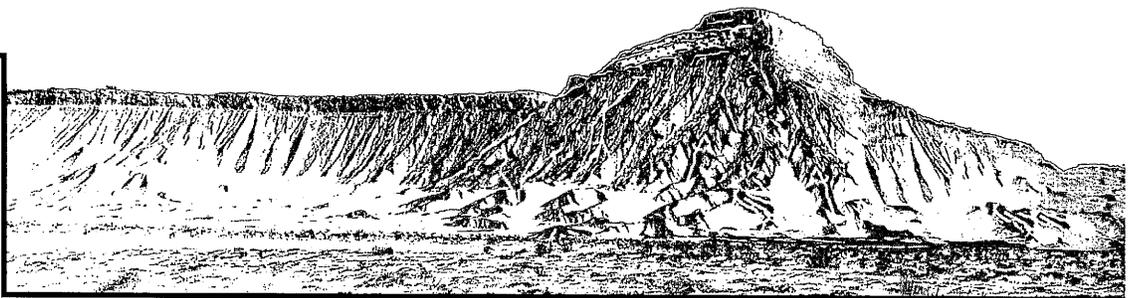
**Draft Final**

# **Monticello Site Management Plan**

**October 2003**



**U.S. Department  
of Energy**



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**Draft-Final**

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**October 2003**

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Prepared by  
U.S. Department of Energy  
Grand Junction, Colorado

Work Performed Under DOE Contract Number DE-AC13-02GJ79491

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## **Acronyms and Abbreviations**

AA	alternatives analysis
ACAP	Alternative Cover Assessment Program
AEC	U.S. Atomic Energy Commission
ARARs	applicable or relevant and appropriate requirements
BCC	baseline change control
BLM	U.S. Bureau of Land Management
BLRA	baseline risk assessment
BMPA	Best Management Practice Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	<i>Code of Federal Regulations</i>
COR	Close-Out Report
CRP	Community Relations Plan
DOE	U.S. Department of Energy
EA	environmental assessment
EE/CA	Engineering Evaluation/Cost Analysis
EM	environmental monitoring
EM-1	Office of Environmental Management
EPA	U.S. Environmental Protection Agency
ESD	explanation of significant difference
ET	evapotranspiration
EVM	earned value management
FFA	Federal Facility Agreement
FS	Feasibility Study
ft	foot (feet)
FY	fiscal year
GCL	geosynthetic clay liner
GJO	Grand Junction Office
HDPE	high density polyethylene
HQ	Headquarters
HASP	Health and Safety Plan
ID	Idaho Operations Office
IRA	interim remedial action
IVC	independent verification contractor
in.	inch (inches)
IWMA	Interim Waste Management Area
LCRS	leachate collection and removal system
LDS	leak detection system
LM	legacy management
LTRA	Long-Term Response Action
LTS&M	Long-Term Surveillance and Maintenance
mi	mile(s)
MMTS	Monticello Mill Tailings Site
MRAP	Monticello Remedial Action Project
MSGRAP	Monticello Surface- and Ground-Water Remedial Action Project

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MVP	Monticello Vicinity Properties
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NOID	Notice of Intent to Delete
NPL	National Priorities List
OU	Operable Unit
PCB	polychlorinated biphenyls
pCi/g	picocuries per gram
PCOR	Preliminary Close-Out Report
PeRT	permeable reactive treatment
PMCS	Project Management and Control System
PSP	project safety plan
QA	quality assurance
QAPP	Quality Assurance Program Plan
QAPjP	Quality Assurance Project Plan
QC	quality control
RAA	Remedial Action Agreement
RAR	Remedial Action Report
RCRA	Resource Conservation and Recovery Act
RDC	radon daughter concentration
RD/RA	Remedial Design/Remedial Action
RDWP	Remedial Design Work Plan
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RO	reverse osmosis
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SCR	Site Characterization Report
SFMP	Surplus Facilities Management Program
SMP	Monticello Site Management Plan
SSAB	Site Specific Advisory Board
State	State of Utah
TAC	technical assistance contractor
TDS	total dissolved solids
TES	threatened, endangered, and sensitive
TSF	temporary storage facility
UPDES	Utah Pollutant Discharge Elimination System
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
VCA	Vanadium Corporation of America
WBS	work breakdown structure
WL	working level
WWTP	wastewater treatment plant
yd <sup>3</sup>	cubic yard(s)
ZVI	zero-valent iron

## **Executive Summary**

The *Monticello Site Management Plan (SMP)* establishes the overall plan for remedial actions at the Monticello Mill Tailings Site and the Monticello Vicinity Properties Site. Both of these sites are located at and adjacent to the City of Monticello, in San Juan County, Utah. Both sites were on the National Priorities List (NPL); remedial action has been completed at the Monticello Vicinity Properties and it was deleted from the NPL. Deletion of the Monticello Mill Tailings Site from the NPL will be accomplished with partial deletions. The first area deleted is designated as Operable Unit II Non-Surface and Ground-Water Impacted Properties. Deletion of this area became effective on October 12, 2003.

The U.S. Department of Energy (DOE) is conducting response actions pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. In 1988, the U.S. Environmental Protection Agency (EPA), the State of Utah (State), and DOE entered into a Federal Facility Agreement (FFA) (DOE 1988b) that defines the roles and responsibilities of the parties for response action at the two sites. DOE is the lead agency and performs response actions pursuant to Section 120 of CERCLA/SARA. EPA and the State provide oversight of the response actions as described in the FFA.

This SMP provides an overview of the response actions that have taken place, are underway and are planned for the future at the Monticello NPL sites. It is intended as a management tool; additional information regarding the nature and extent of contamination and specific response actions can be found in the specific documents listed in the SMP.

The SMP is organized into eleven main sections. The sections correspond to the EPA model for management of Superfund sites (EPA 1993a). Section 1.0 presents general background information and the document objectives. Section 2.0 identifies the management structure, roles, and responsibilities. Section 3.0 presents project objectives. Section 4.0 describes the project tasks, applicable or relevant and appropriate requirements compliance, document submittals, and corresponding schedules and costs. Section 5.0 presents the project milestones and schedules, including the enforceable milestones. Section 6.0 describes the Long-Term Surveillance and Maintenance Program. Sections 7.0 through 11.0 address health and safety protection; quality assurance; acquisition strategy; project control; and references, respectively.

The stipulated penalty milestones listed in Section 5.0 are the enforceable milestones unless superseded by revised schedules agreed to by EPA, the State, and DOE. The general process for revising enforceable milestones is presented in Section 5.0. Milestones identified in this document are enforceable through fiscal year (FY) 2006. Dates beyond FY 2006 are targets only.

The original version of this document was finalized in March 1995. The SMP was revised in July 1998, September 1999, October 2000, March 2001, September 2002, and again in September 2003, this is the sixth revision of the SMP. Schedules and milestones for each revision (and at other times when necessary) were negotiated between DOE, EPA, and the Utah Department of Environmental Quality.

DOE, EPA, and the State agreed that this will be the last scheduled revision of the entire SMP. An addendum that updates milestones and target dates will then be prepared each year. The first addendum will be in September 2004.

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## **1.0 Introduction**

### **1.1 Site Background**

In 1941, the Vanadium Corporation of America (VCA) constructed a mill in Monticello, Utah, to provide vanadium during World War II. Numerous mill processes, including uranium milling, were used at the Monticello Millsite during its tenure of operation. Mill operations were terminated in 1960, leaving behind approximately 2.5 million cubic yards (yd<sup>3</sup>) of low-level radioactive mill tailings and contaminated soils. The contamination from the mill tailings resulted in the establishment of two National Priorities List sites: the Monticello Mill Tailings Site (MMTS) and the Monticello Radioactively Contaminated Properties site. The Monticello Radioactively Contaminated Properties site is more commonly called the Monticello Vicinity Properties (MVP) Site.

#### **1.1.1 Response and Enforcement History**

This *Monticello Site Management Plan* (SMP) establishes the overall plan for remedial action activities at the MMTS and MVP Site in Monticello, Utah. Both of these sites were on the National Priorities List (NPL). The MVP was remediated in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. Upon completion of remedial actions at the MVP, the MVP was deleted from the NPL on February 28, 2000. Remediation in accordance with CERCLA is ongoing at the MMTS. A Federal Facility Agreement (FFA) among the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), and the Utah Department of Environmental Quality (UDEQ), pursuant to Section 120 of CERCLA/SARA, became effective December 1988 (DOE 1988b). DOE, EPA, and UDEQ agreed to perform response actions at the MMTS and MVP Site in accordance with the FFA. DOE is the lead agency that provides the principal staff and resources to plan and implement response actions. EPA is the lead oversight agency with ultimate responsibility and authority but shares its decision-making activity with UDEQ.

#### **1.1.2 Purpose of the Monticello Site Management Plan**

This SMP becomes the Work Plan identified in Section IX, Paragraph A, of the FFA. Pursuant to Section IX, Paragraph Q, of the FFA, the SMP shall be incorporated in and become an enforceable part of the FFA. The SMP supersedes DOE's Remedial Design Work Plan (RDWP) (DOE 1992b). This revision of the SMP supersedes schedules presented in Remedial Design/Remedial Action (RD/RA) Work Plans for Operable Unit (OU) I and OU II completed in 1995, and previous versions of the SMP, including all updates to SMP Section 5.0, "Project Schedules and Milestones." This revision to the SMP will be the last that addresses detailed information on all the Monticello Projects. Subsequent updates or revisions will address the Monticello Projects where response actions were not completed at the time of publication of this document.

This SMP focuses on three major objectives, including (1) presentation of an overview of the organization of the Monticello Projects, (2) presentation of the major phases and critical tasks for the projects and, (3) establishing milestones for completion of the projects that consider the critical interrelationships of project phases and tasks.

Implementation of this SMP is consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), CERCLA, and DOE orders and directives. This SMP describes the planning, coordination, and oversight activities to be conducted by the FFA parties. Technical baseline and work-scope definition are provided by enclosed or referenced documents. Roles and responsibilities of the FFA participants are identified. Other concerns such as quality-assurance (QA) and quality-control (QC) requirements, and overall complexity are discussed in this SMP.

Sections of this SMP correspond to the EPA model for management of Superfund sites as defined in the *Enforcement Project Management Handbook* (EPA 1993a). Section 1.0 presents general background and objectives. Section 2.0 discusses organization, roles, accountability, team commitment to project objectives, review and approval responsibilities, and coordination activities. Section 3.0 presents project objectives. Section 4.0 describes project tasks, applicable or relevant and appropriate requirements (ARARs) compliance, document submittal, and corresponding schedule and cost. Section 5.0 discusses project schedules, including enforceable milestones and nonenforceable target dates. Section 6.0 discusses DOE's Legacy Management (LM) office and how long-term surveillance and maintenance (LTS&M) is implemented at the Monticello site. Section 7.0 identifies documents implementing worker health and safety. The Quality Assurance Program applicable to the Monticello site is described in Section 8.0. Subcontract acquisition is discussed in Section 9.0. Section 10.0 describes the Project Management and Control System that integrates the technical, schedule and cost baselines. References are listed in Section 11.0.

### **1.1.3 Site Descriptions and History**

The MMTS and MVP Site are located in San Juan County, in and near the City of Monticello in southeastern Utah (Figure 1–1). The Millsite encompasses a 110-acre tract of land formerly owned by DOE. The Millsite is now owned by the City of Monticello and is surrounded by other property owned by the City of Monticello and the Utah Department of Transportation (UDOT), as well as private parties. The Millsite is situated in an east-trending alluvial valley formed by Montezuma Creek, a small intermittent stream that flows from the Abajo Mountains immediately to the west. Elevations at the Millsite range between 6,820 feet (ft) above sea level at the southeast corner to 6,990 ft at the northwest corner. Figure 1–2 shows the location of the three OUs for MMTS and a portion of the area included in the MVP Site.

The original Monticello mill was constructed in 1941 with government funding by the VCA to provide vanadium during World War II. VCA operated the mill until early 1944 and again from 1945 through 1946 producing vanadium as well as a uranium-vanadium sludge. In 1948, the U.S. Atomic Energy Commission (AEC) purchased the site. Uranium and vanadium milling operations began again in 1949 under the auspices of AEC. Vanadium milling operations ceased in 1955, but uranium milling continued until 1960 when the mill was permanently closed.

Four tailings piles, resulting from processing vanadium and uranium ore, were left at the Millsite following the cessation of milling operations. The informal names for the separate tailings piles are the Carbonate Tailings Pile, the Vanadium Tailings Pile, the Acid Tailings Pile, and the East Tailings Pile (Figure 1–3). The Carbonate and Vanadium Tailings Piles received wastes from a salt-roast and carbonate-leach milling process until approximately 1955. The acid and east tailings ponds were then constructed to receive the wastes from the acid leach and carbonate-

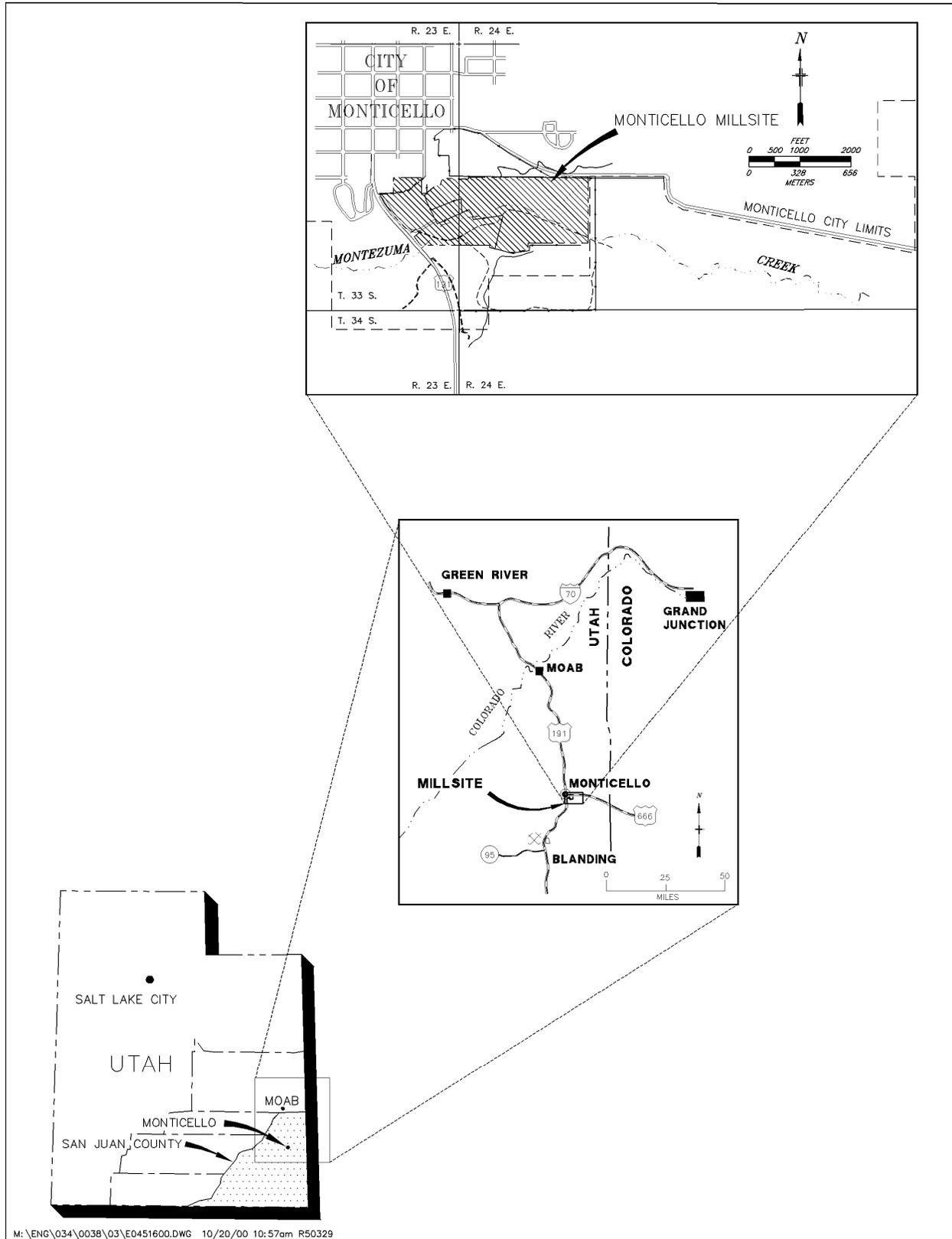


Figure 1-1. Regional Site Map

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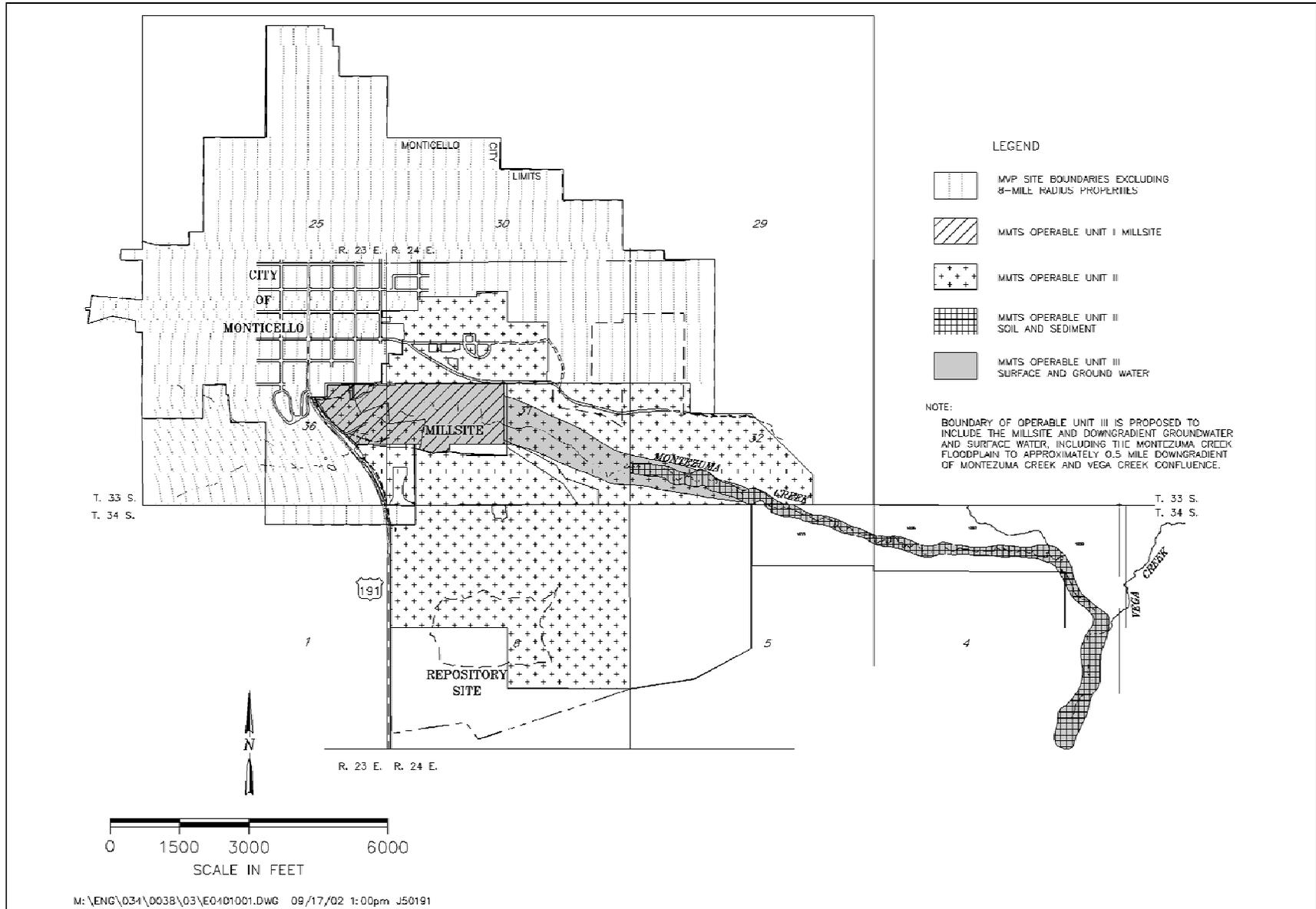


Figure 1-2. Locations of MMTS and MVP Site



leach process. The total combined in-place volume of the four tailings piles and surrounding contaminated soils and related by-product material was approximately 2.2 million yd<sup>3</sup>.

In the summer of 1961, the AEC regraded, stabilized, and revegetated the East Tailings Pile by spreading tailings sand from the other three piles over its surface. After grading was completed, fill dirt and rock were spread over the tops and sides of all piles. The mill was dismantled by 1964. During the summer of 1965, six to 12 inches (in.) of topsoil were removed from the surrounding ore-storage areas and used as fill material to partially bury the mill foundations. In 1974 and 1975, approximately 15,000 yd<sup>3</sup> of contaminated soil was removed from former ore-storage areas and placed on the previously stabilized surface of the East Tailings Pile. These contaminated soils were not covered with clean soil before being graded, contoured, and reseeded.

DOE, under the authority of the Atomic Energy Act, initiated the Surplus Facilities Management Program (SFMP) in 1978 to ensure safe caretaking and decommissioning of government facilities that had been retired from service but still contained radioactive contamination. In 1980, the Millsite was accepted into the SFMP and the Monticello Remedial Action Project (MRAP) was established. The MRAP cleanup was conducted by DOE's Office of Environmental Management (EM-1).

In 1983, remedial activities for vicinity properties were separated from MRAP with the establishment of the MVP Project. The MVP Site was listed on the NPL on June 10, 1986, and was remediated pursuant to a Record of Decision (ROD) dated November 29, 1989 (DOE 1989). The selected remedy for cleanup of the MVP Site was excavation of tailings, ore, and related by-product material from vicinity properties; temporary storage on the Millsite; and final disposal in the same Repository described for OU I of the MMTS. Remediation of the MVP Site was completed in 1999 and deletion from the NPL became effective February 28, 2000. Appendix A provides a list of the properties included in the MVP Site by OU.

The MMTS was placed on the NPL on November 16, 1989. In January 1990, DOE completed the Remedial Investigation/Feasibility Study (RI/FS)-Environmental Assessment (EA) (DOE 1990a) for the Millsite. The RI/FS-EA was supplemented to include analyses sufficient to enable DOE to assess the impacts of the remedial action alternatives as required under the National Environmental Policy Act.

An MMTS ROD (DOE 1990b) was signed by all FFA parties in September 1990, and the remedies were selected for remediation of the Millsite and peripheral properties, OUs I and II, respectively. The remedies required the removal of contaminated soils and tailings and placement of contamination in an on-site Repository (see Figure 1-2 for location). A final remedy has not been selected for surface-water and ground-water contamination (OU III) because the effects of Millsite tailings removal on water quality are being assessed. In addition to the Millsite, EPA has determined that 12 properties are potentially affected by contaminated ground water and/or surface water. These properties are identified in Table 5-2.

Upon signing of the MMTS ROD, design of the on-site Repository was initiated. A conceptual liner design was completed in April 1993 (DOE 1993a) that incorporated evaluation of additional data collected on the hydrogeology of the Repository site. The Repository design was determined to be unacceptable because, on the basis of a performance assessment, it would not

meet ARARs and because the constructibility of the proposed design was questionable. For the above reasons and because the cost for construction of the Repository was increasing, DOE decided to evaluate other remedial action alternatives.

The alternatives analysis (AA) identified two viable alternatives, 1) a revised on-site Repository design that could meet ARARs, and 2) off-site disposal at the U.S. Nuclear Regulatory Commission-licensed disposal facility south of Blanding, Utah. The on-site Repository was redesigned to incorporate the installation of a double-liner system that could control leakage from the Repository to the extent necessary to ensure protection of ground-water quality. In addition, the cost of the on-site disposal alternative was reevaluated and significant cost savings were identified in the cost of Repository construction. Public input on the selection of a preferred alternative was obtained through various activities, including public meetings, public opinion surveys, and use of a toll-free telephone number that the public could call to state opinions and preferences. The process culminated in facilitated meetings with the Site Specific Advisory Board (SSAB), which was established to provide focused public input into the DOE decision-making process. The 19-member board selected off-site disposal as the preferred remedy by only one vote, indicating essentially no clear consensus with regard to remedy selection. DOE reviewed the two alternatives using the nine criteria established in Title 40 of the *Code of Federal Regulations* (CFR), Part 300 (40 CFR 300) NCP and on December 22, 1994, determined that the on-site alternative remained the preferred remedy.

#### **1.1.4 Description of Operable Units (OUs)**

Remedial work conducted at a site is often divided into distinct segments known as OUs. Both the MMTS and the MVP Site have been divided into OUs. The OUs for the two sites are described separately below.

#### **1.1.5 Monticello Remedial Action Projects**

DOE, as the responsible party, established the Monticello Program for conducting response actions at MMTS and MVP Site. This program consists of four projects:

- **MRAP.** This project consists of OU I of the MMTS and OU II peripheral properties that were remediated by the Millsite remedial action subcontractor. Remediation of tailings-related contamination under the tailings piles was also addressed by this project.
- **Monticello Surface- and Ground-Water Remedial Action Project (MSGRAP).** This project consists of OU III of the MMTS. A final decision regarding the remedy for contaminated ground water and surface water will be reached under this project. Historically, MSGRAP included the characterization through remedial action of the OU II properties contaminated by stream transport of tailings from the Millsite except for the property immediately downstream from the Millsite, which is included in MRAP.
- **MVP Project.** This project consisted of the MVP Site and OU II peripheral properties not associated with Millsite remediation. The MVP Site was completed on September 30, 1999, and deletion from the NPL became effective February 28, 2000.
- **Monticello Program Management Project.** Work that addresses all of the above three projects is included in the Program Management Project.

Each of the projects is tracked separately in various DOE planning and management documents. However, interrelationships among these projects have been acknowledged in those documents.

### **1.1.5.1 Monticello Mill Tailings NPL Site**

The MMTS consists of three OUs:

- **Operable Unit I—Millsite Tailings and Millsite Property.** OU I consists of the former tailings impoundment areas, the area where the milling operations were conducted, and the on-site Repository where contamination has been permanently disposed. There were less than 1,000,000 tons of ore processed at the Monticello Uranium Processing Mill. Cleanup of the resulting tailings and properties contaminated by release of tailings or residual ore has resulted in the placement of approximately 2.5 million yd<sup>3</sup> of contaminated material in the permanent on-site Repository. Contaminated material was removed to radium-226 cleanup standards of 5 picocuries per gram (pCi/g) in the surficial 15 centimeters or to 15 pCi/g in successively deeper 15-centimeter layers. Contaminated material placed in the Repository came from the Millsite, properties peripheral to the Millsite and downstream of the Millsite, and properties in the MVP Site. Following cleanup to the radium-226 standards, approximately 75,000 yd<sup>3</sup> of contaminated soils under the tailings piles were removed to minimize residual uranium and metals contamination that could contribute to continued ground-water contamination. The residual material was placed in the Repository and on the out slopes of the Repository cover.

Work performed for OU I and OU II (below) was under the DOE MRAP until October 2001. At that time, the remaining OU I and OU II activities were transferred to the DOE Monticello Program Management Project.

- **Operable Unit II—Peripheral Properties.** OU II consists of private and DOE-owned properties peripheral to and downstream from the Millsite that were contaminated by windblown or stream-deposited tailings or by radioactive material from ore-buying stations and mill facilities. Contaminated material was removed from peripheral properties, stored on the Millsite, and subsequently placed in the Repository. Contaminated material was removed to radium-226 cleanup standards established in 40 CFR 192.12, or supplemental standards were applied. On three government-owned peripheral properties and nine privately owned properties along Montezuma Creek, supplemental standards were applied on all or parts of the properties. Application of supplemental standards was pursued to minimize environmental damage from remedial action. Appendix A (page A-20) lists the properties for which supplemental standards were applied in OU II.

The remedy for the privately owned properties where contaminated soil and sediment was present along Montezuma Creek and where supplemental standards were applied was selected under OU III. Potential remedies (alternatives) for soil and sediment properties in OU III were evaluated in an Alternatives Analysis (AA) (DOE 1998a). The alternatives included removal actions (i.e., excavation of contaminated soil and sediment) as well as remedies that applied supplemental standards. DOE proposed that the AA satisfied the requirements of an Engineering Evaluation/Cost Analysis (EE/CA) for a non-time-critical removal action because it included all required elements of an EE/CA. The AA evaluated the

alternatives based on the nine CERCLA evaluation criteria (as required by a feasibility study) instead of the three criteria (i.e., effectiveness, implementability, and cost) typically used in an EE/CA.

