

2013 Annual Inspection Report for the DOE Monticello, Utah, Mill Tailings Site and Monticello Vicinity Properties

December 2013



U.S. DEPARTMENT OF
ENERGY

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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 9, 10 and 26, 2013. 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 groundwater 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 2013 annual inspection.

Repository Findings

The repository site is well maintained and well managed. 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 and Pond 4 fence were intact and functional. A new gully resulting from heavy rainstorms was identified on the former haul road corridor, but the gully does not threaten structures or fence posts. A new erosion gully also was identified undercutting the north boundary fence near perimeter sign P16. Site vegetation is healthy and composed primarily of desirable species. Small noxious weed populations were found onsite and were treated with herbicide in late 2013. Repository cover vegetation is healthy, and no damage to the cover soils were apparent from the large, recent rainstorm. Prairie dogs have become established on the repository cover since the last annual inspection. The cover was engineered to withstand potential impacts from prairie dogs, and the burrows will be monitored for evidence of excavation into the biointrusion layer. The vegetation on the repository cover remains ecologically healthy and diverse, but large amounts of standing dead vegetation may continue to 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

Drainage and runoff control structures on the City-owned properties were in good condition. These structures were observed to be functioning well during a significant rainstorm. No remedy-related repair or maintenance items requiring action by the City of Monticello were observed. However, erosion gullies had formed on the access roads on the non-supplemental standards areas of the City-owned properties. 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. Fire pits discovered during previous annual inspections showed no evidence of additional use.

City Streets and Utility Corridor Findings

No unplanned or unmonitored excavations were identified during the 2013 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 land use changes on restricted properties were apparent. No well drilling occurred in 2013 in the Groundwater Restricted Area, as verified by the Utah Division of Water Rights 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 could 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, and the records were updated in October 2012. The Grand Junction copy of the Information Repository was decommissioned in 2012 and was not inspected. The site record books were correct and complete with only minor errors. Deficiencies noted during the 2012 annual inspection had been fully corrected.

Conclusions and Recommendations

The 2013 annual inspection confirmed that DOE LTS&M activities implemented throughout the year remain effective and appropriate, and institutional controls restricting land and groundwater use as part of the MMTS and MVP remedies remain effective. No corrective actions are necessary.

All maintenance items identified in the 2012 annual inspection have been resolved. No new maintenance items were identified.

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 9 and 10, 2013. Some inspection activities postponed due to inclement weather were completed on September 26, 2013. DOE inspects the MMTS and MVP 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 groundwater 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 2013 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 the city of Monticello. Drainage of liquids from the impounded tailings contaminated groundwater in the underlying shallow alluvial aquifer, which eventually discharges into Montezuma Creek.

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 or operations-generated radiologically contaminated materials are stored before eventual disposal offsite.

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 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. Land use restrictions and supplemental standards 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 groundwater 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, surface water and groundwater, 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 Five-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 2013 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 confirms that deed annotations applicable to the supplemental standards areas remain accurately filed and accessible at the County Courthouse, 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 also verifies that the Monticello copy of the

Information Repository and the Monticello and Grand Junction copies of the OU III Administrative Record documents are complete and current. The MMTS and MVP Administrative Record documents were archived 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 evaluating 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 LCRS and LDS. Populations of noxious weeds are 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 groundwater 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-01033, and MP-01084. Drilling for and appropriation of groundwater from the alluvial aquifer for domestic use is prohibited on these properties. This institutional control is administered by the Utah Division of Water Rights (State Engineer's Office) through the well permitting and water right processes.

- 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 supplemental standards 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 2013 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 9 and 10, 2013. On September 26, 2013, L. Sheader and P. Wetherstein also completed some inspection activities that were postponed due to inclement weather. J. Nguyen, K. Lively, F. Smith, and D. Dille also participated in portions of the inspection. EPA and UDEQ representatives were unable to attend the 2013 inspection. M. Stilson, a Regional Engineer with the Utah Division of Water Rights, was contacted in conjunction with the inspection.

Monday, September 9, 2013

Inspection team members convened at the Monticello field office at 1:00 p.m. to review the inspection procedure and checklist, review health and safety documents, and to hold a site briefing for new participants. The recordkeeping and administrative review was completed: 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. Also on September 9, the team inspected the former mill site properties (MP-00181, MP-00391, and MS-00893), the Highway 191 embankment at Montezuma Creek, City-owned property

MP-00211, private property MS-00176, and city streets and utilities excavations that were conducted in 2013.

Tuesday, September 10, 2013

The field inspection of the repository site near the field office and within the wildlife fence occurred on September 10. Because heavy rain created access and safety issues, some features could not be inspected at that time. Features that were inspected include field office facilities, the TSF, disposal cell features and cover vegetation, site monuments, cover penetrations (except for Manhole 5), and Pond 4. Institutional controls at the Montezuma Creek Soil and Sediment Properties were verified with the onsite personnel.

Thursday, September 26, 2013

The repository perimeter fence and signs, drain ditches, toe trenches, boundary markers, and Manhole 5 were inspected on September 26. City-owned properties MP-01040 (north), MP-01041, MP-01042, and MP-01077 were also inspected.

Additional inspection-related activities

In 2013, areas associated with OU III were inspected in conjunction with scheduled maintenance activities at the groundwater treatment cells on property MP-00179. This portion of the inspection was completed on September 17 and 18. Institutional controls in the Groundwater Management Area were verified by phone with M. Stilson of the Utah Division of Water Rights, on September 6, 2013.

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 2013 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 (Photo 1). Site access signs displaying contact information were current and visible. The site's paved access road was in good condition.

The TSF is a restricted-access, gravel-surfaced area enclosed by an 8-foot-high chainlink fence. The fence was appropriately posted with access control signs, and there was no evidence of vandalism or trespassing (Photo 2). Inspectors did not enter the TSF during the inspection, but onsite personnel reported approximately 25 cubic yards of low-level radiologically contaminated materials 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. Clamshell containers were used for excavated materials with activity below release levels.

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. Repairs had been made to damaged areas reported in 2012 (Photo 3). No evidence of vandalism or areas of excessive tumbleweed buildup were present.

Location-Reference Signs

All perimeter signs were legible and in good condition, although perimeter sign P15 was scratched, and the designation “P15” was no longer readable. New “No Hunting” signs have been posted at all gates along the perimeter fence (Photo 4).

Boundary Markers

All six boundary markers were located during the inspection and were in good condition.

Erosion and Gullies

A significant rainstorm occurred during the 2013 inspection, which provided an opportunity to assess erosion protection features. Most site drainages are well vegetated and were not significantly affected by the rainfall. However, one new erosion gully, 1 to 2 ft wide, formed beneath the north boundary fence between perimeter sign P16 and the north site access gate (Photo 5). A new erosion gully also formed in the former haul road corridor near perimeter sign P16 (Photo 6), but the gully currently does not threaten site structures or fence posts and will continue to be monitored. Previous inspection reports describe a gully between perimeter signs E and P2. Sources of water to this gully have been rerouted and repaired by UDOT, and despite the heavy rainfall, the gully continues to fill in with sediment (Photo 7).

