LMS/MNT/S18941

Monticello, Utah, National Priorities List Sites Federal Facility Agreement (FFA) Quarterly Report: January 1–March 31, 2018

April 2018

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Contents

Tables

Appendixes

Abbreviations

AOA	Area of Attainment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
gpm	gallons per minute
GRO	groundwater remedy optimization
ICs	institutional controls
LCRS	Leachate Collection and Removal System
LDS	Leak Detection System
LM	Office of Legacy Management
LTS&M	long-term surveillance and maintenance
MMTS	Monticello Mill Tailings Site
MVP	Monticello Vicinity Properties
NPL	National Priorities List
OU	Operable Unit
PRB	permeable reactive barrier
TSF	temporary storage facility
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
ZVI	zero-valent iron

1.0 Introduction

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) submits this quarterly report to inform the U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality (UDEQ) of the status of the Monticello Vicinity Properties (MVP) and the Monticello Mill Tailings Site (MMTS) (the LM Monticello, Utah, Disposal and Processing Sites) for the period of January through March 2018. The MVP and MMTS are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Quarterly reports are submitted to EPA and UDEQ in February (for October through December), May (January through March), August (April through June), and November (July through September).

LM assesses MVP and MMTS conditions and remedy protectiveness through (1) inspections (monthly, quarterly, and annually) of site infrastructure and operations as specified under the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (DOE 2007) (referred to herein as the "LTS&M Plan"), (2) semiannual monitoring of groundwater and surface water under the *Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface Water and Ground Water, Monticello, Utah* (DOE 2004), and (3) CERCLA Five-Year Reviews.

The primary long-term surveillance and maintenance (LTS&M) activities at the MVP and MMTS are conducted to (1) provide radiological control at properties where residual soil contamination from mill tailings remains in place (supplemental standards properties), (2) operate and maintain the mill tailings repository, (3) ensure that institutional controls (ICs) restricting the use of land and water remain effective, (4) monitor water-quality restoration progress, and (5) operate the Operable Unit (OU) III pump-and-treat groundwater contingency remedy optimization system that was implemented under the *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah* (DOE 2014). This system focuses on groundwater remediation within a specified region of the alluvial aquifer that is referred to as the Area of Attainment (AOA).

Project milestones and guiding documents are further described in the *Monticello Site Management Plan* (GJO-2003-493-TAC). Annual groundwater reports present comprehensive data evaluation for the groundwater and surface water OU III remedy.

1.1 Quarterly Site Status

- The groundwater remedy optimization (GRO) system operated as planned during the current period with the exception of a 3.5-day shutdown from February 22 to February 26, 2018. The shutdown was due to a fuse failure in the Supervisory Control and Data Acquisition (SCADA) cabinet. The fuse was replaced, the system was analyzed, and operations were resumed.
- Water samples were collected from the monitoring and extraction wells in the AOA on a monthly schedule this quarter. The water samples were analyzed for uranium concentrations in each well.
- Routine surveillance noted no anomalous conditions for the MVP remedy.

- Routine surveillance noted no violations of MMTS ICs regarding land- and groundwater-use restrictions.
- Routine surveillance noted no anomalous conditions for the surface features of the disposal cell and Pond 4.
- Water collection in the Pond 4 Leachate Collection and Removal System (LCRS) continued to exceed the action level. LM has previously notified EPA and UDEQ of this Pond 4 action level exceedance.
- Routine surveillance noted no operating deficiencies for the temporary storage facility (TSF). Minor maintenance of the TSF fence and cover will occur this spring.

2.0 Monticello Vicinity Properties

LTS&M for the MVP consists of providing radiological control at excavations in Monticello roadway and utility corridors, in Utah Department of Transportation (UDOT) rights-of-way within the city limits, and at property MS-00176-VL (privately owned supplemental standards property). Surveillance results for this quarter are:

- No anomalous conditions for the MVP remedy were noted.
- LM representatives continued to coordinate with City of Monticello (City) officials in planning meetings regarding construction and excavation activities by the City, UDOT, and utility companies in roadway and utility corridors. LM has followed and will continue to follow normal LTS&M protocol to provide radiological control in the affected roadways.
- There were no planned or unplanned excavations in city streets or utility corridors where radiologically contaminated material was encountered that required LM management.
- Neither excessive erosion nor unauthorized excavations were observed at the Highway 191 embankment at Montezuma Creek (supplemental standards property).
- Surveillance of property MS-00176-VL identified no excessive erosion of supplemental standards material or violation of the land-use restriction.