DOE recommended application of supplemental standards to Upper, Middle, and Lower Montezuma Creek to allow material above the 5 pCi/g surface cleanup criteria to remain in place. This recommendation included removal of contaminated soil and sediment to alternative actions levels at Upper and Lower Montezuma Creek, but removal of contaminated material from Middle Montezuma Creek was not recommended. Following a public comment period on the AA and recommended response action, the decision to implement the non-time-critical removal action was documented in an Action Memorandum followed by implementation. The supplemental standards applications were prepared for those properties where contamination above the standards in 40 CFR 192.12 was left in place. Land use restrictions were implemented through restrictive easements for properties where contamination was left in place. Approval of the supplemental standards applications by EPA and UDEQ documents acceptance of the removal actions as the final remedy. Because the remedial actions were similar in nature to the remedial actions implemented for OU II peripheral properties, the decision was made to include remediation of the soil and sediment portion of the OU III properties into OU II.

As stated above, until October 2001, work on the OU II was funded and tracked under DOE's MRAP.

- **Operable Unit III—Surface Water and Ground Water.** OU III consists of contaminated ground water and surface water. Contamination exists in the shallow alluvial ground-water system underlying the Millsite and peripheral properties downgradient of the Millsite and in the surface water of Montezuma Creek. Contamination is known to exceed federal and state standards for water quality. A remedy for ground water and surface water will be selected pursuant to the CERCLA process. The RI for OU III began with site characterization activities in the fall of 1992; data collection for the purposes of completing the remedial investigation report and preparing a draft FS report (DOE 1998b) continued through June 1996. During development of the draft FS report in the summer of 1997, DOE, EPA, and UDEQ jointly agreed that it was not possible at that time to definitively predict the effects that Millsite remediation would have on the ground water and surface water systems. To address those and other site uncertainties, a decision was made to conduct an interim remedial action and finalize the FS at a later date. Also in September 1998, *the Monticello Mill Tailings Site, Operable Unit III, Remedial Investigation* report (DOE 1998a) was finalized.

The objective of the IRA is to initiate remedial actions consistent with the final remedy for OU III. The components of the IRA are to prevent potential exposure to contaminated ground water by implementing institutional controls, to better understand surface-water and ground-water contamination following the excavation of contaminated material from the Millsite, to conduct permeable reactive treatment (PeRT) wall treatability studies, and to extract and treat ground water during excavation and dewatering of the Millsite. The IRA has been completed and a draft-final RI Addendum Focused FS was submitted in September 2003. A preferred final remedy will be described in a Proposed Plan, which will be subject to public comment. After consideration of public comment and review of the Administrative Record, EPA,

UDEQ, and DOE will concur on a final remedy. OU III peripheral properties are listed in Table 4-1.

Beginning in October 1991, DOE funded and tracked work performed for OU III under the Monticello Surface- and Ground-Water Remedial Action Project.

### **1.1.5.2 Monticello Vicinity Properties NPL Site**

The MVP Site contains 424 properties in eight OUs, Appendix A lists each property and the date it was included. An estimated 152,000 yd<sup>3</sup> were removed from the vicinity properties. Contaminated material was removed to radium-226 cleanup standards established in 40 CFR 192.12, or to supplemental standards. The MVP project was discontinued on September 30, 1999, because remedial action was complete. Deletion from the NPL became effective February 28, 2000. Each OU is defined below.

- **Operable Unit A—Properties Included in the FFA.** OU A consists of 104 properties. These properties were those identified in the original listing for the MVP.
- **Operable Unit B—Properties Included Subsequent to the FFA.** OU B consists of 243 properties which were included between January 1990 and March 1995.
- **Operable Unit C—Disputed Properties.** OU C consists of 34 properties that had tailings contamination presumed to be from the Dry Valley Milling operation. DOE disputed its responsibility to remediate these properties because the contamination originated at an abandoned privately owned uranium mill. Subsequently, DOE accepted responsibility for these properties and remediated them following the same process utilized for properties in OU A and OU B.
- **Operable Unit D—Properties Contaminated with Potential Hazardous Substances.** These properties were initially included in OUs A, B, or C. During site assessments for radiological contamination or during remedial action activities, the presence of concentrations of nonradiological hazardous substances that could present an unacceptable risk to human health and the environment was identified. Nonradiological hazardous substances that exceeded risk-based cleanup standards were remediated on all but one property where ongoing operations limited the extent of cleanup. Six properties are included in this OU.
- **Operable Unit E—Properties Crossed by Halls' Ditch.** There are 11 properties in OU E that were crossed by an irrigation ditch called Halls' Ditch. The ditch, which crossed the Millsite, was contaminated with tailings. The ditch was remediated but not reconstructed. An agreement was made with the owner of the ditch to provide him with an alternate water source.
- **Operable Unit F—**OU F consists of 10 properties previously included in OUs A, B, or C, where owner negotiations or owner refusal to allow access delayed remediation. DOE ultimately negotiated access and completed remedial action.
- **Operable Unit G—**OU G consists of 11 properties included in the MVP Site since the beginning of 1995. Five of these properties were included as a result of the Site Boundary

Program. The Site Boundary Program, initiated in 1995, resulted in a strategy to conclusively identify the properties to be included in the MVP cleanup program. The strategy focuses on properties within an 8-mile radius of the Monticello Millsite but may include properties beyond this limit.

- **Operable Unit H—Supplemental Standards.** OU H contains five properties where supplemental standards have been applied. One is a privately owned parcel with piñon/juniper woodlands and four properties are associated with the U.S. Highway 191 embankment, which is owned by UDOT. Supplemental standards have also been applied to streets and utilities in the City of Monticello rights-of-way. These areas have not been assigned property numbers but are located within the City of Monticello and they are considered part of the MVP Site.

### **1.1.6 Monticello Remedial Action Facilities**

This section contains a brief narrative description of the facilities that are or have been used to support the CERCLA response actions. See Figure 1–4 for locations of these facilities. Other than facilities associated with the Repository (Section 1.1.6.3), these facilities were removed during site remediation or restoration.

#### **1.1.6.1 Millsite**

**Millsite Access Area**—The Millsite access area is located in the northeast corner of the Millsite. The access was the entry for subcontractor vehicles transporting tailings from the vicinity and peripheral properties to the Interim Repository where tailings were stored prior to final disposal in the Repository. It remained an access and egress point for work on the Millsite until remedial actions were completed at which time the access trailer and offices were removed. A decontamination pad in the access area was used to remove contamination from equipment leaving the Millsite, the pad remains but is no longer used for that purpose. The access area including the paving, decontamination pad, and fencing around the access area has been turned over to the City of Monticello as part of the Millsite land transfer effort to allow the city to develop the land for recreational purposes. The City of Monticello has reconfigured the access area to allow the public access to the Millsite along the north side of the access area.

**Ponds 1 and 2**—Pond 1 was located on the northeastern side of the Millsite. The pond collected water used to decontaminate vehicles exiting the Millsite. The water was pumped out and used for dust control on contaminated areas of the Millsite or pumped to Pond 3. Pond 2 was designed as a temporary pond to collect contaminated runoff from the Interim Repository. Following a release of untreated stormwater into Montezuma Creek in 1995, on-site drainage controls were redesigned and Pond 2 became inactive. Subsequently, Pond 2 was modified to serve as the recirculation pond for the decontamination facility at the Millsite end of the haul road between the Millsite and the Repository. When the decontamination facility was abandoned, Pond 2 was used to contain brine produced by the on-site wastewater treatment plant (WWTP). Ponds 1 and 2 have been removed as part of the remedial action effort.

**Pond 3**—Pond 3 was located just east of the Millsite on private property. It received contaminated water from the Millsite area through a system of runoff-control ditches. Water removed from tailing excavations was also pumped to Pond 3. Pond 3 held approximately

5 million gallons of water. The water in Pond 3 was maintained at a level to ensure capacity for a single 25-year, 24-hour storm event. Water from Pond 3 was used for dust control during remediation or was pumped to the WWTP for treatment to established effluent standards and discharged to Montezuma Creek. Alternatively, depending on water management requirements, water was also pumped to Pond 4 via a pipeline that was installed during September and October 1997. Pond 3 has been removed as part of the remedial action effort.

**Wastewater Treatment Plant (WWTP)**—The Millsite WWTP operated from May 1995 to May 1999 and was used to treat the water from Pond 3 or Pond 4 before it was released to Montezuma Creek. Samples of the discharged water were taken to ensure compliance with Utah Pollutant Discharge Elimination System (UPDES) standards. The WWTP was designed to remove heavy metals, radionuclides, and total dissolved solids (TDS) from contaminated ground water and surface water. Two treatment processes were used. One was precipitation followed by filtering. The other was a reverse osmosis (RO) treatment process. These processes were used in combination or separately depending on influent water quality.

Considerable treatment process development was required to select the processes described above. Originally, the treatment process was conducted in two 48-ft trailers. Precipitation in Trailer 1 removed certain heavy metals and radionuclides. Adjustments to the pH were made in Trailer 2, which also contained a membrane filtration system for filtering out particulate matter to meet the TDS standard. This treatment system was first operated in May 1995 to determine removal efficiencies and a substantial volume of water was treated in 1995 and 1996. However, difficulty in achieving selenium standards was encountered with this system, so a final polishing step using activated alumina was added in 1996. In 1997, installation of Trailer 3, which housed the activated alumina, was completed and treatment resumed. Difficulty in attaining treatment standards was again encountered because elevated concentrations of sulfates were produced. An attempt to precipitate sulfates with barium chloride was unsuccessful because the treated water then failed barium standards established by the State on April 28, 1997.

Since the WWTP could not be operated to remove both selenium and barium to established standards, Trailer 3 operations were modified to use zero-valent iron (ZVI) in place of activated alumina. Operation of the WWTP with the ZVI did not prove successful because adequate flow through the columns could not be attained along with sufficient resident time in the columns to remove selenium.

A RO treatment system was added in 1998 to the treatment configuration primarily to remove selenium and TDS. The RO unit effectively removed all contaminants of concern but generated a brine waste stream, which required management. The RO system could be used in combination with the precipitation/filtering system or the two systems could be used separately. Processed water from the RO unit was blended with water from the trailers. This treatment configuration, which proved to be effective in meeting treatment standards, treated over 50 million gallons of water prior to being dismantled in May 1999.

**Interim Waste Management Area (IWMA)**—Remediation of both the MVP Site and MMTS generated wastes that required special management. An IWMA was established on the Millsite in June 1995 to store and manage these wastes. The IWMA was operated in conformance to the State of Utah Hazardous Waste Management Rules. During the 1997 construction season, wastes



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in the IWMA were treated to meet the Repository waste acceptance criteria and disposed of in the Repository. The only treatment required was to render liquid wastes non-liquid. All wastes were removed from the IWMA in the fall of 1997 and winter of 1998 and the facility was closed in 1999 as required by the Closure Plan in the Special Waste Management Plan (DOE 1997c).

**Best Management Practice Area (BMPA)**—The BMPA was used for the storage of contaminated soils that required more containment than that attained at the Interim Repository, but were not hazardous or liquid wastes requiring management at the IWMA. The types of waste stored at the BMPA were soil contaminated with waste oil that also contained lead in concentrations up to 1,500 milligrams per kilogram. The BMPA was located to the west of the Acid Tailings Pile, south of Montezuma Creek. The area was bermed and plastic laid over the bermed area. The purpose of the additional containment was to prevent uncontrolled release of the waste material. The wastes stored in the BMPA were placed in the Repository during the 1998 construction season and the area was remediated to radiological standards.

**Interim Repository**—There were two interim repositories at the Millsite. The first interim repository was established on the East Tailings Pile. When it reached capacity, a second interim repository was constructed on the south side of the Millsite east of the Acid Tailings Pile. The area was used for the interim storage of tailings from the MVP and peripheral properties. The area had a capacity of 200,000 yd<sup>3</sup>. The area included access roads, drainage control structures, and Pond 2. Runoff from this area was routed to Pond 3 via the onsite collection ditches. The materials placed here were moved to the permanent Repository during the 1998 and 1999 construction seasons.

### **1.1.6.2 Haul Road**

Trucks were used to transport tailings along the 1.2-mile (mi) haul road that was constructed between the Millsite and the Repository. Use of the dedicated haul road reduced remediation traffic on U.S. Highway 191. Decontamination pads were constructed at both ends of the haul road. In 1997, trucks were decontaminated by removal of visible loose contamination, but not for free release. The purpose of the decontamination was to ensure that contamination on the trucks did not fall off and contaminate the haul road and surrounding properties. Starting in 1998 the haul road was operated as a contaminated haul road to improve haul cycle times. Runoff from the haul road was contained and drained to Pond 3. The area around the haul road was periodically scanned to ensure contamination was contained on the haul road. All contaminated surfaces on and adjacent to the haul road were remediated in 1999.

The haul road embankment in North Draw was subsequently used for fill material by the City of Monticello during restoration of the Millsite. DOE graded the road to blend in with the adjacent topography and revegetated the area. Wetlands displaced by the embankment were re-established and are monitored in accordance with the *Monticello Wetlands Master Plan* (DOE 1996c).

### **1.1.6.3 Repository**

A double-lined Repository was constructed approximately 1 mi south of the Millsite. It was designed to contain 2.3 million yd<sup>3</sup> of contaminated material with the ability to expand the cell to contain 2.6 million yd<sup>3</sup>. Approximately 2.5 million yd<sup>3</sup> of contaminated materials were placed in the Repository prior to its closure in 1999. A multi-layer water balance/evapotranspiration cover that includes a radon barrier was constructed over the placed contaminated materials. The top of

the cover primarily consists of native vegetation to blend in with the surrounding terrain; however, slopes steeper than 18 horizontal to 1 vertical have been covered with rock. Facilities associated with the operations in the Repository area are described below.

**Runoff Control Ditches/Sediment Ponds**—Runoff control ditches have been constructed around all disturbed areas to limit off site sedimentation. These ditches channel water to one of three sediment ponds located around the Repository. The sediment ponds are designed to trap the sediment while allowing water to pass through. There are two sediment ponds located along the north side of the Repository. The third pond is situated on the southeast corner.

**Stockpiles**—Soils from the Repository excavation were stockpiled in several locations surrounding the Repository. The primary purpose of these stockpiles was to segregate the different soils excavated from the Repository. Each type of soil was used for a specific component of the Repository. Almost all of the stockpiled soils were used in construction of the Repository cover. There are three primary types of soils:

- **Topsoil** was used as the final layer on the cover of the Repository.
- **Random fill** was used for construction of Repository berms.
- **Select fill** was used for construction of the soil layer under the Repository liner and was also used for cover construction.

**Support Area**—The support area is located west of the Repository, just off of U.S. Highway 191. This area contained office trailers, lunchrooms, restrooms, and other administrative and employee facilities required for contractor and subcontractor use during remediation and restoration activities. The area was constructed in 1995 prior to initiating Repository construction. Due to the completion of the Repository and demobilization of construction activities, most of these facilities were removed in 2000. One office trailer, three sea/land storage containers, and a laboratory trailer remain for Long-Term Surveillance and Maintenance (LTS&M) and OU III use.

In 1999, a Temporary Storage Facility (TSF) was constructed in the support area for use by DOE and the City of Monticello for the storage of contaminated materials. These materials may be removed from supplemental standards areas or adjacent areas that become contaminated above applicable standards as a result of contaminant transport from supplemental standards areas. The TSF, which is maintained by DOE under the LTS&M Program, is a graveled area enclosed with a locked chain-link fence. This area includes a 22-ft wide by 30-ft long by 4-ft high concrete bin with a sloped floor, which is used for storage of contaminated soil and debris. The bin is open at one end and is designed for access by dump trucks and front-end loaders. The area also has a support building for storage of tools and it has roll-off bins and drums for storage of other radioactive material that may need to be segregated from contaminated soil and debris.

**Pond 4**—Pond 4, located east of the Repository, is used to contain water and leachate removed from the Repository leachate collection and leak detection system(s). It was also designed to collect runoff during tailings placement prior to cover construction. During tailings placement, water was pumped from Pond 4 to the WWTP for treatment. Over the long-term, the pond has been sized to function as an evaporation pond. The pond has a triple liner to ensure that ground-water quality will be protected. Based on estimates of anticipated transient drainage volumes, up to 7 million gallons can remain in Pond 4 after completion of Repository construction. The remaining 11 million gallons of capacity may be used to contain transient drainage (leachate).

DOE will continue to monitor Pond 4 now that the Repository has been closed and the protective cover is in place. The pond is expected to remain in use for up to 20 years depending on the flow of leachate from the Repository. Pond 4 will be decommissioned when liquid draining from the Repository becomes minimal or nonexistent. At that time, DOE may replace the pond with smaller storage tanks.

**Lysimeters**—Since 1991, DOE and EPA have been conducting a series of field lysimeter experiments at Monticello to help design and then to monitor the performance of the engineered cover. The EPA Alternative Covers Assessment Project (ACAP), EPA Region 8, and the DOE Office of Science and Technology have collaborated with GJO on these studies. The Monticello Lysimeter Test Facility evolved as a sequence of installations, first to test the concept of using an evapotranspiration (ET) cover design at Monticello, next to evaluate the soil-water balance of engineered designs, and finally to monitor the hydrologic performance of a large facet of the actual disposal cell cover.

In 1990, GJO installed small weighing lysimeters containing intact, 100-cm-deep profiles of undisturbed silt loam soil (monoliths) overlying a pea-gravel capillary barrier and supporting mature native grasses. Leaf water potential and whole-plant transpiration were measured on and adjacent to the lysimeters to test effects of the small lysimeter design on plant behavior. Given favorable monolith lysimeter results, an array of 15 additional small weighing lysimeters were constructed in 1993 to compare effects of different soil types and layer thickness on the water balance and water-storage capacity of ET designs.

In 1998 and 1999, GJO teamed with EPA Region 8 on the construction of large caisson lysimeters to evaluate the water balance of the final cover design for the Monticello disposal cell. Construction of the first caisson lysimeter began in 1998 to test the Monticello design using local soil materials that were considered best suited for the various cover layers. A second caisson lysimeter was constructed during 1999 using soil materials and as-built engineering parameters achieved during construction of the actual disposal cell cover. The two caisson lysimeters provided a side-by-side comparison of the range of as-built conditions measured in the disposal cell cover.

In 2000, GJO and the EPA ACAP collaborated on a large drainage lysimeter constructed to monitor the water balance of a 3-hectare facet on the east side of the Monticello cover. The EPA National Risk Management Laboratory funds ACAP. The primary objective of the cover lysimeter study is to evaluate drainage and soil water balance from an actual ET cover. Placement of an HDPE geomembrane beneath the ET cover created this large-scale lysimeter. Collected water is conveyed to a measurement system located in a water-collection basin (vault) positioned downgradient (east) of the ACAP facet.

In 2002, EPA and DOE installed additional small lysimeters to evaluate designs and soil materials for an ET cover for a uranium mill tailings disposal cell near Moab, Utah. Two key questions must be addressed in the processes of designing ET covers in arid areas: (1) do available soils have adequate water storage capacity (do available soils make good sponges), and (2) can a sustainable plant community be established that seasonally dries the soil profile thereby preventing deep percolation. The 2002 study determined the water storage capacity of three different borrow soils for potential use in the design of an ET cover for a disposal site near Moab, Utah.

### **1.1.7 Schedule of Major Activities**

Major activities completed or scheduled for completion of the Monticello Projects are listed in Table 1–1. These dates are late dates for completion of the activities; working schedule dates are earlier. The dates listed in Table 1–1 are consistent with dates listed in Section 5.0.

## **1.2 CERCLA Compliance Strategy**

The MMTS is currently listed on the NPL; remediation of OU I and OU II is complete, but a final remedy for OU III has not yet been selected. The MVP Site was listed on the NPL, but as a result of completion of remedial activities, the direct and final rule removing it from the NPL became effective on February 28, 2000. Remediation of both sites is pursuant to CERCLA/SARA and the requirements of the NCP (40 CFR 300), as well as EPA guidance and directives on the implementation and interpretation of CERCLA. DOE has entered into an FFA, which states in part, “Pursuant to Section 120(a) of CERCLA, as amended, DOE agrees that it is bound by this Agreement and that the terms of this Agreement may be enforced against DOE...” The FFA further states, “The activities undertaken pursuant to this Agreement are subject to approval by EPA and shall not be inconsistent with CERCLA/SARA and the NCP...” The FFA is a legal commitment by DOE to comply with CERCLA.

DOE will work continuously and cooperatively with EPA and UDEQ to define and resolve compliance issues in a timely manner. DOE will ensure that the projects conform with CERCLA requirements by assigning project personnel who are familiar with CERCLA requirements and are experienced managers of major projects under CERCLA/SARA; by providing timely and updated training to project personnel; and by ensuring that project personnel have access to legal, financial, and policy guidance needed to resolve compliance issues.

### **1.2.1 Enforcement Actions Taken Against DOE**

In February and March of 1995, releases occurred from Ponds 2 and 3 that resulted in exceedence of the UPDES standards for discharge into Montezuma Creek. EPA assessed a stipulated penalty against DOE in the sum of \$40,000 for the period of the releases and failure to construct, complete, and maintain proper controls to prevent the releases. DOE paid the penalty in August 1998.

This occurrence resulted in implementation of several corrective actions, including installation of an overflow connection from Pond 2 to Pond 3, construction of a diversion ditch around Pond 2, completion of measures to increase the capacity of Pond 3, and installation of the WWTP for treatment of water from Pond 3.

In December 1996 and April 1997, discharges from the WWTP and Pond 2 occurred that were above UPDES standards. UDEQ notified DOE that any further exceedence of effluent standards will be treated as a noncompliant discharge and past exceedences will be included retroactively in any enforcement action taken.

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*Table 1–1. Schedule of Major MMTS and MVP Activities*

<b>Operable Unit</b>	<b>Completion Date</b>	<b>Activity</b>
<b>Monticello Mill Tailings Site</b>		
OU I	April 28, 1995	Pre-Final Design and Specification Package for Millsite Remediation (Complete)
	October 27, 1995	On-site activities initiated. (Notice to Proceed issued) (Complete)
	August 4, 1999	Cooperative Agreement with City of Monticello signed (Complete)
	August 31, 1999	Complete tailings removal (Complete)
	May 19, 2000	Complete Repository construction (Complete)
	August 28, 2000	Notice of Award for Millsite restoration (Complete)
	August 31, 2001	Complete Millsite restoration (Complete)
	July 31, 2002	Submit Draft-Final Remedial Action Report (RAR) for Millsite and Ground-Water Properties (Complete)
OU II	February 2, 1998	Submit Draft-Final Alternatives Analysis for soil and sediment (Complete)
	February 16, 1998	Complete design package submittals (Complete)
	March 23, 1998	Submit Draft-Final Remedial Action Design for soil and sediment (Complete)
	May 5, 1998	Submit Draft-Final Action Memorandum for soil and sediment (Complete)
	January 20, 1999	Submit Draft-Final Supplemental Standards Applications for soil and sediment (Complete)
	July 28, 1999	Complete remedial action for soil and sediment (Complete)
	October 30, 2000	Submit Draft-Final Remedial Action Report (Non-Ground-Water Properties) (Complete)
	July 19, 2001	Submit Final Remedial Action Report (Non-Ground-Water Properties) (Complete)
OU III	February 2, 1998	Submit Draft-Final Remedial Investigation Report (Complete)
	March 16, 1998	Submit Draft-Final Interim Proposed Plan (Complete)
	March 30, 1998	Submit Revised-Draft (pre-IRA) Feasibility Study for surface water and ground water (Complete)
	August 17, 1998	Submit Draft-Final ROD for an Interim Remedial Action for surface water and ground water (Complete)
	October 30, 2000	Submit Final Interim Remedial Action Work Plan (Complete)
	September 30, 2002	Submit Draft-Final Evaluation of PeRT Wall Treatability Study (Complete)

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*Table 1–1 (continued). Schedule of Major MMTS and MVP Activities*

<b>Operable Unit</b>	<b>Completion Date</b>	<b>Activity</b>
OU III, continued	September 2, 2003	Submit Draft-Final Remedial Investigation Addendum/Focused Feasibility Study for Surface Water and Ground Water (Complete)
	November 3, 2003	Submit Draft-Final Proposed Plan
	March 2, 2004	Submit Draft-Final ROD
	August 11, 2004	Submit Draft-Final Remedial Design Remedial Action Work Plan for Restoration of Surface Water and Ground Water
	November 15, 2004	Submit Pre-final Design for Restoration of Surface and Ground Water (if active remediation is selected)
	June 27, 2005	On-site activities initiated for restoration of surface water and ground water (Notice to Proceed issued) (if active remediation is selected)
	February 2, 2006	Submit Draft-Final Interim Remedial Action Report (if active remediation is selected)
Entire Site	August 22, 2002	Second CERCLA Five-Year Review (Complete)
	August 13, 2007	Next CERCLA Five-Year Review
Monticello Vicinity Properties Site		
MVP Site—OU A	September 30, 1996	Construction Complete (Complete)
	November 8, 1996	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU B	September 30, 1997	Construction Complete (Complete)
	December 24, 1997	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU C	June 18, 1997	Construction Complete (Complete)
	October 15, 1997	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU D	November 4, 1997	Construction Complete (Complete)
	March 18, 1998	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU E	December 3, 1997	Construction Complete (Complete)
	March 18, 1998	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU F	July 10, 1998	Construction Complete (Complete)
	December 24, 1997	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU G	December 11, 1997	Construction Complete (Complete)
	September 12, 1998	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU H	December 30, 1998	Construction Complete (Complete)
	April 29, 1999	Submit Draft-Final Remedial Action Report (Complete)
Entire MVP Site	February 28, 2000	Deletion from NPL (Complete)
	August 9, 2002	Second CERCLA Five-Year Review (Complete)
	August 13, 2007	Next CERCLA Five-Year Review

## **2.0 Management Structure, Roles, and Responsibilities**

Management roles and responsibilities for agencies involved in the completion of remedial action activities at the MMTS and MVP Site are described in this section and in the FFA (DOE 1988b). Management must ensure that response actions are fully consistent with the requirements of CERCLA and NCP, and that an accountability framework is established. The roles, responsibilities, and management relationship among DOE, EPA, and UDEQ presented in this SMP are summarized from the FFA. The FFA establishes a cooperative approach among EPA, UDEQ, and DOE for conducting response actions. DOE management structure is further described in this section to show the relationship among involved DOE offices.

### **2.1 U.S. Environmental Protection Agency**

Responsibility for oversight of the activities performed under the FFA are shared by EPA and UDEQ, with EPA being the lead agency for oversight (DOE 1988b). Activities undertaken under the FFA are subject to approval by EPA, after consultation with UDEQ.

EPA has assigned remedial project managers in the Office of Ecosystems Protection and Remediation, Federal Facilities Program of EPA Region 8, located in Denver, Colorado.

### **2.2 Utah Department of Environmental Quality**

UDEQ has assigned remedial project managers in UDEQ Division of Environmental Response and Remediation, located in Salt Lake City, Utah to the Monticello project. UDEQ provides project oversight to address UDEQ issues and concerns and participates in the planning, selection, and implementation of the remedial action.

EPA may delegate to UDEQ the review of specific tasks and shall accept recommendations from UDEQ regarding the acceptability of any particular submittal (DOE 1988b).

### **2.3 U.S. Department of Energy**

DOE is a responsible party with respect to present and past releases at the Monticello site(s) (DOE 1988b). DOE is also the lead agency responsible for providing resources to plan and implement response actions at the sites.

DOE has established the Legacy Management (LM) Program to assume long-term custody of all completed DOE remedial action sites. With the completion of the RODs for MVP and MMTS OU I and OU II, these parts of the Monticello sites were transferred to LM on October 1, 2001. The entire site was transferred to LM October 1, 2003 based on a DOE reorganization. The new LM structure is currently in the development stages but it is clear that among the offices will be an office for sites that are finished, sites that are finishing remediation, and for sites scheduled to begin remediation in the next 5 years. The Monticello sites are in the office known as Land Management under the LM Office. Figure 2-1 shows the DOE project management structure as it currently relates to the Monticello sites.