Perimeter Vegetation

Vegetation between the perimeter fence and the wildlife fence (inner fence) is healthy and composed primarily of desirable species. Several small populations of noxious weeds were mapped on the site and treated with herbicide after the annual inspection. Prairie dog activity continues to disturb some vegetation along the eastern border of the site (Photo 8).

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. Movement of materials into the trenches is the result of expected, natural processes.

South Drain Ditch

No evidence of new erosion was found in 2013 (Photo 9). 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.

West Drain Ditch

No evidence of new erosion was apparent in 2013. The small Siberian elm (*Ulmus pumila*) tree reported in 2012 has been removed (Photo 10).

East Toe Trench and North Toe Trench

Erosion or bypass of these trenches was not evident. Soils and vegetation in the trenches are not expected to impede flows. After the recent large rainstorms, inspectors observed increased siltation and small amounts of surface riprap that had moved from the repository side slope (Photo 11). Monitoring of the toe trenches will continue to ensure that any material movement does not threaten the integrity of the disposal cell.

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 chainlink 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. 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. There was no evidence of vandalism or trespass. All damaged areas of the security fence reported in 2012 had been repaired.

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 that 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 nonweed 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. Hornets were nesting in the cabinet nearest the vehicle access gate at the time of the annual inspection, and the nest was removed shortly after the annual inspection.

Pond 4 LCRS/LDS Control Cabinet

The LCRS/LDS control cabinet was in good condition. No evidence of insect 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 most recently repaired in August 2013, and no visible evidence of holes or other damage to Pond 4 was observed during the 2013 inspection (Photo 12). Liner anchors were also removed from the pond in 2013. Several inches of water was standing in the northeast and southwest corners of the pond. Saltcedar (*Tamarix ramosissima*) infestations reported in 2012 have been removed.

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 excellent condition, and the disposal cell road had been recently repaired and resurfaced (Photo 13). The wildlife fence and gate apertures were functional and showed no evidence of vandalism. Both site monuments—one at the west access gate inside the wildlife fence and one at the apex of the disposal cell (Photo 14)—were present and intact. Six raptor perches, installed near the disposal cell cover in 2007, were also in good condition and continued to show evidence of use.

Vegetation

Desirable plants remained well established on the cover, and no significant barren or eroded areas were identified (Photo 15). No damage to vegetation or soils from the large, recent rainstorm was apparent. No species of phreatophyte shrubs were growing on the cover. A large number of healthy, desirable sagebrush (*Artemisia tridentata*) seedlings were apparent in 2013, as they were 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 remains healthy. A vegetation condition score of 3.61 out of 5.00 was assigned to the cover in 2013. The vegetation condition score is used to detect trends in the health of the vegetation community. Dominant species identified on the cover in 2013 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 generally 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. More standing dead vegetation was apparent in 2013 than in 2012. Also, dry conditions in the spring of 2013 limited foliar growth in the early growing season, resulting in lower foliar cover values.

Vegetation on the repository's soil-covered side slopes and outlying areas, similar in composition to that on the repository cover, was also 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 16). Several Russian olive trees (*Elaeagnus angustifolia*) described in 2012 were removed.

Burrowing Animals

Small burrowing animals have been observed on the repository cover for years. Raptors and other predators have kept these populations at moderate levels since a vole outbreak occurred in 2006. In 2013, prairie dog burrows were found on the repository cover for the first time, and these burrows were monitored during the annual inspection (Photo 17). Because the repository cover was engineered to withstand prairie dog activity, populations are not a concern at this time. Burrows and the effect of prairie dog populations on the vegetation cover will continue to be monitored. Inspectors and onsite personnel will look for evidence of gray-colored soils being cast to the surface, as this would indicate excavation in the biointrusion layer. No such soils have been observed on the surface.

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 degradation, settling, or slumping. As reported in Section 2.1.3, a small amount of rock riprap and soils have moved into the East and North Toe Trenches.

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, and all of the bolts on the covers had been replaced. Manhole 4 will continue to be monitored, as soils have eroded on its uphill side, and rocks have been displaced to the top of the structure. Appropriate safety warnings and entry procedures were posted on the manholes, exterior pump access ports were undamaged, telemetry surface installations were in good condition, and no leakage or drainage was evident. Covers of the two inoperable video ports were locked and secure (Photo 18).

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 (Photo 19). 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. Drainage and a small amount of siltation were detected at the outlet due to recent rainfall (Photo 20). Along cover penetrations, no seepage was evident. 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.” Photo 21 shows Wetland 2, Montezuma Creek, and vegetated slopes of the former mill site during the 2013 inspection. Property MP-00211 (Photo 22) was always City-owned and is subject only to zoning restrictions on excavation and construction.

Results of the 2013 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, is routinely monitored by onsite personnel, and no evidence of recent use was observed. A fire pit previously identified on MP-01040 (North) was no longer apparent and will no longer be monitored. A fire pit discovered in 2012 on MP-01041 showed no evidence of additional use (Photo 23).

Construction of Habitable Structures

Construction of habitable structures is prohibited on these properties. No evidence of any such construction was observed during the 2013 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. However, recent rainstorms had eroded some soils on the hillsides. 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 (Photo 24). The bike trails and areas of eroded

soils were scanned after the recent heavy rainfall, and radiation levels were not above background. Survey records are available at the Monticello field office.

Soil Movement, Drainage, and Runoff Controls

All riprap-armored structures, dams, check dams, berms, and runoff control drainages (Figure 4) were intact and functional. One riprap-armored structure below Steele's Pond on the former mill site was observed effectively carrying runoff during a significant rainstorm (Photo 25). Although all erosion structures were functional, erosion gullies have formed in portions of the access roads on several of the non-supplemental standards properties (Photo 26).

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 2013 inspection. Photo 27 shows Wetland 1 at the time of the inspection.

Groundwater Use

No evidence of water-well drilling on City-owned properties with groundwater restrictions was observed during routine inspections or during the 2013 annual inspection. No applications to drill were filed with the Utah 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

Section VIII of Appendix A presents results of the 2013 annual inspection of UDOT rights-of-way and city streets and utility corridors. 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. Photo 28 shows an example of a completed excavation that was monitored by onsite personnel. 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. Inspectors noted that the roadway along the embankment is slumping, but UDOT has not yet posted plans to repair this area on their website.

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 (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

Properties in the Montezuma Creek Restrictive Easement area were inspected on a regular basis by onsite personnel, and no evidence of significant erosion or soil removal from the restricted areas of these properties was noted (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. 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 land use changes were noted in 2013.

2.6 Groundwater Restricted Area

There has been no evidence of well-drilling activity in the GWRA (Appendix A, Section VI) during routine surveillance. On September 6, 2013, M. Stilson of the Utah Division of Water Rights confirmed that there were no change applications to divert water from the shallow alluvial aquifer in the GWRA and that there were no applications or approvals to drill into or through the shallow alluvial aquifer. One pre-existing water right located within or near the GWRA was replaced with a new water right, but conditions of the water right did not change.

