

# 2012 Annual Inspection Report for the DOE Monticello, Utah, Mill Tailings Site and Monticello Vicinity Properties

December 2012



U.S. DEPARTMENT OF  
**ENERGY**

Legacy  
Management

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## Executive Summary

The annual inspection of the U.S. Department of Energy (DOE) Monticello Mill Tailings Site (MMTS) and Monticello Vicinity Properties (MVP) was conducted on September 25 and 26, 2012. DOE inspects these sites annually to ensure that the selected remedies remain protective of human health and the environment. Under those remedies, contamination remains in place at some locations where use is restricted and exposure is limited. Annual inspections (1) verify that DOE long-term surveillance and maintenance (LTS&M) activities implemented throughout the year are effective and appropriate, (2) confirm that the institutional controls restricting land and water use under the MMTS and MVP remedies remain effective, and (3) identify deficiencies and maintenance items and recommend corrective actions as needed. This report summarizes the results of the 2012 annual inspection.

### Repository Findings

The repository site is well maintained and well managed. No remedy-related maintenance items were identified. Most site features and support structures, including field office buildings, access roads, repository runoff/run-on controls, and the vegetated repository cover were in good to excellent condition. The repository perimeter fence was functional, although several areas were identified that require minor repairs. Minor repairs are also required at the Pond 4 fence, and several maintenance items related to vegetation control were identified. “No Hunting” replacement signs have been ordered to be installed at the perimeter gates. No new erosion or gullies were apparent at the repository site. A deep gully along the western site boundary continues to fill in with sediment. Rodent burrows continue to be monitored in some locations across the site and do not threaten the disposal cell or other structures. Site vegetation is healthy and composed primarily of desirable species. Small noxious weed populations were found near the field office buildings and entrance gate. The vegetation on the repository cover remains ecologically healthy and diverse, but large amounts of standing dead vegetation may degenerate the overall health of the cover over time. Reducing standing dead vegetation on the cover could improve the health of the vegetation community and reduce potential fuels for wildfire.

### City-Owned Property Findings

No significant violations of institutional controls that restrict land and water use were evident during the 2012 annual inspection. A recently used fire pit was discovered on MP-01041, which may relate to the land use restriction prohibiting overnight camping. This fire pit was not observed during previous inspections. While it cannot be determined whether the fire pit was associated with a day camp or an overnight camp, the lack of debris and soil disturbance around the pit indicate that it was not associated with long-term camping. It will continue to be monitored. Drainage and runoff control structures on the City-owned properties were in good condition. No remedy-related repair or maintenance items requiring action by the City of Monticello were observed. Although no land use restrictions apply to soil disturbance on Property MP-00181, utility-related construction on this property was properly monitored for radiological control by onsite personnel (LM contractor Site Operations Manager and Site Representative) in accordance with the LTS&M Plan. Wetlands were ecologically healthy, and no evidence of damage was apparent. No groundwater drilling applications were sought for the City-owned properties, and no drilling activities within the restricted area were noted or reported by onsite personnel.

## **City Streets and Utility Corridor Findings**

No unplanned or unmonitored excavations were identified during the 2012 annual inspection. No new erosion of highway shoulders and along the Highway 191 embankment at Montezuma Creek was apparent. All planned excavations had been properly monitored by onsite personnel.

## **Private Property Findings**

No violation of land or water use restrictions was evident during the 2012 annual inspection. No land use changes on restricted properties since the 2011 annual inspection were apparent. No well drilling occurred in 2012 in the Groundwater Restricted Area, as verified by the State Engineer's Office and by onsite personnel during routine surveillance.

## **Records Findings**

Although the most current version of the LTS&M Plan was available at the field office, portions of the plan need to be updated. For example, many recordkeeping-related requirements could be better managed electronically than in hard copy, as currently specified by the plan. Deed restrictions were verified at the San Juan County Recorder's Office, including those associated with the sale of properties. The Information Repository and Operable Unit III Administrative Record were present and in good condition, but the collection had not been updated in 2011. After the annual inspection, in October 2012, both Monticello record collections were updated. The site record books were generally correct and complete. Minor errors in record books (e.g., the omission of a name from a signature log) were corrected during the annual inspection. More significant errors included duplicate Temporary Storage Facility (TSF) record books; the original record book was misplaced during personnel transition in 2012 and later found. Deficiencies were also noted in the radiological as-built drawing updates and corresponding record books. For example, some items were recorded on the drawing but not in the corresponding record book. The books and drawings will be corrected by onsite personnel, and the newest TSF record book will be incorporated into the original, before the 2013 annual inspection.

# 1.0 Introduction

The annual inspection of the U.S. Department of Energy (DOE) Monticello Mill Tailings Site (MMTS) and Monticello Vicinity Properties (MVP) was conducted on September 25 and 26, 2012. DOE inspects these sites annually to ensure that the selected remedies remain protective of human health and the environment. Under those remedies, contamination remains in place at some locations where use is restricted and exposure is limited. Annual inspections (1) verify that DOE long-term surveillance and maintenance (LTS&M) activities implemented throughout the year are effective and appropriate, (2) confirm that the institutional controls restricting land and water use under the MMTS and MVP remedies remain effective, and (3) identify deficiencies and maintenance items and recommend corrective actions as needed. This report summarizes the results of the 2012 annual inspection.

## 1.1 Monticello Site Background Information

Between the early 1940s and 1960, uranium and vanadium ore was intermittently processed at the mill and ore-buying station in Monticello, Utah. Mill tailings with low-level radioactivity were impounded at the former mill, and some were dispersed over time to nearby properties by wind and water or used for construction in Monticello. Drainage of liquids from the impounded tailings contaminated groundwater in the underlying shallow alluvial aquifer.

The MVP and MMTS projects were placed on the National Priorities List (NPL) in 1986 and 1989, respectively, to address mill-related contamination. Figure 1 shows the locations of the Monticello NPL sites. DOE, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as implemented through a Federal Facility Agreement, completed remediation of soil contamination at the MMTS and MVP in August 1999. Radiologically contaminated materials were placed in an engineered disposal cell about 1 mile south of the former mill site. The disposal cell, completed in October 1999, and associated support facilities are known collectively as the repository site (Figure 2). The repository site includes the Temporary Storage Facility (TSF), where newly excavated radiologically contaminated materials are stored before eventual disposal off site.

In some locations, radiologically contaminated material was left in place in compliance with supplemental standards, as codified at Title 40 *Code of Federal Regulations* Part 192.21. These locations, referred to as supplemental standards areas (Figures 3 and 4), occur on City-owned and private properties, beneath City streets, and in utility corridors. Land use restrictions (Section 1.3, City-owned and Private Properties) are applied to these properties and to the former mill site, although the former mill site is not a supplemental standards area. Restrictions are also applied to properties overlying contaminated groundwater. The former mill site property and several adjacent properties that include supplemental standards areas were transferred to the City of Monticello in 2000 for use as a public park. City-owned and private properties are described in more detail in Section 1.3.

Figure 3 identifies the locations of the Monticello properties affected by the remedial actions and subject to annual inspection, as referenced in the following sections of this report. In this report, many of the inspection items refer to a specific property identification, such as MS-00893. These identifications were assigned during remedial actions for the purpose of tracking the scope and progress of remedial actions on individual land holdings.

## 1.2 Long-Term Surveillance and Maintenance

LTS&M activities, including the annual inspection and reporting, are conducted by onsite personnel (DOE contractor Site Operations Manager and Site Representative) and offsite personnel (DOE and DOE contractor employees) in accordance with the procedures provided in the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (LTS&M Plan).

The DOE Office of Legacy Management (LM) administers the long-term stewardship of the Monticello NPL sites to ensure that the selected remedies continue to be protective of human health and the environment. The U.S. Environmental Protection Agency (EPA) Region 8 and the Utah Department of Environmental Quality (UDEQ) provide oversight. Annual inspections are one component of LTS&M at Monticello. Other primary components include operating and maintaining the disposal cell's leachate management system, inspecting the repository site and all properties affected by land and water controls on a monthly and/or quarterly basis, and monitoring and managing radiologically contaminated soil encountered at City of Monticello and Utah Department of Transportation (UDOT) excavations in Monticello. Because the remedy is still being implemented, activities associated with Operable Unit (OU) III are not traditional LTS&M activities. However, long-term procedures related to OU III are included in the LTS&M Plan, and several items are inspected annually (Section 2.7). OU III groundwater and surface water quality are monitored regularly; the progress of groundwater treatment and annual monitoring results are reported in annual groundwater reports. CERCLA 5-year reviews (begun in 1997) are also conducted to monitor and document the protectiveness of the MMTS and MVP remedies.

## 1.3 Annual Site Inspection Scope

Annual inspections of the MMTS and MVP focus on four general topics: Recordkeeping and Administrative Review, DOE Repository Site, City-owned and Private Properties, and City Streets and Utility Corridors. The Annual Inspection Checklist records the items inspected; Appendix A includes the completed checklist for the 2012 annual inspection. Revised in 2009, this checklist format was approved by EPA and UDEQ through Federal Facility Agreement meetings. The revised checklist supersedes Appendix K of the LTS&M Plan.

### Recordkeeping and Administrative Review

Recordkeeping by onsite personnel is reviewed to ensure proper documentation of day-to-day activities, and findings are recorded in Section II of the Annual Inspection Checklist. Onsite record books, surveillance checklists, and radiological as-built drawings are verified. Radiological as-built drawings, in addition to onsite record books, document the location and findings of radiological control measures provided by onsite personnel during municipal and State of Utah construction activities in Monticello.

The inspection also confirms that deed annotations applicable to the supplemental standards areas remain accurately filed at the County Courthouse; the Information Repository and OU III Administrative Record documents are complete and current; updated copies of relevant LTS&M documents are available to the onsite personnel; and workers accessing the TSF are appropriately trained or escorted. The inspection no longer includes a review of the MMTS and MVP Administrative Record, because these files were sent to the Federal Records Center in Denver, Colorado, per CERCLA guidelines, in 2008.

## DOE Repository Site

The repository site is inspected for the integrity of constructed features and support facilities (e.g., signs, buildings, fences, and gates) and the integrity of the disposal cell cover, including the health of the plant community. Observations are recorded in Section III of the Annual Inspection Checklist. The repository site inspection also includes the management and operation of the TSF and the disposal cell leachate management system, which consists of the Repository Leachate Collection and Recovery System (LCRS), the Repository Leak Detection System (LDS), and Pond 4, an engineered pond for evaporation of disposal cell leachate. Pond 4 was constructed with its own Pond 4 LCRS and Pond 4 LDS. Populations of noxious weeds are also noted during the inspection, but this activity is not mandated by the LTS&M Plan and does not appear on the Annual Inspection Checklist.

## City-owned and Private Properties

City-owned and private properties are inspected annually to confirm that institutional controls, as described in the LTS&M Plan, remain effective and to document changes in conditions that may affect the protectiveness of the remedies. Properties are inspected for evidence of violations of applicable restrictions, and findings are recorded in Sections IV, V, VI, VII, and VIII-C of the Annual Inspection Checklist.