3.0 Monticello Mill Tailings Site

LTS&M activities for the MMTS consist of (1) maintaining the onsite repository and operating the associated LCRS and Leak Detection System (LDS) for the disposal cell and Pond 4 (the engineered solar evaporation pond), (2) surveillance of properties affected by groundwater- and land-use ICs on the former mill site and peripheral properties, and (3) operation and maintenance of the OU III groundwater remediation system.

3.1 Operable Unit I

OU I consists of the property of the former Monticello mill (mill site) and the repository. Radioactively contaminated materials were removed from the MVP, the mill site, and peripheral properties (OU II) and encapsulated at the repository as a remedial action that was completed in

1999. LM owns and manages the repository; the City owns the former mill site and manages it as a public park.

3.1.1 Repository

Monthly, quarterly, and annual inspections of the repository ensure that remedy controls remain intact and that the waste remains isolated from the environment. Inspection observations and maintenance activities for the quarter are:

- No area of the cover indicated settling, slumping, fracturing, seepage, ponding, or significant erosion.
- No anomalous surface feature conditions were observed at the disposal cell and Pond 4. Surveillance checklists for this quarter are attached as Appendix A.
- Minor burrowing on the disposal cell and the Pond 4 berm by voles and small ground squirrels was observed. These burrows are not deep and do not pose a concern.
- The disposal cell LCRS and LDS were operated in accordance with the requirements specified in the LTS&M Plan. Findings include:
  - Leachate production from the disposal cell was approximately 700 gallons per week combined for LCRS sumps LCRS 1 and LCRS 2. This collection rate is typical for the past several years. There is no action level for the disposal cell LCRS. See Appendix B for a graphical depiction of leachate production history.
  - The disposal cell LDS continues to receive no water; therefore, the disposal cell LDS action level was not exceeded. See Appendix B for a graphical depiction of leachate production history.
- Operation of the GRO system has resulted in increased water collection in the Pond 4 LCRS and LDS. The Pond 4 LCRS and LDS monitoring and pumping systems are functioning as intended to circulate water back to the pond.
  - Water collection at the Pond 4 LCRS exceeded the action level during the quarter (see Appendix B). LM has previously notified EPA and UDEQ of this Pond 4 action level exceedance.
  - Water collection in the Pond 4 LDS remained below the action level during the period (see Appendix B). LM is required to notify EPA and UDEQ of any water collection and removal in the Pond 4 LDS.

3.1.2 Temporary Storage Facility

Routine surveillance of the TSF ensures that maintenance and radiological controls that govern access to and the placement, storage, and transfer of contaminated material in the TSF are current and effective. Surveillance results for this quarter are:

- Minor maintenance items were observed for the TSF area and will be corrected this spring (see the surveillance checklist attached for this quarter in Appendix A).

LM is required to initiate the transfer of TSF materials for permanent disposal at the Grand Junction, Colorado, Disposal Site when the contents reach approximately 75 cubic yards. The following summarizes recent TSF activity:

- No waste was added to the TSF this quarter
- The volume of waste stored in the TSF is approximately 1 cubic yard

3.1.3 Former Mill Site

LM conducts surveillance of the former mill site (properties MP-00181-VL and MS-00893-VL) to ensure compliance with ICs that were implemented to preserve the OU I remedy for soil and groundwater. The ICs applicable to the former mill site are no installation of domestic-use wells in the alluvial aquifer, no construction of habitable structures, no camping, and preserving the properties as a public park for day-use recreation.

Surveillance results for this quarter are:

- No nonconformance with water- and land-use restrictions was observed.

3.2 Operable Unit II

OU II consists of private and City-owned properties peripheral to the former mill site. LM conducts surveillance of OU II properties to verify compliance with ICs that were implemented to preserve the OU II remedy for soil and groundwater.

Surveillance results for this quarter are:

- Montezuma Creek Restrictive Easement Area (supplemental standards properties, both City-owned and privately owned). No evidence of nonconformance with land-use restrictions (no soil removal or construction of habitable structures in supplemental standards areas) was observed.
- Groundwater-use restrictions (i.e., no installation of domestic-use wells in the alluvial aquifer). These were applied to several OU II properties under the 2004 covenant by which DOE transferred selected properties to the City. No evidence of nonconformance with this restriction was observed during the quarter.
- Property MS-00211-VL (City-owned). No evidence of nonconformance with the land-use restriction on building construction was observed.
- Pinyon-juniper supplemental standards properties (City-owned). No evidence of nonconformance with land- and groundwater-use restrictions was observed.
- No storm events exceeding 2.8 inches of precipitation in a 24-hour period occurred to require surveillance of supplemental standards cleanup properties for excessive erosion.