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. Although the structures are regularly maintained, features of these systems are inspected each year to ensure that the current land use, ranching, is not adversely affected. These features were inspected on September 17 and 18 in conjunction with the change-out of reactive media in the auxiliary treatment cells. All 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 29).

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 2013. During the 2013 annual inspection, there were no identified maintenance items 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-Record of Decision Monitoring Plan) be included with an 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, and the records were updated in October 2012. The Grand Junction copy of the Information Repository was decommissioned in 2012 and was not inspected. The site record books were correct and complete with only minor errors. Deficiencies noted during the 2012 annual inspection had been fully corrected.

3.0 Conclusions and Recommendations

The 2013 annual inspection confirmed that DOE LTS&M activities implemented throughout the year remain effective and appropriate, and institutional controls restricting land and groundwater use as part of the MMTS and MVP remedies remain effective. No corrective actions are necessary.

All maintenance items identified in the 2012 annual inspection have been resolved. No new maintenance items were identified. 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 2014.

4.0 Photograph Log and Photographs

Photographs were taken to document findings of the 2013 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 2013 annual inspection is included as Appendix A, Section IX.



Photo 1. Office facility and parking lot.



Photo 2. TSF yard and fence.



Photo 3. Section of perimeter fence with spacers repaired in 2013.



Photo 4. New "No Hunting" sign posted on a site access gate.



Photo 5. New erosion gully undercutting the fence between P16 and site access gate.



Photo 6. New erosion gully in former haul road corridor near P16.



Photo 7. Erosion channel along west fence line near P1, continuing to fill in.



Photo 8. Prairie dog burrows and mound near the east perimeter fence.



Photo 9. South Drain Ditch, view west.



Photo 10. Elm stem cut and treated in West Drain Ditch.



Photo 11. Northern portion of the East Toe Trench showing soil and riprap movement.



Photo 12. Barrier rope, standing water, sediment, and shallow-rooted vegetation at Pond 4.



Photo 13. Newly repaired and resurfaced repository loop road.



Photo 14. Site Marker 2.



Photo 15. View west of the vegetated cell cover.



Photo 16. Repository side slope showing vegetation.



Photo 17. Prairie dog burrows on cell cover.



Photo 18. Video Port MH 1.



Photo 19. Interior of Settlement Plate E on cell cover.



Photo 20. Lysimeter outlet with minor siltation.



Photo 21. View of Wetland 2 and surrounding area.



Photo 22. View from City-owned property MP-00181 toward property MP-00211.



Photo 23. Discovered in 2012, this day camp area and fire pit show no evidence of additional use.



Photo 24. Supplemental standards fencing showing deterioration over time.



Photo 25. Rock-lined channel below Steele's Pond at former millsite, effectively carrying significant runoff.



Photo 26. City-owned property MP-01040 with erosion channel in road.



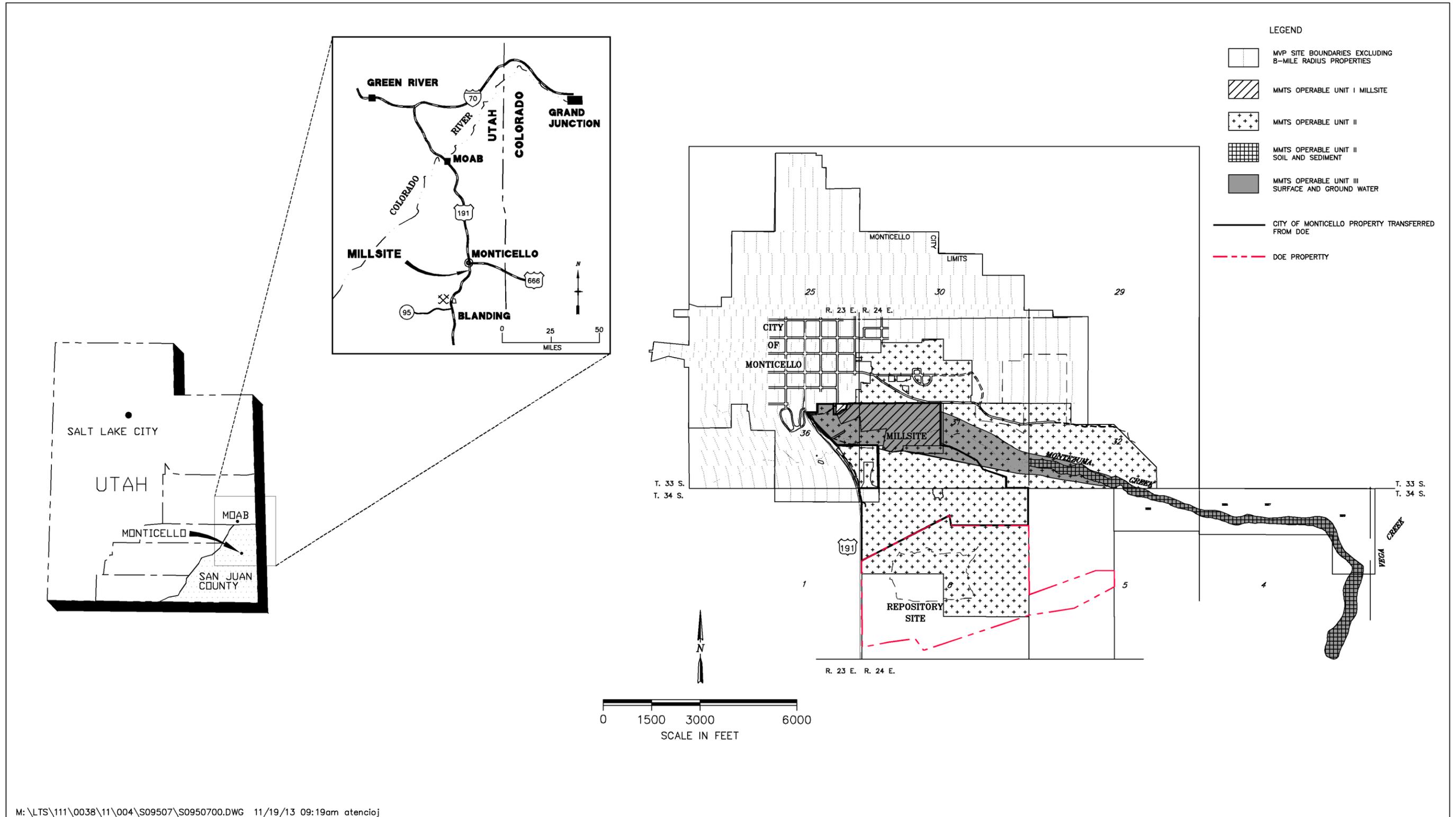
Photo 27. View of Wetland 1 at former mill site and surrounding area.



Photo 28. Excavation at 300 E, scanned in 2013.



Photo 29. Wells in the vicinity of the auxiliary treatment cells.