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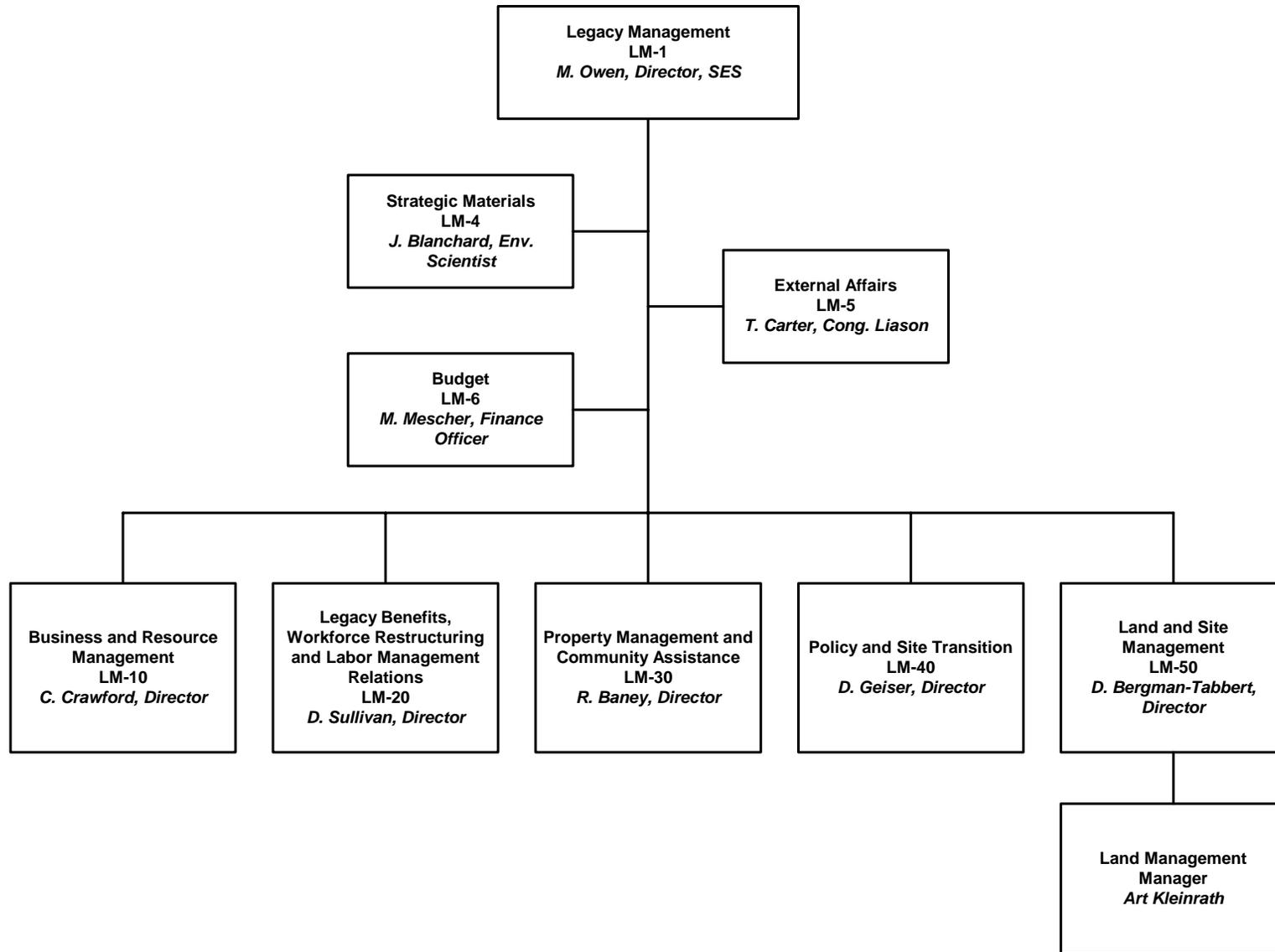


Figure 2-1. DOE Project Management Structure

The Director of LM is the approving official who has overall responsibility and authority within DOE for the Monticello Project. Authority, responsibility, and accountability for the overall project implementation and contract administration for the LTS&M Program has been granted to the DOE LM-50 Director in Grand Junction. The LM-50 Director has been delegated the authority for the Monticello sites and assigns the DOE Monticello Manager. The Monticello Project Manager is the implementing official and has been delegated the authority from the LM-50 Director for day-to-day implementation, management, and direction for the projects. As required by the FFA, the Monticello Project Manager also serves as the Project Coordinator for the Monticello Project. The Project Coordinator is the formal point of contact for EPA, UDEQ, and DOE-HQ for the Monticello project. The Monticello Project Manager also serves as the Remedial Project Manager/On-Scene Coordinator (RPM/OSC) within the meaning of the statute (42 USC 9600), the NCP (40 CFR 300), and Executive Order 12580.

The GJO has also assigned matrix support for procurement, public affairs, health and safety, legal, and environmental compliance to the Monticello Projects. Financial, procurement, and real estate management support is also provided by LM.

DOE-GJO has contracted with S.M. Stoller Corporation (Stoller) as the technical assistance contractor (TAC). The TAC is responsible for ensuring that all remedial activities are executed in compliance with the FFA, regulatory, and health and safety requirements. The TAC Program Manager reports directly to the DOE-GJO Project Coordinator and Project Managers and has the ultimate responsibility for implementing the project scope and schedule defined by the DOE project management staff. The TAC has subcontracted remediation to several subcontractors. The DOE-GJO, through a cooperative agreement with the City of Monticello, has compensated the city for the restoration of the Millsite. DOE-GJO provided funding for oversight of the restoration by the TAC. The TAC has assigned a Program Manager who is responsible for the day-to-day implementation, management, and direction of the projects.

## **2.4 Management Review and Concurrence Process**

Section XII of the FFA (DOE 1988b) establishes procedures to be used by DOE, EPA, and UDEQ for review, comment, and response to comments on documents established as secondary or primary documents. Primary documents include those reports that are major, discrete portions of the RI/FS or RD/RA activities. Secondary documents include those reports that are discrete portions of the primary documents and are typically input or feeder documents.

DOE-GJO is responsible for the preparation of primary and secondary documents according to established time schedules. DOE-GJO must simultaneously submit the documents to EPA and UDEQ. For both primary and secondary documents, EPA and UDEQ must provide comments within 60 calendar days unless otherwise agreed to by all parties.

DOE-GJO has 60 calendar days to respond to the comments by simultaneously sending a copy of the responses to EPA and UDEQ unless otherwise agreed to by all parties. For a draft primary document, a draft-final primary document incorporating the comments is required, along with the comment responses. The draft-final primary document will become a final primary document within 30 days unless dispute resolution is invoked. Historically, on Monticello Projects,

additional comments have been received by DOE from EPA and UDEQ during the final review period and have been addressed by DOE in the submittal of a final primary document.

## **2.5 Routine Reporting Requirements**

The FFA establishes that DOE shall submit monthly written progress reports to EPA and UDEQ. These reports describe the actions that DOE has taken during the previous month to implement the requirements of the FFA. The progress reports are required to be submitted on the 20th day of each month. The monthly report has been modified to include a description of issues that must be resolved for timely progress on the Monticello Projects and a list of documents expected to be submitted during the 2 to 3 months following the submittal of the monthly report. The monthly reports include water production data on the Repository and Pond 4 leachate collection and removal systems (LCRS) and leachate detection systems. The monthly report will also include a calendar of upcoming field activities. In 2001, with agreement of UDEQ, EPA, and DOE, the schedule for submittals of the monthly report was modified to every 2 months.

## **2.6 Meetings of the Project Managers**

EPA, UDEQ, and DOE project managers will meet quarterly to review project progress and discuss issues. In addition to these quarterly meetings, the project managers may meet more frequently to review specific technical and compliance issues.

## **3.0 Project Objectives**

The overall objective of remedial action at the Monticello Sites is to mitigate risk from exposure to hazardous substances from the Millsite and included peripheral and vicinity properties to levels that are protective of human health and the environment. Final remedies have been selected for the MVP Site and OUs I and II of the MMTS. Selection of a final remedy for OU III of the MMTS is in progress. The DOE must comply with ARARs while accomplishing project objectives and implementing selected remedies.

The objectives for each of the Monticello Projects are described in detail in this section.

### **3.1 Monticello Remedial Action Project**

#### **3.1.1 Operable Unit I—Millsite Tailings and Millsite Property**

The objective for the remediation of OU I as defined in the ROD is excavation of tailings and other by-product material and hazardous substances to levels protective of human health and the environment, modification or alteration of existing habitable structures to mitigate radon concentration, and disposal of those wastes in the on-site Repository. Five-year reviews will be required to evaluate the protectiveness of the remedy because contamination will be left on-site in the Repository. To implement the remediation, MRAP has established two major project objectives.

- *Achieve cleanup levels at the Millsite that are protective of human health and the environment.* The ROD established that remediation of concentrations of radium-226 to levels established in 40 CFR 192.12, can be used as a proxy for other metals contained in the ore and tailings because "... no transport mechanism has been identified that would account for the segregation and dispersal of one of the non-ore elements independently of others (DOE 1990b)." Therefore, cleanup deeper than that required to remove the radium-226 was not expected.

Subsequently, data were collected that indicated that heavy metals leached to depths greater than the radium-226 cleanup criteria. DOE has removed soils contaminated with elevated levels of uranium and vanadium to the extent practicable within the capacity limitation of the on-site Repository and assessed residual levels of contamination. The impact of residual contamination on ground-water and surface-water quality will be assessed as part of the selection of a final remedy for OU III and the need for active ground-water restoration will be determined in a final ROD addressing surface and ground water.

- *Achieve the cleanup of hazardous substances that are not by-product material.* Hazardous substances were encountered on the Millsite that were not by-product material but presented a risk to human health and the environment above acceptable levels. The materials were remediated as required by the Special Waste Management Plan (DOE 1997c) which was concurred on among DOE, EPA, and UDEQ. DOE was required to remediate hazardous substances present in concentrations that present unacceptable risk to human health and the environment.

### **3.1.2 Operable Unit II—Peripheral Properties**

The selected remedy for the remediation of OU II is to excavate tailings and concentrations of other by-product material and hazardous substances to levels protective of human health and the environment and to temporarily store those wastes on the Millsite until final placement in the on-site Repository. DOE has completed the removal of uranium mill tailings and other hazardous substances that present an unacceptable risk to human health and the environment from the peripheral properties.

Although the MMTS ROD (DOE 1990b) states that the wastes removed from the peripheral properties will be placed on existing tailings piles, the MRAP Phase IIA for OU I, Millsite Pre-Excavation Final Design Report (DOE 1993b) established an alternate interim Repository south of the East Tailings Pile and east of the Acid Tailings Pile for storage of wastes removed from peripheral and vicinity properties. This design was approved by EPA and UDEQ in 1993. The revision to the selected remedy is not significant (as defined in the NCP) and did not require a ROD amendment or an Explanation of Significant Difference (ESD).

Radiological contamination on peripheral properties was remediated to the standards established in 40 CFR 192.12 except where supplemental standards were applied as described below. Activities for OU II included remediation of nonradiological hazardous substances that posed an unacceptable risk. DOE remediated these properties as required by the Special Waste Management Plan (DOE 1997c) as described in Section 3.1.1 and the remedial designs.

For radiological contamination, if the cost of remediation or the adverse effects on the environment are excessive compared to the benefit of remediation, alternative cleanup levels and/or application of supplemental standards may be pursued. Supplemental standards allow for leaving in place contaminated material that is above the standards in 40 CFR 192.12. The following documents were approved by EPA and UDEQ allowing the application of supplemental standards:

- General Radiological Risk Assessments Method Document (DOE 1999b)
- Explanation of Significant Differences for MVP and MMTS Records of Decision (DOE 1999a)
- MVP Application for Supplemental Standards—City of Monticello Streets and Utilities, (DOE 1999c)
- MVP Application for Supplemental Standards—Highways 191 and 666 Rights-of Way, (DOE 1999f)
- Application for Supplemental Standards for DOE ID No. MS-00176-VL and Application for Supplemental Standards for Government-Owned Properties in Monticello, Utah, DOE ID Nos. MP-00391-VL, MP-01041-VL, and MP-01077-VL (DOE 1999d and DOE 1999e)
- MMTS Operable Unit II Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek—DOE ID Nos. MP-00951-VL, MP-00990-CS, MP-01084-VL, MG-01026-VL, MG-01027-VL, MG-01029-VL, MG-01030-VL, and MG-01033-VL, (DOE 1999g)

For OU II, the areas where supplemental standards have been applied are piñon/juniper woodlands, wetlands along Montezuma Creek, and steep, sage-covered hillsides where the high cost of remediation and loss of vegetation may not be warranted compared to the risks posed by the level of radiological contamination present. Implementation of supplemental standards for OU II requires long-term institutional controls on these properties. The institutional controls for OU II include restrictive easements filed with the San Juan County Recorder. The restrictive easements do not allow construction of habitable structures, restrict public use to day-use recreation, and state that no soils may be removed from the restrictive easement area. In addition, the DOE has implemented an LTS&M Program, which will monitor conformance to the restrictive easements.

### **3.2 Monticello Surface- and Ground-Water Remedial Action Project**

The primary objective of OU III is to determine if, following Millsite excavation and implementation of the components of the OU III IRA, contaminated ground water and surface water continue to pose a future potential unacceptable risk to human health and the environment. The components of the IRA include using institutional controls to restrict use of the contaminated ground water, continuing characterization efforts to better understand the effects of Millsite remediation on water quality, extracting and treating ground water during excavation of the Millsite and continuing, if necessary, after Millsite excavation, and conducting a pilot-scale treatability study consisting of installing and monitoring the performance of a PeRT wall. At the conclusion of the IRA an addendum to the RI will be prepared and the draft FS will be revised. A preferred final remedy will be described in a Proposed Plan and presented to the public. After consideration of public comment and review of the Administrative Record, EPA, UDEQ, and DOE will concur on a final remedy which controls any unacceptable risk and complies with ARARs.

### **3.3 Monticello Vicinity Properties Project**

The selected remedy for the remediation of the MVP Site was to excavate tailings and other by-product material and concentrations of other hazardous substances to levels protective of human health and the environment, modify or alter existing habitable structures to mitigate radon concentration, and to temporarily store those wastes on the Millsite until final placement in the on-site Repository. Although the MVP ROD states that the wastes removed from the vicinity properties will be placed on the East Tailings Pile, the MRAP Phase IIA for OU I, Millsite Pre-Excavation Final Design Report (DOE 1993b) established an alternate Interim Repository (described for OU II) that would be used to store wastes removed from vicinity properties. The revision to the selected remedy is not significant (as defined in the NCP) and did not require a ROD amendment or an ESD.

OU D properties contained nonradiological hazardous substances that required remediation. DOE remediated these properties as required by the Special Waste Management Plan (DOE 1997c) (see Section 3.1.1) and the remedial designs.

Supplemental standards were also applied on vicinity properties. DOE submitted several documents to support the application of supplemental standards (see Section 3.1.2) which were

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approved by the EPA and UDEQ. In addition to one privately owned property and four properties along the U.S. Highway 191 embankment, supplemental standards were applied on streets and utilities in the City of Monticello rights-of-way, and U.S. Highways 191 and 666 rights-of-way (see Section 1.1.4.2, Operable Unit H).

## **4.0 Project Tasks**

This section presents the major tasks, compliance requirements, document submittals, and cost and schedule information through deletion of the sites from the NPL. This section does not address LTS&M, which is discussed in Section 6.0.

Figure 4–1, the Monticello Projects Logic Flow Diagram—Project Overview, shows major activities and interrelationships of activities leading to the deletion of the sites from the NPL. The Project Overview provides the framework to understand more detailed logic networks for OU I and OU III of the MMTS. Logic networks have not been prepared for OU II of MMTS and the MVP Site because the activities on these OUs are not complex.

### **4.1 Operable Unit I—Millsite Remediation and Repository Construction**

OU I consisted of three major tasks. The first task, Millsite Remediation, includes those activities necessary for remediation of the Millsite: construction of the Repository; excavate, load, haul the tailings and contaminated material; placement of tailings and contaminated material in the on-site Repository; interim grading of the Millsite; and Repository site restoration. All items listed have been completed; however, success of reseeded of the Repository cannot yet be determined.

The second task, Millsite Restoration, included those activities necessary to restore the Millsite to an acceptable land use. DOE and the City of Monticello have entered into a Cooperative Agreement wherein the City of Monticello is responsible for the Millsite restoration construction effort with support from DOE. Transfer of funding to the City was contingent on transfer of the ownership of the Millsite and several adjacent properties to the City. DOE transferred the Millsite and these properties to the City of Monticello through the Federal Lands-to-Parks Program administered by the National Park Service. Through this program, land and buildings once used for federal purposes can be transferred to states and local governments provided they are open to the public and used exclusively for park and recreation activities. Because all response actions had not yet been completed for the MMTS, DOE submitted a covenant deferral request to EPA and UDEQ for early transfer of ownership of the properties. The covenant deferral request allows for postponement of the requirements of CERCLA Section 120(h), “Properties Transferred by Federal Agencies,” which requires DOE to warrant that all remedial action necessary to protect human health and the environment has been taken before the date of transfer. EPA and UDEQ concurred with the covenant deferral request and ownership of the properties was transferred to the City of Monticello on June 28, 2000. DOE then provided the City of Monticello a lump sum payment to complete restoration of the Millsite. On August 28, 2000, the City of Monticello selected a subcontractor to perform the work. DOE conducted oversight activities of the restoration through a contract with the city. Restoration activities were completed on August 31, 2001; however, revegetation success is still being evaluated.

The third task, Operable Unit Completion, addresses those activities necessary to document that cleanup activities were conducted in accordance with the ROD for OU I. A Remedial Action Report (RAR) was prepared for OU I. The RAR addresses soil and sediment contamination on OU I properties including those associated with surface and ground water contamination;

however, it does not address surface and ground water contamination. The RAR does not address the properties on which the Repository is located (e.g., MP-01040 and MP-01080).

Figure 4-2, the OU I Logic Flow Diagram, shows the interrelationships of these phases of OU I.

#### **4.1.1 Task Descriptions**

Millsite remediation and restoration designs were conducted in specific tasks. These tasks are identified and described below.

##### **4.1.1.1 Millsite Remediation**

###### **Millsite Remediation Design**

The design for Millsite remediation was completed in 1995. This task involved the preparation of a design for the removal and disposal of tailings from the Millsite to an on-site Repository and preparation of supporting specifications and drawings. The primary focus of the design effort was to achieve compliance with ARARs established in the ROD. Protection of a shallow ground-water system under the Repository site was a primary driver in the development of the design.

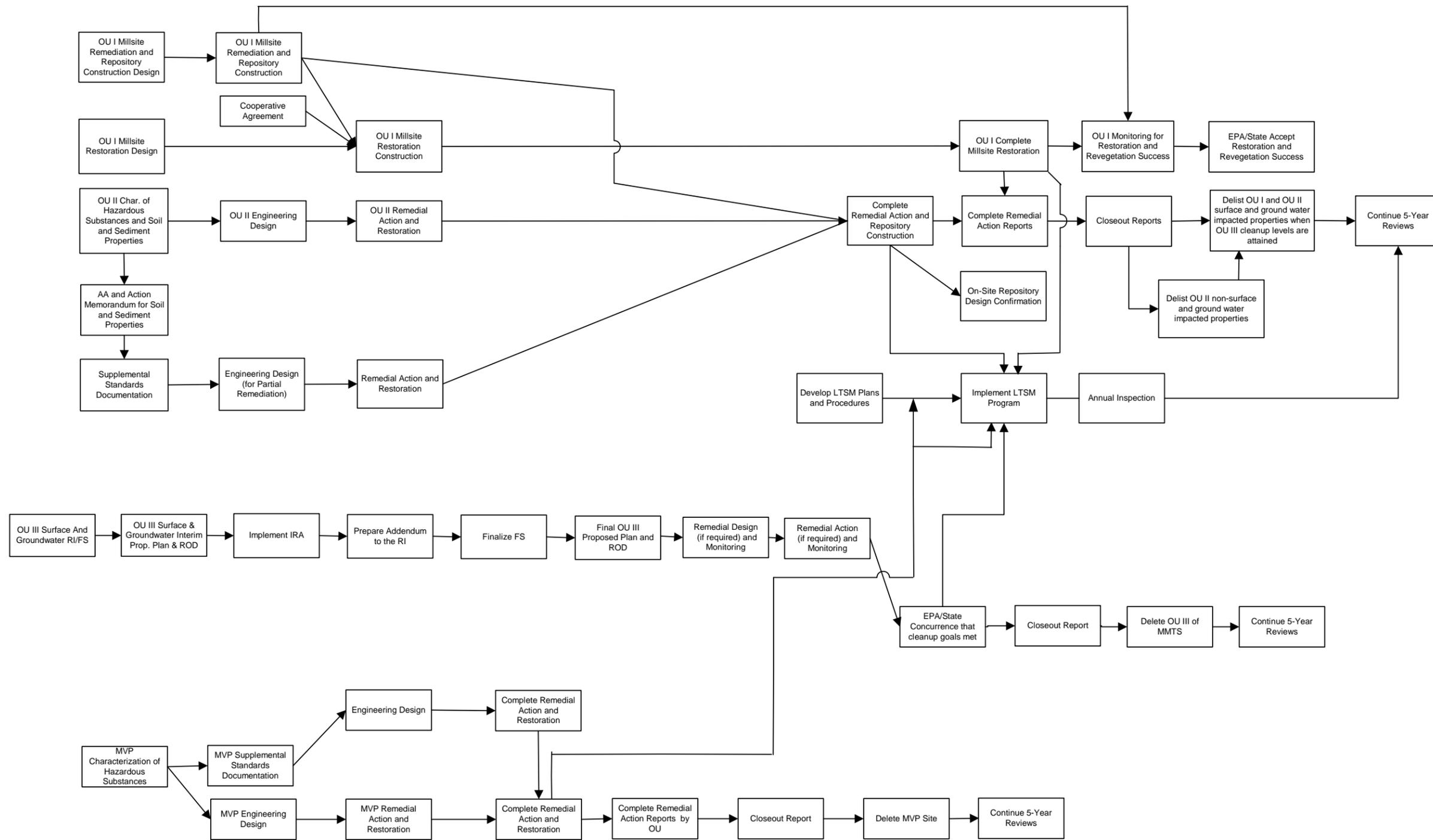
The Repository liner system has been designed to be equivalent to the minimum technology requirements established in the Resource Conservation and Recovery Act (RCRA) for containment of hazardous wastes in a landfill. The Repository has been designed with two cells, each of which has a leachate collection and a leak detection system. Leachate drains to collection sumps in each cell and is pumped from the Repository to Pond 4. During construction, this water was used for dust control or moisture conditioning in the Repository or pumped to the WWTP for treatment. After Repository construction was completed, leachate that remained in Pond 4 was left to evaporate.

The Repository cover has been designed to limit infiltration using a water balance cover and installation of a 60-mil thick high density polyethylene (HDPE) liner. The leakage rate through the cover has been designed to be less than the leakage rate through the bottom liner system. The cover, which includes a specially designed radon barrier, will control radon emissions from the Repository so that they meet applicable regulatory requirements.

###### **Procurement of Repository and Millsite Remediation Subcontractor**

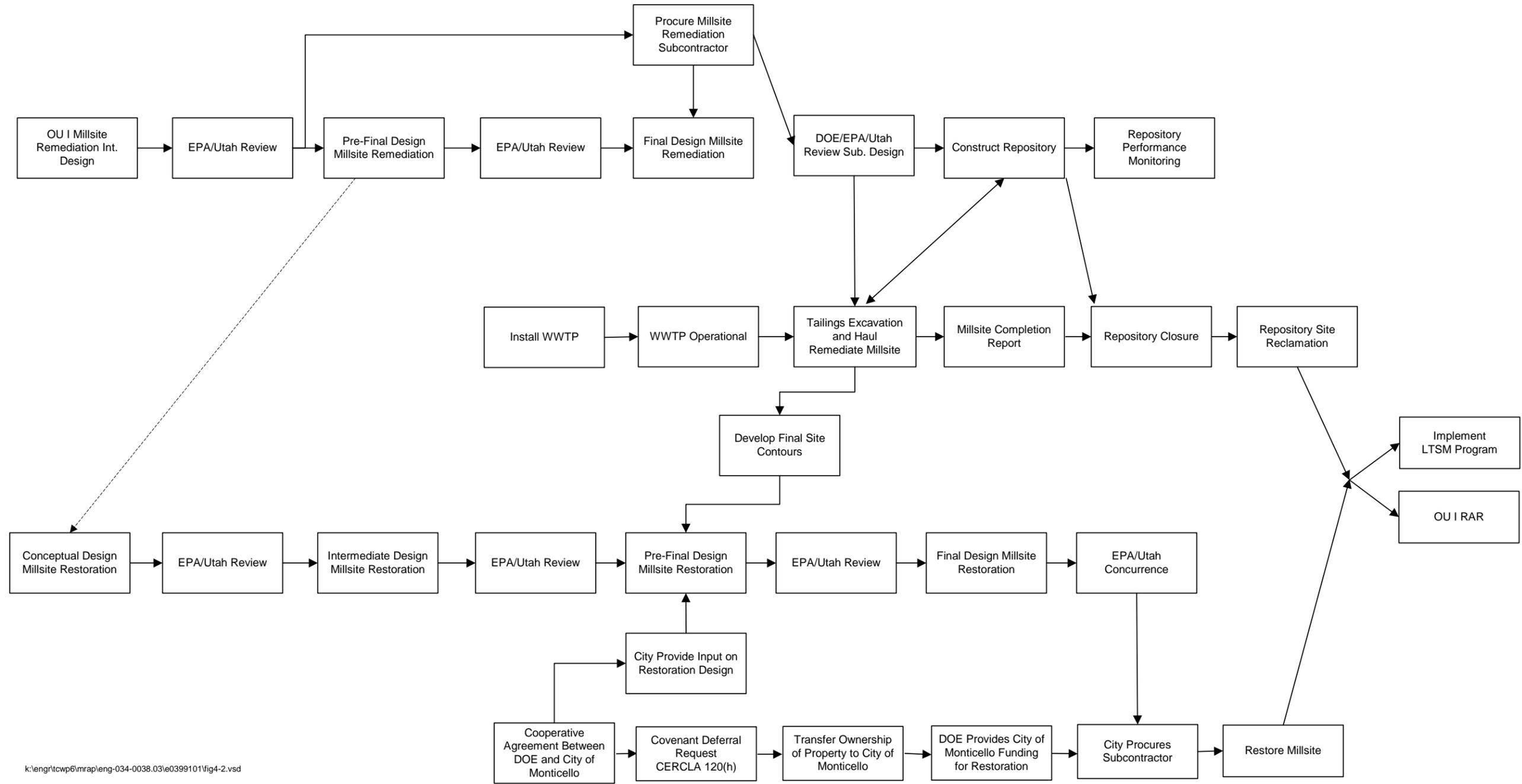
The Millsite Remediation Design, Specifications and Drawings, along with supplemental information, were attached to a Request for Proposal, which was advertised in the Commerce Business Daily. Three proposals were received and OHM Remediation Services Corporation was selected as the Repository and Millsite Remediation Subcontractor. The subcontract also included remediation of peripheral property phases MP-00211 Phase II; MP-00181 Phases IB, II, and IV; MP-00179 Phases III and IV; MP-00391 Phase IV; and MP-01042.

The Notice of Award was September 8, 1995. After required document submittals were received and accepted by the TAC, the Notice to Proceed was issued October 27, 1995. Repository excavation started November 6, 1995.



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Figure 4-1. Monticello Projects Logic Flow Diagram—Project Overview



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Figure 4-2. OU I Logic Flow Diagram

Repository excavation was completed in June 1996 and required the removal of approximately 1.6 million yd<sup>3</sup>. Material excavated from the Repository was placed in stockpiles near the excavation. Topsoil, select fill, and random fill were selectively handled and placed in separate stockpiles. The select fill was used for construction of the soil layer under the liner and for cover construction. The random fill was used for construction of the haul road and the Repository berms as well as the biointrusion layer. Topsoil was used as the final layer on the cover.

The Repository liner system was completed in November 1996. The sand drainage layer of the leachate collection system was completed July 1997. From the bottom to the top, the liner system consists of geosynthetic clay liner (GCL), 60 mil HDPE, geonet with heat bonded geotextile, GCL, 60 mil HDPE, geonet with heat bonded geotextile, and on the bottom of the Repository, a drainage sand layer. The leak detection system (LDS) is composed of the lower liner and geonet and the LCRS is composed of the upper liner, geonet, and sand drain layer. The bottom of the Repository has been sloped to allow drainage in the LCRS and LDS to two sumps on the north side of the Repository. Piping connects the sumps to the surface and pumps are used to remove leachate from the sumps to Pond 4.

During the spring of 1997, the amount of leachate collecting in the LDS sumps became a concern and investigations for the source of the leachate were conducted throughout the summer. Dye testing was conducted to determine if there were hydraulic connections between the LCRS and the LDS and anchor trenches. Electrical conductivity testing and visual inspections were performed over most of the Repository floor to find leaks. A total of 19 leaks were found and repaired. Inflow into sump 1 of the LDS dropped from 1.3 gallons per day to 0.4 gallons per day and inflow into sump 2 dropped from a maximum of 190 gallons per day to 43 gallons per day by December 1997.