Land and water use restrictions apply to the following City-owned and private properties (Figure 3):

- City-owned properties transferred from DOE: MP-00181, MP-00391, MS-00893, MP-01040 (north), MP-01041, MP-01042, and MP-01077. These properties are restricted to recreational day use. Overnight camping and the building of habitable structures are prohibited.
- Piñon/Juniper properties supplemental standards areas (a subset of the City-owned properties): MP-00391, MP-01041, and MP-01077. These properties have an added restriction of no soil removal.
- Former mill site (a subset of the City-owned properties): MP-00181 and MS-00893. In addition to the restrictions cited above, damage to wetlands is prohibited in these areas.
- Groundwater Management Area (also known as the Groundwater Restricted Area [GWRA]; includes both City-owned and private properties): MP-00179, MP-00181, MP-00211, MS-00893, MP-00947, MP-00951, MP-00990, MG-01026, MG-01027, MG-01029, MG-01030, MG-01033, MP-01077, MP-01083, and MP-01084. Domestic use of groundwater from the alluvial aquifer is prohibited on these properties. This institutional control is administered by the State Engineer's Office through the well permitting process.
- Montezuma Creek Soil and Sediment Properties (also known as the Montezuma Creek Restrictive Easement Area; privately owned): MP-00951, MP-00990, MG-01026, MG-01027, MG-01029, MG-01030, MG-01033, and MP-01084. Portions of these properties where supplemental standards have been applied have restrictive easements to prohibit soil removal or the construction of habitable structures.
- Properties MP-00211 (City-owned but not transferred from DOE) and MS-00176 (privately owned): Special zoning ordinances, which require radiological scanning for certain ground-disturbing activities, affect these properties.

Surface components of the OU III groundwater treatment system and inactive monitoring well surface completions, located on private property MP-00179, are also inspected annually. Inspectors also note evidence of standing water, saturated soil, surface disturbance, or stressed vegetation in the area of the groundwater treatment system.

### **City Streets and Utility Corridors**

Radiologically contaminated soil remains in some places beneath City streets and utility corridors in Monticello, in the Highway 191 embankment over Montezuma Creek, and in UDOT rights-of-way along Highways 191 and 491. Supplemental standards have been applied to these areas. Through a cooperative agreement with the City, the onsite personnel monitor excavations in these areas for radiologically contaminated material, and the City transports any such material to the TSF under direction of the onsite personnel. Onsite personnel also monitor excavations of Highways 191 and 491 within City limits. Through a Memorandum of Understanding between UDOT and DOE, UDOT has the option of returning contaminated material to the excavation as backfill or having City workers, under the direction of onsite personnel, haul the material to the TSF. During the annual inspection, the supplemental standards areas are inspected for evidence of unmonitored excavations or soil movement. Results are recorded in Sections VIII-A and VIII-B of the Annual Inspection Checklist.

## **1.4 2012 Annual Site Inspection Participants and Schedule**

Inspection team members and affiliations are listed on page 1 of the Annual Inspection Checklist (Appendix A). L. Sheader and P. Wetherstein conducted the physical site inspection on September 25 and 26, 2012. J. Dayvault and J. Nguyen of DOE, V. Moritz of EPA, and F. Smith and D. Dille participated in portions of the inspection. M. Stilson, State Engineer, was also contacted in conjunction with the inspection.

### Tuesday, September 25, 2012

Inspection team members convened at the Monticello field office at 8:00 a.m. P. Wetherstein reviewed health and safety documents, and L. Sheader reviewed the inspection procedure and checklist with the inspection team. In the morning, radiological as-built drawings, site records, record books, and surveillance checklists were inspected, and deed restrictions were verified at the San Juan County Recorder's office. In the afternoon, a field inspection of the repository site near the field office and inside the wildlife fence occurred. This included inspection of field office facilities, the TSF, disposal cell features and vegetation, cover penetrations, drain ditches, and toe trenches.

### Wednesday, September 26, 2012

The repository perimeter fence and signs, boundary markers, and Pond 4 were inspected in the morning along with Piñon-Juniper properties MP-01041 and MP-01077, and City-owned property MP-01042 along the former haul road. In the afternoon, the remaining Piñon-Juniper property (MP-00391), properties MS-00176, MP-00181, MP-00211, MP-01040 (north), and MS-00893, City streets and utilities, and UDOT rights-of-way were inspected. Areas associated with OU III were also inspected. Institutional controls at the Montezuma Creek Soil and Sediment Properties were verified with onsite personnel. Institutional controls in the Groundwater Management Area were verified by phone with M. Stilson of the Utah Department of Natural Resources Division of Water Rights, on September 20, 2012.

## 2.0 Site Inspection Results

### 2.1 DOE Repository Site and Disposal Cell

The repository site consists of the access area (support buildings and the TSF), the repository perimeter, runoff/run-on controls, Pond 4, the repository cover, and cover penetrations (manholes, settlement monuments, and structures associated with the embedded lysimeter). Results of the 2012 repository site inspection are summarized below and in Appendix A, Section III.

#### 2.1.1 Access Area

The Monticello field office buildings and associated structures were in excellent condition. Site access signs displaying contact information were current and visible (Photo 1). Small populations of two noxious weed species (Russian knapweed [*Acroptilon repens*] and spotted knapweed [*Centaurea diffusa*]) were identified near the field office buildings and entrance gate. Noxious weeds are regularly mapped and treated at the site. The site's paved access road was in good condition, with vegetation mowed along the margins.

The TSF is a restricted-access, gravel-surfaced area enclosed by an 8-foot-high chain link fence. The fence was appropriately posted with access control signs, and there was no evidence of vandalism or trespassing. Inspectors did not enter the TSF during the inspection, but onsite personnel reported approximately 4 cubic yards of low-level radiologically contaminated soil and debris from street and utility excavations within the bin. The TSF yard was well maintained, and the vegetation was mowed. The lay-down area for potential mixed waste was in good working order, but no mixed waste was stored in the TSF.

#### 2.1.2 Repository Perimeter

A barbed-wire stock fence containing several gates marks the repository site boundary and discourages human trespass and livestock entry. Forty numbered location-reference signs (E and P1–P39) are fixed to the fence or on separate posts nearby. The site entrance gate is locked at night and at other times when onsite personnel are not present.

##### Perimeter Fence

The perimeter fence was in good condition and was functionally intact, but some sections were in need of minor repair, with broken or slack wires and broken or missing wooden spacers. These areas have been noted on the map (Figure 2). One gate at the northeast corner of the site near P18, damaged in 2011, was repaired and functional. It is recommended that tumbleweed buildup along some areas of the southern fence be removed to prevent potential damage from drifting snow in the winter. No evidence of vandalism was present.

##### Location-Reference Signs

All perimeter signs were legible and in good condition (Photo 2), although perimeter sign P15 was scratched, and sign P5 contained a bullet hole along the edge. Weathered “No Hunting” signs, posted at all gates along the perimeter fence, were in need of replacement. New signs were ordered in October 2012 and will be installed in winter 2012.

### Boundary Markers

All six boundary markers were located during the inspection and were in good condition. Boundary marker 6, a representative marker, is shown in Photo 3.

### Erosion and Gullies

No new site erosion was apparent during the 2012 inspection. Previous inspection reports describe a gully between perimeter signs E and P2. Because sources of water to the gully have been rerouted or repaired by UDOT, no action was taken by DOE to fill the gully or to move the perimeter fence. The gully was still present in 2012, but soil deposition has continued, slowly filling in washout areas (Photo 4). This process will likely continue to fill the gully over time.

### Perimeter Vegetation

Vegetation between the perimeter fence and the wildlife fence (inner fence) is healthy and composed primarily of desirable species. One small patch of spotted knapweed, treated in 2011, persisted near the southeastern corner of the perimeter fence. Field bindweed (*Convolvulus arvensis*), a Category C noxious weed species, also was observed, but it is not spreading and does not require control. Prairie dog activity has increased along the eastern border of the site, and populations will continue to be monitored to prevent spread to the Pond 4 berm or the disposal cell.

**Maintenance Item:** Complete minor repairs to the perimeter fence (broken wires, slack wires, and broken or missing wooden spacers).

**Maintenance Item:** Clear areas of major tumbleweed buildup along the perimeter fence, where onsite personnel determine that buildup may cause drifting snow to accumulate and damage the fence.

**Maintenance Item:** Install “No Hunting” signs at all gates along the perimeter fence.

### **2.1.3 Repository Runoff/Run-on Controls**

Engineered rock-lined drainage controls that collect and direct runoff from the disposal cell are the West Drain Ditch, South Drain Ditch, East Toe Trench, and North Toe Trench. These features are designed to prevent gully erosion of the disposal cell. Some areas of siltation occur within the ditches and trenches, particularly in the North and East Toe Trenches (Photo 5). This is the result of natural processes where rock channels are filled in slowly with soils over time, primarily through wind deposition, and vegetation becomes established in the soils.

#### West Drain Ditch

No evidence of new erosion was apparent in 2012. One small Siberian elm (*Ulmus pumila*) tree has become established in the West Drain Ditch (Photo 6). It will be removed, because it is a nuisance species and has the potential to impede flows in the ditch as it grows.

#### South Drain Ditch

No evidence of new erosion was found in 2012 (Photo 7). Shrubs observed in portions of the South Drain Ditch do not block potential flow. Burrows from small rodents occurred in places along the margin of the ditch but do not threaten its integrity.

### East Toe Trench and North Toe Trench

Some rock at the surface of the East Toe Trench and North Toe Trench has degraded in the past, but no significant new degradation was noted in 2012. Erosion or bypass of these trenches was not evident. Soils and vegetation in the trenches are not expected to impede flows. Burrows from small rodents were found in several places along the ditches but do not threaten their integrity.

**Maintenance Item:** Remove the Siberian elm tree growing in the West Drain Ditch.

### **2.1.4 Pond 4**

Pond 4 is a lined, solar-evaporation pond that collects disposal cell leachate and a small amount of precipitation. An 8-foot-high security fence surrounds Pond 4, and a rope barrier surrounds the restricted area of the pond within the security fence. Locked chain link gates are present at the northeast and southwest corners of the fence, and a locked vehicle access gate is in the west fence. Water rescue equipment is stored in weatherproof metal cabinets on the pond's berm near the northeast gate and near the vehicle access gate.

#### Gate, Fence, Entrance, and Perimeter Signs

All gates were in good working condition. Warning signs on the perimeter fence were easily visible and legible (Photo 8). The following warning signs were posted on the perimeter fence and gates: "Danger Do Not Enter," "Controlled Area, Enter at Designated Access Only," "Contaminated Water, Do Not Discharge," "No Trespassing," and – on the vehicle access gate – a sign posting contact information. The contact information sign contained outdated names and phone numbers. There was no evidence of vandalism or trespass, but minor repairs to the security fence, noted on the site map (Figure 2), are necessary.

#### Pond Perimeter and Berm

The pond's rope barrier was intact, and warning signs – "Contamination Area" postings and notices that life jackets are required – were visible and legible. Animal burrows, made by voles and other small rodents, were visible on and below the pond's berm on all sides. No large burrows, which might threaten the berm's integrity, were found. Animal burrows will continue to be monitored during routine and annual Pond 4 inspections. Vegetation on the slopes of the berm was well established and primarily composed of non-weedy species.

#### Lifesaving Equipment

The cabinets containing the water rescue equipment were highly visible, adequately labeled, and in good condition. The contents of the cabinets (throw buoys, rope, rope ladders, and personal flotation devices) were easily accessible and in good condition.

#### Pond 4 LCRS/LDS Control Cabinet

The LCRS/LDS control cabinet was in good condition. No evidence of insects or rodent damage was present, and the cabinet remained weatherproof. Operation of the Pond 4 LCRS and LDS is reported under Section 2.1.6, "Cover Penetrations."