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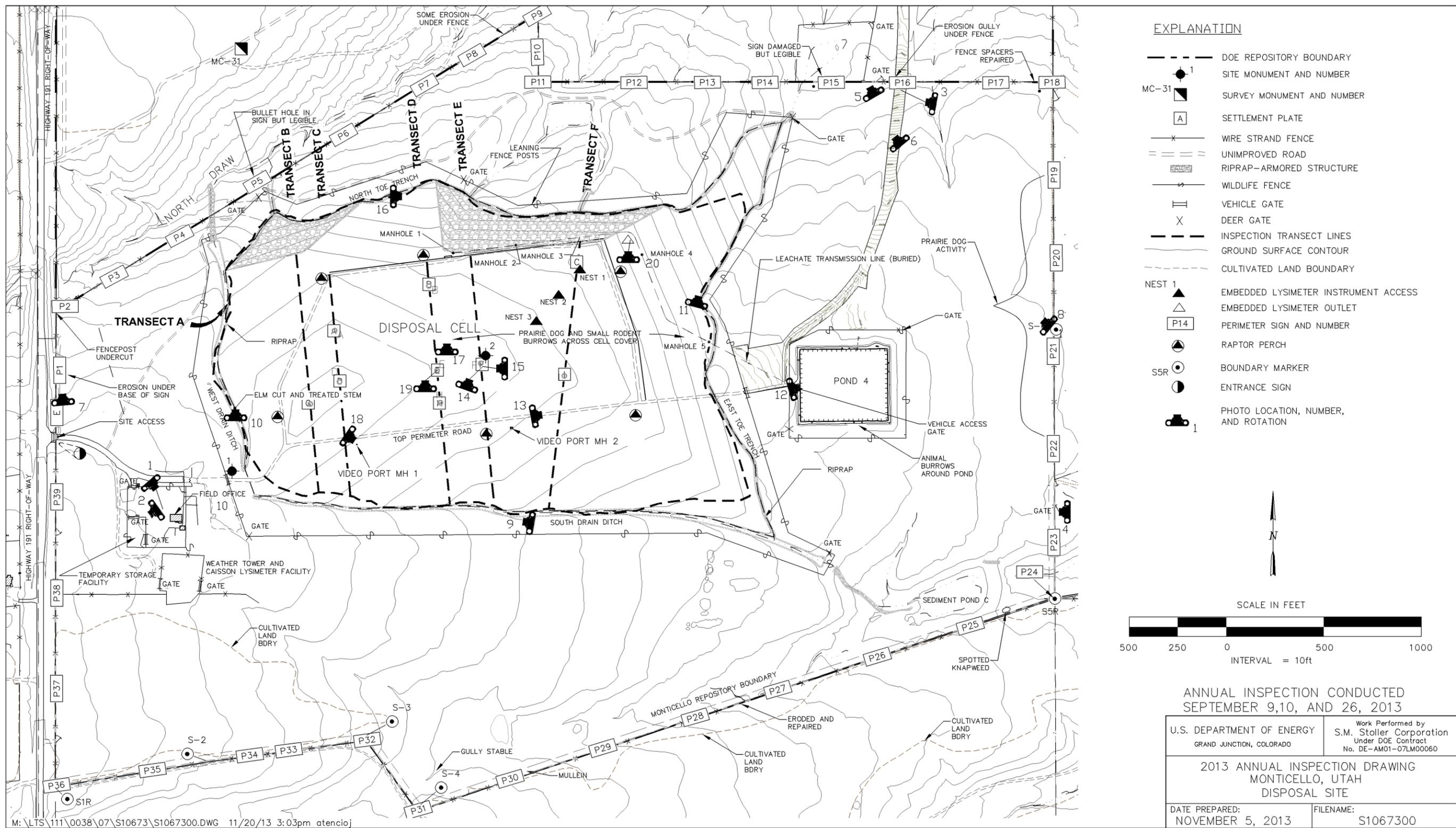