During Repository construction, strict construction QC and QA programs were implemented. The QC program was conducted by the Millsite Remediation Subcontractor, and the QA program was conducted by the TAC through procurement of an independent firm for the liner installation in both the Repository and Pond 4 and the cover. Other QA activities were conducted by the TAC, such as moisture testing in the tailings and particle size distribution in the operations layer adjacent to the liner. QC/QA was critical to ensuring that the Repository was constructed according to specifications so that Repository performance requirements are met.

#### **Pond 4**

Pond 4 is located to the east of the Repository. It is designed to collect transient drainage (leachate) from the tailings and that is collected in either the LCRS or LDS. Construction of the pond was completed in June 1996. The pond has been sized to operate as an evaporation pond with a capacity of 55 acre-feet (18 million gallons) and has a triple liner system to ensure protection of underlying ground water. Design features of Pond 4 include a HDPE/GCL composite primary liner overlaying a geonet LCRS that is on top of a secondary liner overlaying a geonet, which in turn is on top of a HDPE/GCL composite tertiary liner. The LCRS is designed to collect any leakage passing through the upper-most liner. The LDS should collect any leakage passing through the second liner. A 5 gallon per minute pump circulates fluids collected in the LCR sump back into Pond 4. Automatic controls turn on the LCR pump at a normal high-water operating level in the LCR sump, record the cumulative volume of fluids pumped, record times when fluids are pumped, activate an alarm when the maximum high-water level is reached in the

LCR sump, and provide remote status and control capabilities to a local maintenance person who can monitor and correct any operational problems that occur. The most important feature of the system is that, if a problem occurs in the primary liner system that cannot be controlled with the LCR pump, the pond can be pumped dry and the liner repaired.

Pond 4 will remain in use until drainage from the Repository reaches quantities that can be more cost effectively handled by using other methods such as pumping the leachate to a tank for off-site treatment. The pond will then be decommissioned and contaminated materials will be hauled to an offsite disposal facility.

### **Ancillary Facilities**

Construction of the Repository and hauling the tailings have required construction of several ancillary facilities. The Repository access area consisted of offices and a parking area that were established on the west end of the Repository site during the 1995 construction season. These facilities provided office space for the DOE staff and employees of the TAC and Millsite Remediation Subcontractor. Acceleration and deceleration lanes were constructed on U.S. Highway 191 to improve traffic flow into and out of the facility. The access area also contains the TSF and three sea/land storage containers that are used by the LTS&M Program. Only one office trailer remains for the DOE On-Site Representative.

A haul road, approximately a mile long, was constructed between the Millsite and the Repository for tailings transport. Tailings were not hauled on public roads from the Millsite to the Repository because of public safety concerns and decreased haul efficiency. Decontamination pads were constructed at either end of the road but were abandoned after the first year of use and have now been removed. Control fencing was installed along the perimeter of the road, and drainage from the haul road was controlled by ditches and berms. The haul road has been removed and the terrain has been matched to existing terrain and seeded. A decontamination facility, constructed at the Repository access area for vehicles accessing U.S. Highway 191 from the Repository, has been dismantled.

During construction and restoration of the Repository and the surrounding disturbed areas, runoff was controlled with a series of ditches that directed water to sedimentation basins. A stormwater pollution prevention plan detailing the design, construction, and operation of the runoff control system was prepared by the Millsite Remediation Subcontractor and accepted for construction by the TAC. These ditches and basins were designed to contain the 25-year, 24-hour storm event. After consultation with UDEQ in 2000, the decision was made to leave the sedimentation basins in place. The purpose for leaving them in place was to control erosion while vegetation stabilized on the Repository and disturbed areas. The decisions with UDEQ centered around water-rights issues and structural integrity of the berms.

Fences have been constructed around the Repository and Pond 4 to keep wildlife from walking on the liners and puncturing them and to restrict unauthorized access to the site. Wildlife gates have been placed in several corners to release animals that may inadvertently enter the area during operations. A deer was trapped in the fenced area in 1996 and was not able to escape through the wildlife gates. As a result, the gates were adjusted to ensure that they performed as required. In 1997, the height of the fence around Pond 4 was increased to 10 ft because deer were able to jump the fence when it was only 8 ft high.

## **Wastewater Treatment Plant**

A transportable WWTP using a precipitation/membrane filtration process was set up at the Millsite. The plant was tested according to a plan submitted to EPA and UDEQ in February 1995 and was put into operation in May 1995. The plant treated water from Pond 3, which was fed by a network of ditches on the Millsite to control runoff and transport excavation water to Pond 3. In 1998 and 1999, the plant also treated water from Pond 4. Discharge from the plant had to meet the requirements of the UPDES regulations. Discharge from the WWTP in 1995 met the UPDES requirements; however, selenium concentrations were very near the allowable limits. As a result, the plant was modified in 1996 to include an activated alumina treatment process to improve selenium removal to less than the UPDES requirement of 0.012 milligrams per liter. Because the selenium removal process required the use of barium chloride to remove excess sulfates, a sodium sulfate injection system was added to precipitate barium after the activated alumina treatment and then a filter system added to remove the barium sulfate. This system was tested in October 1997 and failed because the filter clogged in under 5 hours.

Pilot and laboratory scale testing was conducted in January 1998 to determine if there were any further treatment options available for treating water to meet UPDES effluent limitations. Addition of a clarifier or microfiltration system was evaluated for removal of the barium sulfate. RO and nanofiltration were tested for use either with the existing plant or as a separate treatment system. A new technology, the use of ZVI was investigated for removal of selenium instead of activated alumina. ZVI does not require the removal of sulfates and therefore does not require the addition of excess barium. Testing this system was not successful because adequate flow through the ZVI columns could not be achieved along with adequate resident time to remove selenium.

Installation of an RO unit was selected because of reliability and ability of the system to remove contamination to UPDES standards for both selenium and TDS. The brine waste stream generated by the RO was used for dust control in the Repository and on contaminated areas on the Millsite and was placed in Pond 4. The RO unit was occasionally used by itself, but more often, effluent from the RO was blended with effluent from Trailers 1 and 2 of the existing WWTP to reduce selenium and TDS concentrations. Operation of the WWTP ceased in May 1999, after treating approximately 50,000,000 gallons.

## **Tailings Removal and Placement**

Millsite tailings, contaminated soils and debris, were excavated, loaded into haul trucks, and hauled to the on-site Repository. Dust suppression was practiced during all aspects of tailings removal. Radon emissions were monitored demonstrating that acceptable limits were not exceeded during remedial action. With notification of EPA and concurrence by UDEQ, DOE discontinued the air-monitoring program in Monticello in March 2000.

Tailings removal started with the removal of the Carbonate Tailings Pile. Carbonate tailings, which consisted mostly of fine sands, was the first layer placed in the Repository. This layer, called the operations layer, protects the liner from larger debris that was subsequently deposited in the Repository. Material from the Vanadium Pile and Acid Pile were also used to construct this protective layer. Placement of tailings and tailings-contaminated soil was completed

September 22, 1999, with the exception of contamination associated with the decontamination pad near the Repository. The contaminated material associated with the decontamination pad near the Repository was transported to DOE's Grand Junction Disposal Cell in January 2000.

A large volume of the tailings removed were below the ground-water surface. Water from excavations was used for dust control in contaminated areas or transported to Pond 3 for treatment and subsequent release to Montezuma Creek or pumped to Pond 4. The moisture content of the tailings was managed to ensure that compaction specifications were met in the Repository. Mixing wet tailings with drier tailings was conducted to meet specifications. Tailings that were dry required the addition of water to ensure that optimum moisture conditions were attained to meet compaction requirements.

Removal of tailings was verified in accordance with the MRAP Radiological Sampling and Verification Plan (DOE 1998c). Peripheral properties were verified using large area verification techniques, the 78-acre tailings area was verified using the 100 square meter procedure. DOE conducted independent verification on a portion of the excavation through an independent verification contractor (IVC).

Following tailings removal and verification, the site was backfilled, as necessary, and graded for erosion control and slope stability to ensure drainage of the site. Backfilling and grading necessary to meet the final design for restoration of the Millsite was conducted as part of the Millsite restoration phase.

### **Repository Cover Construction**

Construction of the cover was substantially completed on February 23, 2000. Construction of the cover progressed from west to east with the work generally divided into 4 quadrants. The cover consists (from the bottom to the top) of a radon barrier, 60 mil HDPE, sand drainage layer, geotextile, fill, biointrusion layer, fill, and topsoil and gravel admixture in the top 8 in. of topsoil. The number of layers in the cover decreases over the berms and consists of common fill, covered with topsoil and a gravel admixture and a bedding/filter layer on the riprapped slopes, or a riprapped slope. Some of the approximately 75,000 yd<sup>3</sup> of residual vadose zone material that was excavated from the Millsite was placed on the outslopes of the Repository. This material, which contains uranium and vanadium in concentrations below the 40 CFR 192 standards, was removed from the Millsite to assist in long-term ground-water compliance. QA samples of the soil materials and HDPE layer have been taken to ensure that the material placed meets specification. Material that did not meet specification was not used. Placed material not meeting specification was removed and replaced with material meeting specification, such as occurred with some of the fill material.

### **Repository Site Restoration**

Reclamation of areas disturbed as a result of construction activities at the Repository was substantially completed on February 23, 2000. The Millsite Remediation Subcontractor has completed the following reclamation activities:

- Removal of support facilities such as office trailers and decontamination facilities, the staging areas will remain along with one trailer to support LTS&M activities;

- Grading of disturbed areas to ensure that reclaimed land contours blend with adjacent undisturbed land areas;
- Seed bed preparation for areas being reclaimed; and
- Revegetation.

Removal of the haul road fill in North Draw was conducted by the City of Monticello. Material was used for backfill during Millsite restoration. The haul road corridor was reclaimed to blend in with the surrounding terrain.

### **Performance Monitoring**

Repository performance will be confirmed by monitoring leachate volume in the primary LCRS and by monitoring leachate quantity and quality in the secondary LDS. Criteria for allowable leachate volume and quality have been established as measurements of acceptable Repository performance in the Contingency Plan (DOE 1998d). The cover will be inspected to evaluate vegetation growth, erosion, rodent activity, and other characteristics that may indicate compromise of cover integrity.

The Repository was placed in DOE's LTS&M Program on October 1, 2001. An overview of LTS&M activities is contained in Section 6.0.

#### **4.1.1.2 Millsite Restoration (Task Description)**

##### **Millsite Restoration Design**

In August 1999, DOE entered into a Cooperative Agreement with the City of Monticello whereby the DOE paid the City in lieu of construction for the restoration of the former Millsite. The Agreement stipulated that the City would prepare a design for the Millsite restoration for EPA, UDEQ, and DOE approval. In August 2000, the City completed a design, which incorporated a natural meander reconstruction of Montezuma Creek, establishment of wetlands along the creek and in three off-channel ponds, and an open space concept for the upland areas. This approach for the Millsite met the National Park Service requirements that the land be used for public, recreational use under the Federal Lands-to-Parks Program which was the mechanism that DOE used to transfer title of the land to the City.

##### **Millsite Restoration Construction**

In August 2000, construction was initiated for the Millsite restoration by a contractor that was competitively procured by the City. Key components of the restoration included:

- Back fill placement: Approximately 110,000 yd<sup>3</sup> of material was excavated from the haul road fill area across North Draw and used to contour the Millsite in order to minimize slopes for erosion protection purposes.

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- Montezuma Creek reconstruction: Alluvial channel material was processed on-site using gradation specifications derived from the pre-remediation creek alluvial material. The creek was reconstructed near its original (pre-mill) location using meanders for gradient control.
- Wetlands reconstruction: Per the Cooperative Agreement with the City, a minimum of 5.5 acres of wetland were planted on the Millsite. This consisted of herbaceous and woody species planted along the creek channel and around three off-channel wetlands that are recharged by Montezuma Creek through infiltration galleries.
- Topsoil placement: Six inches of clean topsoil was placed on all areas of the Millsite in order to meet the Ra-226 surface remediation standards in 40 CFR 192. The topsoil was borrowed from the City-owned land MP-01040 south of the Millsite. The topsoil borrow area was re-seeded following excavation.
- Armoring of drainage channels: Drainage channels at Fred Jensen Draw, the former haul road, and Deer Draw were lined with rock that was processed from on-site material. Additionally, the Montezuma Creek channel in the first section entering the Millsite from the U.S. Highway 191 culvert crossing was armored with rock imported from off-site.
- Revegetation: the upland areas of the Millsite and the topsoil borrow areas were seeded with a native seed mix. Areas with slope of greater than 4:1 horizontal:vertical were treated with bonded fiber matrix to enhance erosion protection.

The final activity for the Millsite restoration (seeding of the upland areas) was completed in August 2001. The city of Monticello is responsible for maintenance of the Millsite with oversight provided by DOE. Maintenance items include protection of wetland areas, successful establishment of vegetation, and prevention of erosion by storm water runoff. DOE conducts oversight and inspections of the upkeep of this area.

Land use restrictions were recorded on the property deed for the Millsite. Restrictions include maintaining the property for public recreational use, prohibiting construction of habitable structures, prohibiting overnight camping, and prohibiting installation of water wells to be used for human consumption. DOE conducts inspections of the property for compliance with land restrictions.

The land use restrictions, revegetation, and stabilization are part of the final steps of completing the remedies chosen to date.

### **4.1.1.3 Operable Unit Completion**

All construction activities are complete. A Remedial Action Report was prepared documenting that all of the necessary activities took place and cleanup standards achieved as required by the ROD. The RAR for OU I included OU II ground-water related properties. Section 4.5.1.6 provides information on the content of the RAR and how it supports the deletion process.

#### **4.1.2 Applicable or Relevant and Appropriate Requirements**

Compliance with ARARs established in the ROD is addressed in the design documents. The designs identify each ARAR and specific design requirements or construction procedures to achieve compliance.

The Repository has been designed to be protective of human health and the environment and to meet all ARARs. This is substantiated by leakage rate calculations submitted with the design documents. DOE has shown that the design will achieve compliance with ARARs through performance calculations and will demonstrate performance by monitoring the LCRS and LDS.

The restoration design addresses all ARARs as necessary to demonstrate compliance.

Substantial effort has been made to demonstrate compliance with wetlands restoration requirements. A Wetlands Master Plan (DOE 1996c) was prepared which provided an inventory of all wetlands that would or could be impacted by remedial action activities. The Plan also provided specific restoration requirements such as seed mixes and planting requirements that would have to be implemented to restore wetlands. Approximately 5.5 acres of wetlands will be restored on the Millsite to replace wetlands on the Millsite destroyed during remediation and wetlands that could not be replaced in-situ on other properties. An addendum to the Wetlands Master Plan applicable to the Millsite restoration effort was prepared and submitted with the Pre-Final Restoration Design.

Several activities have been conducted subsequent to the Millsite Remediation design effort to ensure compliance with ARARs for OU I. These additional activities are listed below.

- A survey was conducted of the areas affected by Millsite Remediation to ensure that there were no threatened, endangered, and sensitive (TES) species requiring special protection. A report summarizing the results of a TES species survey of lands disturbed by Millsite Remediation activities was submitted in July 1995; TES species were not identified.
- An archaeological mitigation effort along the haul road was conducted in accordance with a plan reviewed and approved by the State Historic Preservation Officer. The mitigation plan was submitted May 1995. A report was submitted to the State Historic Preservation Officer summarizing the results of the archaeological mitigation effort in June 1996. Copies of the mitigation plan and results of the mitigation effort were also submitted to EPA and UDEQ.
- During Repository construction, control of fugitive dust emissions was required. In noncontaminated areas, UDEQ opacity standard of 20 percent for fugitive dust was met. In contaminated areas and during the placement of tailings, specifications required no visible dust emissions.
- Compliance with control of storm water runoff was achieved by implementing the Millsite Remediation Subcontractor's storm water pollution prevention plan. Ditches and sedimentation ponds have been constructed to control storm water runoff.

- The MMTS and adjacent properties were transferred to the City of Monticello through the Federal Lands-to-Parks Program that is administered by the National Park Service. This program stipulates that the land must be open to the public and used exclusively for park and recreation activity. Deed annotations bind the City of Monticello to comply with this stipulation.

#### **4.1.3 Document Submittals**

The following is a list of major documents that have been or will be submitted for OU I since the ROD was signed in August 1990:

*OU I Millsite Remediation Final Design:* This design was submitted to EPA and UDEQ in July 1995. It incorporated comments from EPA and UDEQ on the Intermediate and Pre-Final Designs. Performance specifications were also included in the Pre-Final document for all aspects of Millsite remediation and Repository construction. The Pre-Final Design was used to obtain subcontractor bids.

*Contingency Plan: The Draft-Final Monticello Remedial Action Project Repository and Pond 4 Groundwater Contingency Plan* (DOE 1998d) has been developed for OU I to address actions that may be taken if the Repository does not perform as planned. The Contingency Plan is a stand-alone document that identifies possible failure mechanisms at the Repository and proposed response actions specific to these failure mechanisms. Conditions that trigger implementation of the contingency plan are discussed in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2002a). See Section 6.0 for a discussion on LTS&M plans.

*Explanation of Significant Difference (ESD):* In March 1995, DOE prepared an ESD for OU I to address the increase in the total project cost. The ESD was made available for public review and comment in April 1995. No comments were received.

*Repository Access Area Design:* This document was submitted to EPA and UDEQ in April 1995. It addressed access off of U.S. Highway 191 and the office facility layout.

*OU I RD/RA Work Plan:* The OU I RD/RA Work Plan was submitted on April 27, 1995. The Work Plan provided a detailed description of the activities and the schedules presented in the SMP. The schedules in the OU I RD/RA Work Plan are superseded by the schedules presented in this revision of the SMP.

*Haul Road Design:* The haul road design prepared by the Millsite Remediation Subcontractor was initially transmitted to EPA and UDEQ in April 1996 and completed in May 1996.

*Decontamination Pad Design:* The decontamination area design was submitted in three parts by the Repository and Millsite Remediation Subcontractor. These designs were initially transmitted to EPA and UDEQ in June and July 1996. Comments on the designs from EPA and UDEQ were received and incorporated into the revised design and as-built drawings were submitted in July 1997.

*Millsite Restoration Design:* DOE submitted a Conceptual Design for Millsite Restoration on December 24, 1996. The conceptual design consisted of two site Plans (one each for natural and

golf course style restorations), a brief description of design approach, calculations, a sample vegetation specification, and a quantity summary. An Intermediate Millsite Restoration Design was submitted in April 1999 as a secondary document for EPA and UDEQ review. As described in Section 4.1.1.2, a Pre-Final Design was prepared by DOE on the realignment of Montezuma Creek and reestablishment of wetlands. On October 27, 1999, a cooperative agreement between DOE and the City of Monticello was initiated and the City became responsible for preparing the final restoration design. A natural style design was completed and a notice to proceed with construction activities was issued on August 28, 2000.

*Covenant Deferral Request:* DOE submitted the *Final Covenant Deferral Request for Transfer of Federal Property in Monticello, Utah* (DOE 2000a) to the Governor of the State of Utah and to EPA Region 8 Regional Administrator in February 2000. The request to defer the CERCLA covenant requiring all of the response actions to be completed prior to transferring the property to a non-federal agency was approved, thereby allowing transfer of the property to the City of Monticello for beneficial public use. The property was transferred to the City of Monticello on June 28, 2000.

*Long-Term Surveillance and Maintenance Plans and Procedure:* The *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2002a) was accepted by the EPA and UDEQ in 2002. This manual is a compendium of plans, procedures, and documents intended to implement the overall LTS&M requirements associated with the MMTS and MVP Site. It will be revised and a final LTS&M Manual will be submitted after the ROD for OU III is completed. Operating procedures identified in the Administrative Manual include the following:

- *Monticello Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (Volume I) (DOE 2002b).
- *Monticello Long-Term Surveillance and Maintenance Operating Procedures for Supplemental Standards Properties* (Volume II) (DOE 2002c).
- *Long-Term Surveillance and Maintenance Operating Procedures for Monticello Surface and Ground Water* (Volume III) (DOE 2005). These procedures will be submitted after the ROD of OU III is finalized in 2004.
- *Monticello Long-Term Surveillance and Maintenance Operating Procedures for Annual Inspections and CERCLA Five-Year Reviews* (Volume IV) (DOE 2002d).

*Completion Report:* A completion report will be prepared for the Millsite. This report is expected to be similar in content to the reports prepared for vicinity and peripheral properties (see Section 4.2.1 for a description of these reports). Verification data will be provided for radiological contaminants remediated. The draft-final property completion reports for MMTS, OU I and OU II Surface- and Ground-Water Impacted Properties and OU I Repository properties were submitted July 15, 2002 and resubmitted on May 16, 2003.

*Remedial Action Report:* This report documents specific remedial action activities that occurred under each OU at a site. The report provides documentation that a particular OU has met its objectives and summarizes information for subsequent inclusion in the Superfund Site Close-Out Report. The draft-final RAR for MMTS, OU I and OU II Surface- and Ground-Water Impacted

Properties was submitted to EPA and UDEQ July 31, 2002 and resubmitted on May 16, 2003. See Section 4.5.1.6 for additional information on the content of an RAR and deletion of the MMTS from the NPL.

**4.1.4 Schedule and Funding**

DOE’s goal, as reflected in the schedule provided, was to complete Millsite remediation and restoration by July 17, 2001. To attain this goal, DOE began cell excavation November 1995 and lining of the cell began in June 1996. Tailings placement began on June 5, 1997, and was completed along with placement of all contaminated soils except those associated with the Repository access area decontamination pad on September 22, 1999. Contaminated soils associated with the Repository access area decontamination pad were placed in the Grand Junction, Colorado, disposal cell (formerly known as the Cheney disposal cell) in January 2000. Repository cover construction started in 1999 and was substantially completed on February 23, 2000. Repository construction, including reseeded, was completed June 30, 2000. Millsite restoration began on August 30, 2000, and was completed August 31, 2001.

The costs for the Monticello Projects are shown in Appendix C. Costs shown in Appendix C through fiscal year 2002 are actual costs; costs beyond 2002 are projected costs. Future costs reflect definitive estimates to rough order-of-magnitude estimates. The funding levels shown in Appendix C are expected to meet project requirements.

**4.2 Monticello Remedial Action Project: Operable Unit II—Peripheral Properties**

OU II consists of 34 properties that are peripheral to the Millsite, listed in Table 4–1. Remedial activities on these properties consisted of characterization of contamination, remedial action design, procurement and construction, verification, and preparation of the completion reports. Twenty-two of these 34 peripheral properties had tailings contamination in soils. The remaining 12 peripheral properties had tailings contamination in soils and in sediment along Montezuma Creek and surface water and/or ground water contamination from Millsite operations.

*Table 4–1. Operable Unit II Peripheral Properties*

<b>34 Operable Unit II Peripheral Properties</b>	
<b>22 Properties Without Contaminated Surface Water and/or Ground Water</b>	<b>12 Properties With Contaminated Surface Water and/or Ground Water</b>
MP-00105-VL, MP-00178-RS, MP-00180-CS, MP-00198-VL, MP-00211-VL, MP-00845-VL, MP-00886-VL, MP-00887-VL, MP-00888-VL, MP-00947-VL, MP-00948-VL, MP-00949-RS, MP-00950-VL, MP-00963-OT, MP-00964-VL, MP-00988-VL, MP-01040-VL (North Portion), MP-01041-VL, MP-01042-VL, MP-01081-VL, MP-01083-MR, MP-01102-VL	MP-00179-VL, MP-00181-OT, MP-00391-VL, MP-00951-VL, MP-00990-CS, MG-01026-VL, MG-01027-VL, MG-01029-VL, MG-01030-VL, MG-01033-VL, MP-01077-VL, MP-01084-VL

The contaminated soils and sediment portion of the 12 peripheral properties with contaminated surface water and/or ground water were at one time included in OU III. Using a non-time-critical removal action, which DOE documented in an Action Memorandum, soil and sediment were remediated to alternate action levels in some areas of the properties and no remediation was

performed in other areas. Supplemental standards applications were prepared for those areas where contamination above standards was left in place. EPA and UDEQ approval of the supplemental standards applications documents their acceptance of the removal actions as part of the final remedy. An ESD to the MMTS ROD for OU I and OU II (DOE 1990b) was prepared to include these 12 peripheral properties into the selected remedy for OU II.

Remedial action has been completed on all OU II properties. An RAR was prepared for OU II peripheral properties not impacted by contaminated surface and/or ground water; DOE has proposed deletion from the NPL of 22 OU II peripheral properties that are not impacted by surface and/or ground water contamination in FY 2003. These 22 properties (listed in Table 4-1) will be deleted on October 12, 2003. Properties that are impacted by ground water contamination cannot be deleted from the NPL until surface and ground water standards are met.

#### **4.2.1 Task Descriptions**

##### **Field Characterization for Original OU II Properties**

Characterization of the extent of radiological contamination on the peripheral properties was conducted in support of the *Final Remedial Investigation/Feasibility Study-Environmental Assessment for the Monticello, Utah, Uranium Mill Tailings Site* (DOE 1990a).

##### **Characterization and Remediation of Hazardous Substances Other Than Radium-226**

Investigations were conducted to evaluate the presence of concentrations of hazardous substances other than radium-226 that may pose unacceptable risk and require remediation or special handling as a hazardous waste. For the peripheral properties, these investigations were conducted on the U.S. Bureau of Land Management (BLM) Compound (MP-00181), on MP-00181/MP-00211 Phase II where the Millsite analytical lab was located and fuel spills were identified, and on MP-00990 where waste oils were spilled along with other potential contaminants. Nonradiological substances released to the environment requiring remediation beyond the extent of radiological contamination have not been identified on MP-00181 or MP-00211. Although nonradiological hazardous substances have been identified on MP-00990, EPA and UDEQ agreed (EPA 1996) to allow DOE to limit remediation to only commingled and radiological contamination. In part, the decision was made because of the ongoing operations on this privately owned property.

Nonradiological hazardous substances that meet the Repository waste acceptance criteria were placed in the on-site Repository with EPA and UDEQ approval. Hazardous substances that could not be disposed of in the on-site Repository were shipped to off-site, permitted commercial treatment, storage, and disposal facilities that met the CERCLA off-site response requirements of the NCP.

DOE's responsibilities for remediation of nonradiological hazardous substances were fulfilled when the nonradiological contamination identified in approved work plans was removed and verification samples showed contamination below cleanup standards (State of Utah 1997). During remediation, DOE implemented the Special Waste Management Plan (DOE 1997c) as required and provided verification data demonstrating that contamination was removed to cleanup standards. DOE was not responsible for ongoing or future releases on the properties not

identified in approved work plans or recorded as required by the Special Waste Management Plan (DOE 1997c). If radiological contamination for which DOE was responsible (such as could have been discovered during remedial action on any property) became mixed with hazardous waste by any mechanism, DOE was responsible for the resultant mixed waste.

### **Field Characterization for Soil and Sediment Properties along Montezuma Creek**

Characterization of the nature and extent of contamination in contaminated soil and sediment along Montezuma Creek was required to determine if the contamination presented an unacceptable risk to human health and the environment. An OU III RI/FS Work Plan (DOE 1995b) was prepared by DOE proposing the characterization activities required to determine the nature and extent of contamination. EPA and UDEQ concurrence on the RI/FS Work Plan was not obtained; however, DOE proceeded with the characterization activities at risk. Characterization activities have included assessing concentrations of contaminants of concern in sediments and soils.

### **Prepare Risk Assessments for Soil and Sediment Properties**

A Human Health Risk Assessment and Ecological Risk Assessment were prepared to evaluate the risk to human health and the environment from contamination in soil and sediment along Montezuma Creek. The human health risk assessment is based on land-use scenarios concurred on among DOE, EPA, and UDEQ in various meetings. The risk assessments were submitted as secondary documents and were revised and submitted with the final OU III RI report (DOE 1998b).

### **Prepare Remedial Investigation Report for Soil and Sediment Properties**

The final OU III RI report (DOE 1998b) was prepared to document the results of the site characterization and risk assessments in accordance with established EPA guidelines. The RI report discusses the nature and extent of contamination, contaminant fate and transport and incorporates the human health and ecological Baseline Risk Assessment (BLRA) report. An ARARs evaluation is identified in an appendix to the RI report. The final RI report (DOE 1998b) was submitted in September 1998. By accepting the final RI report, it is implicit that previous issues on the RI Work Plan are resolved.

### **Prepare Alternatives Analysis (AA) for Soil and Sediment Properties**

A detailed AA (DOE 1998a) was performed to assess potential remedies for mitigation of any unacceptable risks identified in the BLRA. The alternatives evaluated for various segments of Montezuma Creek, were (1) no action, (2) institutional controls, including land purchase by DOE, (3) partial remediation of areas of elevated gamma readings, (4) remediation to standards in 40 CFR 192.12 over selected areas, and (5) remediation to the standards in 40 CFR 192.12 along the entire creek. The draft-final AA analyzed each alternative on the basis of meeting the two threshold criteria and the five balancing criteria or CERCLA criteria.