#### Liner, Anchors, and Pond Interior

The pond liner was repaired in 2011 (Photo 9), and no visible evidence of holes or other damage to Pond 4 was observed during the 2012 inspection (Photo 10). Liner anchors, consisting of sand-filled polyethylene pipe, were in good condition. Several inches of water was standing in

the northeast and southwest corners of the pond. The pond contained silt and vegetation, including a small saltcedar (*Tamarix ramosissima*) that will need to be removed.

**Maintenance Item:** Update contact information on the sign at the Pond 4 vehicle access gate.

**Maintenance Item:** Repair two small holes in the Pond 4 security fence.

**Maintenance Item:** Remove saltcedar growing in Pond 4.

### 2.1.5 Repository Cover

The repository cover inspection includes the disposal cell cover and other features – except for drainage features – within the inner wildlife fence, including roads, riprap slopes, and site monuments. Drainage features are described in Section 2.1.3 (Repository Runoff/Run-on Controls). The wildlife fence is a 6-foot-high wire-mesh fence that contains a vehicle access gate on the west end, a Pond 4 vehicle access gate on the east end, and five narrow gate apertures that allow wildlife to pass through.

#### Roads, Wildlife Fence, Site Monuments, and Raptor Perches

The gravel road surrounding the disposal cell and the road to Pond 4 were in very good condition. The wildlife fence and gate apertures were functional and showed no evidence of vandalism. Both site monuments – one at the west access gate outside the wildlife fence and one at the apex of the disposal cell (Photo 11) – were present and intact. Six raptor perches, installed near the disposal cell cover in 2007, were also in good condition.

#### Vegetation

Desirable plants remained well established on the cover, and no significant barren or eroded areas were identified (Photo 12). No species of phreatophyte shrubs were growing on the cover. A large number of healthy, desirable sagebrush (*Artemisia tridentata*) seedlings were apparent in 2012. Small quantities of field bindweed were growing on the cover, but because it is not spreading, control is unnecessary.

The Repository Cover Vegetation Index, developed in 2009 for use during annual inspections (pages A–12 and A–13 in Appendix A), indicated that the cover vegetation generally remains healthy. A vegetation condition score of 4.00 out of 5.00 was assigned to the cover in 2012. The vegetation condition score is used to detect trends in the health of the vegetation community, and the score may be trending slightly upward since 2009. Dominant species identified on the cover in 2012 included sagebrush, western wheatgrass (*Pascopyrum smithii*), crested wheatgrass (*Agropyron cristatum*), and smooth brome (*Bromus inermis*). Two of these species are native, and none are weedy. Although the vegetation is ecologically healthy, standing dead vegetation is historically high at the site, particularly in older perennial bunchgrasses. Large amounts of standing dead vegetation potentially interfere with new growth and over time can result in degenerating range conditions. Standing dead vegetation was not as apparent in 2012, because precipitation in the spring and early summer was well below normal at the site, curtailing spring growth of cool-season perennial grasses.

Vegetation on the repository's soil-covered side slopes and outlying areas, similar in composition to the repository cover, was also generally healthy. Plants, mainly rabbitbrush (*Ericameria nauseosa*), yarrow (*Achillea millefolium*), smooth brome, and western wheatgrass,

have established on portions of the rock riprap that have no soil cover (Photo 13). Some sagebrush, antelope bitterbrush (*Purshia tridentata*), Cicer milkvetch (*Astragalus cicer*), and purple aster (*Machaeranthera canescens*) were also found. Weeds were not common but included Russian thistle (*Salsola tragus*), amaranth (*Amaranthus* sp.), and cheatgrass (*Bromus tectorum*). Because this vegetation does not overlie tailings or threaten the integrity of the side slopes, control is unnecessary. However, because they are a nuisance species, several Russian olive trees (*Elaeagnus angustifolia*) will be removed.

#### Burrowing Animals

Several areas of small rodent burrows – probably made by voles and ground squirrels – were observed on the cover in 2012. Little or no damage to shrubs was apparent, and there was no evidence that burrows penetrate beneath the cover's biointrusion layer. Raptors are expected to keep rodent populations from exploding to excessively high numbers on the cover as they did in 2006 before the raptor perches were installed. Burrows will continue to be monitored.

#### Stability

No area of the cover indicated settling, slumping, fracturing, seepage, ponding, or significant erosion. The steep, rock-lined slopes showed no evidence of rock movement or degradation, settling, slumping, or erosion.

**Maintenance Item:** Remove Russian olive trees growing on side slopes of disposal cell.

### **2.1.6 Cover Penetrations**

Cover penetrations include five manholes (Manholes 1 and 3 enclose equipment for the Repository LCRS and LDS), two video ports, nine settlement monuments, and structures associated with a large lysimeter, which measures water flow, embedded in the eastern portion of the disposal cell (Figure 2).

#### Manholes and Video Ports

The manholes are restricted areas and were not entered during the annual inspection, but the exteriors were in good condition. All five manhole covers were secure and operable. At Manhole 3, one loose bolt was noted near the northeast corner of the cover. Manhole 4 (Photo 14) will continue to be monitored, as soils have eroded on its uphill side. Appropriate safety warnings and entry procedures were posted on the manholes, exterior pump access ports were undamaged, telemetry surface installations were in good condition (the telemetry pole near Manhole 3 was leaning slightly), and no leakage or drainage was evident. Covers of the two inoperable video ports were locked and secure.

#### Settlement Monuments

Nine settlement monuments, identified by the letters A through I, are on the disposal cell. The outer protective casings (12-inch PVC pipe) and the inner plates were intact and undamaged. Elevation surveys are performed on the settlement monuments every 5 years in preparation for CERCLA Five-Year Reviews. Data from the most recent elevation surveys in 2011 indicate no evidence of settlement.

### Embedded Lysimeter

External features of the embedded lysimeter were inspected, and no drainage or seepage was detected at the outlet or along cover penetrations. Instrumentation installations were in good condition.

### Operation of Repository and Pond 4 LCRS and LDS

Monitoring of leachate production is performed automatically via the repository telemetry system, which relays data to the LM Systems Operation and Analysis at Remote Sites (SOARS) system for offsite viewing, evaluation, and management. Onsite personnel routinely monitor leachate production in accordance with specifications in the LTS&M Plan. Leachate production rates are presented in quarterly reports to DOE, EPA, and UDEQ. The Repository and Pond 4 LCRS and LDS are operating properly with no anomalous readings or conditions.

## **2.2 City-Owned Properties**

City-owned properties MP-00181, MP-00391, MS-00893, MP-01040 (north), MP-01041, MP-01042, and MP-01077 were transferred from DOE to the City of Monticello in 2000. Specific restrictions on these properties are summarized in Section 1.3 (City-owned and Private Properties). Photos 15 and 16 show the wetlands, creek, and vegetated slopes of the former mill site during the 2012 inspection. Property MP-00211 (Photo 17) was always City-owned and is subject only to zoning restrictions on excavation and construction.

Results of the 2012 annual inspection of City-owned properties are summarized below and in Section IV of Appendix A.

### Recreational Use

The City-owned properties transferred from DOE are accessible to the public. In 2007, these properties were annexed by the City of Monticello (between 2000 and 2007, they were City-owned but outside city limits). Hunting with firearms is not allowed within city limits, but bow hunting on the City-owned properties was authorized in 2009. Walking and mountain bike trails are used throughout the properties.

Overnight camping is not allowed on these properties. One area, previously determined to be a day camp on Property MP-01077, was monitored (Photo 18), and no evidence of recent use was observed. A fire pit previously identified on MP-01040 (North) was also monitored, with no evidence of recent use. A recently used fire pit was discovered on MP-01041 (Photo 19). This fire pit was not observed during previous inspections. Although it cannot be determined whether the fire pit was associated with a day camp or an overnight camp, the lack of debris and soil disturbance around the pit indicate that it was not associated with long-term camping. This fire pit will be monitored in the future.

### Construction of Habitable Structures

Construction of habitable structures is prohibited on these properties. No evidence of any such construction was observed during the 2012 inspection.

### Supplemental Standards Areas on Piñon/Juniper Properties

No evidence of new soil removal was noted on any of the Piñon/Juniper properties supplemental standards areas. The supplemental standards areas are physically delineated by four-strand wire

fences. The City of Monticello breached sections of these fences to accommodate mountain bike trails, and other sections of the fence have degenerated due to age. Past radiological scans of the bike trails were at background levels, and survey records are available at the Monticello field office. DOE will continue to monitor the soils and fences in these areas regularly.

#### Soil Movement, Drainage, and Runoff Controls

Although no land use restrictions apply to soil disturbance on Property MP-00181, utility-related construction on this property (a sewer line excavation) was properly monitored for radiological control by onsite personnel in accordance with the LTS&M Plan. During the summer of 2012, a small volume of material was identified and removed from the area surrounding a manhole on this property (Photo 20). All riprap-armored structures, dams, check dams, berms, and runoff control drainages (Figure 4) were intact and functional. No major erosion issues or evidence of recent erosion were noted during the 2012 inspection. One structure, Deer Draw Dam, is shown in Photo 21.

#### Wetlands

Wetlands on the former mill site were constructed according to EPA-specific criteria, and these wetlands are protected by cooperative agreement. Under this agreement, the City of Monticello will not disturb these areas without prior approval from appropriate state and federal agencies and is not responsible for repairing damage to these areas by natural causes. Montezuma Creek and three constructed marsh wetlands on the City-owned properties were ecologically healthy, and no evidence of damage by human activity or natural causes was observed during the 2012 inspection. Photo 22 shows Wetland 3 at the time of the 2012 inspection.

#### Groundwater Use

No evidence of water-well drilling on City-owned properties with groundwater restrictions was observed during routine inspections or during the 2012 annual inspection. No applications to drill were filed with the Utah Department of Natural Resources Division of Water Rights for these areas (Section 2.6), and no drilling activities within the restricted area were noted or reported by onsite personnel.

### **2.3 City Streets and Utility Corridors, and UDOT Rights-of-Way**

Results of the 2012 annual inspection of UDOT rights-of-way and City streets and utility corridors are found in Appendix A, Section VIII. No unmonitored or unplanned excavations were identified. Onsite personnel were aware of all planned excavations, and excavations were monitored in accordance with the LTS&M Plan. An example of an excavation is shown in Photo 23. Along the shoulders of Highways 191 and 491 and at the Highway 191 embankment at Montezuma Creek, no new excavations or new erosion were evident (Photo 24).

### **2.4 Private Property MS-00176-VL**

Before a habitable structure is constructed on this property, Monticello zoning ordinance requires that a special building permit, based on radiological scanning results, be obtained. There is no evidence of erosion, soil removal, or construction of habitable structures (Photo 25; Appendix A, Section VIII-C). A portion of this property was sold in 2006, and even though no supplemental standards areas exist on the new property, the property owner did not remove the zoning ordinance from it.

## **2.5 Properties in the Montezuma Creek Restrictive Easement Area**

At the time of the 2012 annual inspection, access to these properties was restricted by a private property owner. However, recent routine inspections by onsite personnel confirmed no evidence of significant erosion or soil removal from the restricted areas of these properties (Appendix A, Section V).

In 2006, a new residence was constructed on property MP-00990 outside the supplemental standards area. At that time, onsite personnel helped the landowner delineate the restricted area. Portions of Property MG-01033 and MP-00990, including the residence, were sold in 2010 to a new landowner. No land use changes are evident.