Figure 2. Monticello, Utah, Repository Site

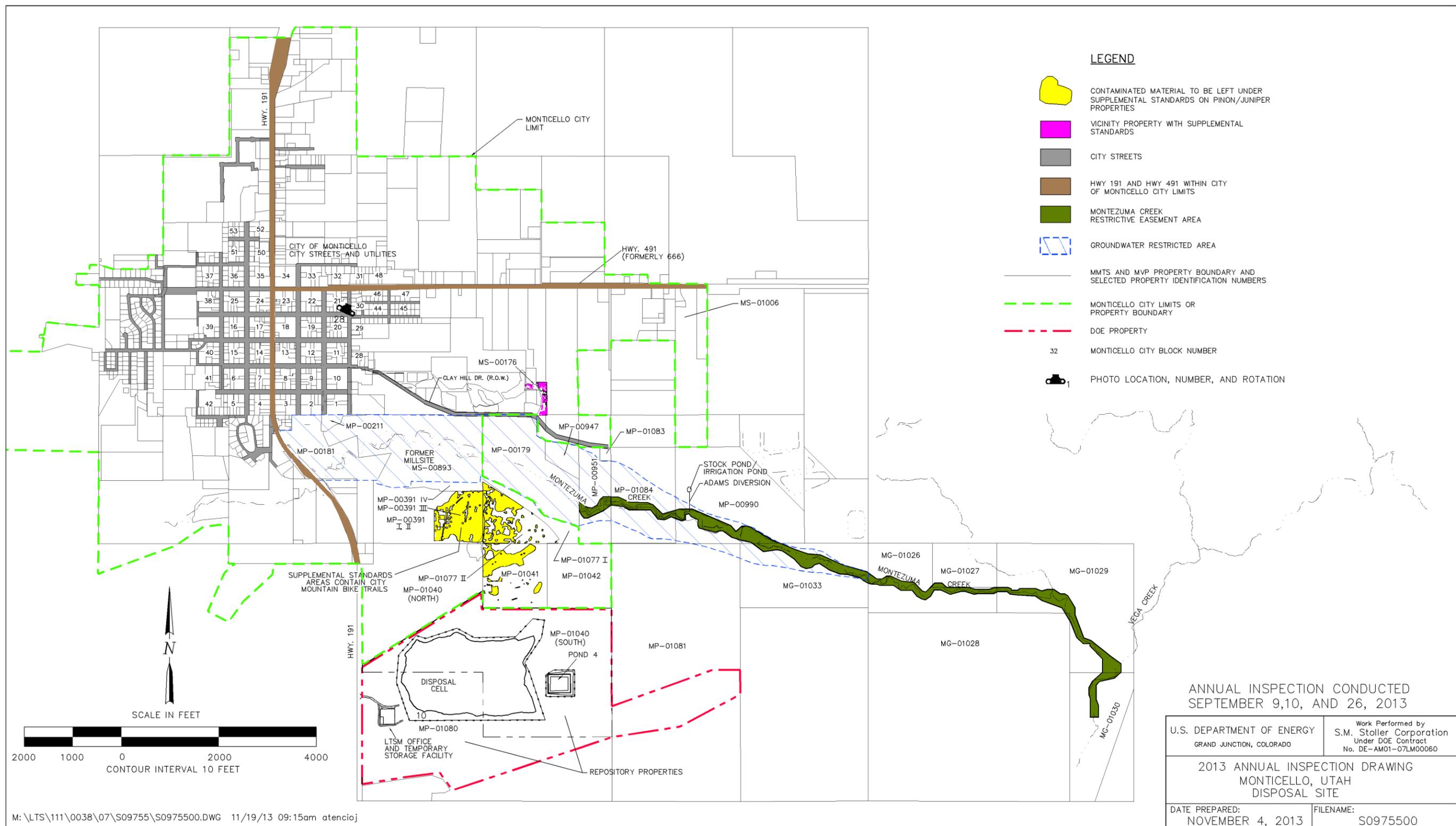


Figure 3. MMTS and MVP Supplemental Standards and Groundwater Restricted Areas

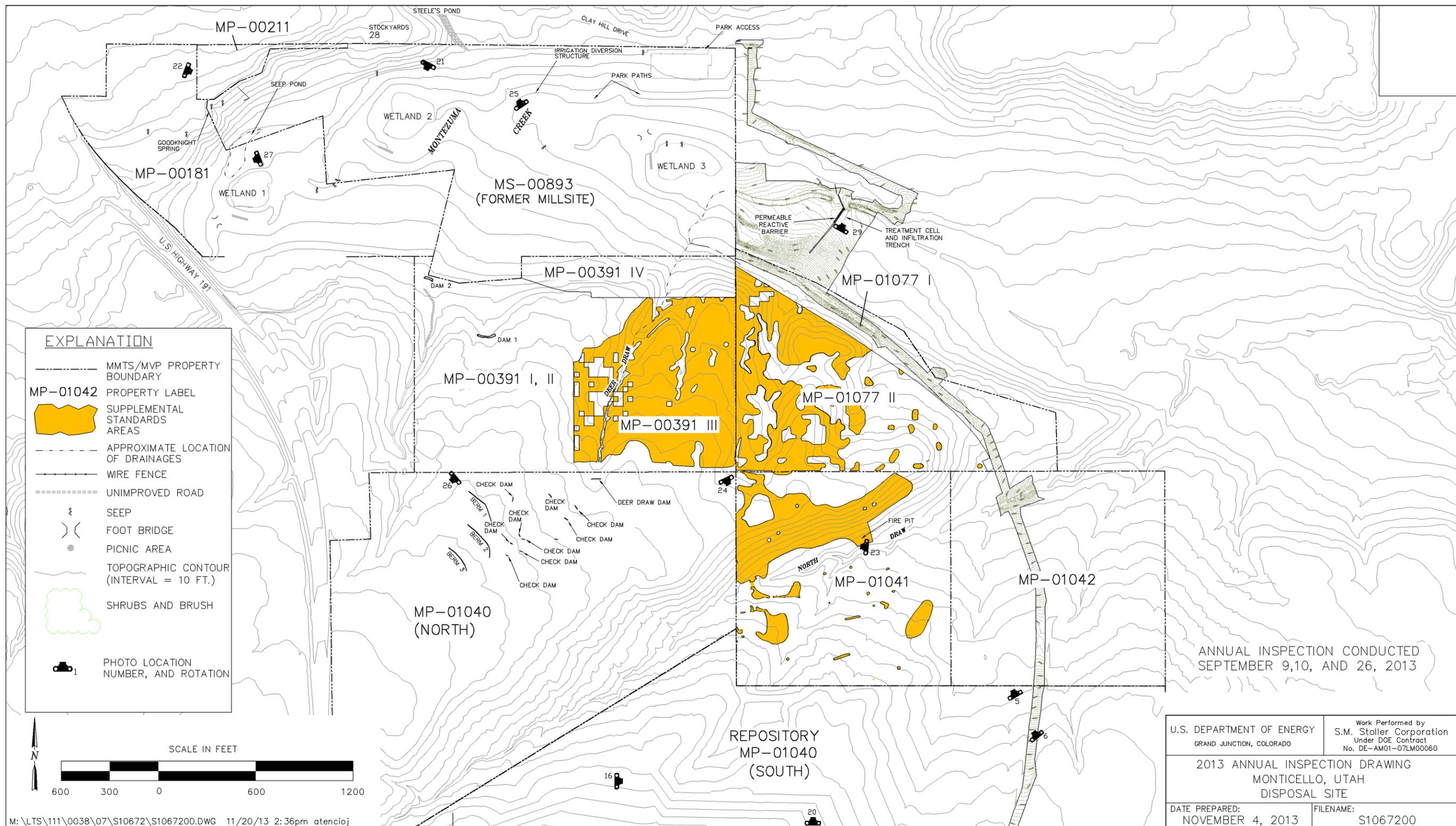


Figure 4. Monticello, Utah, Former Mill Site and Surrounding Area

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: 9/9/13, 9/10/13, 9/26/13

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
Jason Nguyen	U.S. Department of Energy (Site Manager)	970-248-6707	Jason.Nguyen@lm.doe.gov
Karen Lively	U.S. Department of Energy	970-248-6002	Karen.Lively@lm.doe.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.

I. Interviews		
Name of Individual Interviewed	Affiliation	Date Interviewed
Fred Smith	Onsite LM Representative	September 9, 2013
Notes: <i>A portion of the Highway 191 road on top of the western embankment at Montezuma Creek appears to be settling/slumping to a significant degree. However, no erosion of the embankment is evident in this area. No repair work has yet been posted on UDOT website. See also notes in individual sections, below. F. Smith or D. Dille accompanied inspectors during portions of the inspection and answered site-related questions.</i>		
Name of Individual Interviewed	Affiliation	Date Interviewed
	City of Monticello	
Notes: <i>Individuals from the City of Monticello were not interviewed during the 2013 inspection.</i>		
Name of Individual Interviewed	Affiliation	Date Interviewed
Marc Stilson	State Engineer	September 6, 2013
Notes: <ul style="list-style-type: none"> • <i>One pre-existing water right that may be located within the Ground Water Restricted Area (GWRA) was replaced with a new water right; conditions of the pre-existing water right did not change.</i> • <i>There were no change applications to divert water from the shallow alluvial aquifer in the GWRA.</i> • <i>There were no applications or approvals to drill into the shallow alluvial aquifer in the GWRA or to drill through the shallow alluvial aquifer to access the deeper Burro Canyon aquifer.</i> 		
Name of Individual Interviewed	Affiliation	Date Interviewed
Notes:		