The AA meets the requirements of an EE/CA for non-time-critical removal actions and was used to document the evaluation of removal actions considered as remedies for Upper, Middle, and Lower Montezuma Creek.

## **Selection of the Preferred Remedy for Remediation of Soil and Sediment**

DOE prepared a Fact Sheet summarizing the AA and describing the recommended remedy and provided the fact sheet for public comment. The AA was placed in the Administrative Record for public review. A public comment period was held from March 27, 1998, to April 27, 1998. A public meeting was held to discuss the preferred remedy and obtain input from the public. Concurrence was reached among the DOE, EPA, and UDEQ on the preferred remedy, and an Action Memorandum prepared for the preferred remedy, which was a non-time-critical removal action. The preferred remedy was also discussed in the OU III ROD for an IRA (DOE 1998e).

## **Supplemental Standards Applications**

Supplemental Standards applications were prepared for OU II properties where it was anticipated that remedial action would result in excessive environmental damage. These properties are located on the hillsides to the south of the Millsite where there are thick piñon/juniper stands and along Montezuma Creek where wetlands are present. The supplemental standards applications establish alternative action levels protective of human health and the environment that are based on existing and projected exposure scenarios. Restrictive easements and institutional controls were implemented to ensure that future land uses do not result in exposure in excess of the exposure scenarios evaluated. In addition, restrictions on land use have been implemented. Deed annotations identifying the land use restrictions have been filed with the San Juan County Recorder for all of the supplemental standards properties. The purpose of the deed annotations is to inform the public and potential new owners of the property of the agreement to restrict use of the land. Appendix A, page 20 lists the OU II properties where supplemental standards have been applied. EPA and UDEQ concurrence on application of Supplemental Standards was received on July 1, 1999.

## **Remedial Action Design**

A design document was prepared for each included property using the information in a Radiological Assessment (Appendix A to the design) as well as the Site Assessment Report or the Site Characterization Report (SCR) for properties where hazardous substances other than radium-226 were suspected to be present. The designs were developed to demonstrate that compliance with ARARs would be achieved. The designs were submitted to EPA and UDEQ for review. Concurrence was provided by UDEQ. All Remedial Action Designs are completed.

## **Remedial Action Agreement**

Following regulatory approval of the Remedial Action Design, the DOE-GJO contracting officer prepared the Remedial Action Agreement (RAA). Each property owner accepted the remedial action design by reviewing, negotiating, and subsequently approving the design by signing a RAA.

## **Procurement and Construction**

A bid package was prepared and an invitation for bid was issued based on the approved remedial action design and the RAA. The Notice of Award was issued to the successful bidder, and a

request for submittals was issued by DOE. All submittals were reviewed by DOE for technical responsiveness. The successful bidder was issued a Notice to Proceed following the technical review and acceptance of the submittals by DOE. Remediation of the property was conducted in accordance with the Remedial Action Design. Construction oversight was conducted by DOE's TAC and the DOE Site Engineer and OU II Project Manager.

### **Verification and Measurement of Radon Daughter Concentrations**

After removal of contamination, the excavation was verified using the 100-square-meter procedure or the large-area-verification procedure to demonstrate that remediation to applicable standards for contamination in soil was achieved. Track Etch cups were placed in all habitable structures following completion of remedial action to determine if internal radon concentration met the applicable indoor standard established by EPA. Results of radon measurements, where applicable, are subsequently included in the property completion report.

A report entitled *Prompt Alpha-Track Study for Monticello, Utah, Vicinity and Peripheral Properties* (DOE 1995c) was submitted to EPA and UDEQ in March 1995. On the basis of the data presented in this report, EPA and UDEQ concurred on the use of a 3-month measurement in either the spring or fall as representative of a 1-year measurement. Implementation of the prompt measurements significantly reduced the amount of time required to determine the adequacy of remediation.

### **Completion Reports, Independent Verification, and Preparation of the RAR**

The field verification map, excavation control and verification survey logs, Opposed Crystal System Spectral Gamma Analysis Data Forms, and radon daughter concentration (RDC) results were used to prepare a completion report for each property. The completion reports were submitted to the Independent Verification Contractor (IVC) for review. The IVC reviewed completion reports, conducted field visits, collected soil samples from 10 percent of the completed properties, and recommended approval or disapproval of completion reports to DOE. DOE reviewed the IVC's recommendation for approval of completion reports and prepared an RAR to certify that construction was completed on all the properties within the OU. See Section 4.5.1.6 for information on the preparation and approval of the RAR and the deletion process. DOE proposed deletion of non-ground-water related peripheral OU II properties (identified on page 5–12) from the NPL separately from the entire site.

#### **4.2.2 Applicable or Relevant and Appropriate Requirements**

The design documents demonstrate compliance with ARARs established in the ROD (DOE 1990b). Each ARAR is identified and specific design requirements or construction procedures that demonstrate compliance with the ARAR are identified.

## **UNCONTROLLED IF PRINTED**

The ROD (DOE 1990b) identifies the following regulations as ARAR for OU II:

- Clean Water Act
- Clean Air Act
- Uranium Mill Tailings Radiation Control Act
- Occupational Safety and Health Act
- National Historic Preservation Act
- Endangered Species Act
- Farmland Protection Policy Act
- Standards for Protection Against Radiation
- Statement of Procedures on Floodplain Management
- Protection of Archaeological, Anthropological, Paleontological, Historic, and Cultural Resources
- Utah Occupational Safety and Health Standards
- Definitions for Water Pollution Rules and General Requirements
- Standards for Quality for Water of the State of Utah
- Utah Air Conservation Act and Rules
- Utah Corrective Action Policy
- General Provisions and Licensing Requirements for Handling Radioactive Material

In some instances, additional actions may be required during construction when differing site conditions are encountered or new information is obtained. Examples of actions that have been taken are described below:

- Swallows were noticed nesting on the BLM Compound during remedial action in 1995. DOE worked with the U.S. Fish and Wildlife Service and the State of Utah Division of Wildlife Resources to ensure that compliance with the Migratory Bird Act was attained. Demolition activities were rescheduled so that the nestlings could fledge before the nests were removed. No adverse impacts on the bird population occurred as a result.
- The Southwestern Willow Flycatcher was identified as an endangered species when the list of TES species was reviewed. Some areas scheduled for remediation contained willow stands that were suitable nesting sites for this species. As a result, remediation of willow stands greater than a specified area were rescheduled for remediation after August 15, 1996, when the nesting season was over. In the spring of 1997, willows were removed from the Millsite prior to the start of the nesting season so that construction could proceed as scheduled.
- Asbestos was discovered on the Millsite in the mill building area. An Asbestos Management Plan (DOE 1997a) was prepared addressing how the material would be managed for disposal in the on-site Repository. The Asbestos Management Plan (DOE 1997a) was submitted to UDEQ, Division of Air Quality for review and concurrence. Removal and disposal of asbestos was conducted in accordance with this plan.

### **4.2.3 Documents**

*OU II RD/RA Work Plan:* This Work Plan was submitted to EPA and UDEQ on March 22, 1995. Additional scheduling details, beyond those presented in the December 1995 version of the SMP, were addressed in the Work Plan for design and construction. The schedules submitted in the Work Plan are now superseded by the schedules presented in this version (September 2002) of the SMP. Revision of the Work Plan is not proposed.

*Radiological and Engineering Assessment Reports:* These reports documented the property radiological characterization. Radiological data are included in Appendix A of the reports.

*Site Assessment Reports (for nonradiological hazardous substances):* These reports documented the first phase of property characterization for nonradiological hazardous substances. This phase of characterization consisted of visual inspection of the property, interviews with current and past property owners, and limited sample collection. The Site Assessment Report recommended no further action, preparation of a Sampling and Analysis Plan (SAP), if necessary, to determine appropriate remedial action, or remedial action if the area(s) of concern were limited in extent. Site Assessment Reports were submitted to EPA and UDEQ for review and were included in the remedial design for the property for approval.

*Sampling and Analysis Plans (for nonradiological hazardous substances):* The SAP established the plan for further site characterization. A screening phase was often proposed to take biased samples in “worst case” locations to determine if hazardous substances exceeding risk-based cleanup standards were present. A second phase established the extent of the contamination requiring remediation. The SAP included sampling rationale, locations, analytical requirements and methods, and QA/QC requirements.

*Site Characterization Reports (SCR) (for nonradiological hazardous substances):* The results of the characterization effort, as specified in the SAP, were summarized in the SCR. The SCR also provided recommendations for remediation or waste management requirements. SCRs were submitted to EPA and UDEQ for review and were included in the remedial design for the property for approval.

*Human Health and Ecological Risk Assessments for Soil and Sediment Properties:* The risk assessments documented the baseline risk to human health and the environment from the presence of the contaminated soil and sediment along Montezuma Creek.

*Remedial Investigation Report for Soil and Sediment Properties:* The RI documented the results of the characterization effort for contaminated soil and sediment and included the risk assessments in the final document.

*Alternatives Analysis for Soil and Sediment Properties:* The AA documented the evaluation of several potential removal actions for the cleanup of contaminated soil and sediment along Montezuma Creek.

*Supplemental Standards Applications:* The supplemental standards applications documented the cleanup standards used on the soil and sediment properties and the piñon/juniper properties south of the Millsite.

*Action Memorandum for Soil and Sediment.* The Action Memorandum documented the decision to implement a non-time-critical removal action for the soil and sediment properties.

*Remedial Action Designs:* Designs were submitted to EPA and UDEQ for review and concurrence on the scope of the remedial action.

*Remedial Action Agreements:* These were internal DOE documents establishing a contractual relationship between the property owner and DOE during remedial action.

*Completion Reports:* Completion Reports documented that each included property has been remediated and is in compliance with the applicable standards and guidelines. For radium-226, the standards are established in 40 CFR 192. Cleanup of other hazardous substances of concern was to risk-based standards. Alternative cleanup standards are documented in the supplemental standard applications.

*Remedial Action Report:* This report documents specific remedial action activities that occurred under each OU at a site. The report provides documentation that a particular OU has met its objectives and summarizes information for subsequent inclusion in the Superfund Site Close-Out Report. See Section 4.5.1.6 for additional information on the RAR and deletion of the site from the NPL.

#### **4.2.4 Schedule and Funding**

Remediation of the peripheral properties is complete and all contamination removed from the properties has been placed in the on-site Repository. The OU II non-ground-water related Peripheral Properties will be deleted on October 12, 2003, separately from the OU II ground-water related Peripheral Properties. OU I (the Millsite) and OU II ground-water related peripheral properties will be deleted at a later date.

Funding for OU II is included in the funding numbers shown for MRAP in Appendix C. Costs shown in Appendix C through fiscal year 2002 are actual costs; costs beyond 2002 are projected costs. Some of the final closeout documentation will be prepared by the LTS&M Program.

### **4.3 Monticello Vicinity Properties Project**

#### **4.3.1 Tasks Descriptions**

The same tasks described for OU II are applicable to the vicinity properties, with the following modification and additions:

##### **Inclusion Surveys**

This activity included performing land surveys, gamma scans, and measurement of RDCs to determine if a property had radium-226 contamination in excess of EPA cleanup standards. A radiological contamination map and an inclusion or exclusion recommendation was prepared. Inclusion surveys are completed.

## **Investigation and Remediation of Nonradiological Hazardous Substances**

Investigations have been conducted to evaluate the presence of concentrations of hazardous substances other than radium-226 that may pose unacceptable risk and may require remediation or special handling as a hazardous waste. For the vicinity properties, these investigations were conducted on MS-00111, MS-00112, MS-00685, MS-00910, and MS-00959. Although hazardous substances were not suspected on MS-00688, the remedial action design for MS-00688 was included with MS-00685 because both properties are located at the same address and owned by the same entity. Therefore, MS-00688 is included in OU D.

Nonradiological substances released to the environment requiring remediation were identified on MS-00111, MS-00112, and MS-00959; remediation is complete on these properties. Although nonradiological hazardous substances were identified on MS-00685, EPA and UDEQ agreed (EPA 1996) to allow DOE to limit remediation to only commingled and radiological contamination. In part, the decision was made because of the ongoing operations on this privately owned property. Remediation of MS-00685 is complete.

### **Defining the Site Boundary**

DOE submitted a proposal for defining the site boundary in March 1995. The proposal was based on EPA and UDEQ recommendations to continue examining properties within an 8-mi radius of the Millsite. DOE's efforts to locate additional mill related materials included:

- a mailing to all owners of property within the 8-mi radius,
- an announcement on radio station KUTA, Blanding, Utah,
- advertisements in local newspapers and notices in Salt Lake City newspapers,
- interviews with ore shippers and relatives, and
- talks with senior citizens and civic/community groups.

DOE notified property owners that inclusion surveys would be conducted at no cost to owners who believe their property may contain tailings or other materials from the Monticello Millsite. DOE also surveyed properties beyond the 8-mi radius when reliable evidence indicated that Monticello Millsite materials were present. Because it was in the public and DOE's best interest to identify properties with Monticello Millsite materials as quickly as possible, DOE gave the benefit of the doubt to information sources and performed inclusion surveys even when information was somewhat sketchy. The inclusion criteria were based solely on radiological contamination and not on the presence of nonradiological hazardous substances. The public was notified that the last day to request a survey was April 30, 1996. A total of 20 properties within the 8-mi boundary were surveyed and six properties included in the MVP site and were designated as OU G.

#### **4.3.2 Applicable or Relevant and Appropriate Requirements**

Designs demonstrate compliance with ARARs established in the ROD. Specific design requirements or construction procedures were established to achieve compliance with ARARs.

The primary ARAR establishing cleanup standards for remediation of the MVP Site is 40 CFR 192. Section 192.12 of this relevant and appropriate requirement establishes limits on gamma radiation levels and annual average RDC in habitable structures. It also establishes cleanup levels for radium in soil on open lands. Indoor gamma levels shall not exceed the background level by more than 20 microroentgens per hour. RDC levels should not exceed 0.02 working level (WL) and shall not exceed 0.03 WL in any case. The residual radium-226 concentration in soil shall not exceed 5 pCi/g above background in the first 15 centimeters of soil or 15 pCi/g above background in any 15 centimeter soil layer below the top 15 centimeter averaged over 100 square meters.

Supplemental standards are also described in 40 CFR 192. Based on the eligibility requirements stated in 40 CFR 192.21, standards other than those established in 40 CFR 192.12 may be applied. DOE applied for supplemental standards based on the criteria of excessive environmental damage and unreasonably high cost compared with the health benefits to be gained. Approval of supplemental standards was received for City of Monticello streets and utilities, U.S. Highways 191 and 666 right-of-ways within the Monticello city limits, and DOE Property ID number MS-00176-VL.

### **4.3.3 Document Submittals**

The following documents were prepared for work on the MVP Site. These documents are described in Section 4.2.3 except for the Inclusion/Exclusion letter, which is described below.

- Inclusion/Exclusion Letter
- Site Assessments (for non-radiological hazardous substances)
- Sampling and Analysis Plans
- Radiological Assessment Survey (Appendix A)
- Radiological and Engineering Assessment (same as Remedial Action Design)
- Supplemental Standards Applications (where appropriate)
- Remedial Action Agreements
- Completion Reports
- Remedial Action Reports (one report per OU)

Additional requirements for deletion of the MVP Site from the NPL are described in Section 4.5.1.6.

*Inclusion/Exclusion Letter:* After reviewing information from inclusion surveys, DOE provides a recommendation to EPA and UDEQ to either include a property into the Site or exclude it as required by Section XIII of the FFA.

### **4.3.4 Schedule and Funding**

DOE has completed all remedial actions, completion reports, Remedial Action Reports, and the preliminary and final Closeout Report. A Notice of Intent to Delete (NOID) for the MVP Site was published in the Federal Register on December 30, 1999. The direct and final rule deleting the MVP Site from the NPL became effective February 28, 2000.

## **4.4 Monticello Surface- and Ground-Water Remedial Action Project**

The major activity of MSGRAP is the selection and implementation of an appropriate response action addressing ground-water and surface-water contamination.

### **4.4.1 Task Descriptions**

The following sections describe the tasks that will be performed to reach selection of an appropriate remedy. Figure 4-3, the OU III Logic Flow Diagram, shows the relationships of the tasks described below.

#### **4.4.1.1 Field Characterization**

Characterization of the nature and extent of contamination in ground water and surface water is required to determine if the contamination presents an unacceptable risk to human health and the environment. An OU III RI/FS Work Plan (DOE 1995b) was prepared by DOE proposing the characterization activities required to determine the nature and extent of contamination. EPA and UDEQ concurrence on the RI Work Plan was not obtained; however, DOE proceeded with the characterization activities at risk. Characterization activities included assessing concentrations of contaminants of concern in surface water, ground water, sediments, soils, and biota. Previous studies indicated a sixth medium, air, is not a significant pathway.

Because of the unknown effects of Millsite remediation on surface-water and ground-water contamination, an IRA was proposed and the ROD for an IRA was signed by DOE, EPA, and UDEQ in September 1998. Additional characterization activities of surface water, ground water, soil and sediment were performed during the IRA (Section 4.4.1.9).

#### **4.4.1.2 Prepare Risk Assessments**

A Human Health Risk Assessment and Ecological Risk Assessment were prepared to evaluate the risk to human health and the environment from contamination in ground water, surface water, sediment, soil, and biota. The human health risk assessment is based on land-use scenarios concurred on by DOE, EPA, and UDEQ in various meetings. The risk assessments were first submitted as secondary documents and were then revised and submitted as part of the RI report (DOE 1998b).

The Human Health Risk Assessment and Ecological Risk Assessment were updated and submitted as part of the 2003 RI Addendum/Focused Feasibility Study. For the update to the Human Health Risk Assessment, risk was reevaluated using the exposure scenarios presented in the 1998 RI report and updated media concentrations and toxicity benchmarks. For the update to the Ecological Risk Assessment, risk was reevaluated using the same receptors and exposure parameters as presented in the 1998 RI report and considering updated surface water concentrations and toxicity information. During the Ecological Risk Assessment update it was realized that because of an increase in selenium concentrations in surface water and the wetlands that are being created on the Millsite, the ecological site conceptual model must be reevaluated and possible risk to other receptors calculated. Because the Millsite wetlands have not yet developed to the extent of being good quality habitat and selenium concentrations are trending, the decision has been made to continue to monitor conditions on the Millsite and assess risk to (possibly) new receptors at a future date.

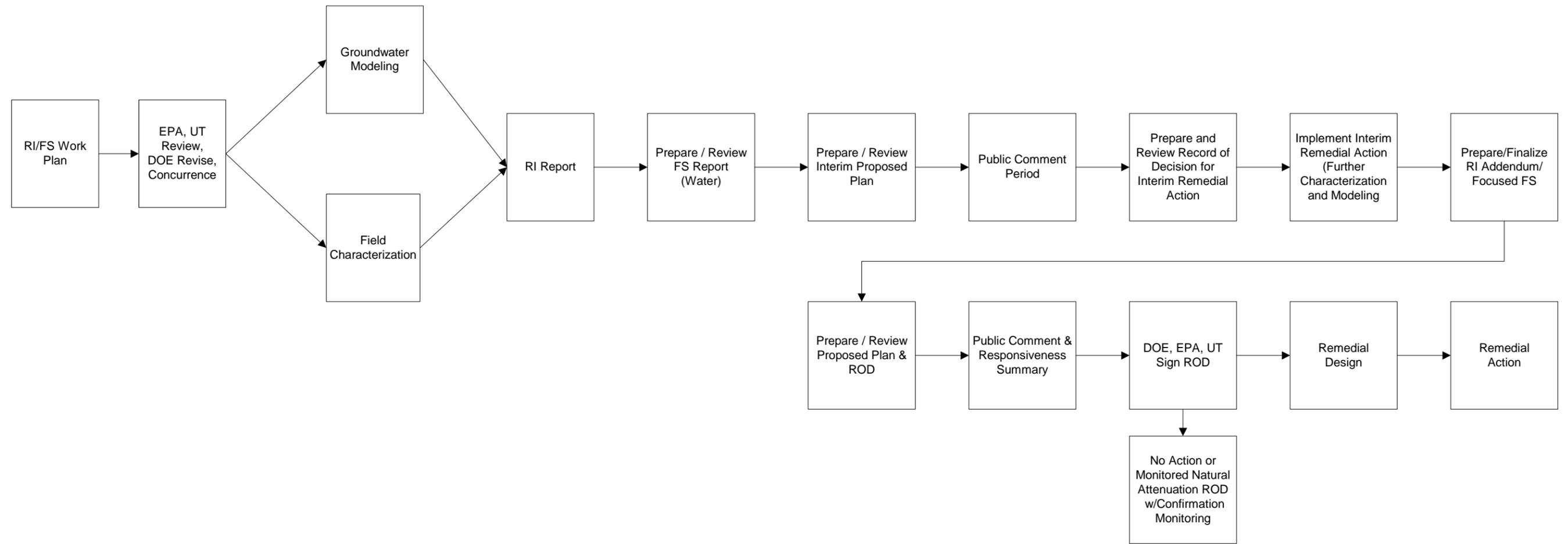


Figure 4-3. OU III Logic Flow Diagram

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#### **4.4.1.3 Prepare Remedial Investigation Report**

The RI report (DOE 1998b) has been prepared to document the results of the pre-Millsite remediation characterization and risk assessments in accordance with established EPA guidelines. The 1998 RI report discusses the nature and extent of contamination, contaminant fate and transport, and incorporates the human health and ecological BLRA report. An ARAR evaluation is identified in an appendix to the RI report.

In September 2003, an addendum was prepared to the 1998 RI report to document the results of characterization activities and ground-water modeling performed during the IRA; the addendum to the RI report also includes the BLRA updated to reflect post-Millsite remediation conditions.

#### **4.4.1.4 Conduct Feasibility Study (pre- and post-Millsite Remediation) and Prepare Focused Feasibility Study Report (pre-and post-Millsite Remediation) for Surface Water and Ground Water**

During the pre-Millsite remediation FS, results of the RI (DOE 1998b) were used to develop remedial action objectives and remedial action alternatives, and to support initial screening and detailed analysis of the alternatives for surface water and ground water in accordance with established EPA guidelines. Numerical modeling results were used, in part, to evaluate alternatives for active and passive restoration. The pre-Millsite remediation FS was not finalized because it was recognized by DOE, EPA, and UDEQ that Millsite remediation would have a profound and unpredictable impact on the surface-water and ground-water systems.

A draft-final post-Millsite remediation Focused FS has been prepared and uses results of activities performed during the IRA to refine remedial action objectives and alternatives and to revise the detailed analysis of alternatives that were presented in the pre-Millsite remediation FS. The post-Millsite remediation Focused FS is conducted to ensure that appropriate remedial alternatives for surface water and ground water are evaluated so that relevant information concerning the remedial action options can be presented to the decision makers and an appropriate final remedy selected. Numerical modeling results are used, in part, to evaluate the alternatives. The Focused FS report has been submitted with the RI Addendum as a combined document to facilitate review and approval.

#### **4.4.1.5 Prepare Interim Proposed Plan and ROD for an IRA**

An interim Proposed Plan was prepared to obtain input from the public on the proposed IRA. The selected IRA was documented in the *Record of Decision for an Interim Remedial Action at the Monticello Mill Tailings Site, Operable Unit III – Surface Water and Groundwater, Monticello, Utah* (DOE 1998e).

#### **4.4.1.6 Implement Interim Remedial Action**

An IRA was implemented to prevent exposure and control risks from ground water, to prevent further degradation of water quality, and to achieve significant risk reduction quickly. The IRA Work Plan was prepared to discuss the scope of IRA activities and was finalized in October 2000. Implementation of the IRA began and will continue until a long-term solution is finalized in the ROD. Installation of a PeRT wall downgradient of the Millsite was completed in

July 1999. Analytical results from performance monitoring wells located upgradient, within, and downgradient of the wall were evaluated in a report prepared in September 2002.

IRA Progress Reports (DOE 2000b and 2001c) were submitted in September 2000 and August 2001 to summarize progress made on completing the various IRA activities.

#### **4.4.1.7 Prepare Proposed Plan and ROD (Final Remedy)**

Determination of a remedy for surface-water and ground-water contamination will be based on an evaluation of alternatives in the post-Millsite remediation Focused FS. A Proposed Plan and ROD will be prepared and submitted to EPA and UDEQ. These will be made available for public review and comment. The Proposed Plan and ROD will establish performance goals for acceptable water quality and the time period within which these criteria must be met. Estimates on the time required for surface-water and ground-water cleanup will be based on numerical modeling projections and will be confirmed by field monitoring.

#### **4.4.1.8 Prepare Remedial Design/Remedial Action Work Plan or Confirmation Monitoring Plan**

If the selected remedy for OU III surface water and ground water is an active technology, an RD/RA Work Plan for the design and remedial action for restoration will be prepared to document the process that will be followed and the schedule for implementation. The content of the RD/RA Work Plan will follow available EPA guidance.

If the selected remedy for OU III is no further action or monitored natural attenuation, a surface-water and ground-water monitoring plan will be prepared that will detail the scope of the monitoring effort. The goal of monitoring is to provide the data necessary to demonstrate that the remediation objectives are being met within a reasonable time frame and consistent with the predictive ground-water modeling performed during the IRA and documented in the addendum to the RI report.

#### **4.4.1.9 Remedial Action Design**

A remedial action design will be prepared if the selected remedy for restoration of ground water and surface water is an active technology. DOE must prepare at least a conceptual and pre-final design. The content of these designs will follow the descriptions in Appendix B, "Definition of Design Submittal Content." As part of preparing the RD/RA Work Plan, DOE will provide a specific plan for implementing the design.

A remedial action design will not be necessary if Monitored Natural Attenuation With Institutional Control is selected as the remedy. Instead a surface-water and ground-water monitoring plan will be prepared that specifies the acceptable remediation time frame and the data and performance criteria (triggers) necessary to demonstrate that the remediation goals are being met.

#### **4.4.1.10 Procurement and Construction**

This will be implemented similar to the process described in Section 4.2.1, if required. The RD/RA Work Plan will provide specific details for implementing construction.

#### **4.4.1.11 Operation and Maintenance**

If the selected remedy for OU III involves operation and maintenance of a WWTP or some other active system developed for restoration of ground water and surface water, a plan for operation and maintenance will be developed. Development of an Operation and Maintenance Manual may also be required. Once a remedy is selected, the DOE will address the requirements for operation and maintenance in the RD/RA Work Plan.

#### **4.4.1.12 Interim Remedial Action Report**

Assuming that a Long-Term Response Action (LTRA) has been implemented for restoration of ground water and surface water, or verification monitoring, an interim RAR will be prepared (EPA 2000). See Section 4.5.1.6 for the content of an RAR and additional information on deletion of a site from the NPL.

### **4.4.2 Applicable or Relevant and Appropriate Requirements**

The RI/FS Work Plan (DOE 1995b) presented a preliminary evaluation of ARARs for OU III. The ARARs analysis has been updated annually and presented as part of the IRA Progress Report beginning in 2000. The Draft-Final RI Addendum/Focused FS evaluates compliance of each alternative for surface water and ground water with ARARs. The OU III ROD will establish the final ARARs for OU III.

### **4.4.3 Documents**

The draft-final OU III RI/FS Work Plan, Field Sampling Plan, and Quality Assurance Project Plan (QAPjP) were submitted to EPA and UDEQ in September 1995. EPA and UDEQ concurrence was not received on these documents; however, in accepting the final RI report (DOE 1998b), dispute over the planning documents has ended. The following documents have been or will be prepared for OU III and were described in Section 4.4.1.

- *Human Health and Ecological Risk Assessments*. Secondary documents.
- *Remedial Investigation Report*. Primary document.
- *Draft Pre-IRA Feasibility Study Report*. Primary document.
- *Interim Proposed Plan* for surface water and ground water. Primary document.
- *ROD for an Interim Remedial Action for Surface Water and Ground Water*. Primary document.
- *Interim Remedial Action Work Plan*. Primary document.
- *Interim Remedial Action Progress Reports*. Secondary documents.
- *Evaluation of PeRT Wall Treatability Study*. Secondary document.

- *RI Addendum/Focused Feasibility Study Report* for surface water and ground water. Primary document.
- *Proposed Plan* for surface water and ground water. Primary document.
- *ROD* for surface water and ground water. Primary document.
- *RD/RA Work Plan* for surface water and ground water. Primary Document.
- *Remedial Design* for surface water and ground water (if an active technology is selected as a remedy). Primary Document.
- *Interim RAR* for OU III, assuming a long-term response action has been implemented. Primary Document.