A portion of Property MP-00990 is also cultivated in the easement area in compliance with the land use restriction. In 2008, the landowner changed the land use by diverting water from Montezuma Creek near monitoring well 92-09 to an irrigation pond to apply to cultivated areas. DOE evaluated this land use change and found no significant associated risk. No additional land use changes were observed during the annual inspection.

## **2.6 Groundwater Restricted Area**

There has been no evidence of well-drilling activity in the GWRA (Appendix A, Section VI). On September 20, 2012, M. Stilson of the State Engineer's Office confirmed the lack of well-drilling activity, indicating that no applications were filed in the past year for shallow or deep water wells in the Monticello GWRA. Onsite personnel also noted no evidence of well-drilling activity in the GWRA during routine surveillance.

## **2.7 Operable Unit III**

### Permeable Reactive Barrier (PRB) and Auxiliary Treatment System

A groundwater treatment system comprising the PRB and treatment cells is on Property MP-00179 (private property) east of the former mill site. Features of these systems are inspected each year to ensure that the current land use, ranching, is not adversely affected. In 2012, the outside of the treatment cell structures was inspected, but the vaults were not opened, because the structures are regularly maintained by DOE Environmental Sciences personnel. Structures were in good condition, and there was no evidence of ponded water, saturated soil, surface disturbance, or stressed vegetation in the vicinity of the PRB or treatment vaults (Photo 26).

### Water Quality Monitoring Well Inspection

OU III water quality is monitored at an established network of active groundwater monitoring wells and surface water monitoring sites. Active wells are inspected during sampling in April and October of each year, and field personnel noted no deficiencies during routine well inspections in 2012. During the 2012 annual inspection, it was noted that inactive well R2M8 was missing a lid, there was a loose lid on a breather pipe southwest of wells R6M3 and R5M4, and there was also a loose lid on an unmarked well near the treatment cells. These maintenance items will be reported to groundwater sampling personnel, who maintain the wells.

## 2.8 Administrative and Records Inspection

The following documents and records, recorded by the onsite personnel, were inspected for completeness and accuracy of information (Appendix A, Section II):

- Radiological as-built drawings (residential and utility maps that document the location and results of radiological control provided by onsite personnel).
- Site record books, which include the repository site, the TSF, City-owned properties, private property restricted areas, and public roads and utilities.
- Surveillance checklists, which include meteorological monitoring data; TSF access/security logs; and monthly, quarterly, and Pond 4 surveillance checklists. Pond 4 and Repository LCRS and LDS monitoring records are maintained electronically.

Deed restrictions (verified in the San Juan County Recorder's Office) were inspected to ensure that administrative controls remain in effect with the City of Monticello and San Juan County.

The following categories of documents and records were inspected to ensure that pertinent information for implementing LTS&M activities is readily available to the onsite personnel and the general public:

- LTS&M Plan (including site-specific emergency response information), the *Health and Safety Manual* (LMS/POL/S04321), and the Quality Assurance manual (LMS/POL/S04320). These documents are available electronically.
- Information Repository and OU III Administrative Record.
- LTS&M Training Records (applicable to onsite personnel and unescorted City of Monticello employees accessing the TSF).

No major deficiencies were noted in the above administrative categories. LTS&M documents were available electronically from the field office. Although the most current version of the LTS&M Plan was available, portions of the plan need to be updated. It is recommended that an update of other outdated site documents (e.g., the OU III Post-ROD Monitoring Plan) be included with update of the LTS&M Plan. Deed restrictions were verified at the San Juan County Recorder's Office, including those associated with the sale of properties. Annotations were in place for properties sold or divided, and deed restrictions were attached. The Information Repository and Operable Unit III Administrative Record were present and in good condition, but the collection had not been updated in 2011. After the annual inspection, in October 2012, both Monticello record collections were updated. The site record books were generally correct and complete, and site recordkeeping since May 2012 was greatly improved. Minor errors in record books (e.g., the omission of a name from a signature log) were corrected during the annual inspection. More significant errors include the presence of two TSF record books. Deficiencies were also noted in the radiological as-built drawings and corresponding record books. For example, some drawings were marked but no corresponding entries were in the record book. There were also some missing dates or initials in the drawings and books. The books and drawings will be corrected by onsite personnel before the 2013 annual inspection. Also, the newest TSF record book will be incorporated into the original TSF record book, which was misplaced during personnel transition and included information before May 2012.

**Maintenance Item:** Update record books and drawings so that entries are recorded in both places in accordance with the LTS&M Plan.

**Maintenance Item:** Incorporate the newest TSF record book into the original TSF record book.

### **3.0 Conclusions and Recommendations**

The 2012 annual inspection confirmed that DOE LTS&M activities implemented throughout the year remain effective and appropriate, and institutional controls restricting land and water use as part of the MMTS and MVP remedies remain effective. No corrective actions are necessary.

All maintenance items identified in the 2011 annual inspection have been resolved except for installing “No Hunting” signs at all gates in the perimeter fence. Replacement signs have been ordered. The following maintenance issues were identified during the 2012 annual inspection and are scheduled to be resolved as indicated below:

- Complete minor repairs to the perimeter fence (broken wires, slack wires, and broken or missing wooden spacers). Some repairs were completed in October and November 2012. All repairs are scheduled to be completed by July 31, 2013.
- Clear areas of major tumbleweed buildup along the perimeter fence, where onsite personnel determine that buildup may cause drifting snow to accumulate and damage the fence. Scheduled to be completed by December 31, 2012.
- Install “No Hunting” signs at all gates along the perimeter fence by December 31, 2012.
- Remove the Siberian elm tree growing in the West Drain Ditch by June 30, 2013.
- Update contact information on the sign at the Pond 4 vehicle access gate by January 15, 2013.
- Repair two small holes in the Pond 4 security fence. This item was completed in October 2012. Several additional small holes were identified and repaired at this time.
- Remove saltcedar growing in Pond 4 by June 30, 2013.
- Remove Russian olive trees growing on side slopes of disposal cell by June 30, 2013.
- Update record books and drawings so that entries are recorded in both places in accordance with the LTS&M Plan by January 31, 2013.
- Incorporate the newest TSF record book into the original TSF record book by January 31, 2013.

Because portions of the LTS&M Plan have become outdated, it is recommended that an update of this document, along with an update of other outdated site documents be planned during 2013.

### **4.0 Photograph Log and Photographs**

Photographs were taken to document findings of the 2012 annual inspection. The location and orientation of the photographs included below are identified in Figures 2, 3, and 4. A Field Photograph Log associated with all photographs taken during the 2012 annual inspection is included as Appendix A, Section IX.



Photo 1. Information sign on front access gate to the site.



Photo 2. Perimeter sign P24.



Photo 3. Boundary Marker 6.



Photo 4. Erosion channel at western fence line filling in with sediment over time.



Photo 5. East Toe Trench, view to the north.



Photo 6. Siberian elm (*Ulmus pumila*) growing in West Drain Ditch, to be removed.



Photo 7. South Drain Ditch, view to the east.



Photo 8. Personnel at gate to Pond 4.



Photo 9. Recent repairs in lining of Pond 4.



Photo 10. Pond 4, view to the east.



Photo 11. Site Monument 2 on top of disposal cell.



Photo 12. Vegetated disposal cell cover, view west from Site Monument 2.



Photo 13. Rock-covered side slope of disposal cell showing volunteer vegetation.



Photo 14. Manhole 4, showing health and safety postings.



Photo 15. View of Wetland 1 from City-owned property MP-00211.



Photo 16. View of Wetland 2 from City-owned property MP-00211.



Photo 17. Property MP-00211, view to the northeast.



Photo 18. Lean-to and fire pit discovered during previous inspections showing no evidence of additional use.



Photo 19. Fire pit discovered during 2012 inspection on MP-01041.



Photo 20. Area where contaminated material was removed during 2012 construction activities.



Photo 21. Deer Draw Dam, view to the east.



Photo 22. View of Wetland 3 from City access road.



Photo 23. Monitored utility line excavation on City streets.



Photo 24. Previously eroded area along Highway 191 embankment.

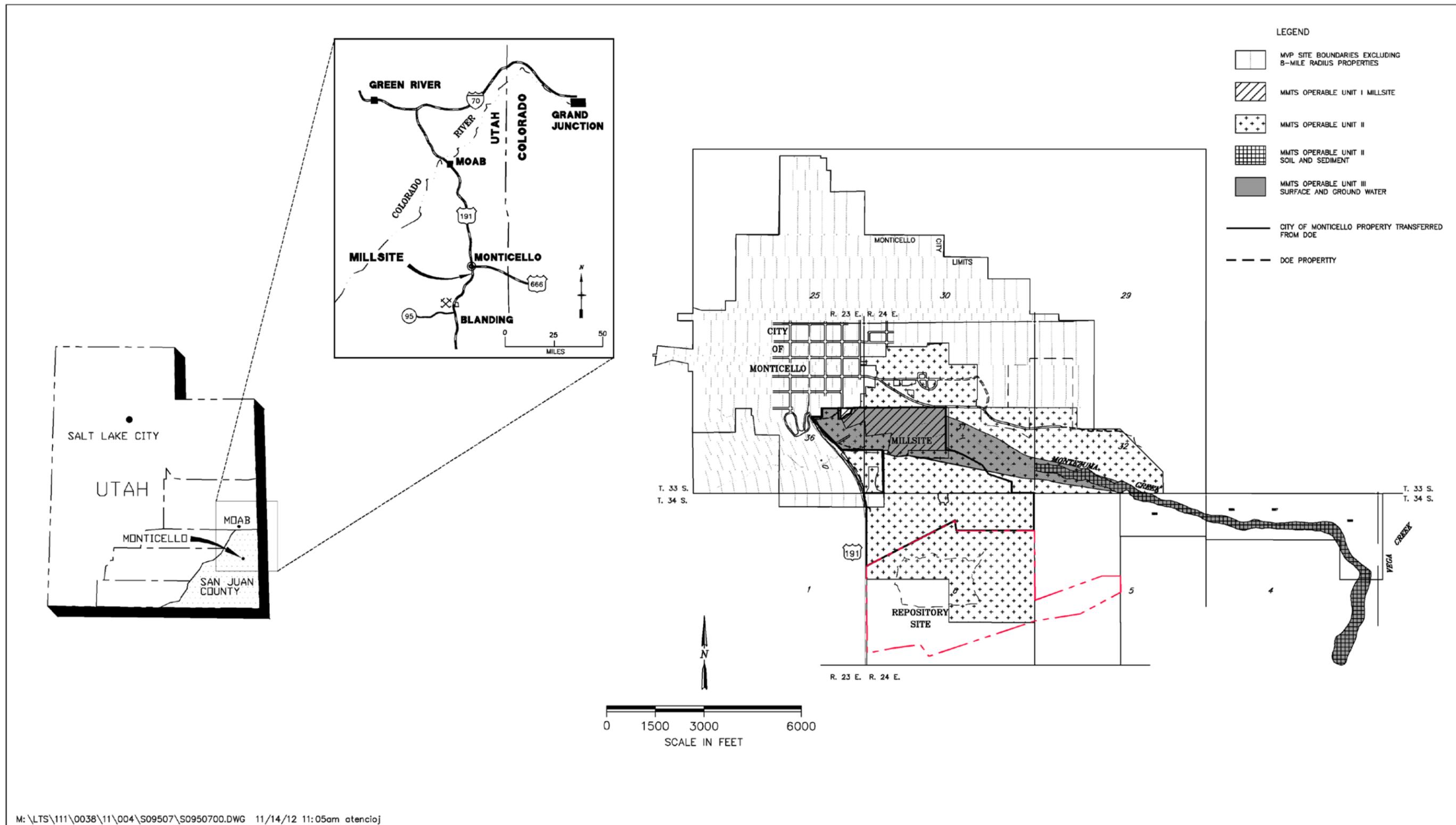


Photo 25. Property MS-00176.