II. Administrative and Records Inspection

	Readily Available		Current	
	Y	N	Y	N
1. General LTS&M Documents				
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"/>
2. LTS&M Training Records (<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>)		N/A 2013	<input type="checkbox"/>	<input type="checkbox"/>
3. Public Records (<i>verify records are present and in order</i>)				
OU III Administrative Record updated 10/2012	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Information Repository (Monticello) updated 10/2012	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Information Repository (Grand Junction) n/a - extra GJ copy decommissioned in 2012				
4. Record Books (<i>Note: Inspection guidelines are listed inside covers of record books; LTS&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&M Plan Section 3.4</i>)	X	<input type="checkbox"/>	X	<input type="checkbox"/>
City-owned properties (<i>see LTS&M Plan Section 4.4</i>)	X	<input type="checkbox"/>	X	<input type="checkbox"/>
Private Property Restricted Areas (<i>see LTS&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	X	<i>satisfactory</i>	<input type="checkbox"/>	<i>unsatisfactory</i>
Information readily traced to updated drawings	X	<i>satisfactory</i>	<input type="checkbox"/>	<i>unsatisfactory</i>
Rad scan info for eroded/excavated material	X	<i>satisfactory</i>	<input type="checkbox"/>	<i>unsatisfactory</i>
Entries include TSF transfers	<input type="checkbox"/>	<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>unsatisfactory</i>
Hwy 191/491 entries include information on scan Results and material returned to excavation	X	<i>satisfactory</i>	<input type="checkbox"/>	<i>unsatisfactory</i>
Storm event surveys documented	<input type="checkbox"/>	<i>satisfactory</i>	<input type="checkbox"/>	<i>unsatisfactory</i>
Notes for Record Books Inspection:				
ICs verified on routine basis by onsite personnel. Recordkeeping is excellent. Rad Tech always present when TSF bin cover open. Transfer documentation not prepared for materials in clamshells because they were below release levels. Entries in Public Roads and Utilities (PRU) book were spot checked for accuracy. With minor exceptions, documentation was satisfactory. Minor instances were found where 1) some of the rad information in the record book did not match the as-built drawings, 2) dates were incomplete (year missing), or 3) initials of entry author were missing. Information missing from the record book during 2012 inspection was subsequently entered during 2013. Recommendation for Process Improvement : Include sheet number of pertinent Radiological As-Built Drawing when making entries into the PRU Record Book. This will result in more efficient cross referencing of information on the Radiological As-Built Drawings with entries in the record book.				
5. Radiological As-Built Drawings				
Drawing updated annually	X	<i>satisfactory</i>	<input type="checkbox"/>	<i>unsatisfactory</i>
Documentation/recordkeeping requirements met	X	<i>satisfactory</i>	<input type="checkbox"/>	<i>unsatisfactory</i>
Radiological scan information recorded	X	<i>satisfactory</i>	<input type="checkbox"/>	<i>unsatisfactory</i>
6. Surveillance Checklists and Records				
	Readily Available		Current	
<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: monitoring data are electronic Agreements and Zoning Restrictions verified in I.R. (IR074, IR021, and IR044)				
7. Agreements (<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"/>
8. Zoning Restriction—Overlay Zone OL-1				
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 33S23E367204 A34240063004	E061691	B788	100-113	X	<input type="checkbox"/>
				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 34S24E061201	E061691	B788	100-113	X	<input type="checkbox"/>
				electronic record	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 33S24E328400 33S24E324802	E063343	B793	831-852	X	<input type="checkbox"/>
				B921 474-476	X	<input type="checkbox"/>
				electronic record	X	<input type="checkbox"/>
MG-01033-VL	34S24E050000 34S24E050601	E063343	B793	831-852	X	<input type="checkbox"/>
				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 34S24E040001	E063219	B793	390-404	X	<input type="checkbox"/>
				electronic record	X	<input type="checkbox"/>
MP-00951-VL	33S24E317200 33S24E317204	E063926	B796	188-202	X	<input type="checkbox"/>
				electronic record	X	<input type="checkbox"/>
MP-01084-VL	33S24E326000	E063926	B796	188-202	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 A33230367825	E068703	B814	533	X	<input type="checkbox"/>
				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 <i>book</i>	X <i>computer</i>
MS-01020-OT	A33230369001	E068706	B814	537-538	X	<input type="checkbox"/>

Notes for deed restriction inspection:

A34240063004 also applies to properties 391, 893, 1040, 1041, 1042, and 1077.

III. Repository Inspection

A. Access Area

1. Site Access Sign/Emergency Information	X Satisfactory	<input type="checkbox"/>	Repairs/Maintenance Needed
2. Field Office	X Satisfactory	<input type="checkbox"/>	Repairs/Maintenance Needed
3. Temporary Storage Facility	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>25</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:

New signage on fence. Volume of bin contents reported by F. Smith

B. Repository Perimeter (Note locations of erosion, noxious weeds, vandalism, or excessive vegetation on map)

- 1. **Outer Fencing and Gates** Satisfactory Repairs/Maintenance Needed
- 2. **Signs** (Note condition of 40 numbered reference signs and posts)
Signs damaged but legible, requiring monitoring: **P5 (bullet hole); P15 (damaged; missing "P15")**
Signs requiring replacement: **none**
- 3. **South Boundary Markers** All six markers located Marker(s) _____ not located
- 4. **Erosion/Gullying** Not evident Evident
- 5. **Vegetation** Not excessive Excessive growth
 Noxious weeds absent Noxious weeds present
- 6. **Land use changes on adjoining property** No change Change
- 7. **Vandalism/trespassing** Not evident Evident

Notes for condition of repository perimeter (e.g., repairs needed, erosion areas, vandalism):
Spotted knapweed noted on map. Gully along west boundary filling in and stabilizing. New erosion area undercutting site boundary fence near perimeter sign P16. New erosion channels in previous remediation Haul Road near perimeter sign P16. Erosion repairs not recommended at this time, but monitoring will continue. Cows were observed grazing on Hammons property east of Pond 4, which may represent a land use change.

C. Repository Runoff/Run-On Controls (North and East Toe Drains; South and West Drain Ditches)

- 1. **Settlement** Not evident Evident
- 2. **Material Degradation** Not evident Evident
- 3. **Erosion/gullies** Not evident Evident
- 4. **Siltation** Not evident Evident
- 5. **Obstructions** Not evident Evident
- 6. **Excessive Vegetation** Not evident Evident

Notes for condition of repository runoff and run-on controls (Note: locate all areas of concern on map):
Elm tree in West Drain Ditch was removed. Degradation of rock in North Toe Trench relatively unchanged since 2011. Siltation in all drains and ditches is expected over time. Shrubs in ditches not obstructing flow. Increased movement of materials into North and East Toe Trenches observed from recent heavy rainfall.

D. Pond 4 (Note: locate all areas of concern on map)

- 1. **Perimeter Fence and Access Gate** Satisfactory Unsatisfactory
- 2. **Erosion/Biointrusion of Pond Berm** Not evident Evident
- 3. **Safety Equipment** Pond barrier rope intact Yes No
Personal floatation device posting present and visible Yes No
PFD storage containers appropriately marked and in good condition Yes No
PFDs accessible, in good condition, and appropriately sized Yes No
- 4. **Pond 4 LCRS and LDS Electrical Housing/Surface Installations**
Physical condition is: Satisfactory Unsatisfactory
- 5. **Liner—Holes/Cracks/Tears** Not Evident Evident
- 6. **Liner Anchors** Intact Not intact
- 7. **Siltation and Vegetation in Pond 4** Not evident Evident
- 8. **Pond 4 Water Level** Estimated water depth is 1 ft.
- 9. **Vandalism** Not evident Evident

Notes for condition of Pond 4 features:
Some evidence of burrowing animal activity in pond berm but does not threaten integrity of berm or pond liner. Liner anchors removed in 2013. Vegetation in pond is not excessive; deep-rooted vegetation found in 2012 has been removed. Hornets were nesting in the PFD cabinet nearest the vehicle access gate.