#### **4.4.4 Schedule and Funding**

The schedule for OU III has been developed so that a decision can be made on a preferred remedy as soon as reasonably achievable after Millsite remediation. As contamination was removed from the Millsite, the extent of residual soil contamination was characterized as part of the OU III IRA to understand its potential to be a continued source of ground-water contamination. Surface-water and ground-water concentrations have been monitored and show that concentration trends have stabilized. The RI Addendum/Focused FS are currently being finalized and the project is on track to meet the schedule for selection of a final remedy as established in Section 5.0.

The funding for completion of this project is shown in Appendix C. Costs shown in Appendix C through fiscal year 2002 are actual costs; costs beyond 2002 are projected costs.

FY 2004 funding is adequate for the scheduled activities. Funding has already been requested for FY 2005, which, if fully appropriated, will be adequate to fund the scheduled activities. DOE has developed a budget request for FY 2006. Funding in the out years, which, if fully appropriated, will be adequate to fund the scheduled activities.

### **4.5 Monticello Projects Tasks**

Several activities pertain to both MMTS and the MVP Site or several of the OUs. These activities are discussed below along with the documents that have been prepared in support of the activities.

#### **4.5.1 Task Descriptions**

Activities common to both the MMTS and the MVP Site or several of the OUs were completed in tasks. A description of the tasks completed is provided below.

##### **4.5.1.1 Community Relations Program**

The purpose of the community relations program for the combined MMTS and the MVP Site is to encourage public involvement in environmental restoration decision-making. The goal is to provide understandable, accurate, and timely information to interested parties during environmental cleanup activities. The program establishes a two-way communication between

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DOE and stakeholders and maximizes opportunities for public involvement. To support this communication, DOE had a full-time Site Engineer assigned to Monticello and the TAC had a full-time community relations person and owner relations person. There were also several DOE and TAC support staff at the GJO that support community relations activities. In April 2000, DOE established a LTS&M office with on-site personnel in Monticello, Utah. The LTS&M Representatives function as a point-of-contact, and will continue to encourage open relations between DOE and the public.

As discussed in Section 1.1.3, the SSAB was initially established to support the AA for OU I. The SSAB continued to provide input to DOE on such issues as land-use options for the restored Millsite and preference for hiring local residents and providing training for those people. With the conclusion of remediation on the Millsite, the peripheral properties, and the vicinity properties, the SSAB disbanded following the October 20, 1999 meeting. SSAB members remain on the Key Contacts List and receive distributions of any fact sheets or press releases concerning the MMTS and MVP Site.

All community relations activities are conducted in accordance with the following federal environmental laws and DOE and EPA guidance.

- 1990 NCP Section 300.415, Section 300.425, Section 300.430, Section 300.435, Section 300.815.
- CERCLA Sections 113; 117(a), (b), (c), (d), (e); 122 (d).
- U.S. Environmental Protection Agency, *Community Relations in Superfund: A Handbook*, January 1992 (EPA 1992).
- U.S. Department of Energy, *Public Participation in Environmental Restoration Activities Environmental Guidance*, November 1991 (DOE 1991).
- *Interim Report of the Federal Facilities Environmental Restoration Dialogue Committee, Recommendations for Improving the Federal Facilities Environmental Restoration and Decision-Making and Priority-Setting Processes*, February 1993 (EPA 1993b).
- U.S. Department of Energy, Policy DOE P 1210.1, Subject: Public Participation (DOE 1994).

The Community Relations Plan (CRP) (DOE 2001b) describes the activities that are being implemented to keep the community informed and involved in the project. Periodically, fact sheets are released describing current activities along with monthly news releases. Briefings are held for local officials and key business groups. Public meetings or public availability sessions are held on an as-required basis. Display advertisements are prepared to announce public meetings or applicable public comment periods on documents. A Utah Key Contacts List is maintained by GJO Public Affairs staff and is updated once every month and/or as information changes. The CRP was last updated in 2001.

In the past, DOE and TAC staff participated in community activities such as the San Juan County Fair and Pioneer Days and supported local educational programs by providing speakers for classroom presentations and community organizations. DOE has also established a toll free telephone number (1-877-695-5322) to connect Utah residents directly with DOE in Grand Junction, Colorado.

#### **4.5.1.2 Health and Safety Program**

Occupational safety is a paramount concern for activities on the Monticello Projects. Health and Safety staff prepare Health and Safety Plans (HASPs), Radiation Work Permits, and Safe Work Permits. Requirements for training, medical monitoring, site access, and personnel protective equipment are established by Health and Safety staff. Activity-specific requirements are determined based on a safety and health hazard analysis. Section 7.0, Worker Health and Safety Protection, describes the function of this program in more detail.

#### **4.5.1.3 Special Waste Management**

During the remediation of the Millsite and properties, hazardous substances other than by-product material required remediation (see task description for Characterization and Remediation of Hazardous Substances Other Than Radium-226 under Section 4.2.1). The IWMA was designated to store hazardous wastes, mixed wastes (RCRA hazardous wastes that are also radioactive), wastes regulated by the Toxic Substances Control Act, and wastes that pose an acute health and safety hazard. With the exception of polychlorinated biphenyl (PCB) waste, wastes stored at the IWMA were containerized and ultimately placed in the Repository. PCB waste stored at the IWMA was determined to be non-radioactive and was shipped offsite to a licensed treatment, storage, and disposal facility. The IWMA was operated in compliance with the requirements for a RCRA storage facility and was closed in accordance with the requirements of the Special Waste Management Plan (DOE 1997c).

Other wastes were also encountered that did not need to be stored at the IWMA but required special handling as a best management practice. These wastes presented low hazards, typically soils contaminated with waste oils. These wastes were placed in the Best Management Practice Area (BMPA) where containerization was not required. These wastes were placed on plastic in a bermed area and covered with plastic, as necessary, to prevent releases to the environment. The BMPA has been removed and materials stored there placed in the Repository.

#### **4.5.1.4 Supplemental Standards Activities**

Application of supplemental standards has been approved for properties containing vegetation that cannot be readily restored if destroyed or damaged, particularly piñon/juniper woodlands and wetlands along Montezuma Creek. In addition, supplemental standards have been applied to city streets and utilities in the City of Monticello, and the U.S. Highway 191 embankment and along U.S. Highway 666 because the cost of excavation is excessive compared to the benefits of remediation. The EPA and UDEQ approved supplemental standards on several OU II properties and properties in the MVP Site. As part of the requirements for implementation of supplemental standards, DOE has entered into binding agreements with the City of Monticello and UDOT for long-term management of contamination. In addition, DOE has implemented LTS&M activities at the sites to ensure that the use of the land remains limited and off-site migration of

contamination is detected and managed as appropriate. DOE will be working with the City of Monticello to ensure that utility excavations are monitored and, as appropriate, contamination moved to the TSF at the Repository access area for final disposal at the Grand Junction, Colorado disposal cell.

#### **4.5.1.5 Wetlands Protection and Restoration**

Although impacts to wetland areas were minimized as much as possible, CERCLA cleanup activities did affect some wetland areas. DOE ensured that (1) CERCLA cleanup activities complied with wetlands regulations and guidance; (2) adverse effects to wetland areas were avoided where possible; (3) adverse effects to wetland areas were minimized; and (4) unavoidable adverse effects to wetland areas have been or will be mitigated.

Wetland areas at the MMTS and MVP Site totaled 38 acres. Divided into wetland types, these areas included (1) perennial streams (functions typically include flood-flow alteration and medium wildlife and aquatic diversity); (2) intermittent streams (functions typically include flood-flow alteration, ground-water recharge, and low wildlife diversity); (3) emergent wetlands (functions typically include ground-water discharge and recharge, and low wildlife diversity); and (4) depressions (functions typically include ground-water recharge, sediment retention, and low wildlife diversity).

Of the 38 acres of wetland on the MMTS and the MVP Site, only 11.7 acres were remediated or affected by remedial activities. Affected wetland areas included perennial streams (5.7 acres), intermittent streams (1.0 acre), emergent wetlands (0.70 acres), and depressions (4.3 acres). Wetland areas have been or will be restored in situ where possible; otherwise, they have been re-created at the OU I Millsite. Mitigation has focused on the restoration of wetland functions and the areal extent of wetland type, the minimization of erosion, and the prevention of noxious and non-noxious weed encroachment. As much as possible, revegetation efforts have emphasized the use of ecotype seed.

DOE and the City of Monticello have entered into a Cooperative Agreement wherein the City of Monticello is responsible for and has completed restoration of the Millsite. The City of Monticello completed a restoration design for the Millsite, which includes construction of 6.3 acres of wetland areas. The restoration design was approved by EPA and UDEQ and requires successful establishment of a minimum of 4.7 acres of wetlands.

Monitoring at each restored wetland area was or will be initiated at the end of the growing season following restoration to allow mitigation success to be evaluated. Monitoring continues for 3 years or until the success criteria are met. Success criteria include restoration of 80 percent of the baseline canopy cover, 80 percent of the baseline shrub and tree density, and a combined frequency of obligate, facultative, and facultative wetland plants in proportions similar to those of the baseline. After the third year of monitoring, wetland delineations are conducted to verify restored acreage. Annual monitoring reports are submitted to EPA at the end of each calendar year.

#### **4.5.1.6 Deletion of the Sites from the National Priorities List**

Remedial action at the MVP Site is complete, and the Site has been deleted from the NPL. A Proposed Rule and a Direct Final Rule for the MVP Site was published in Federal Register on December 30, 1999. EPA did not receive significant adverse or critical comments and the Direct Final Ruling deleting the MVP Site from the NPL became effective on February 28, 2000. Remedial action for the MMTS is not complete. A partial deletion of the MMTS is scheduled for October 12, 2003. Non-ground-water related properties, identified in the footnotes of Table 5–3, will be deleted at this time.

Deletion of the MVP and MMTS from the NPL involves a specific documentation process. DOE will prepare a Property Completion Report for each property. The information in the Property Completion Reports along with other required information will be compiled into a RAR for each OU within each site. The RAR will reference the Property Completion Reports, and various verification sampling protocols under which the work was performed. The Property Completion Reports and RARs are available in the Administrative Record and the DOE–GJO project file archives.

The purpose of the RARs is to demonstrate that remedial action for each OU is complete in accordance with CERCLA. A punch list of outstanding items can be included, in the appendix of the RAR for each OU, to document action items to be completed prior to the approval of the Close-Out Report (COR). For OU II, properties not associated with ground-water concerns have been addressed by a RAR. The RAR for the OU II non-ground-water related properties serves as the COR to partially delete OU II from the NPL. A draft-final RAR has been prepared for OU I and the OU II ground-water related properties. Subsequently, a Preliminary Close-Out Report (PCOR) and COR will be prepared to delete OU I and the remainder of OU II from the NPL. Section 5.0 lists the OU II ground-water and non-ground-water related properties.

For OU III of the MMTS, an interim RAR will be prepared because the selected remedy for OU III will likely be a Long-Term Response Action (LTRA). For LTRAs, an interim RAR is prepared when the physical construction of the selected remedy is completed and the unit is operating as designed.

A PCOR will be prepared to document that all physical construction at the site has been completed. The PCOR contains a schedule for activities that must be completed prior to issuing a COR. The COR documents compliance with statutory requirements and provides overall technical justification for site completion. EPA, after consultation with UDEQ, will determine whether appropriate response actions have been implemented and whether any potential threat to public health or the environment remains. This determination may be indicated by documenting by memorandum that enforcement inspection has been performed and that EPA and UDEQ concur that the remedial action complies with construction specifications. If EPA determines, after consultation with UDEQ, that no further removal action is appropriate (i.e., all remedial goals have been met), EPA will initiate action to delete the OUs (or portions of an OU in the case of the peripheral properties) from the NPL, consistent with CERCLA, as amended, the NCP, and applicable EPA policy and guidance.

The COR is reviewed and comments provided by EPA Headquarters, UDEQ, and EPA Region VIII. DOE will incorporate these comments and the COR will be submitted to the EPA

Regional Administrator for approval. Approval of the COR by the Regional Administrator signifies the superfund NPL Site completion and that the site has entered the operation and maintenance phase. All punch list items must be complete at this time. Subsequent to the Regional Administrator's approval, DOE will assist EPA in preparing and publishing a NOID in the Federal Register and will compile deletion docket material. The NOID will be available for public review, and a responsiveness summary must be prepared addressing any comments received. Upon assembling all documentation in the Certification Docket, and receiving approval from the Regional Administrator, a Notice of Deletion will be published in the Federal Register.

If, at any step, EPA determines, after consultation with UDEQ, that the documentation is not sufficient to warrant deletion from the NPL, EPA shall notify DOE in writing and provide specific reasons for the determination. DOE shall take appropriate actions to correct any deficiencies noted and shall resubmit the documentation to EPA.

#### **4.5.1.7 Five-Year Reviews**

The NCP acknowledges that CERCLA cleanups may leave some contamination in place. Such instances must be part of a selected remedy by using CERCLA evaluation criteria (40 CFR 300.430[e-f]). However, EPA must review the protectiveness of that remedy at least every 5 years after remedial action begins (40 CFR 300.430 [(f)(4)(ii)]) (EPA 1991). Five-year reviews do not end with deletion of a site from the NPL but continue until contaminant levels allow unlimited use and unrestricted exposure at that site (55 FR 8699 1990) or until EPA determines that they are no longer necessary. DOE will prepare the CERCLA five-year review that will be submitted to EPA and UDEQ for evaluation. If, at a later date, the regulators determine that the completed remedial action is no longer protective of human health or the environment under CERCLA, DOE is responsible for developing and implementing a Contingency Plan for remediating the contamination or otherwise controlling the risk that it poses. Furthermore, DOE is responsible for documenting its activities under the Contingency Plan and reporting them to EPA, UDEQ, affected local governments, and the public.

Except for the Repository and areas where supplemental standards are applied, contamination exceeding risk-based cleanup levels or radium-226 in excess of cleanup standards in 40 CFR 192 does not remain on the Millsite, peripheral properties, or vicinity properties. Five-year reviews will need to be conducted at the on-site Repository and any areas where supplemental standards are applied. The first five-year reviews were issued February 13, 1997. The most recent five-year review was completed in August 2002. The next five-year review will be completed in August 2007.

#### **4.5.2 Documents**

All documents associated with Monticello Projects are accessible at the Monticello Information Repository. Several of the major documents associated with Monticello Projects and which are currently relevant are described below.

- *Community Relations Plan* (DOE 1996b): The CRP for the MMTS has been updated each year since the SMP was first completed in March 1995. The CRP is intended to be a "living" document that will be updated to reflect major new issues, activities, and milestones during the course of all work to be performed at Monticello. DOE has committed to updating this

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plan the first quarter of each FY. The 2000-2001 issue of the CRP is a transitional document and is the last issue in that format. Henceforth, information will primarily be disseminated to stakeholders through the issuance of fact sheets and community relations updates in the form of news releases.

- *Monticello Projects Health and Safety Plan* (DOE 1997b): This primary document was submitted to EPA and UDEQ in April 1995 and was updated in 1997 and 1998. The content of this plan is discussed in Section 7.0 of the SMP. Task Specific HASPs are appended to the HASP as additional detail is added to the HASP for new activities.
- *Monticello Wetlands Master Plan* (DOE 1996c): The Wetlands Master Plan, a primary document, establishes the overall plan for protecting MMTS and MVP Site wetland areas during the remedial process. Provided in the Wetlands Master Plan are mitigation plans for disturbed wetland areas at OU II, the MVP Site, and OU III, which have all been implemented. An addendum to the Wetlands Master Plan was prepared to address restoration requirements for OU I. This addendum was submitted with the Pre-Final design for Millsite Restoration.
- *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2002a), The LTS&M administrative manual is a primary document that establishes activities that will be conducted at the Monticello Repository and former Millsite. This manual is a general document that references LTS&M operating procedures for the Monticello site mill tailings Repository, the former millsite, and supplemental standards properties. The operating procedures have been finalized and are a subset of the administrative manual.

## **5.0 Project Schedules and Milestones (FY 2008–2010)**

### **5.1 Establishing Project Schedules and Milestones**

As stated in Section 1.1.2, the SMP establishes the overall plan for remedial actions at the MMTS and milestones against which progress can be measured. The SMP also documents the overall plan for remedial actions at the MVP Site, which was deleted from the NPL on February 28, 2000. The SMP was first prepared in 1995 and was revised annually from 1998 through fiscal year (FY) 2003. As of FY 2004 (October 1, 2003, through September 30, 2004), only Section 5.0 of the SMP, “Project Schedules and Milestones,” is updated yearly (in September) to reflect revised schedules agreed to by DOE, EPA, and UDEQ. The current update of Section 5.0 of the SMP contains project schedules and milestones for FYs 2008 through 2010. The stipulated penalty milestones listed in this section are the enforceable milestones unless superseded by revised schedules agreed to by DOE, EPA, and UDEQ, or by amendments to the FFA.

#### **5.1.1 Requirements of the Federal Facilities Agreement**

Section XXX of the FFA states that “... [a]ll terms and conditions of this Agreement which relate to interim or final remedial actions, including corresponding timetables, deadlines, or schedules ... shall be enforceable.” The FFA required DOE to submit a Work Plan establishing how DOE would complete the tasks required by the FFA and specific timetables and schedule for completion of remedial action. The FFA Work Plan was completed May 1989 and established the enforceable timetable for completion of primary documents identified in the FFA and completion of remedial action.

The scope of work, timetables, and schedule for remedial action presented in the FFA Work Plan were superseded by the RDWP (DOE 1992b). The RDWP was identified as a primary document and was submitted as a final document in January 1992. The RDWP established a revised timetable with specific stipulated penalty milestones. The stipulated penalty milestones were associated with submittal of primary design documents that would be generated as part of the remedial design and notice of award to subcontractors for remedial action work.

The timetable in the RDWP was superseded by the timetables established in the 1995 version of the SMP. DOE, EPA, and UDEQ concurrence on the SMP has been the basis for establishing new enforceable milestones and nonenforceable target dates for all activities extending through completion of the Monticello Projects. The SMP is a primary document and, per the FFA, the corresponding timetables, deadlines, or schedules are enforceable.

#### **5.1.2 Enforceable Milestones and Nonenforceable Target Dates**

DOE, with EPA and UDEQ concurrence, has developed a 3-year (FY + 2 year) rolling milestone approach for establishing a schedule for completing remedial action activities at the Monticello NPL Sites. Under this approach, schedule dates are designated as either “milestones” or “target dates.” Milestones and target dates are established in consideration of the site’s environmental budget allocation. Milestones are enforceable deadlines established for near-term (FY + 2) activities for which greater fiscal and technical certainty exists. Target dates are nonenforceable

deadlines for longer-term activities (greater than FY + 2) and may be converted to milestones on an annual basis. Target dates may also be established in the FY + 2 time frame and beyond for completion of activities leading to stipulated penalty milestones. Each year, after receipt of the Approved Funding Program that reflects the final Congressional appropriation for the current FY, existing milestones are reviewed and adjusted if necessary. An additional year of milestones (FY + 2) are also established, adjusting the previous target dates if necessary. Enforceable milestones and nonenforceable target dates for the Monticello Projects are described in Table 5-1 and Table 5-2, respectively. Enforceable milestones are identified for those activities in FYs 2008, 2009, and 2010 for which stipulated penalties may be assessed against DOE. The penalty date for the respective document listed in Table 5-1 is defined as the date the document is received by EPA and UDEQ. As work on the projects progresses, additional documents may be submitted. Additional documents will be identified in the FFA quarterly report as soon as it is determined that they are required. Previous milestone and targets leading to the current project status are listed in Table 5-2 and Table 5-3 of Section 5.0 of previous SMPs.

Under DOE's rolling milestone approach, DOE, EPA, and UDEQ consider a variety of factors during the annual review and establishment of milestones and target dates. These include funding availability, latest information on cost estimates, site priorities identified through consultations between DOE, EPA, UDEQ, and stakeholders, new or emerging technologies, and other relevant factors. A renegotiation of milestones may occur in the event of insufficient Congressional appropriations. Out-year nonenforceable target dates are established using realistic assumptions. DOE, EPA, and UDEQ recognize the uncertainties associated with the long-term target dates that lay out DOE's strategic vision of how it ultimately plans to accomplish the project. Furthermore, DOE provides the regulatory agencies and other stakeholders with an opportunity to assist in formulating the site budget and developing priorities at the site. Beginning in September 2004, DOE, EPA, and UDEQ concurrence on updates to Section 5.0, "Project Schedules and Milestones," became the basis for establishing new enforceable milestones and nonenforceable target dates.

EPA and UDEQ agree to meet with DOE on an annual basis to renegotiate the milestones and target dates established in the SMP. The enforceable milestones described in Table 5-1 for those activities in the current FY (2008) and the two subsequent FYs (2009 and 2010) may only be modified as part of this renegotiation or through the already existing procedures of the FFA. Further, EPA and UDEQ reserve the right to initiate any action deemed necessary to enforce these milestones. DOE, EPA, and UDEQ agree to abide by the existing procedure for resolution of disputes (Section XIV Resolution of Disputes, Monticello FFA [DOE 1988b]) and will make all reasonable efforts to informally resolve any disputes involving insufficient funding before invoking formal Dispute Procedures.

## **5.2 Site Status**

Remedial actions at the Monticello NPL sites have been completed in accordance with the RODs for the corresponding operable units. The remedial actions are protective of current and anticipated land use; however, they do not allow for unlimited use and unrestricted exposure in all areas. This is because contamination remains in the on-site repository, in the soil at other locations where supplemental standards were applied, and in ground water and surface water. To ensure that the remedies remain fully protective of human health and the environment, a program of long-term surveillance and maintenance (LTS&M) activities was initiated in October 2001.

The LTS&M program is currently implemented under the DOE Office of Legacy Management. LTS&M activities at the Monticello NPL sites comprise periodic surveillance and inspection of affected properties, operation and maintenance of the on-site repository, institutional controls to restrict land and ground water use, ground water and surface water monitoring, and the appropriate documentation and reporting.

In addition to routine (weekly, monthly, and quarterly) inspection and surveillance, annual site inspections and CERCLA 5-year reviews are conducted as on-going evaluations of remedy effectiveness. The most recent 5-year review of the MVP and MMTS, finalized in June 2007, concluded that the remedy for all OUs of the MVP remained protective of human health and the environment. The review of the MMTS concluded that the remedy for all OUs remained protective of human health and the environment, except that the remedy for OU III was not fully protective of the environment because of possible excess risk to ecological receptors from recent redistribution of selenium in surface water and sediment. Follow-up activities to address this issue are on-going (see Section 5.3.4). The next CERCLA 5-year reviews are due in 2012.

### **5.3 Long-Term Surveillance and Maintenance**

Revision 0 of the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* was issued June 20, 2007. This document supersedes the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (September 2005) and associated Volumes I to IV. The *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* directs all routine surveillance, maintenance, and monitoring activities conducted by DOE at the MVP and MMTS to ensure that the selected remedies remain protective of human health and the environment. The following subsections describe the status of the various components of the MVP and MMTS as addressed under the current scope of LTS&M.

#### **5.3.1 Millsite Remediation and Restoration**

Soil contamination removal activities were concluded at the former millsite in July 1999. DOE transferred ownership of the former millsite property and several adjacent (“peripheral properties”) to the City of Monticello in June 2000. Under the terms of the transfer agreement (Cooperative Agreement DE-FC01-00GJ79485), post remediation restoration activities were to be completed by the City of Monticello according to the millsite restoration design plan; restoration activities were completed by the City in fall 2001. The associated wetland areas were fully restored by 2004; however, during annual site inspections through 2004, DOE, EPA, and UDEQ identified several restoration deficiencies that were related mainly to erosion and drainage control.

DOE and the City agreed to jointly correct the deficiencies under a separate plan dated February 24, 2005. DOE completed its activities under the plan by mid-September 2005; however, the City had not. DOE then corrected the remaining deficiencies by September 30, 2005, as documented in the 2005 annual inspection report (December 2005). With only minor exception, the restored condition of the millsite and adjacent properties was found to be acceptable in the annual inspections conducted in 2006 and 2007. Having resolved the erosion control issues, DOE will submit Property Certification Letters to the City of Monticello in FY 2008 for the transferred millsite properties (property numbers MS-00893 and MP-00181).

DOE continues to monitor the millsite for compliance with institutional controls that place restrictions on use of that property and to ensure that the remedy remains protective.

### **5.3.2 Repository**

Revegetation of the repository cover was completed in 2000. Successful long-term performance of the cover depends in part on the health and diversity of the vegetation. The cover has been and will be monitored yearly (in September, independent of the annual site inspection) until success criteria in *Methodology for Determining Revegetation Success at the Monticello, Utah, Repository* (DOE 2002) are met.

Recent damage to desirable vegetation on the repository cover was determined to be caused by a temporary infestation of burrowing rodents (voles). Six raptor perches were erected by DOE in August 2007 to encourage predation on rodents and moderate the magnitude of future vole infestations. Planting of live rabbit brush seedlings in damaged areas of the repository cover is scheduled for the last 2 weeks of September 2007. DOE, in consultation with EPA and UDEQ, will consider winter grazing by livestock on an as-needed basis following establishment of the new shrubs.

During repository construction, a drainage lysimeter was imbedded in a 7-acre facet of the Monticello cover in partnership with EPA's Alternative Cover Assessment Program. The lysimeter consists of physical barriers to capture and direct flow of water, and instrumentation to monitor the soil water balance. Continued monitoring of the lysimeter indicates that infiltration of precipitation through the vegetated cover is negligible. DOE and EPA are currently collaborating on studies of the Monticello cover to provide information for projecting long-term performance of vegetated covers. The latest effort (July 2007) characterized soil morphology, soil hydrology, plant ecology, and soil hydraulic properties. Preliminary results suggest the rapid development of soil structure from the original constructed condition.

The repository leachate monitoring system was upgraded in August 2007 with new water level sensors, pump controls, and data transmitting equipment ("telemetry system"). The telemetry system was integrated into the DOE SOARS (System Operation and Analysis at Remote Sites) System for data management and real-time desktop viewing of monitoring data such as water levels in the collection sumps and sump pumping history.

### **5.3.3 Monticello Mill Tailings Site Operable Unit II—Peripheral Properties**

Completion reports, RARs, and closeout documentation have been completed for the remediation of contaminated soil and sediment on all OU II peripheral properties. Twenty-two of the OU II peripheral properties without contaminated surface water or ground water were deleted from the NPL on October 14, 2003. Twelve of the OU II peripheral properties impacted by contaminated ground water cannot be deleted from the NPL until surface water and ground water remediation goals are met.

DOE will submit Property Certification Letters to the City of Monticello in FY 2008 for peripheral properties owned by the City (properties MP-00391 and MP-01077). DOE continues to perform long-term surveillance of the OU II peripheral properties to ensure protectiveness of the implemented remedies.

### **5.3.4 Monticello Mill Tailings Site Operable Unit III—Surface Water and Ground Water**

On June 2, 2004, the final remedy for MMTS OU III was selected and documented in the *Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface Water and Ground Water, Monticello, Utah* (ROD). The ROD was prepared following the submittal of *Remedial Investigation Addendum/Focused Feasibility Study, Final*, January 2004, as a basis for OU III remedy selection. That document updated human health and ecological risk assessments, and updated conceptual and numerical models of ground water flow and contaminant transport from the 1998 remedial investigation and feasibility study. Ground water restoration was predicted to be complete within about 42 years as of October 2002 (by the year 2045).

The selected remedy for OU III consists of:

- Monitored natural attenuation, including comprehensive monitoring to evaluate its effectiveness in achieving restoration goals for all contaminants of concern by 2045. Specifically included as part of monitored natural attenuation is an evaluation of selenium concentration trends and the potential impacts of selenium concentrations on ecological receptors.
- Continued implementation and enforcement of the institutional controls that restrict use of the contaminated shallow alluvial aquifer and the restrictive easement that prohibits removal of contaminated sediments from the Montezuma Creek floodplain.
- Removal of the permeable reactive barrier (PRB), which was constructed as a full-scale treatability study during the Interim Remedial Action, when the PRB ceases to be effective in removing contaminants from the ground water or when ground water mounding became excessive.
- Biomonitoring to assess the potential impact of selenium to ecological receptors at wetlands in OU III.

These activities will be continued until the remediation goals are met. If the selected remedy does not remain protective of human health and the environment or results of the monitoring program do not indicate that the remediation goals can be achieved within 42 years, contingency remedies will be evaluated and will be implemented if determined necessary.

All of the construction requirements listed in the Remedial Design/Remedial Action work plan necessary to complete the surface water and ground water monitoring system for OU III have been completed. A draft-final Post-Record of Decision Monitoring Plan was submitted to EPA and UDEQ on August 27, 2004. Data continues to be collected in support of this plan to evaluate the progress of water quality restoration by natural attenuation and whether selenium levels in environmental media could cause adverse effects on ecological receptors. Annual reports are prepared to present and evaluate the monitoring data.