Photo 26. Permeable Reactive Barrier Area.

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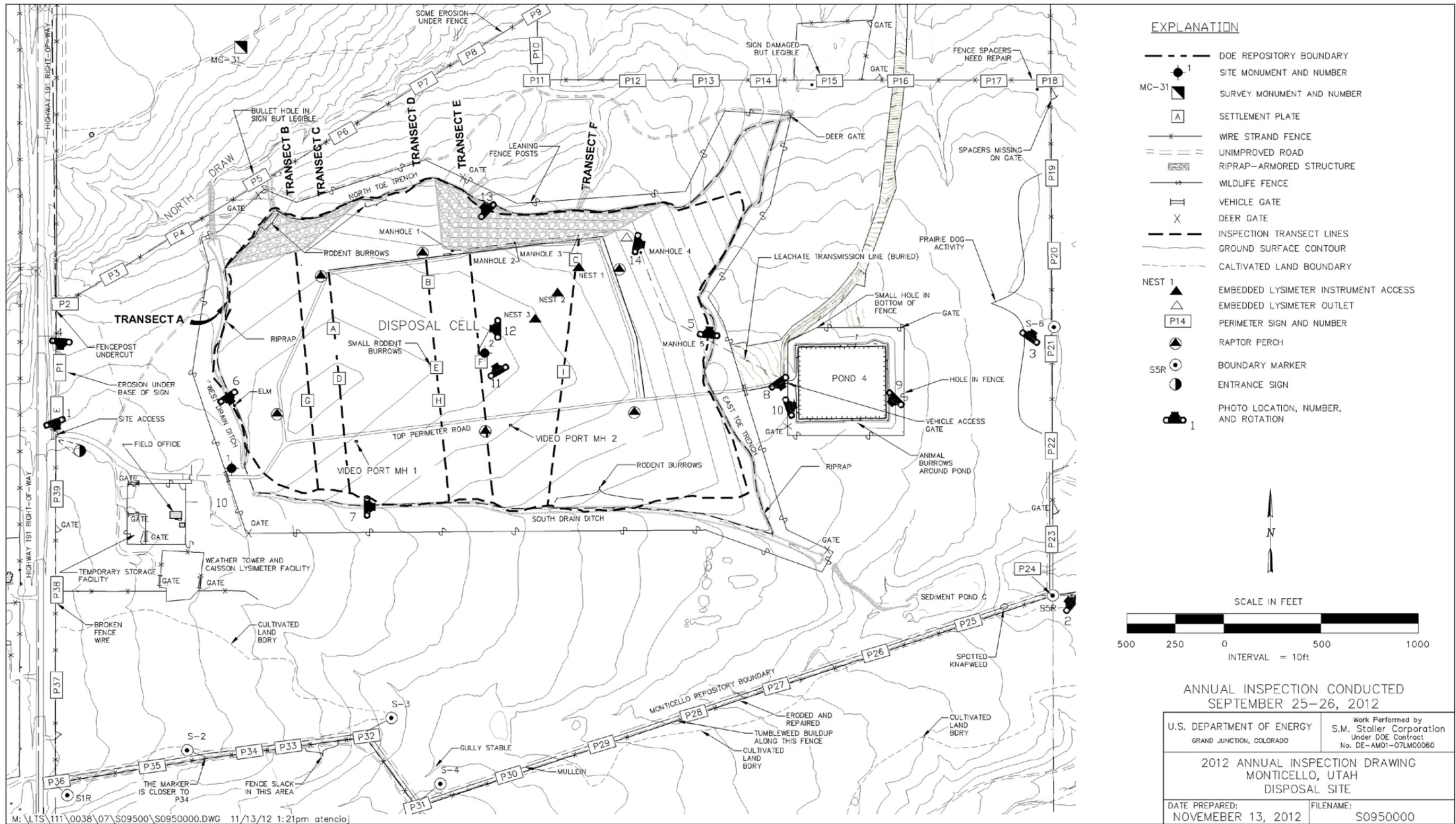


Figure 2. Monticello, Utah, Repository Site

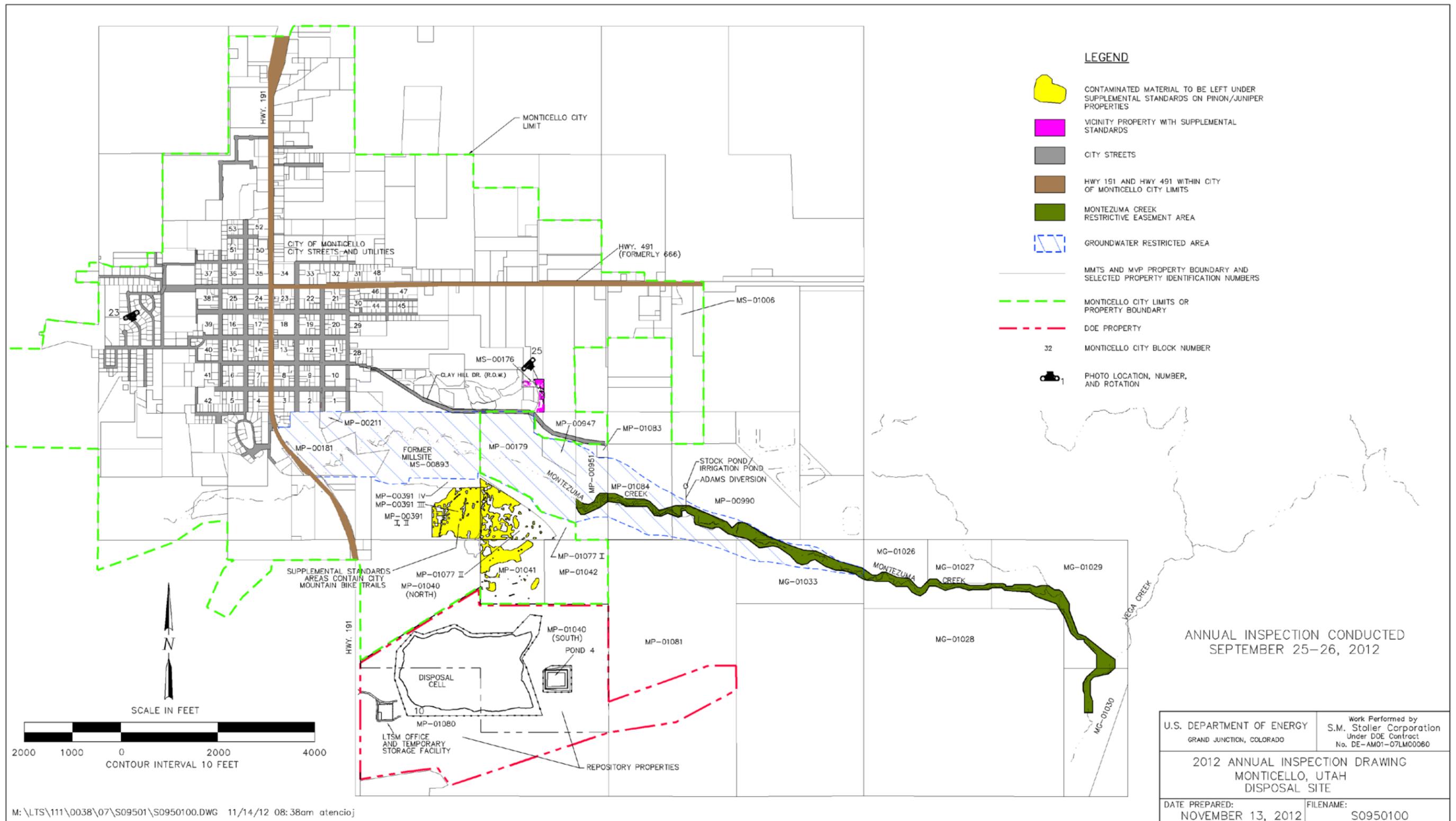


Figure 3. MMTS and MVP Supplemental Standards and Groundwater Restricted Areas

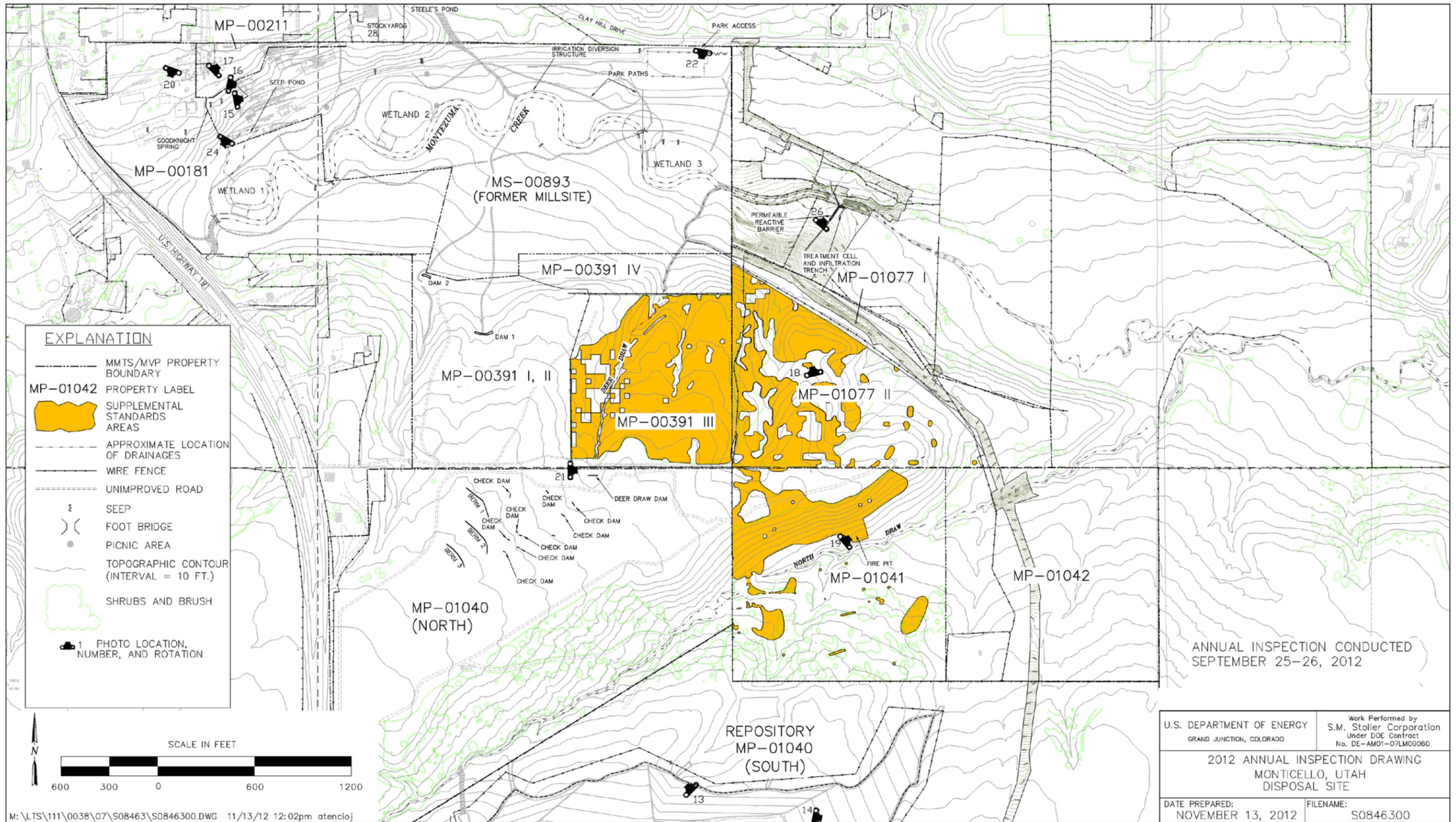


Figure 4. Monticello, Utah, Former Mill Site and Surrounding Area

## **Appendix A**

### **Annual Inspection Checklist**

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**MMTS:** Monticello Mill Tailings (USDOE) Site; Operable Units I, II, and III (UT 3890090035)  
**MVP:** Monticello Radioactively Contaminated Properties (Monticello Vicinity Properties) (UTD 980667208)  
 Location: Monticello, Utah: EPA Region 8