E. Repository Cover Inspection			
1. Top Perimeter Road and Road to Pond 4	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Unsatisfactory	
2. Interior Wildlife Fence and Wildlife Gates			
Physical condition is:	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Unsatisfactory	
Wildlife gates are:	<input checked="" type="checkbox"/> Open	<input type="checkbox"/> Closed	
3. Cover Vegetation	See attached Repository Cover Vegetation Index form; note areas of concern on map		
4. Riprap Armoring			
<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)		
5. Settlement/Desiccation/Erosion/Gullies			
<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)		
6. Holes/Burrows/Biointrusion			
<input type="checkbox"/> Holes/burrows/biointrusion not evident	<input checked="" type="checkbox"/> Holes/burrows/biointrusion evident (locate on map)		
7. Seepage/Ponding			
<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)		
8. Site Monument at apex of cover	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Repairs/maintenance needed	
Site Monument at boundary gate	<input checked="" type="checkbox"/> Satisfactory	<input type="checkbox"/> Repairs/maintenance needed	
Notes for repository cover inspection:			
<i>Prairie dog burrows were found on the cover in 2013, including areas near Settlement Plate H and Nest 3. The cover was engineered to accommodate prairie dog activity. Burrows will be monitored and photographed as necessary during routine and annual inspections.</i>			
F. Cover Penetrations (<i>Caution: confined space entry requirements in effect for all manholes</i>)			
1. Manholes 1 and 3 (LCRS and LDS access vaults)			
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	
2. Manholes 2, 4, and 5			
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: <i>Bolts have been replaced at all manholes. Rocks are piled up on the concrete cover penetration and against the manhole lid at Manhole 4. No damage was observed; monitoring of the area will continue.</i>			
3. LCR Video Ports (check covers only; ports are inoperable)			
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	
4. Settlement Monuments (A to I) (<i>Note: plates surveyed during 5-year reviews only</i>)			
Surface completions undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Inner plates undamaged	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
5. Embedded Lysimeter			
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. A small amount of sediment was observed in the lysimeter outlet.

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"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>
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 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 was breached years ago by the City for access to trails. Remaining fence is aging and deteriorating. Water wells are used to irrigate VMTE memorial tree plantings, and it is recommended that the water source be verified. To strengthen enforcement of ICs, it is recommended that "No Overnight Camping" signs be posted in supplemental standards areas.

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: **These areas were recently accessed by onsite representatives, and this report is based on interviewing onsite representatives.**

* 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 representatives regularly inspect 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 checked="" type="checkbox"/>	<input type="checkbox"/>

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

Wells are checked and maintained biannually by groundwater sampling crew.

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:

Structures maintained by Environmental Sciences personnel. No problems reported. Inspection of these features done during change-out of ZVI in September 2013.

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:

Weekly inspections of these areas occur by onsite personnel to routinely identify any IC-related issues.

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 – <i>n/a</i> – website only		

Notes for UDOT highways inspection:

UDOT information available on website; no construction. Onsite LM representative routinely consults website 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:

No additional erosion was evident despite large rainstorms.

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:

The sediment in runoff ditches is routinely scanned by onsite personnel. No structures have been noted on the property.

IX. Photo Log <i>(attach additional pages as necessary)</i>		
Photo No.	Feature Photographed	Description (include photo location on map)
Note: numbers in parentheses indicate the photo number used in this report		
1	Repository Runoff/Run-on Controls	South Drain Ditch, view east
2 (9)	Repository Runoff/Run-on Controls	South Drain Ditch, view west
3	Repository Runoff/Run-on Controls	Channel below the South Drain Ditch and East Toe Trench, view northwest from the wildlife fence
4	Repository Runoff/Run-on Controls	East Toe Trench, a portion where soils and vegetation have covered rock rip-rap.
5	Repository Runoff/Run-on Controls	View south-southeast of the East Toe Trench from the access road
6	Repository Runoff/Run-on Controls	View north-northwest of the East Toe Trench from the access road
7	Cover Penetrations	Manhole 5 with postings
8 (11)	Repository Runoff/Run-on Controls	Northern portion of the East Toe Trench showing soil and riprap movement
9	Repository Runoff/Run-on Controls	Northern portion of the East Toe Trench filled in with soils and vegetation
10 (26)	City-Owned Properties Transferred from DOE	City-owned property MP-01040 with erosion channel in road
11	City-Owned Properties Transferred from DOE	Deer Draw Dam area showing no significant erosion or siltation from recent heavy rains
12	City-Owned Properties Transferred from DOE	Area of damaged Supplemental Standards fencing
13 (24)	City-Owned Properties Transferred from DOE	Supplemental Standards fencing showing deterioration over time
14 (23)	City-Owned Properties Transferred from DOE	Discovered in 2012, this day camp area and fire pit show no evidence of additional use
15	Repository Perimeter	Perimeter Sign P33
16	Repository Perimeter	Section of bent but intact perimeter fencing near Perimeter Sign P33
17 (7)	Repository Perimeter	Erosion channel along west fence line near P1, continuing to fill in
18	Repository Runoff/Run-on Controls	Rock-lined outflow from the West Drain Ditch to North Draw
19	Repository Runoff/Run-on Controls	West Drain Ditch
20 (10)	Repository Runoff/Run-on Controls	Elm stem cut and treated in West Drain Ditch
21	Repository Cover	Repository side slope
22	Repository Cover	Repository side slope and North Toe Trench
23	Repository Runoff/Run-on Controls	Portion of North Toe Trench filled in with sediment and vegetation
24	Repository Cover	Wildlife fence and vegetated side slope of repository
25	Repository Cover	Repository slope and wildlife fence
26 (16)	Repository Cover	Repository side slope showing vegetation
27	Repository Perimeter	Road outside perimeter fence with erosion channel
28	Repository Perimeter	Access gate