The PRB was installed as a treatability study in 1999 under the interim remedial action ROD for OU III (August 1998) to evaluate passive ground water treatment technology. Excessive ground water mounding caused by decreased flow through the PRB was addressed by the installation of an active ex situ treatment system components in 2005 and 2007. The PRB and auxiliary system are not required components of the OU III remedy but are instead operated as a treatability study of zero-valent iron treatment technology.

## **Water Quality Restoration**

Analysis of ground water monitoring data indicates that water quality restoration at present rates is not attainable within the 42-year period predicted by the OU III ground water model. This restoration period was adopted in the OU III ROD as the acceptable or expected time period for natural attenuation to site remediation goals. The ROD specified the method by which the water quality data would initially be analyzed. An additional specification of the ROD was the application of a to-be-determined alternate method to evaluate concentration trends if ground water restoration progress by the initial method was determined to be not acceptable. Application of a second method, using formal trend analysis, provided similar results to those of the initial method, as documented in *MMTS OU III Analysis of Uranium Trends in Ground Water*, August 2007. Although the OU III remedy remains protective of human health because the ground water ingestion pathway is incomplete, DOE will develop an alternate compliance strategy on the basis that the 42-year restoration period is not attainable. The finalized strategy, with EPA and UDEQ concurrence, will be prepared as a stand-alone document. Institutional controls implemented under OU III continue to prevent the use of contaminated water for domestic purposes. The alluvial aquifer is not productive, has no historical use, and drinking water from other sources is readily available.

## **Biomonitoring**

The biomonitoring component of the OU III ROD provides that data collection and analysis be continued since 2004 until sufficient information allows a protectiveness determination regarding potential risk to ecological receptors from selenium in surface water and sediment. The present biomonitoring strategy through the next 5-year CERCLA review period, as adopted from the April 2007 FFA meeting is: 1) DOE will conduct aquatic insect sampling, and sediment and surface water sampling, in spring 2007 and spring 2008, 2) DOE will conduct a bird survey in spring 2008 by personnel qualified in the identification of threatened and endangered species, 3) if threatened and endangered species are absent and selenium concentration in the various media are not rising, environmental risk will be considered acceptable and biomonitoring may be discontinued, 4) if T&E species are absent and selenium concentration in the various media are increasing, bird egg sampling may be required to confirm that environmental risk is acceptable, 5) The Biological Technical Assistance Group (BTAG) may consider confirmatory sediment and surface water sampling as part of the 5-year review process, and 6) a new strategy will be developed in consultation with the BTAG if a T&E species is present and is at risk from selenium accumulation in aquatic macroinvertebrates.

### **5.3.5 Monticello Vicinity Properties Site Operable Units A Through H**

Remediation of the MVP site was completed on September 30, 1999. The direct and final rule to delete the MVP site from the NPL became effective February 28, 2000. DOE continues to perform long-term management of certain MVPs through annual inspections, enforcement of institutional controls, and monitoring. The affected properties are the city streets and utility corridors in Monticello and private property MS-00176 where contamination was left in place and supplemental standards were applied.

### **5.3.6 Long-Term Decommissioning Activities**

Components of the MMTS infrastructure that require eventual decommissioning are the (1) PRB and ex situ treatment system, (2) Pond 4 (leachate evaporation pond), (3) OU III monitoring wells, and (4) the water diversion flap of the drainage lysimeter embedded in the cover of the disposal cell. Decommissioning of these features will occur separately when determined to be obsolete by DOE, EPA, and UDEQ.

Eventual decommissioning the PRB and ex situ treatment system is contingent upon several factors, including treatment effectiveness and the long-term ground water compliance strategy. A work plan will be developed at such time as decommissioning these systems is determined as necessary. Decommissioning of Pond 4 is contingent upon the rate of leachate production from the disposal cell. Design calculations estimated drainage from the cell for up to 20 years from the time of final waste encapsulation in 1999. The current rate of leachate production is about 15-thousand gallons per month. As the rate decreases significantly, a strategy for decommissioning Pond 4 and managing any liquid by other means will be developed.

Ground water monitoring for OU III will be conducted until water quality has attained acceptable levels. Monitoring wells will be decommissioned when the water quality objectives are met throughout the affected aquifer. Monitoring well decommissioning may also occur in a phased approach as separate regions of the aquifer meet remediation goals.

To facilitate improved understanding of the performance of water balance covers, and the Monticello disposal cell cover in particular, a 7.5-acre facet of the Monticello disposal cell cover was constructed to collect and measure moisture that infiltrates the vegetated soil layers to the immediately underlying synthetic liner. This portion of the cover serves as a very large-scale drainage lysimeter. Water flows on the liner to a collection sump and measurement device. Capture of the drainage water is aided on the downslope (east) side of the facet by a synthetic flap that is glue welded to the liner. Ongoing maintenance and monitoring requirements of this system are minimal. In the event that the associated piping becomes plugged, a response action will be required to prevent possible saturation of the overlying soil layers. This condition could destabilize the cover or cause leakage into the underlying waste (mill tailings). The eventual strategy to decommission the lysimeter will include the provision to breach the flap to thus prevent possible saturation of the soil cover.

## **5.4 Milestones and Target Dates**

Enforceable milestones applicable to the MVP and MMTS for the current rolling milestone period FYs 2008, 2009, and 2010 are listed in Table 5-1. Table 5-2 lists significant target activities within the current CERCLA 5-year review period and beyond. Table 5-3 and Table 5-4 list recent activities/documents leading to the OU III remedy status.

Detailed listings of milestone and target date activities and documents related to the selection, implementation, and documentation of the remedies for the MVP and MMTS were included as Table 5-2 and Table 5-3 in Site Management Plan revisions prior to the FY 2006 submittal. With the completion and documentation of remedial actions for the affected properties, many of which have been deleted from the NPL, and with the transition of the MVP and MMTS to the DOE Office of Legacy Management for LTS&M, the respective tables of historical activities and documentation have been discontinued, excepting OU III, as obsolete in the annual revisions to the SMP. Continued listing of recent OU III activities/documents is provided because investigation of certain components of the OU III remedy (biomonitoring, ground water compliance) is ongoing and the restoration objectives for water quality have yet to be achieved.

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*Table 5-1. Penalty Milestones in Fiscal Years 2008, 2009, and 2010*

<b>Milestones</b>	<b>Stipulated Penalty Dates</b>
Revised Section 5.0 of Site Management Plan (draft-final)	September 30, 2008
Revised Section 5.0 of Site Management Plan (draft-final)	September 30, 2009
Revised Section 5.0 of Site Management Plan (draft-final)	September 30, 2010
2007 Annual Inspection Report (draft-final)	December 31, 2007
2008 Annual Inspection Report (draft-final)	December 31, 2008
2009 Annual Inspection Report (draft-final)	December 31, 2009

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*Table 5–2. MMTS and MVP Targets for CERCLA Five-year Review Period and Beyond*

<b>Activity/Document</b>	<b>Purpose</b>	<b>Target Date/Scope</b>
Annual water-quality monitoring	Sampling and analysis to evaluate contaminant levels in OU III surface water and ground water	October and April each year
Annual Ground Water Report	Evaluate water-quality restoration progress	September each year
Biomonitoring and Reporting	Sampling and analysis to evaluate selenium levels in abiotic and biotic media at OU III wetlands	Spring 2008 sediment, surface water, aquatic insect sampling and analysis Spring 2008 bird survey
Biomonitoring Report	Evaluate selenium accumulation trends in biotic and abiotic media and assess potential risk to ecological receptors	FY 2008 and annually through termination of biomonitoring
Ground Water Compliance Position Paper	Develop alternate compliance strategy in response to less than expected rates of ground water restoration	FY 2008
Implement Compliance strategy		Through next CERCLA review in 2012
Repository Vegetation Monitoring	Quantitative comparison of cover vegetation to numeric criteria	August–September FY 2008 and 2009 Report due December 2008 and 2009.
Repository Vegetation Success Criteria	Re-assess numeric success criteria for repository cover	FY 2008 and 2009
Obtain Surface Water Discharge Permit	Failsafe discharge of treatment system effluent while active treatment is in progress	FY 2008
Fourth CERCLA 5-year review	Evaluate site-wide protectiveness of the MVP and MMTS remedies	FY 2012
FFA meeting	Review status, goals, issues, and recent accomplishments  Identify issues/needed actions  Develop scope and schedule of planned activities	April and October each year
FFA quarterly report	Short term summary of current scope, status, and schedule of ongoing and planned activities	10th of January, April, July, and October
Decommission PRB and Treatment System	Systems may become ineffective or unnecessary	Out-year date to be determined
Decommission Pond 4	Leachate production may become insignificant	Out-year date to be determined
Decommission lysimeter flap	Prevent possible saturation of cover soil	Out-year date to be determined
Decommission OU III monitoring wells	Site restoration as wells become obsolete	Out-year date(s) to be determined
Delete OU II ground water impacted properties	Remove affected properties from NPL	Out-year date to be determined upon ground water compliance strategy
Delete OU III	Remove from NPL	Out-year date to be determined upon ground water compliance strategy

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Table 5–3. OU III Guiding Documents

Document	Milestone
<b>Remedial Investigation (Pre-IRA)</b>	
MMTS OU III Remedial Investigation	September 1998
<b>Surface Water/Ground Water Interim Remedial Action</b>	
Draft-Final Interim Remedial Action Proposed Plan	March 16, 1998
DOE sign Interim Record of Decision	August 25, 1998
Draft-Final Interim Remedial Action Work Plan	October 30, 2000
<b>Remedial Investigation/Focused Feasibility Study (Post-IRA)</b>	
Draft-Final Evaluation of PeRT Wall Treatability Study	September 30, 2002
Remedial Investigation Addendum/Focused Feasibility Study, Draft-Final	September 2, 2003
<b>Surface Water/Ground Water Decision Documents</b>	
Draft-Final Proposed Plan	November 3, 2003
Record of Decision	June 2, 2004
<b>LTS&amp;M and Monitoring</b>	
Draft-Final Post-Record of Decision Monitoring Plan	August 27, 2004
Draft-Final LSTM Administrative Manual and LSTM Operating Procedures Volume III <sup>a</sup> (OU III Operating Procedures)	September 6, 2005
Complete Millsite Restoration Construction Activities <sup>b</sup>	September 30, 2005
Draft Consolidated LSTM Administrative Manual and Operating Procedures <sup>a</sup>	May 4, 2006
LTS&M Plan for the Monticello NPL Sites	Revision 0 issued June 20, 2007
MMTS OU III Analysis of Uranium Trends in Ground Water	August 16, 2007
<b>Operable Unit Completion</b>	
Draft-Final Interim RAR <sup>c</sup>	September 30, 2004
<b>CERCLA Reviews</b>	
Third Five-Year Review Report for Monticello Mill Tailings (USDOE) Site, City of Monticello, San Juan County, Utah	June 12, 2007

<sup>a</sup>Superseded by *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites*.

<sup>b</sup>Completion of MMTS restoration construction activities documented in *2005 Annual Inspection of the Monticello Mill Tailings (USDOE) and Monticello Radioactively Contaminated Properties Sites*, December 2005.

<sup>c</sup>For LTRAs, an interim RAR is prepared when the physical construction of the system is complete and the unit is operating as designed (EPA 2000). The RAR is amended and completed when the LTRA cleanup standards specified in the ROD are achieved.

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Table 5-4. MMTS OU III Program Directives

<b>Program Directive Number</b>	<b>Description</b>
MSG-04-01	Sampling and Analysis Plan for Baseline Sediment and Surface Water Samples
MSG-04-02	Total Dissolved Solids Analysis at five surface water and five ground water locations
MSG-05-01	Wildlife Surveys
MSG-05-02	Renewal of MSG-04-02
MSG-05-03	Macroinvertebrate Sampling and Analysis Plan
MSG-05-04	Total Dissolved Solids Analysis at five surface water and five ground water locations
MSG-06-01	Sediment and surface water sampling in wetlands and sediment retention pond
MSG-06-02	Waterfowl survey in wetlands and sediment retention pond
MSG-06-03	Macroinvertebrate sampling and analysis

## **6.0 Long-Term Surveillance and Maintenance Program**

### **6.1 Long-Term Surveillance and Maintenance Program**

DOE–GJO was designated as the DOE program office for “disposal site long-term surveillance and maintenance” on January 1, 1989 (DOE 1988a). In response to this designation, DOE–GJO established the LTS&M Program to carry out its assigned responsibilities. The assignment of this responsibility to the GJO has since been reconfirmed on three occasions (DOE 1992a, DOE 1996a, and DOE 1998g).

The mission of the LTS&M Program is to assume long-term custody of all completed DOE remedial action project disposal sites, as well as other sites assigned, and to establish a common office for the operation, security, surveillance, monitoring, and maintenance of these sites. Should a disposal site suffer severe damage or a catastrophic failure, DOE is responsible for undertaking any necessary corrective action.

Currently the program is responsible for annual surveillance and maintenance of more than 30 sites assigned to DOE under Titles I and II of the Uranium Mill Tailings Radiation Control Act, and Section 151 of the Nuclear Waste Policy Act, as appropriate. Additional sites will be assigned in the out-years as remedial actions are completed.

DOE will need to perform LTS&M at the Monticello sites because contaminants will be left in place at the OU I Repository and supplemental standards properties, in city streets and utility corridors, U.S. Highways 191 and 666 rights-of-way, and the U.S. Highway 191 embankment. LTS&M will also be required to monitor restoration of wetlands. OU III will have LTS&M requirements as well; however, these will not be initiated until after the ROD is completed.

DOE transferred OU I of the MMTS, supplemental standards properties, and wetlands monitoring to the LTS&M Program on October 1, 2001. The Monticello LTS&M Administrative Manual has been developed to implement inspections, monitoring, and maintenance of the MVP and MMTS and to meet CERCLA requirements.

DOE established the Office of Legacy Management to focus on the long-term care of legacy liabilities of former nuclear weapons production sites following environmental clean-up. The office is responsible for sites that have been closed and are no longer supporting DOE’s on-going missions. Sites transferred to LM include Office of Environmental Management closure sites, Uranium Mill Tailings Radiation Control Act sites, and Formerly Utilized Sites Remedial Action Program sites where remediation is complete. The LTS&M Program, which includes the Monticello sites, was transferred to the jurisdiction of LM on October 1, 2003.

### **6.2 Long-Term Surveillance and Maintenance Process**

#### **6.2.1 Inspections**

The objectives of the site inspection are to report on the condition of the site, note any changes or modifications, and identify potential problems. The inspection detects and documents progressive changes over several years as a result of slow-acting processes. Inspections typically

include monitoring of all engineered features such as the disposal cell cover, drainage channels, vegetation, LDS, and LCRS to assure that the site remedy is functioning as designed. Inspection requirements, including wetlands monitoring, have been specified in the site LTS&M plans for the required sites and will be performed as necessary. Inspections will be conducted in accordance with the schedule set forth in the LTS&M plans and procedures. Inspection reports will be prepared following each inspection. Inspection reports will also be summarized in the CERCLA five-year reviews.

### **6.2.2 Custodial Maintenance**

Performance of routine maintenance will be completed, as necessary, to prevent development of significant maintenance problems and in response to acts of vandalism. Some examples of maintenance or repair that will be performed at the Monticello sites follow.

- Planned maintenance: Repository weed control, maintenance of access roads, sumps, ponds, wells, and security systems.
- Unscheduled maintenance: removal of animal burrows on the disposal cell, removal of deep-rooted or other unwanted vegetation.
- Repair: sign replacement, fence repairs, minor erosion mitigation.
- Replanting or reseeding where planned vegetation has not been successful.
- Pond 4: monitoring of conditions (i.e., full, intact), disposal of contents as necessary, as well as eventual decommissioning.

### **6.2.3 Corrective Action**

Corrective actions are nonroutine actions taken to address specific, nonconforming conditions that may lead to significant environmental or public health impacts if not addressed. Corrective actions will be developed as the nature and extent of the problems are defined. The *Final Monticello Remedial Action Project Repository and Pond 4 Groundwater Contingency Plan* (DOE 1998d) establishes some preliminary contingency actions if certain performance criteria are exceeded.

The need and scope of a corrective action is determined by the cause and magnitude of the problem, the immediate threat to the public or the environment, and the need to comply with the standards. The site inspectors evaluate the problem and prepare a report with recommendations for the next step (e.g., immediate action or continued evaluation) based on the requirements of the Contingency Plan. After EPA and UDEQ review the report and its recommendations, DOE will prepare a corrective action plan and submit it to the regulators. Corrective action begins after the regulators have concurred with the plan.

Three examples of conditions which may trigger corrective action are as follows:

**1. During repair of primary and secondary liner in Pond 4, damage to third liner is discovered.**

*Corrective Action:*

- Notify EPA/UDEQ.
- Collect soil samples at 6-in. increments for a total depth of 5 ft and test for contaminants found in pond LDS leachate.
- After soil sample analysis is complete and it is determined that no contaminants are found in the soil above background concentrations, repair primary, secondary, and tertiary liners as required. Test all repair seams.
- Resume operations.
- Evaluate need to modify Corrective Action Plan based on information gathered during repairs.

**2. Leachate is pumped from Pond 4 LDS sump.**

*Corrective Action:*

- Notify EPA/UDEQ.
- Inspect exposed liner around perimeter and at potential points of short circuiting.
- Evaluate appropriateness of conducting intrusive investigation based on depth of tailing fill present. Perform intrusive investigation if appropriate.
- Subcontractor repairs damaged areas as necessary.
- Subcontractor begins daily review of LDS depth data and calculates/records daily leakage rate.

**3. Failure of institutional controls.**

*Corrective Action:*

- Notify EPA/UDEQ.
- Negotiate with entity violating institutional control.
- If necessary, pursue legal action.

Contingency actions have also been developed for the supplemental standards properties and identified in the LTS&M plans and procedures. Additional contingency actions have been developed for OU I addressing the other aspects of Repository performance and have been submitted in the LTS&M plans package to EPA and UDEQ for regulatory concurrence.

#### **6.2.4 Personnel Health and Safety**

All LTS&M activities will be performed in accordance with the Monticello LTS&M Project Safety Plan (DOE 2001a) to minimize risks to workers. This project safety plan (PSP) addresses safety and health procedures and practices for work that is anticipated to be conducted at the Monticello sites. In addition to anticipated work, the PSP addresses Job Safety Analysis and Safe Work Permit procedures that may be used to safely conduct work that has not already been addressed in the PSP.

### **6.3 Long-Term Surveillance and Maintenance Plan**

DOE has prepared and EPA and UDEQ have concurred with the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2002a) for the Monticello sites. The manual is a compendium of plans, procedures, and documents that implement the overall LTS&M requirements associated with the MMTS and MVP Site. This manual brings together information and cites the more specific references that define the LTS&M tasks for post-closure care at the various Monticello Millsite related remedial actions.

The administrative manual provides a general overview of the activities required ensuring long-term effectiveness of the remedial actions and provides procedures that are common to all aspects of the LTS&M Program. LTS&M Operating Procedures are a subset of the administrative manual and are designed for implementation by the LTS&M Program. LTS&M Operating Procedures include the following volumes:

- Volume I—*Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (DOE 2002b).
- Volume II—*Long-Term Surveillance and Maintenance Operating Procedures for Supplemental Standards Properties* (DOE 2002c).
- Volume III—*Long-Term Surveillance and Maintenance Operating Procedures for Monticello Surface and Ground Water*. This document will not be written until the OU III Record of Decision is finalized in 2004.
- Volume IV—*Monticello Long-Term Surveillance and Maintenance Operating Procedures for Annual Inspections and CERCLA Five-Year Reviews* (DOE 2002d).

## **7.0 Worker Health and Safety Protection**

Protection of worker health and safety is critical to planning and execution of the Monticello Projects. Compliance with worker health and safety requirements will be achieved through detailed planning, effective project management, and self-assessment.

The Stoller Occupational Safety and Health program is derived from the requirements of 29 CFR 1910, 29 CFR 1926, 10 CFR 835, and a variety of DOE Orders. It complies with all Occupational Safety and Health Administration and DOE requirements.

The *Grand Junction Office Health and Safety Standards* (GJO 2001) and the *Grand Junction Office Site Radiological Control Manual* (GJO 2002b) present the detailed policies, procedures and other requirements applicable to the work performed by Stoller. Health and safety hazard analysis is used to evaluate the known and potential site health and safety hazards from available data. The analysis also qualitatively evaluates the risks from potential work exposures for identified tasks to estimate the significance of the exposure. The degree of protection that must be provided is determined by the types and severity of potential exposures. The worker protection requirements are developed on the basis of the hazard analysis, and control measures are assigned according to the applicable industrial safety, radiation protection, or industrial hygiene requirements. HASPs identify appropriate engineering and administrative controls, including measures to mitigate temperature extremes, training requirements, exposure monitoring, and site controls.

Remedial activities were conducted in accordance with the *Monticello Projects Health and Safety Plan* (DOE 1997b). This plan and the associated task and site-specific HASPs cover the tasks implemented on the Monticello Projects. Appendix A to the *Monticello Projects Health and Safety Plan* (DOE 1997b) defines the model task and site-specific HASP. The Monticello Site Safety Coordinator assigned to the Monticello Projects was responsible for completing each task and site-specific HASP, with the assistance and input of the responsible Project Manager, before the scope of work addressed by the HASP was started. In addition, the HASP aided in coordinating activities with applicable Radiation Work Permits and Safe Work Permits. Upon completion of the Repository cover in 1999, the HASP was superceded by the *Monticello Project Safety Plan* (DOE 1999h).

Remaining restoration work at the Millsite was conducted in accordance with the City of Monticello's restoration subcontractor's HASP. Since remediation was completed at the Monticello sites and the sites have been transitioned from construction to LTS&M activities, work is conducted under the *Monticello LTS&M Project Safety Plan* (DOE 2001a). This plan specifies procedures to be used for all LTS&M activities and identifies the Site Safety Supervisor responsible for overseeing the work activities performed by the TAC Contractor employees, subcontractors and vendors. The Site Safety Supervisor serves as the point-of-contact for health and safety issues and communication and ensures that all LTS&M work is conducted in compliance with project health and safety requirements.

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## **8.0 Quality Assurance Management**

Monticello Program and Project management is committed to establishing, maintaining, and implementing an effective QA program that achieves quality in all activities through planning, performing, assessing, and continually improving the process. The work performed must comply with the requirements of the GJO QA Program.

Work is accomplished through the resources of people, equipment, and procedures. All management is responsible for ensuring people have the information, resources, and support necessary to complete the work in a safe, efficient, and quality manner. The achievement of quality is an interdisciplinary function led by management and is the responsibility of all personnel.

The GJO QA Program, documented in the *Grand Junction Office Quality Assurance Manual* (GJO 2002a), is used as the basis for planning, performing, and documenting project QA activities and construction activities at Monticello. Specific QA activities and program elements are implemented in accordance with the overall QA program requirements, and as planned and scheduled with the Monticello Program Manager.

DOE-ID and its Contractors are required to have QA programs that use a graded approach to meet the requirements of 10 CFR 830.120 and DOE Order 5700.6C. The GJO QA Program, documented in the *Grand Junction Office Quality Assurance Manual* (GJO 2002a), has been accepted by DOE as meeting this requirement. Additionally, the GJO QA Program is designed to adopt and implement the requirements of ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (ANSI/ASQC 1995).

The QA Manager, a contractor employee, is assigned to assist Program/Project management in defining QA program requirements and providing oversight to Contractor personnel in the implementation of the requirements. A *Monticello Projects Quality Assurance Program Plan* (QAPP) (DOE 1998f) was prepared and implemented to define the applicable QA requirements, in a graded manner, and to meet the following project QA objectives.

- To implement the applicable requirements of the QA program as defined in the *Grand Junction Office Quality Assurance Manual* (GJO 2002a) and tailored to the project in QA program and project plans.
- To ensure applicable quality requirements are adequately addressed in the appropriate project documents (e.g., plans, procedures, procurement documents, design documents).
- To implement a quality program that addresses (1) management systems, (2) collection and evaluation of environmental data, and (3) the design, construction, and operation of engineered environmental systems.
- To apply a graded approach to QA requirements that will achieve project goals in an efficient, cost-effective, safe, and productive manner.

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The QA Consultant maintains the QAPP and develops and maintains subordinate QAPjPs when required. Changes to project tasks require a review of the QA program to ensure the specified requirements are maintained current to project activities. QA planning documents that have been prepared for the Monticello Projects include:

- *Monticello Projects Quality Assurance Program Plan* (DOE 1998f)
- *Construction Quality Assurance Plan for the Monticello Remedial Action Project, Operable Unit I, Millsite Remediation* (DOE 1995a)
- “Quality Assurance Project Plan for the Monticello Long-Term Surveillance and Maintenance Project” (Appendix A of the *Monticello Long-Term Surveillance and Maintenance Administrative Manual*) (DOE 2002a)

## **9.0 Acquisition Strategy**

Stoller performs subcontracting for the Monticello Projects in accordance with procurement policies, procedures, and provisions of its prime contract. Approved terms and conditions are used for all subcontracts that incorporate the required flow-down clauses from the Federal Acquisition Regulations and DOE Acquisition Regulations.

In the awarding of subcontracts, Stoller gives consideration to qualified small businesses, minority (disadvantaged) businesses, women-owned businesses, and labor surplus areas to the maximum extent practicable. Procurements may be completed through a small business set-aside or open competition depending on the nature of the project and the anticipated competition.

Stoller develops solicitations after receipt of a fully approved engineering package. The package normally includes a properly executed purchase requisition, in-house estimate, design drawings, statement of work, general construction specifications, terms and conditions, bid form, and wage determination. The solicitation is mailed to all potential bidders, followed by a bid tour of the project. Award is made on the basis of the criteria specified in the solicitation after appropriate approvals by Stoller management and DOE personnel, if required. Subsequent changes to existing subcontracts are negotiated and approved in accordance with current procedures.

The subcontracts for construction are generally awarded on the basis of sealed bids. However, procurement by negotiation may be used when evaluation of technical proposals is required or there are other appropriate reasons to procure through negotiation.

The successful bidder is issued a subcontract incorporating all requirements of the solicitation. The subcontractor is responsible for performing in accordance with the defined performance period and a schedule accepted by Stoller. Performance is monitored daily by Construction Management personnel who document field conditions, construction progress, and proposed changes to the drawings. The procurement representative approves the change and directs the subcontractor to perform.

The procurement representative is responsible for all administrative duties related to the purchase order or subcontract, including maintaining adequate files, tracking deliverables, negotiating modifications, authorizing payments, and closing out the file. All contact with companies for prices, suspensions of work, cure notices, or other administrative items are handled through the procurement representative.

Purchase requisitions of \$2,500 or less generally require that only one company be contacted. Most of these orders are placed on the procurement representative's knowledge that the price is fair and reasonable. For requisitions of more than \$2,500, the procurement representative will make a diligent effort to obtain competitive bids from two or more sources. If situations do not allow competition because of special circumstances, the file will be documented as such in accordance with sole-source procurement procedures.

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## **10.0 Project Control Systems**

The TAC provides management and technical baseline control by means of a formal Project Management and Control System (PMCS) that effectively integrates the technical, schedule, and cost baselines. Earned Value Management (EVM) is the core of the PMCS and incorporates best business practices into project/task order planning and control. EVM is applied cost effectively through the tailored approach, at the appropriate level of detail for the degree of technical, schedule, and cost risk associated with the project. The PMCS is a proven process for controlling Technical Baselines.

The TAC PMCS meets the requirements of DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*, and the American National Standard Institute/Electronic Industries Alliance (ANSI/EIA-748-1998), *Earned Value Management Systems*.

The three major elements of the PMCS are: (1) Baseline Development, (2) Project/Task Order Performance, and (3) Baseline Change Control.

The baseline development process divides the task order effort into logical sequential tasks and applies available resources to meet project objectives. During this process, the technical (project work scope), schedule, and cost baselines are established and integrated. The TAC emphasizes up front quality planning to ensure the parameters required to control the technical baseline are effective.

Formal project controls for funds management, accounting, work authorization, performance analysis, and reporting ensure completion of the technical work scope in a cost-efficient and timely manner. Systematic project reporting provides technical, schedule, and cost baseline status at the appropriate level of the work breakdown structure (WBS). The earned value status reports provide, at a minimum, the following information: narrative status, analysis of significant cost and schedule variances including corrective actions and revised estimate-at-completions, issues and resolutions, DOE Formats 1 and 3 Cost Performance Reports, project schedule, performance trend chart, and baseline change log.

Baseline change control (BCC) provides the formal process to manage changes to the Project's technical baseline. The key purpose of the BCC process is to maintain the integrity and tractability of the project baselines. Only DOE approved changes will be incorporated into the baseline.