**Note: Section 6.1 of the Long-Term Surveillance and Maintenance Plan contains detailed inspection procedures. See attached maps for the location of site inspection features identified in this checklist.**

**Annual Inspection Preparation:**

The following tasks were completed in preparation for the current MMTS and MVP annual inspection:

	Y	N
Review annual inspection requirements outlined in Section 6.1 of the LTS&M Plan	X	<input type="checkbox"/>
Schedule site inspection and appoint chief inspector	X	<input type="checkbox"/>
Review previous reports and records as outlined in Section 6.1.2 of LTS&M Plan	X	<input type="checkbox"/>
Notes:		
Review OU III water quality data for contaminant trends and distribution	X	<input type="checkbox"/>
Provide team members with background information, maps, and inspection checklists	X	<input type="checkbox"/>
Notify EPA and UDEQ at least 2 weeks prior to site visit and invite them to participate	X	<input type="checkbox"/>
Notify representatives from other agencies as necessary and invite them to participate	X	<input type="checkbox"/>
Verify names and telephone numbers of parties with access or notification agreements	X	<input type="checkbox"/>
Verify key contact information listed in Section 6.1.2 of the LTS&M Plan	X	<input type="checkbox"/>
Contact State Engineer's Office for water well permit applications in/near GWMA	X	<input type="checkbox"/>
Verify annual contact with UDOT re: planned highway projects for current year	X	<input type="checkbox"/>
Verify regular contact with City of Monticello re: planned or unplanned excavations	X	<input type="checkbox"/>

**Date(s) of Annual Inspection: 9/25/12–9/26/12**

**Inspection Team Members**

Name	Affiliation	Phone Number	E-mail
Linda Sheader	S.M. Stoller Corp. (Plant Ecologist and curator of site records)	970-248-6711	Linda.Sheader@lm.doe.gov
Paul Wetherstein	S.M. Stoller Corp. (Environmental Compliance)	970-248-6645	Paul.Wetherstein@lm.doe.gov
Jalena Dayvault	U.S. Department of Energy (Site Manager)	970-248-6016	Jalena.Dayvault@lm.doe.gov
Jason Nguyen	U.S. Department of Energy (Backup Site Manager)	970-248-6707	Jason.Nguyen@lm.doe.gov
Vera Moritz	U.S. Environmental Protection Agency (Remedial Project Manager)	303-312-6981	Moritz.Vera@epa.gov
Fred Smith	S.M. Stoller Corp (Site Operations Manager)	435-587-3115	Fred.Smith@lm.doe.gov
David Dille	S.M. Stoller Corp (Site Representative)	435-587-2902	David.Dille@lm.doe.gov

Note: attach additional sheets as needed for any of the following sections.

<b>I. Interviews</b>		
<b>Name of Individual Interviewed</b>	<b>Affiliation</b>	<b>Date Interviewed</b>
Fred Smith and David Dille	Onsite LM Representatives	September 25, 2012
Notes: <i>See notes in individual sections, below. F. Smith or D. Dille accompanied inspectors during the entire inspection and answered site-related questions.</i>		
<b>Name of Individual Interviewed</b>	<b>Affiliation</b>	<b>Date Interviewed</b>
	City of Monticello	
Notes: <i>Individuals from the City of Monticello were not interviewed during the 2012 inspection.</i>		
<b>Name of Individual Interviewed</b>	<b>Affiliation</b>	<b>Date Interviewed</b>
Mark Stilson	State Engineer	September 20, 2012
Notes: <i>P. Wetherstein contacted M. Stilson by phone to verify that no well drilling permits were issued in restricted areas. No well drilling permits were requested or issued in restricted areas in 2012 for shallow or deep water wells.</i>		
<b>Name of Individual Interviewed</b>	<b>Affiliation</b>	<b>Date Interviewed</b>
Training Department (J. Blanck)	S.M. Stoller	Phone 10/18/12
Notes: <i>RCTs A. Martinez and J. Mattson escorted other personnel. F. Smith, D. Dille, and J. Trevino are all current with Rad Worker II training. No other unescorted personnel entered the TSF since the 2011 inspection. The 2012 inspection of the TSF was performed from outside the TSF fence, and the materials bin was not opened.</i>		

## II. Administrative and Records Inspection

	Readily Available		Current	
	Y	N	Y	N
<b>1. General LTS&amp;M Documents</b>				
Ready access from field office to online manuals (Long-Term Surveillance and Maintenance Plan, Health and Safety Manual, QA Manual)	X	<input type="checkbox"/>	X	<input type="checkbox"/>
<b>2. LTS&amp;M Training Records</b> ( <i>ID names in TSF log; verify with Training dept.</i> )				
Onsite employees			X	<input type="checkbox"/>
City workers ( <i>unescorted workers must have current training</i> )		<b>N/A 2012</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3. Public Records</b> ( <i>verify records are present and in order</i> )				
OU III Administrative Record	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Information Repository (Monticello)	X	<input type="checkbox"/>	<input type="checkbox"/>	X
Information Repository (Grand Junction)	X	<input type="checkbox"/>	X	<input type="checkbox"/>
<b>4. Record Books</b> ( <i>Note: Inspection guidelines are listed inside covers of record books; LTS&amp;M Plan Appendix B contains record book management and entry protocol</i> )				
Record book entries/documentation	X	<i>satisfactory</i>		<input type="checkbox"/> <i>unsatisfactory</i>
Repository Site Record Book	X	<input type="checkbox"/>	X	<input type="checkbox"/>
TSF Record Book ( <i>see LTS&amp;M Plan Section 3.4</i> )	X	<input type="checkbox"/>	<input type="checkbox"/>	X
City-owned properties ( <i>see LTS&amp;M Plan Section 4.4</i> )	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Private Property Restricted Areas ( <i>see LTS&amp;M Sec. 4.4</i> )	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Public Roads and Utilities Record Book	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Documentation/recordkeeping requirements met	<input type="checkbox"/>	<i>satisfactory</i>		X <i>unsatisfactory</i>
Information readily traced to updated drawings	<input type="checkbox"/>	<i>satisfactory</i>		X <i>unsatisfactory</i>
Rad scan info for eroded/excavated material	X	<i>satisfactory</i>		<input type="checkbox"/> <i>unsatisfactory</i>
Entries include TSF transfers	X	<i>satisfactory</i>		<input type="checkbox"/> <i>unsatisfactory</i>
Entries include info on stockpiled material and follow-up scan results	X	<i>satisfactory</i>		<input type="checkbox"/> <i>N/A</i>
Hwy 191/491 entries include information on scan	X	<i>satisfactory</i>		<input type="checkbox"/> <i>unsatisfactory</i>
Results and material returned to excavation	<input type="checkbox"/>	<i>satisfactory</i>		X <i>N/A</i>
Storm event surveys documented	X	<i>satisfactory</i>		<input type="checkbox"/> <i>unsatisfactory</i>
Notes for Record Books Inspection:				
<p><b>Update for the Information Repository is overdue; scheduled for October. J Mattson's name was missing from signature log. Recordkeeping since 5/16/2012 greatly improved. The TSF record book was misplaced during personnel transition and later found; the new book needs to be incorporated into the original one. Deficiencies noted in as-built drawings and corresponding record books. Examples: drawing marked but no corresponding notes in log book; entries in log book didn't match corresponding information on drawing; missing dates or initials in log book and drawings. Correction of log books and drawings will be included as maintenance item for 2012.</b></p>				
<b>5. Radiological As-Built Drawings</b>				
Drawing updated annually	X	<i>satisfactory</i>		<input type="checkbox"/> <i>unsatisfactory</i>
Documentation/recordkeeping requirements met	<input type="checkbox"/>	<i>satisfactory</i>		X <i>unsatisfactory</i>
Radiological scan information recorded	X	<i>satisfactory</i>		<input type="checkbox"/> <i>unsatisfactory</i>
<b>6. Surveillance Checklists and Records</b>				
<i>(Note: Repository and Pond 4 LCRS and LDS monitoring records are sent electronically on a regular basis.)</i>				
TSF Access/Security Logs	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Meteorological Monitoring Data, Monthly and Quarterly Repository Surveillance Checklists, and Monthly Pond 4 Surveillance Checklists	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Notes for checklist and records inspection:				
<b>7. Agreements</b> ( <i>Note: verify inclusion in Information Repository</i> )				
DOE/City Cooperative Agreement			X	<input type="checkbox"/>
DOE/UDOT Memorandum of Understanding			X	<input type="checkbox"/>
<b>8. Zoning Restriction—Overlay Zone OL-1</b>				
Restriction is verified as current through City for property MP-00211-VL			X	<input type="checkbox"/>
Restriction is verified as current through City for property MP-00176-VL			X	<input type="checkbox"/>

**9. Deed Restrictions** (verify at San Juan County Recorder's Office, 117 S. Main)

**Properties Transferred from DOE to City of Monticello**

**IC Annotations in Place**

DOE ID	Parcel	Document	Book	Page	Y	N
MP-00181-OT	A33230367201	E061691	B788	100-113	X	<input type="checkbox"/>
	33S23E367204					
	A34240063004			electronic record	X	<input type="checkbox"/>
MP-00391-VL	33S24E316001	E061691	B788	100-113	X	<input type="checkbox"/>
MS-00893-OT	33S24E315400	E061691	B788	100-113	X	<input type="checkbox"/>
MP-01040-VL (N)	34S24E061200	E061691	B788	100-113	X	<input type="checkbox"/>
MP-01041-VL	34S24E060600	E061691	B788	100-113	X	<input type="checkbox"/>
MP-01042-VL	34S24E060000	E061691	B788	100-113	X	<input type="checkbox"/>
MP-01077-VL	33S24E318400	E061691	B788	100-113	X	<input type="checkbox"/>

Note: Correction to quitclaim deed for properties transferred to City recorded as E062130, B789, P450-452.