Photo No.	Feature Photographed	
29	Repository Perimeter	Cow grazing on adjacent property
30 (4)	Repository Perimeter	New "No Hunting" sign posted on a site access gate
31	Repository Perimeter	Drainage near perimeter fence
32	Repository Perimeter	Section of east perimeter fence
33	Repository Perimeter	Boundary marker S-6
34 (8)	Repository Perimeter	Prairie dog burrows and mound near the east perimeter fence
35	Repository Perimeter	East perimeter fence
36	Repository Perimeter	Former haul road area with lath marking planned pipeline
37	City-Owned Properties Transferred from DOE	View down former haul road from perimeter fence
38	Repository Perimeter	Perimeter fence and sign P16
39 (3)	Repository Perimeter	Section of perimeter fence with spacers repaired in 2013
40 (6)	Repository Perimeter	New erosion gully in former haul road corridor near P16
41	Repository Perimeter	New erosion gully undercutting the fence between P16 and site access gate
42 (5)	Repository Perimeter	New erosion gully undercutting the fence between P16 and site access gate
43	Repository Perimeter	Decommissioned sediment pond
44	Repository Perimeter	Stabilized draw
45	Repository Perimeter	Vegetated draw
46 (22)	City-Owned Property MP-00211	View from City-Owned Property MP-00181 toward Property MP-00211
47	City-Owned Properties Transferred from DOE	City-Owned Property MP-00181
48	City-Owned Properties Transferred from DOE	View of Wetland 3 and surrounding area
49	City-Owned Properties Transferred from DOE	East end of former mill site and adjacent peripheral property where PRB and auxiliary treatment cells are located
50 (25)	City-Owned Properties Transferred from DOE	Rock-lined channel below Steele's Pond at former mill site, effectively carrying significant runoff
51	City-Owned Properties Transferred from DOE	DOE personnel at rock-armored channel on former mill site
52	City-Owned Properties Transferred from DOE	DOE personnel at rock-armored channel on former mill site
53 (21)	City-Owned Properties Transferred from DOE	View of Wetland 2 and surrounding area
54	City-Owned Properties Transferred from DOE	Pedestrian path at former mill site with recently planted memorial trees
55	City-Owned Properties Transferred from DOE	A portion of the embankment along Highway 191
56 (27)	City-Owned Properties Transferred from DOE	View of Wetland 1 at former mill site and surrounding area
57	City-Owned Properties Transferred from DOE	VMTE visitor kiosk, day use area, and spigot for irrigation system
58	City-Owned Properties Transferred from DOE	Well and equipment for irrigation at former mill site

Photo No.	Feature Photographed	
59	Property MS-00176	Road embankment at Vicinity Property MS-00176
60 (28)	City Streets & Utilities	Excavation at 300 E, scanned in 2013
61	UDOT Highways 191 and 194 Rights-of-Way	View from the former millsite of the Highway 191 embankment, with no new erosion evident
62	Repository Access Area	New signage and updated postings on the TSF gate
63 (2)	Repository Access Area	TSF yard and fence
64 (1)	Repository Access Area	Office facility and parking lot
65	Repository Access Area	Parking lot area where road repair materials were recently stored and removed
66	Repository Access Area	Posting on the site's main entrance gate
67	Repository Perimeter	The site's main entrance gate
68	Repository Access Area	Access road between site office and repository, recently repaired and resurfaced
69	Repository Cover	Site Marker 1
70	Repository Cover	Prairie dog burrows on cell cover
71 (17)	Repository Cover	Prairie dog burrows on cell cover
72	Repository Cover	Prairie dog burrows on cell cover
73 (14)	Repository Cover	Site Marker 2
74 (15)	Repository Cover	View west of the vegetated cell cover
75	Repository Cover	View north of the vegetated cell cover
76	Repository Cover	View east of the vegetated cell cover
77	Repository Cover	View south of the vegetated cell cover
78 (13)	Repository Cover	Newly repaired and resurfaced repository loop road
79	Pond 4	Postings on gate to Pond 4
80 (12)	Pond 4	Barrier rope, standing water, sediment, and shallow-rooted vegetation at Pond 4
81	Pond 4	Close-up of corner of Pond 4 showing water and vegetation
82	Pond 4	One of two cabinets for flotation devices at Pond 4
83	Pond 4	Pond 4 berm vegetation
84	Pond 4	Electrical panel cabinet and second cabinet for flotation devices at Pond 4
85	Repository Access Area	Updated sign on inner entrance gate to repository
86	Repository Cover	Mushrooms growing in soil on cell cover
87 (19)	Cover Penetrations	Interior of Settlement Plate E on cell cover
88	Repository Cover	Prairie dog burrow on cell cover near Nest 3
89	Cover Penetrations	Manhole 4 showing signage
90 (20)	Cover Penetrations	Lysimeter outlet with minor siltation
91 (18)	Cover Penetrations	Video port MH 1
92	OU III Monitoring Wells and Water Treatment System	Active and inactive wells in the PRB area
93 (29)	OU III Monitoring Wells and Water Treatment System	Wells in the vicinity of the auxiliary treatment cells

Photo No.	Feature Photographed	
94	OU III Monitoring Wells and Water Treatment System	Auxiliary treatment cells
95	OU III Monitoring Wells and Water Treatment System	Active and inactive wells in the PRB area
96	OU III Monitoring Wells and Water Treatment System	Auxiliary treatment cells
97	OU III Monitoring Wells and Water Treatment System	Outflow pipe from treatment cells discharging to Montezuma Creek
98	OU III Monitoring Wells and Water Treatment System	Active and inactive wells in the PRB area
99	OU III Monitoring Wells and Water Treatment System	Wells along fence line near auxiliary treatment cells
100	OU III Monitoring Wells and Water Treatment System	Discharge area from treatment cell outflow pipe
101	OU III Monitoring Wells and Water Treatment System	Active and inactive well completions near PRB
102	OU III Monitoring Wells and Water Treatment System	Close-up of active and inactive well completions near PRB

Repository Cover Vegetation Index
Monticello, Utah

Date inspected: 9/10/13 Inspected by: L. Sheader

Dominant species present on the repository cover at time of inspection (Note: dominant species make up an estimated 10% or more of the vegetation 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*, *Amaranthus retroflexus*, *Astragalus cicer*, *Bromus tectorum*, *Chenopodium album*, *Ericameria nauseosa*, *Gutierrezia sarothrae*, *Helianthus annuus*, *Hesperostipa comata*, *Machaeranthera canescens*, *Medicago sativa*, mushrooms (species unknown), *Pleuraphis jamesii*, *Portulaca oleracea*, *Psathyrostachys juncea*, *Pseudoroegneria spicata*, *Salsola tragus*, *Sisymbrium altissimum*, *Sphaeralcea coccinea*, *Sphaeralcea grossulariifolia*, *Sphaeralcea parviflora*, *Thinopyrum intermedium*, and *Viguiera multiflora*.

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

Additional notes: Many hundreds of small sagebrush plants becoming established.

Vegetation Condition Score (see reverse): 3.61

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).)

In 2012, the condition score was 4.00; the change in 2013 is likely due to a very dry spring and to recent immigration of prairie dogs to the cover. Although this results in lower vegetation cover in places, the cover design was engineered to withstand prairie dog activity. The cover will continue to be monitored to assess the impact of the prairie dogs on the overall vegetation health.

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	1	3.5	2.53	2

Add up all columns for total condition score:

$$\begin{array}{r}
 0 \quad (\text{Column 1}) \times 1 = 0 \\
 1 \quad (\text{Column 2}) \times 2 = 2 \\
 3.5 \quad (\text{Column 3}) \times 3 = 10.5 \\
 2.5 \quad (\text{Column 4}) \times 4 = 10 \\
 2 \quad (\text{Column 5}) \times 5 = 10 \\
 \hline
 32.5 \text{ Total}
 \end{array}$$

Divide total by 9 to calculate vegetation cover condition score = 3.61

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