The TAC combines advanced planning, baseline control, and earned value management to provide an integrated tailored approach to project management. The integration of cost estimating, scheduling, accounting, procurement, and project control software provides for the cost effective use of resources and improves timeliness of the task order/project reporting process.

The TAC PMCS is also the cornerstone for Life-Cycle Project Planning, Budgeting, and Reporting. The PMCS will be integrated by WBS with the DOE Integrated Planning, Accounting, and Budgeting System, Project Baseline Summary, and Project Execution Module to ensure accurate and timely flow of DOE-HQ required project status.

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**Appendix A**

**List of Included Properties by NPL Site and Operable Unit**

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**MVP Operable Unit A Properties**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00012	380 Abajo Dr	06/08/84
MS-00014	165 N 1st West	01/27/84
MS-00016	65 S 2nd West	03/01/89
MS-00022	216 Uranium Dr	10/14/88
MS-00025	516 Circle Dr	03/01/89
MS-00028	197 Lower Uranium Dr	10/14/88
MS-00030	564 Circle Dr	03/01/89
MS-00031	96 W 2nd North St	02/21/91
MS-00040	280 S Main St	03/01/89
MS-00041	280 S Main St	11/01/84
MS-00042	296 S Main St	02/25/85
MS-00043	296 S Main St	06/08/84
MS-00048	470 S Main St	03/01/89
MS-00049	480 S Main St	06/08/84
MS-00050	496 S Main St	01/27/84
MS-00053	64 E 5th North St	03/01/89
MS-00054	132 E 5th North St	03/01/89
MS-00055	432 North Main St	10/14/88
MS-00059	181 South Main St	06/08/84
MS-00062	316 South 1st East St	10/14/88
MS-00068	449 South Main St	03/01/89
MS-00069	96 East 4th South St	06/08/84
MS-00071	464 South 1st East St	06/08/84
MS-00072	493 South Main St	03/01/89
MS-00073	65 East 5th South St	01/27/84
MS-00074	87 East 5th South St	01/27/84
MS-00075	16 East 5th South St	01/27/84
MS-00076	98 East 5th South	01/27/84
MS-00079	181 East 1st South St	03/01/89
MS-00083	196 East 3rd South	01/27/84

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00084	384 South 2nd East	01/27/84
MS-00085	396 S 2nd East St	01/27/84
MS-00086	164 East 4th South	01/27/84
MS-00087	148 East 4th South St	01/27/84
MS-00088	433 S 1st East	01/27/84
MS-00091	265 E 1st South St	11/01/84
MS-00092	273 E 1st South St	06/08/84
MS-00093	80 South 3rd East	06/08/84
MS-00094	281 East 1st South St	06/08/84
MS-00096	196 S Third East St	03/01/81
MS-00097	217 South 2nd East	06/08/84
MS-00099	280 South 3rd St	06/08/84
MS-00100	333 South 2nd East	06/08/84
MS-00101	389 South 2nd East	01/27/84
MS-00102	417 South 2nd East	06/08/84
MS-00103	433 South 2nd East	06/08/84
MS-00104	449 South 2nd East	06/08/84
MS-00114	225 S 2nd East St	10/09/85
MS-00124	301 Silverstone West Ln	09/25/89
MS-00126	548 Circle Dr	03/01/89
MS-00130	76 W 3rd South St	03/01/89
MS-00133	217 & 233 South 3rd East	01/27/84
MS-00134	216 South 3rd East	06/08/84
MS-00135	196 South 2nd East St	11/01/84
MS-00136	EG & G AREA 6	06/08/84
MS-00137	600 North Main St	03/01/89
MS-00138	281 East 3rd South	06/08/84
MS-00139	365 South 2nd East	06/08/84
MS-00140	381 East 3rd South	11/01/84
MS-00141	393 East 3rd South	11/01/84
MS-00143	544 E 3rd South St	06/08/84
MS-00145	600 Clay Hill Dr	06/08/84

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00147	180 E 4th South St	06/08/84
MS-00148	464 South 2nd East St	09/05/85
MS-00150	416 South Main St	06/08/84
MS-00151	149 W 3rd South St	03/01/89
MS-00152	Cedar Ln (Lot 76)	04/21/94
MS-00153	87 E 5th South St	05/22/87
MS-00154	435 S Main St	05/22/87
MS-00155	S Hwy 191, M-634	05/22/87
MS-00156	64 E 4th South	05/22/87
MS-00157	45 S 2nd East St	05/22/87
MS-00159	149 S 2nd East	05/22/87
MS-00161	249 East 2nd South	05/22/87
MS-00162	217 & 249 E 3rd South	05/22/87
MS-00163	264 E Center	05/22/87
MS-00164	64 S 3rd East	05/22/87
MS-00166	365 E 3rd South St	05/22/87
MS-00167	564 East 3rd South St	05/22/87
MS-00168	397 East 3rd South	05/22/87
MS-00170	S Hwy 191	05/22/87
MS-00171	433 South Main St	03/01/89
MS-00174	465 South 1st East St	10/07/88
MS-00183	81 East 3rd South St	09/25/89
MS-00184	South Main St	09/25/89
MS-00185	South 2nd East St	09/25/89
MS-00186	249 South 2nd East St	09/25/89
MS-00187	165 East 4th South	09/25/89
MS-00188	397 South 1st East	09/25/89
MS-00189	164 East 3rd South	09/25/89
MS-00191	165 South 2nd East	09/25/89
MS-00192	226 East 1st South	09/25/89
MS-00193	264 East 1st South	09/25/89
MS-00194	280 East 1st South St	09/25/89

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00195	East 3rd South St	09/25/89
MS-00196	265 South 3rd East St	09/25/89
MS-00197	249 B South 3rd East St	09/25/89
MS-00200	262 East Center St	09/25/89
MS-00201	381 South 1st East St	09/25/89
MS-00202	394 South 1st East St	09/25/89
MS-00203	397 South 1st East St	09/25/89
MS-00204	365 South 1st East St	09/25/89
MS-00209	216 East 1st South St	09/25/89
MS-00897	453 S Main St	07/21/94

**MVP Operable Unit B Properties**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00004	32 Blue Mountain Dr	08/30/91
MS-00009	465 Oak Crest Dr	02/02/93
MS-00018	180 W 3rd South St	11/05/90
MS-00024	480 S 1st West St	04/03/90
MS-00029	450 S 200 West St	01/23/91
MS-00034	49 S 100 West St	06/19/90
MS-00037	180 S Main St	02/14/94
MS-00038	16 W 200 South St	06/19/90
MS-00044	364 S Main St	01/31/91
MS-00045	80 W 4th South St	01/23/91
MS-00064	333 S Main St	12/07/92
MS-00070	432 S 1st East St	01/25/90
MS-00080	80 S 2nd East St	08/02/94
MS-00081	197 E 2nd South St	05/30/90
MS-00082	197 E 3rd South St	07/25/90
MS-00089	164 E First North St	02/26/90
MS-00098	248 S 3rd East St	06/19/90
MS-00106	332 E Center	06/19/90
MS-00107	249 A S 3rd East St	12/07/92
MS-00110	317 Meadowlark Ln	05/12/92
MS-00128	516 S Main St	05/30/90
MS-00132	97 N 2nd West St	01/25/90
MS-00146	US Hwy 191/N E Inter S Main	12/05/89
MS-00149	448 S Main St	06/19/90
MS-00158	65 S Second East St	07/25/90
MS-00182	596 South Eldredge Ln	02/26/90
MS-00199	264 East 2nd South St	07/25/90
MS-00206	349 South 2nd West	11/26/90
MS-00207	East 5th North St	01/25/90
MS-00212	300 East 4th South St	01/25/90

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00213	East 1st North St	01/25/90
MS-00217	216 East 1st North St	01/25/90
MS-00219	117 East 1st South St	08/23/91
MS-00220	32 East Center St	10/10/91
MS-00221	164 South 1st West St	08/02/94
MS-00222	196 South 1st West St	08/02/94
MS-00224	148 East Center	01/25/90
MS-00225	196 South Main St	07/25/90
MS-00226	197 South 3rd East St	12/09/91
MS-00227	145 West 2nd South St	01/14/92
MS-00230	265 South Main St	01/25/90
MS-00234	195 East 1st North St	11/02/93
MS-00235	31 Circle Dr	01/25/90
MS-00238	116 East 3rd South St	01/25/90
MS-00239	549 South Main St	02/26/90
MS-00241	664 East Center St	01/25/90
MS-00242	664 East Center St	01/25/90
MS-00243	South 3rd East St	12/09/91
MS-00244	181 South 3rd East St	12/09/91
MS-00245	South 3rd East St	12/09/91
MS-00246	133 South 3rd East St	12/09/91
MS-00247	17 South 3rd East St	12/31/91
MS-00248	US Hwy 666	07/01/92
MS-00250	US Hwy 666	07/01/92
MS-00251	US Hwy 666	07/01/92
MS-00261	197 East Center St	02/02/93
MS-00267	17 North 1st East St	11/26/90
MS-00270	West 1st North St	04/03/90
MS-00274	216 West Center St	05/30/90
MS-00282	64 N 3rd West St	04/03/90
MS-00283	65 N 200 West	11/26/90
MS-00289	64 B South 2nd West St	11/05/90

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00293	233 West Center St	11/26/90
MS-00301	West 3rd South St	11/26/90
MS-00304	333 Abajo Dr	06/18/91
MS-00308	216 South 2nd West St	11/28/90
MS-00313	W 3rd South & W 4th South	08/20/92
MS-00315	248 Uranium Dr	12/11/90
MS-00316	364 South 2nd West St	08/20/92
MS-00318	316 Uranium Dr	01/23/91
MS-00322	48 Meadowlark Ln	12/31/91
MS-00323	Meadowlark Subdivision	12/31/91
MS-00326	49 West 4th South St	09/12/91
MS-00329	164 Uranium Dr	12/11/90
MS-00336	416 South 1st West St	02/26/91
MS-00345	380 South Main St	06/19/90
MS-00347	81 West 3rd South St	02/21/91
MS-00351	65 East 4th South St	05/02/91
MS-00352	396 South 1st East St	05/02/91
MS-00356	48 East 3rd South St	05/02/91
MS-00357	332 South 1st East St	05/02/91
MS-00359	148 East 3rd South St	11/29/93
MS-00360	132 East 3rd South St	11/29/93
MS-00361	349 & 333 South 1st East St	05/24/91
MS-00363	248 South 2nd East St	03/27/91
MS-00364	264 South 2nd East St	06/19/90
MS-00365	297 South 1st East St	03/27/91
MS-00367	233 & 249 South 1st East St	03/27/91
MS-00368	217 South 1st East St	03/27/91
MS-00369	180 East 2nd South St	03/27/91
MS-00370	164 East 2nd South St	03/27/91
MS-00375	254 South 1st East St	05/02/91
MS-00382	80 West 3rd South St	06/18/91
MS-00384	65 West 2nd South St	01/31/91

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00394	264 South 1st West St	06/18/91
MS-00396	196 West 3rd South St	04/03/90
MS-00397	181 West 2nd South St	02/21/91
MS-00398	253 South 2nd West St	06/18/91
MS-00399	231 South 2nd West St	05/24/91
MS-00405	180 West 2nd South St	01/31/91
MS-00411	48 West 2nd South St	11/26/90
MS-00413	181 South First West St	11/02/93
MS-00414	96 West 2nd South St	06/18/91
MS-00415	64 West 2nd South	03/07/94
MS-00424	49 W 1st South St	02/26/91
MS-00426	165 South Main St	05/24/91
MS-00427	165 East 2nd South St	06/18/91
MS-00428	164 South 2nd East St	06/18/91
MS-00429	117 East 2nd South St	06/18/91
MS-00430	133 East 2nd South St	06/18/91
MS-00437	132 S 3rd East St	01/31/92
MS-00438	97 S 2nd East St	04/03/91
MS-00439	249 E 1st South St	09/22/93
MS-00442	S 2nd East St	08/23/91
MS-00443	165 E 1st South St	08/23/91
MS-00444	S 200 East St	08/23/91
MS-00445	149 E 1st South St	08/23/91
MS-00446	164 E Center St	08/23/91
MS-00447	61 E 1st South St	10/10/91
MS-00449	97 E 1st South St	10/10/91
MS-00456	80 E Center St	10/10/91
MS-00459	64 E Center St	10/10/91
MS-00462	132 Uranium Dr	02/21/91
MS-00464	147 W 1st N St	08/20/92
MS-00476	48 S 1st West St	04/03/90
MS-00489	S 2nd West St	08/20/92

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00499	416 W Center St	09/22/93
MS-00512	196 W 1st St	01/31/91
MS-00513	180 W 1st South St	01/31/91
MS-00515	17 S 2nd West St	08/27/91
MS-00517	16 S 1st West St	08/27/91
MS-00520	W 1st North St	02/26/91
MS-00523	164 W Center St	01/31/91
MS-00524	49 N 1st West St	06/18/91
MS-00529	116 N 1st West St	01/31/91
MS-00534	164 N 100 West St	06/19/90
MS-00535	117 N 1st West St	01/31/91
MS-00563	248 W 1st N St	05/12/92
MS-00566	N 2nd W St	08/30/91
MS-00578	281 Blue Mountain Dr	06/18/91
MS-00585	33 Blue Mountain Dr	08/27/91
MS-00588	264 Mountain View Dr	02/14/94
MS-00622	533 Circle Dr	03/05/92
MS-00623	565 Circle Dr	05/24/91
MS-00656	South 3rd East St	12/31/91
MS-00657	South 3rd East St	12/31/91
MS-00658	81 Meadowlark Ln	12/31/91
MS-00659	80 Meadowlark Ln	12/31/91
MS-00662	381 1st S Meadowlark Ln	12/09/91
MS-00663	97 Meadowlark Ln	12/09/91
MS-00664	316 1st S Meadowlark Ln	12/09/91
MS-00665	364 1st S Meadowlark Ln	12/09/91
MS-00668	Meadowlark Ln	01/31/92
MS-00669	Meadowlark Ln	01/31/92
MS-00689	Meadowlark Ln	12/31/91
MS-00690	Meadowlark Ln	12/31/91
MS-00691	Meadowlark Ln	12/09/91
MS-00692	Meadowlark Ln	12/09/91

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00693	Meadowlark Ln	12/09/91
MS-00694	Meadowlark Ln	12/09/91
MS-00695	1st S Meadowlark Ln	12/09/91
MS-00696	1st S Meadowlark Ln	12/09/91
MS-00697	1st S Meadowlark Ln	12/09/91
MS-00698	1st S Meadowlark Ln	12/09/91
MS-00699	1st S Meadowlark Ln	12/09/91
MS-00700	1st S Meadowlark Ln	12/09/91
MS-00701	1st S Meadowlark Ln	12/09/91
MS-00702	1st S Meadowlark Ln	12/09/91
MS-00703	1st S Meadowlark Ln	12/09/91
MS-00704	1st S Meadowlark Ln	12/09/91
MS-00705	1st S Meadowlark Ln	12/09/91
MS-00706	1st S Meadowlark Ln	01/07/92
MS-00707	1st S Meadowlark Ln	01/07/92
MS-00708	1st S Meadowlark Ln	01/07/92
MS-00709	1st S Meadowlark Ln	01/07/92
MS-00710	1st S Meadowlark Ln	01/07/92
MS-00711	1st S Meadowlark Ln	01/07/92
MS-00712	1st S Meadowlark Ln	01/07/92
MS-00713	Meadowlark Ln	01/07/92
MS-00714	Meadowlark Ln	01/07/92
MS-00715	Meadowlark Ln	01/07/92
MS-00716	Meadowlark Ln	01/07/92
MS-00717	Meadowlark Ln	01/07/92
MS-00718	Meadowlark Ln	01/07/92
MS-00719	Meadowlark Ln	01/07/92
MS-00721	Meadowlark Ln	01/31/92
MS-00722	Meadowlark Ln	01/31/92
MS-00723	Meadowlark Subdivision	12/31/91
MS-00726	N Main St	08/30/91
MS-00738	696 N Main St	08/30/91

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<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00742	E 6th N St	08/30/91
MS-00743	81 E 6th North St	01/14/92
MS-00747	E 5th North St	02/21/91
MS-00748	550 N Main St	02/21/91
MS-00749	264 N 2nd W St	08/27/91
MS-00756	364 W 1st N St	06/18/91
MS-00758	97 N 4th W St	08/30/91
MS-00782	97 E 5th North St	02/21/91
MS-00799	N Main St	08/30/91
MS-00800	348 N Main St	09/12/91
MS-00802	416 N Main St	09/12/91
MS-00806	480 N Main St	06/18/91
MS-00826	164 S 2nd West St	01/31/91
MS-00831	432 W Center St	02/26/91
MS-00844	180 Uranium Dr	09/12/91
MS-00848	301 Silverstone W St	01/23/91
MS-00861	349 Abajo Dr	08/27/91
MS-00862	A33230364202	09/12/91
MS-00867	Uranium Dr	08/30/91
MS-00876	265 Lower Uranium Dr	02/21/91
MS-00877	249 Lower Uranium Dr	02/26/91
MS-00879	A33230364814	03/05/92
MS-00883	549 S Main St	03/05/92
MS-00884	S Main St	06/18/91
MS-00891	South Hwy 191	01/14/92
MS-00923	Near Hwy 191	09/12/91
MS-00936	E Hwy 666	09/12/91
MS-00946	E Hwy 666	08/30/91
MS-00952	E Hwy 666	11/02/93
MS-00956	E Hwy 666	01/31/92
MS-00958	E Hwy 666	03/05/92
MS-00962	549 S Main St	01/31/91

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00969	E Hwy 666	10/10/91
MS-00973	E Hwy 666	09/12/91
MS-00981	South 14th East St	02/21/91
MS-00986	Monticello 84355 (also 33523E323600)	01/08/92
MS-00992	E Hwy 666	03/05/92
MS-00999	S Hwy 191	02/11/92
MS-01001	E Hwy 666	03/05/92
MS-01002	33S24E324801	09/12/91
MS-01037	S Hwy 191	03/05/92
MS-01039	S Hwy 191	01/31/92
MS-01058	717 Abajo Dr	02/02/93
MS-01061	264 E 2nd South St	07/25/90
MS-01063	N Main St (also A33230254806)	09/12/91
MS-01064	N Main St	02/11/92
MS-01069	S Hwy 191	03/05/92
MS-01070	549 S Main St	03/05/92
MS-01071	East Center St	05/12/92
MS-01072	549 S Main St	01/07/94
MS-01073	381 S 1st West St	01/25/90
MS-01076	1057 N Main St	11/02/93
MS-01079	49 W Fourth St	02/14/94

**MVP Operable Unit C Properties**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00002	248 Silverstone West Ln	11/06/92
MS-00013	381 Abajo Dr	11/06/92
MS-00020	220 & 222 W 4th South St	11/06/92
MS-00039	248 S Main St	03/05/92
MS-00115	332 North Creek Lane	07/10/90
MS-00117	North Creek Ln -A00170000070	11/06/92
MS-00125	401 Silverstone West Ln	11/06/92
MS-00127	549 Circle Dr	11/06/92
MS-00144	516 E 3rd South St	01/25/90
MS-00169	417 North Creek Ln	11/06/92
MS-00218	33 North Main St	04/03/90
MS-00233	96 West 4th South St	01/25/90
MS-00266	80 North 1st East St	11/06/92
MS-00271	17 North Main St	11/06/92
MS-00275	49 N 2nd West	04/03/90
MS-00281	96 N 3rd West St	07/25/90
MS-00284	249 W 1st North St	02/21/91
MS-00325	481 South 1st West St	11/06/92
MS-00328	417 South 1st West St	02/21/91
MS-00330	181 West 4th South St	03/05/92
MS-00338	396 South 1st West St	11/06/92
MS-00419	154 South Main St	08/05/92
MS-00425	33 W 1st South St	02/21/91
MS-00451	N Creek Ln (Lot #3)	07/25/90
MS-00475	32 N 2nd West St	11/06/92
MS-00482	564 Oak Crest Dr	11/06/92
MS-00551	249 N 1st W St	01/23/91
MS-00600	32 Park View Dr	11/06/92
MS-00608	265 Cedar Ln	11/06/92
MS-00620	596 Circle Dr	01/31/91

**UNCONTROLLED IF PRINTED**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00624	N Creek Ln	11/06/92
MS-00750	248 N 2nd W St	08/30/91
MS-00768	E Hwy 666	08/20/92
MS-00917	E Hwy 666	11/06/92

### **MVP Operable Unit D Properties**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00111	539 E Center St	05/30/90
MS-00112	665 E Center St	06/19/90
MS-00685	1149 N Main St	02/21/91
MS-00688	1149 N Main St	02/21/91
MS-00910	697 E Center St	06/18/91
MS-00959	1280 E Center St	10/10/91

### **MVP Operable Unit E Properties**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00175	578 South Eldredge Ln	10/07/88
MS-00177	562 Eldredge Ln	10/07/88
MS-00970	E Hwy 666	09/12/91
MS-00971	E Hwy 666	09/12/91
MS-00972	E Hwy 666	01/14/92
MS-00977	E Hwy 666	11/02/98
MS-00987	33524E323601	01/31/92
MS-00989	E Hwy 666	11/02/98
MS-01006	E Hwy 666	09/12/91
MS-01065	E Hwy 666	11/02/98
MS-01078	Southern Sec. Pinto Power Sta	11/29/93

### **MVP Operable Unit F Properties**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00051	533 S Main St	06/08/84
MS-00078	96 N 1st East St	10/14/88
MS-00108	395 E 3rd South St	06/08/84
MS-00116	349 North Creek Ln	11/06/92
MS-00205	1117 East Clay Hill Dr	01/25/90
MS-00314	348 South 2nd West St	11/06/92
MS-00344	48 West 4th South St	08/02/93
MS-00433	145 South 1st East St	06/18/91
MS-00858	449 Silverstone E Ln	11/06/92
MS-00859	449 Silverstone East Ln	11/06/92

**MVP Operable Unit G Properties**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00410	116 S 1st West St	08/25/95
MS-00686	1149 N Main St	08/25/95
MS-00918	E Hwy 666	01/12/96
MS-01103	Wooded Way	12/16/98
MS-01082	280 S Main St	03/01/89
MS-81050	South Hwy 191	11/01/96
MS-81086	South Hwy 191	11/26/96
MS-81088	North Hwy 191	05/16/97
MS-81094	North Hwy 191	11/26/96
MS-81095	East Hwy 666	11/01/96
MS-81097	North Hwy 191	11/26/96

**MVP Operable Unit H Properties**

<b>DOE ID</b>	<b>Street</b>	<b>Inclusion Date</b>
MS-00176	South Eldredge Ln	10/07/88
MS-00892	US Hwy 191	11/15/93
MS-00895	US Hwy 191	11/15/93
MS-01020	US Hwy 191	08/02/94
MS-01021	US Hwy 191	09/12/91

## **MMTS Operable Unit II Properties**

**DOE ID**

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MP-00105

MP-00178

MP-00179<sup>a</sup>

MP-00180

MP-00181<sup>a</sup>

MP-00198

MP-00211

MP-00391<sup>a</sup>

MP-00845

MP-00886

MP-00887

MP-00888

MP-00947

MP-00948

MP-00949

MP-00950

MP-00951<sup>a</sup>

MP-00963

MP-00964

MP-00988

MP-00990<sup>a</sup>

MG-01026<sup>a</sup>

MG-01027<sup>a</sup>

MG-01029<sup>a</sup>

MG-01030<sup>a</sup>

MG-01033<sup>a</sup>

MP-01040

MP-01041

MP-01042

MP-01077<sup>a</sup>

MP-01080

MP-01081

MP-01083

MP-01084<sup>a</sup>

MP-01102

<sup>a</sup>Properties that will be included in the OU I RAR (Millsite peripheral properties). All other properties will be included in an OU II RAR and will be deleted separately from the NPL.

## **Properties Where Supplemental Standards Are Applied**

<b>DOE ID</b>	<b>Operable Unit</b>
MP-00391	MMTS OU II
MP-01077	MMTS OU II
MP-01041	MMTS OU II
MP-00951	MMTS OU II
MP-00990	MMTS OU II
MP-01084	MMTS OU II
MG-01026	MMTS OU II
MG-01027	MMTS OU II
MG-01029	MMTS OU II
MG-01030	MMTS OU II
MG-01033	MMTS OU II
MS-00176	MVP OU H

## **MMTS Operable Unit III Properties**

### **DOE ID**

MP-00179  
MP-00181  
MP-00391  
MS-00893  
(Millsite)  
MP-00951<sup>a</sup>  
MP-00990<sup>a</sup>  
MG-01026<sup>a</sup>  
MG-01027<sup>a</sup>  
MG-01029<sup>a</sup>  
MG-01030<sup>a</sup>  
MG-01033<sup>a</sup>  
MP-01077  
MP-01084<sup>a</sup>

<sup>a</sup> Soil and sediment component will be closed out under OU I and OU II  
Ground-Water Related Properties

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## **Appendix B**

### **Definition of Design Submittal Content**

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## **Appendix B**

### **Definition of Design Submittal Content**

The following proposed definitions of design content are different from the definitions of design documents provided in association with the RDWP (DOE 1992b). The changes pertain to the limited extent of the design report that will be prepared. Design reports will now be focused towards an evaluation of compliance with ARARs.

#### **Conceptual Design (30 Percent Design)**

Conceptual design submittals will focus on major design concepts and the ability of the concepts to achieve compliance with the ARARs in question. Conceptual submittals will contain the following components:

##### **Design Drawings:**

Drawings will show only the site plan layout and design concept (e.g., schematics) of major components of the project that are necessary to indicate how ARAR compliance will be achieved. Sizing and dimensions will be identified sufficiently to portray the design concept. A preliminary drawing sheet index will be included indicating the layout and content of the final drawing set.

##### **Design Criteria:**

Design criteria for all major components that are necessary to demonstrate ARAR compliance will be identified to indicate the basis for design. Design criteria for minor components may or may not be included.

##### **Design Calculations:**

Initial calculations performed to demonstrate the ARAR compliance aspects of the project will be included.

##### **ARAR Compliance Review:**

All ARARs affecting the design will be identified and discussed as to how the design will comply with each respective ARAR.

#### **Intermediate Design (60 Percent Design)**

The 60 percent intermediate design submittal represents a design that is in a developmental stage. Its purpose is to demonstrate that the design is progressing and to allow reviewers an opportunity to determine if issues of concern are being addressed properly. It is not intended to be biddable nor constructible. The 60 percent intermediate design submittal will contain the following components.

Design Drawings:

Drawings will show the overall project layout and details of major components of the project that are necessary to indicate how ARAR compliance will be achieved. Sizing and dimensions will be identified sufficiently to portray the design concept and final optimization will not be complete at this stage. Some, but not all, supporting details will be included. The drawings will be in a developmental stage and will not be complete nor coordinated within themselves. Anticipated drawings and sheets that will become part of the final plan set will be identified but may not be included.

Design Basis Report:

The report will identify the design basis and criteria and will indicate how the design of major components will perform to meet the ARARs and satisfy the requirements of the ROD. Design criteria for other design components also will be identified. All ARARs affecting the design will be identified and discussed as to how the design will comply with each respective ARAR.

Design Calculations:

All calculations required to support the design in compliance with ARARs will be identified and will be complete.

Construction Specifications:

All specification sections necessary to support the project will be identified. Sections will be in various stages of completion ranging from partial drafts to rough drafts. Specifications will not be coordinated with the drawings nor within themselves.

**Pre-Final Design (90 Percent Design)**

Pre-Final design submittals will be complete, biddable, and constructible packages that are final except for last minute minor regulatory comments that need to be incorporated into the design report and the contract documents prior to bidding. The submittal package will include design drawings, a design report, design calculations, and construction specifications.

**Final Design (100 Percent Design)**

Final design submittals will be the same as the Pre-Final Design submittal but will incorporate agreed upon regulatory comments from the Pre-Final submittal.

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**Appendix C**

**Monticello Projects Funding**

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**Funding Levels for Monticello Projects**

Funding Levels for Monticello Projects  
(\$ in 000's)

	Prior Years	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07
<b>Annual Funding Level</b>							
MRAP	192,572	(1,484)					
MVP	41,564						
MSG	13,858	771	915	704	489		
LTSM		376	496	621	837	968	796
	247,994	(337)	1,411	1,325	1,326	968	796
<b>Cumulative Funding Level</b>							
MRAP	192,572	191,088	191,088	191,088	191,088	191,088	191,088
MVP	41,564	41,564	41,564	41,564	41,564	41,564	41,564
MSG	13,858	14,629	15,544	16,248	16,737	16,737	16,737
LTSM	0	376	872	1,493	2,330	3,298	4,094
	247,994	247,657	249,068	250,393	251,719	252,687	253,483

MRAP negative cost for FY2002 reflects reversal of remaining OHM accrual of \$2,145K at time of final claim settlement.

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