**Montezuma Creek Soil and Sediment Properties**

DOE ID	Parcel	Document	Book	Page	Y	N
MP-00990-CS	33S24E324800	E063343	B793	831-852	X	<input type="checkbox"/>
	33S24E328400		B921	474-476	X	<input type="checkbox"/>
	33S24E324802			electronic record	X	<input type="checkbox"/>
MG-01033-VL	34S24E050000	E063343	B793	831-852	X	<input type="checkbox"/>
	34S24E050601			electronic record	X	<input type="checkbox"/>
MS-01026-VL	34S24E043000	E063343	B793	831-852	X	<input type="checkbox"/>
MS-01027-VL	34S24E042400	E063343	B793	831-852	X	<input type="checkbox"/>
MG-01030-VL	34S24E047200	E063255	B793	526-538	X	<input type="checkbox"/>
MG-01029-VL	34S24E040000	E063219	B793	390-404	X	<input type="checkbox"/>
	34S24E040001			electronic record	X	<input type="checkbox"/>
MP-00951-VL	33S24E317200	E063926	B796	188-202	X	<input type="checkbox"/>
	34S24E040001			electronic record	X	<input type="checkbox"/>
MP-01084-VL	33S24E326000	E063926	B796	188-202	X	<input type="checkbox"/>
	33S24E317204			electronic record	X	<input type="checkbox"/>

Note: Correction to warranty deed for MP-01084-VL recorded as E073394, B830, P611.

**Utah Department of Transportation Properties**

DOE ID	Parcel	Document	Book	Page	Y	N
MS-00895-OT	A33230367811	E068703	B814	533	X	<input type="checkbox"/>
	A33230367825			electronic record	X	<input type="checkbox"/>
MS-00892-OT	A33230367202	E068704	B814	534	X	<input type="checkbox"/>
MS-01021-OT	A33230367812	E068705	B814	535-536	X	<input type="checkbox"/>
MS-01020-OT	A33230369001	E068706	B814	537-538	X	<input type="checkbox"/>

Notes for deed restriction inspection:

**New records were added to the above table to reflect properties sold or divided. Oil and gas leases are in effect for some properties.**

**III. Repository Inspection**

**A. Access Area**

<b>1. Site Access Sign/Emergency Information</b>	X Satisfactory	<input type="checkbox"/> Repairs/Maintenance Needed
<b>2. Field Office</b>	X Satisfactory	<input type="checkbox"/> Repairs/Maintenance Needed
<b>3. Temporary Storage Facility</b>	X Satisfactory	<input type="checkbox"/> Repairs/Maintenance Needed
Bin cover	X Functional	<input type="checkbox"/> Not Functional
Approximate volume of bin contents (cubic yards)	<u>4</u>	
Health and safety/rad postings	X Appropriate	<input type="checkbox"/> Inadequate
Drums and secondary containment	X Good condition	<input type="checkbox"/> Unavailable/not good condition
Vandalism/trespassing	X Not evident	<input type="checkbox"/> Evident (locate on map)

Describe access area repairs/maintenance needed:

**Noxious weeds have been noted and will be controlled. Condition of bin and volume of contents determined by interviewing onsite staff. No RCT present to escort the inspection team and view bin.**



<b>E. Repository Cover Inspection</b>			
<b>1. Top Perimeter Road and Road to Pond 4</b>	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Unsatisfactory	
<b>2. Interior Wildlife Fence and Wildlife Gates</b>			
Physical condition is:	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Unsatisfactory	
Wildlife gates are:	<input checked="" type="checkbox"/> Open	<input type="checkbox"/> Closed	
<b>3. Cover Vegetation</b>	See attached Repository Cover Vegetation Index form; note areas of concern on map		
<b>4. Riprap Armoring</b>			
<input checked="" type="checkbox"/> Slumping/sliding not evident	<input type="checkbox"/> Slumping/sliding evident (locate on map)		
<input checked="" type="checkbox"/> Rock deterioration not evident	<input type="checkbox"/> Rock deterioration evident (locate on map)		
<b>5. Settlement/Desiccation/Erosion/Gullies</b>			
<input checked="" type="checkbox"/> Settlement depressions not evident	<input type="checkbox"/> Settlement depressions evident (locate on map)		
<input checked="" type="checkbox"/> Desiccation cracking not evident	<input type="checkbox"/> Desiccation cracking evident (locate on map)		
<input checked="" type="checkbox"/> Erosion/gullies not evident	<input type="checkbox"/> Erosion/gullies evident (locate on map)		
<b>6. Holes/Burrows/Biointrusion</b>			
<input type="checkbox"/> Holes/burrows/biointrusion not evident	<input checked="" type="checkbox"/> Holes/burrows/biointrusion evident (locate on map)		
<b>7. Seepage/Ponding</b>			
<input checked="" type="checkbox"/> Seepage not evident	<input type="checkbox"/> Seepage evident (locate on map)		
<input checked="" type="checkbox"/> Ponding not evident	<input type="checkbox"/> Ponding evident (locate on map)		
<input checked="" type="checkbox"/> Soft subgrade not evident	<input type="checkbox"/> Soft subgrade evident (locate on map)		
<input checked="" type="checkbox"/> Phreatophytes not present	<input type="checkbox"/> Phreatophytes present (locate on map)		
<b>8. Site Monument at apex of cover</b>	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Repairs/maintenance needed	
<b>Site Monument at boundary gate</b>	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Repairs/maintenance needed	
Notes for repository cover inspection:			
<b><i>Small rodent burrows evident in places on cover, particularly near Settlement Plate E and lysimeter surface water enclosure. Chipmunks observed on sideslopes.</i></b>			
<b>F. Cover Penetrations (Caution: confined space entry requirements in effect for all manholes)</b>			
<b>1. Manholes 1 and 3 (LCRS and LDS access vaults)</b>			
Covers secure and operable	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Exterior pump access ports are undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Evidence of leakage into vaults	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Evidence of drainage through cover penetrations	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Telemetry surface installations in good condition	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Vaults are posted as confined-spaces	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
<b>2. Manholes 2, 4, and 5</b>			
Covers secure and operable	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Evidence of drainage through cover penetrations	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Manholes are posted as confined-spaces	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Notes for condition of manholes: <b><i>Manhole 3 has a loose bolt near northeast corner. Slight erosion has occurred on upslope side of Manhole 4 and will continue to be monitored. The telemetry pole near Manhole 3 is crooked.</i></b>			
<b>3. LCR Video Ports (check covers only; ports are inoperable)</b>			
Covers secure and operable	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Evidence of drainage through cover penetrations	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
<b>4. Settlement Monuments (A to I) (Note: plates surveyed during 5-year reviews only)</b>			
Surface completions undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Inner plates undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
<b>5. Embedded Lysimeter</b>			
Evidence of seepage at outlet	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Instrumentation installations undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Evidence of drainage along cover penetrations	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Telemetry surface installations in good condition	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

**6. Operation of Repository and Pond 4 LCRS and LDS (interview onsite LM operator)**

LCRS and LDS pumps, water level sensors, and flow meters are fully operational  Yes  No  
 Telemetry system is fully operational  Yes  No  
 Leachate production is below action levels  Yes  No  
 Leachate production rates are stable  Yes  No  
 Water levels do not exceed top of sumps  Yes  No  
 Monitoring data are managed through SOARS  Yes  No  
 Pumping rates (gallons/week): LCRS 1 \_\_\_\_\_ LCRS 2 \_\_\_\_\_ LDS 1 \_\_\_\_\_  
 LDS 2 \_\_\_\_\_ Pond 4 LCRS 1 \_\_\_\_\_ Pond 4 LDS 1 \_\_\_\_\_

Notes for cover penetrations inspection and operation of LCRS/LDS:

**Pumping rates are reported in quarterly FFA reports to EPA and UDEQ. The leachate pumps about every five weeks per onsite personnel. No anomalies reported.**

**IV. City-Owned Properties Inspection**

**A. City-Owned Properties Transferred from DOE**

(MP-00181, MP-00391, MS-00893, MP-01040 (North Portion), MP-01041, MP-01042, and MP-01077)

Property	181		391		893		1040		1041		1042		1077	
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Accessible to public	<input checked="" type="checkbox"/>	<input type="checkbox"/>												
Evidence of camping	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>						
Habitable structure(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
Gullies/erosion	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
Runoff/drainage controls intact and in good repair (ditches, riprap structures, dams, check dams, berms)	<input checked="" type="checkbox"/>	<input type="checkbox"/>												
Land use changes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Evidence of vandalism	<input type="checkbox"/>	<input checked="" type="checkbox"/>												
Soil removal evident	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water well installation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		n/a		n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wetland/creek damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		n/a		n/a		n/a	
Supp. Stds. fence intact	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>	n/a		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Describe any violations of institutional controls and/or repair/maintenance issues (locate on map):

**Supplemental standards fence is down in several places to access mountain bike trails. No significant new erosion or gullies observed in 2012. Fire pit found on MP-01041; may or may not be associated with overnight camping. Area will be monitored. Activities continue on MP-00181, and sewer line excavations had been scanned. Rad material has been removed from area where vacuum trucks dump excavated material from gas line.**

**B. City-Owned Property MP-00211**

	Yes	No	N/A
Evidence of excavation or construction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If yes, confirm the following with onsite LM representative:			
In accordance with Monticello zoning district Overlay Zone (OL-1)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Violation has been reported	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Radiological contamination was encountered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Radiological contamination was appropriately managed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Corrective action required	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Notes for City-owned property MP-00211 inspection:

## V. Montezuma Creek Soil and Sediment Properties

(Note: Refer to Plates 2 and 3 in the LTS&M Plan for boundary of restricted areas on these properties: MP-00951, MP-00990, MP-01084, MG-01026, MG-01027, MG-01029, MG-01030, and MG-01033)

Evidence of habitable structures within the restricted area	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Evidence of soil removal from the restricted area	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Land use/ownership has changed *	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Land owners are aware of use restrictions *	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Violations have been reported *	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Corrective action required	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	

Notes for Soil and Sediment Properties inspection: **Unable to access these privately owned properties during annual inspection due to closed access gate. Area recently accessed by onsite representative, and this report is based on interviewing onsite representative.**

\* confirm with onsite LM representative

## VI. Groundwater Management Area

(Note: the boundary of the Groundwater Management Area [GWMA] is shown in Plate 4 of the LTS&M Plan and includes the following properties: MP-00181, MS-00893, MP-00211, MP-00179, MP-00947, MG-00951, MG-01084, MG-00990, and MG-01033)

Evidence of water well installation within the restricted area *	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
No permits for water well installation within the restricted area †	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Violations have been reported *	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Land ownership has changed *	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Landowners are aware of water use restriction*	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Corrective action required	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	

Notes for Groundwater Management Area inspection:

**Onsite representative also regularly inspects area to verify wells.**

\* confirm with onsite LM representative

† confirm with State Engineer's Office

## VII. OU III Monitoring Wells and Water Treatment Systems

**A. Monitoring well surface completions** (Note: active wells are inspected and maintained twice annually during sampling events. Inactive wells are inspected during the annual inspection [see attached map for locations])

	Yes	No
Active wells in working condition (verify with sampling teams)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Outer casing or flush mount vault intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wells are locked/flush mount well lids secured	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Notes for inactive monitoring well inspection (note location of any maintenance issues on map):

**Inactive well R2M8 was missing lid. Loose lid on breather pipe southwest of wells R6M3 and R5M4. Loose lid on well near treatment cells, not numbered. Wells are checked and maintained biannually by groundwater sampling crew. Treatment system is running at about 7.5 gallons per minute.**

**B. Permeable Reactive Barrier (PRB) and Auxiliary Treatment Cells and Infiltration Trench**

	Yes	No
Electrical panel, antenna, fence, and vault access in satisfactory condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evidence of ponded water or saturated soil	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Evidence of surface disturbance	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Evidence of stressed vegetation	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Notes for PRB and treatment cells inspection:

**Inspected outside of structures but did not open vaults. Structures maintained by Environmental Sciences personnel. No problems reported.**

## VIII. MVP Field Inspection

### A. City Streets and Utilities

Roads/Utilities under Construction	Y	N
Unmonitored excavations observed during inspection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned excavations are identified by onsite LM representative	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiological material is properly controlled and managed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The utility locator service is contacted regularly by the onsite LM representative	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes for city streets and utilities inspection:

**Fairground trenching was scanned, clean. No activity north of town. Four Corners College is out of scanned area. Inspected all areas of current and recent street repairs and gas line excavations. All areas with 2" or greater utility pipes scanned. Gas line potholing operations observed on Pinyon Dr., Oak Crest Dr., 400 West, and Blue Mesa.**

### B. UDOT Highways 191 and 491 Rights-of-Way

1. Roads under Construction	Y	N
Unmonitored excavations observed during inspection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned excavations are identified by onsite LM representative	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiological material is properly controlled and managed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The local UDOT official is contacted periodically by the onsite LM representative	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes for UDOT highways inspection:

**UDOT information available on website; no construction. Onsite LM representative will consult website instead of local UDOT official for future projects.**

#### 2. Erosion (highway shoulders and Highway 191 embankment at Montezuma Creek)

New erosion evident       Previous erosion evident; unchanged       No erosion evident

Eroded material scanned for radiological contamination and properly managed

Yes       No       N/A

Describe erosion noted on UDOT highways:

### C. Property MS-00176 (Note: observations and activities for MS-00176-VL are recorded by the onsite LM representative in the Private Properties Restricted Areas Record Book)

Monticello zoning district Overlay Zone (OL-1) requires radiological scanning of the footprint of new habitable structures. Radiologically contaminated material is removed under the direction of the onsite LM representative.

	Y	N
Unmonitored excavations observed during inspection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned excavations are identified by onsite LM representative	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Site conditions indicate ICs properly implemented	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes for Property MS-00176 inspection:

**During the summer, onsite representative identified excavation near, but not on this property. This was documented in record books and incident reporting. The excavation was determined to be on the City right-of-way, and it scanned clean.**

<b>IX. Photo Log</b> (attach additional pages as necessary)		
<b>Photo No.</b>	<b>Feature Photographed</b>	<b>Description</b> (include photo location on map)
<b>Note: numbers in parentheses indicate the photo number used in this report</b>		
1 (11)	Repository Cover	Site Monument 2 at top of disposal cell
2 (12)	Repository Cover	Disposal cell vegetated cover, view west from Site Monument 2
3	Repository Cover	Site Monument 2 at top of disposal cell
4 (14)	Cover Penetrations	Manhole 4, showing health and safety postings
5	Repository Runoff/Run-on Controls	North Toe Trench at northeast edge of disposal cell, view to the west
6 (13)	Repository Cover	Rock-covered side slope of disposal cell showing volunteer vegetation
7	Repository Runoff/Run-on Controls	View of West Drain Ditch
8 (6)	Repository Runoff/Run-on Controls	Siberian elm ( <i>Ulmus pumila</i> ) growing in West Drain Ditch, to be removed
9	Repository Cover	Site Monument 1 at entrance road to disposal cell
10	Repository Cover	Personnel at Site Monument 1
11	Repository Cover	Personnel at Site Monument 1
12 (7)	Repository Runoff/Run-on Controls	South Drain Ditch, view to the east
13	Repository Runoff/Run-on Controls	East Toe Trench, view to the north-northwest
14 (5)	Repository Runoff/Run-on Controls	East Toe Trench, view to the north
15 (8)	Pond 4	Personnel at gate to Pond 4
16 (10)	Pond 4	Pond 4, view to the east
17 (9)	Pond 4	Recent repairs in lining of Pond 4
18 (1)	Access Area	Information sign on front access gate to the site
19	Repository Perimeter	Area of damage, broken bottom wire, on western perimeter fence
20 (2)	Repository Perimeter	Perimeter Sign P24
21	Repository Perimeter	Eastern perimeter fence
22 (3)	Repository Perimeter	Boundary Marker 6
23	City-Owned Properties	Former haul road on City-owned properties, view to the north
24	City-Owned Properties	Former haul road on City-owned properties, view to the northwest toward former mill site
25 (18)	City-Owned Properties	Lean-to and fire pit discovered during previous inspections showing no evidence of additional use
26 (19)	City-Owned Properties	Fire pit discovered during 2012 inspection on MP-01041
27	Repository Perimeter	Northern boundary fence
28	Repository Perimeter	Previously eroded soils at western fence line filling in with sediment over time
29 (4)	Repository Perimeter	Erosion channel at western fence line filling in with sediment over time
30 (17)	City-Owned Property MP-00211	Property MP-00211, view to the northeast
31 (15)	City-Owned Properties	View of Wetland 1 from City-owned property MP-00211

<b>Photo No.</b>	<b>Feature Photographed</b>	<b>Description</b> (include photo location on map)
<b>Note: numbers in parentheses indicate the photo number used in this report</b>		
32 (16)	City-Owned Properties	View of Wetland 2 from City-owned property MP-00211
33	City-Owned Properties	City equipment staging area on property MP-00181
34 (20)	City-Owned Properties	Area where contaminated material was removed during 2012 construction activities
35 (23)	City Streets and Utilities	Monitored utility line excavation on City streets
36 (21)	City-Owned Properties	Deer Draw Dam, view to the east
37	City-Owned Properties	Piñon /Juniper Property MP-01077, view to the east
38	City-Owned Properties	Piñon /Juniper Property MP-01077, view to the east
39	City-Owned Properties	Piñon /Juniper Property MP-01077, view to the east
40	UDOT Highways 191 and 491 Rights-of-Way	Highway 191 embankment from the former millsite
41 (24)	UDOT Highways 191 and 491 Rights-of-Way	Previously eroded area along Highway 191 embankment
42 (22)	City-Owned Properties	View of Wetland 3 from City access road
43	PRB and Auxiliary Treatment Cells and Infiltration Trench	Manholes and covers of groundwater treatment cells
44	Monitoring Well Surface Completions	Monitoring wells, including inactive wells
45 (26)	PRB and Auxiliary Treatment Cells and Infiltration Trench	Permeable Reactive Barrier area
46 (25)	Property MS-00176	Property MS-00176

Repository Cover Vegetation Index  
Monticello, Utah

Date inspected: 9/25/12 Inspected by: L. Sheader, J. Dayvault, J. Nguyen

Dominant species present on the repository cover at time of inspection (Note: dominant species make up an estimated 10% or more of the vegetative cover):

Species Name	Growth Form			Life Cycle		Vegetation Type		
	Shrub	Grass	Other	Annual	Perennial	Native	Weedy	Other
<i>Artemisia tridentata</i>	x				x	x		
<i>Pascopyrum smithii</i>		x			x	x		
<i>Agropyron cristatum</i>		x			x			x
<i>Bromus inermis</i>		x			x			x

Less common species present on repository cover: *Amaranthus blitoides*, *Bromus tectorum*, *Chenopodium album*, *Descurainia pinnata*, *Ericameria nauseosa*, *Helianthella uniflora*, *Helianthus annuus*, *Hesperostipa comata*, *Linum perenne*, *Machaeranthera* sp., *Medicago sativa*, *Pleuraphis jamesii*, *Salsola tragus*, *Sphaeralcea coccinea*, *Sphaeralcea grossulariifolia*, *Sphaeralcea parviflora*, *Sporobolus cryptandrus*, *Taraxacum officinale*, *Thinopyrum intermedium*, *Tragopogon dubius*, and *Viguiera multiflora*.

Noxious weed species present (record locations on map or GPS): *Convolvulus arvensis*  
(scattered in small populations in places on cover; not spreading)

Additional notes: \_\_\_\_\_

Vegetation Condition Score (see reverse): 4.00

Notes:

(Has the composition of vegetation changed, including plant diversity? If so, how? Describe any evidence of vegetation disturbance or relevant climate factors. If the vegetation score is less than 3.0, provide explanation and/or recommendation(s).)

Hundreds of sagebrush seedlings observed; some fresh vole and ground squirrel burrows. Vegetative cover condition score has increased since 2011. Although the early to mid- growing season was unusually dry, monsoonal rains arrived later in the season, and many warm-season grasses had leafed out and were flowering. Cover in good condition.

Condition of Vegetative Cover (indicate number in each row that best represents current conditions):

Indicator	1	2	3	4	5
Composition of Plant Cover (estimated visually)	Annual weeds dominant; non-weedy perennial species <20% of total cover	Annual weeds abundant and expanding; non-weedy perennial species 20–40% of total cover	Annual weeds present and expanding; non-weedy perennial species 40–60% of total cover	Some weeds present; non-weedy perennial species 60–80% of total cover	No obvious weeds; non-weedy perennial species exceeding 80% of total cover
Total Plant Cover (visual estimate)	Canopy cover less than 30%	Canopy cover 30–50%	Canopy cover 50–70%	Canopy cover 70–90%	Canopy cover over 90%
Bare Soil	Mostly bare soil	Large areas of bare soil	Moderate areas of bare soil	Few areas of bare soil	No obvious areas of bare soil
Diversity of Dominant Species	One species dominant across site	2–3 species dominant across site, one or both of which are weedy; species occur in patches	2–3 species dominant across site, both of which are non-weedy; species evenly distributed with some monoculture patches	More than 3 species dominant across site, at least 2 of which are non-weedy perennials; few patches of monocultures	More than 4 non-weedy perennial species dominant across site; few to no patches of monocultures
Diversity of Trace Species	0–1 non-weedy trace species observed on cover	2 non-weedy trace species observed	3–4 non-weedy trace species observed	5–6 non-weedy trace species observed	7 or more non-weedy trace species observed
Plant Residue	No plant residue on soil surface	1–10% of soil surface covered with plant residue	10–20% of soil surface covered with plant residue	20–30% of soil surface covered with plant residue	30–70% plant residue on soil surface
Standing dead vegetation (visual estimate)	Standing dead >25%	Standing dead 15–25%	Standing dead 5–15%	Standing dead <5%	No obvious standing dead
Erosion	Sheet erosion visible; rills/gullies present OR blowouts or dunes forming	Sheet erosion visible; some small rills present OR soil swept from onsite causing burial or abrasion of vegetation	Sheet erosion not obvious; no visible rills or rills stabilized OR soil swept from offsite causing burial or abrasion	No obvious sheet erosion; rills not present or fully stabilized OR some soil deposition from off site without burial or abrasion	No visible signs of current or past sheet or wind erosion.
Disturbance	Evidence of mass disturbance to several species of vegetation (fire, animal damage, etc.)	Evidence of some disturbance to several species of vegetation OR major disturbance to one species	Evidence of minor disturbance to one or two species of vegetation; localized to individual patches	Evidence of minor damage to individual plants only; disturbance not sitewide	No evidence of disturbance to any plant species or individual plants
Total each column	0	0	3	3	3

Add up all columns for total condition score:

<u>0</u>	(Column 1) × 1 =	<u>0</u>
<u>0</u>	(Column 2) × 2 =	<u>0</u>
<u>3</u>	(Column 3) × 3 =	<u>9</u>
<u>3</u>	(Column 4) × 4 =	<u>12</u>
<u>3</u>	(Column 5) × 5 =	<u>15</u>
		<u>36</u> Total

Divide total by 9 to calculate vegetative cover condition score = 4.00

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