3.3 Operable Unit III

OU III consists of groundwater and surface water contamination resulting from operation of the former Monticello mill. Routine monitoring of OU III (water quality and water level) is performed semiannually in April and October.

The contaminated groundwater is within the alluvial aquifer beneath the valley of Montezuma Creek; some sections of Montezuma Creek are contaminated by the discharge of contaminated groundwater. The alluvial aquifer has no record of past or present use; however, a portion of the aquifer is subject to ICs to restrict use. Montezuma Creek is used for limited irrigation and livestock watering. There are no ICs that affect surface water use.

The groundwater remedy includes (1) monitored natural attenuation with ICs, and (2) pump-and-treat remediation by evaporation that was implemented as the GRO system in January 2015. Previous remediation efforts included (1) treatment by a zero-valent iron (ZVI) in situ permeable reactive barrier (PRB), and (2) pump-and-treat remediation that used ex situ ZVI treatment. Operation and performance of these are reported annually. The ex situ system was deactivated in December 2014 and replaced by the GRO system, which is described in greater detail in Section 3.3.2 herein. The PRB remains a component of the GRO as a groundwater flow barrier.

3.3.1 Groundwater Restricted Area/Institutional Controls

During spring and fall, LM conducts surveillance of properties where groundwater contamination is present to ensure compliance with the groundwater-use restriction (i.e., no installation of domestic-use wells in the alluvial aquifer). The affected OU III properties constitute the Monticello Groundwater Restricted Area, as defined and administered by the Utah Department of Natural Resources, Division of Water Rights. Surveillance found:

- No evidence of nonconformance with the groundwater-use restriction since its implementation in May 1999.

3.3.2 OU III Groundwater Contingency Remedy Optimization System

The GRO system began full operation in January 2015. Eight vertical extraction wells are strategically placed in the AOA to extract contaminated groundwater. The water is transmitted in buried pipelines to an aboveground holding tank in the groundwater transfer building; from there it is pumped through a buried water transmission line for about 1 mile to Pond 4 for evaporation.

The associated monitoring system consists of 23 monitoring wells (22 active wells and 1 dry well) that were installed in the AOA. Sixteen active wells were installed south of Montezuma Creek and 6 were installed north of Montezuma Creek. These wells are sampled for uranium concentration on a monthly basis.

3.3.2.1 Quarterly Performance Summary

- Groundwater was extracted at a combined rate of approximately 8.4 gallons per minute (gpm). Wells OR-1 and OR-4 were not active because of relatively dilute uranium concentration.
- During the quarter, the volume of water stored in Pond 4 increased by 1.0 million gallons, from approximately 5.9 to 6.9 million gallons. The pond level remained below the operating level of 8 million gallons for the GRO system. The maximum capacity of Pond 4 (pond full) is approximately 15.6 million gallons. To maintain the operating level, periodically increasing or decreasing the groundwater extraction rate may be required to balance the inflow from pumping and precipitation with seasonal evaporation.
- Cumulatively, the system has removed approximately 16.3 million gallons of contaminated groundwater from the aquifer since system startup in January 2015 (Table 1), equivalent to about 8.2 pore volumes in the AOA.
- Water monitoring during the quarter consisted of:
  - Monthly sampling from the monitoring and extraction wells for uranium concentration.
  - Monthly sampling from the transfer tank (see Table 2 for recent tank sample uranium concentrations).
  - Water-level monitoring in AOA extraction and monitoring wells on 5-minute intervals with the LM SOARS system (System Operation and Analysis at Remote Sites).

The GRO system has removed approximately 91.6 pounds of uranium from the aquifer in the AOA as of March 15, 2018.

Table 1. GRO System Treatment Volumes and Rates: Monthly and Cumulative Volumes (from January 2015)

Calendar Month	Approximate Volume Pumped (million gallons)	Effective Pumping Rate (gpm)	Approximate Cumulative Volume[a] (million gallons)
January 2018	0.41	9.2	15.6
February 2018	0.33	8.2	15.9
March 2018[b]	0.35	7.8	16.3

Notes:
[a] Cumulative volume is based on the volume of groundwater extracted by the GRO system since system startup in January 2015.
[b] Reporting end date is March 31, 2018.

Table 2. Uranium Mass Removal from Groundwater in the AOA

Tank Effluent Sample Date	Uranium Concentration (µg/L)	Volume Removed Between Tank Samples (million gallons)	Uranium Removed (pounds)[a]	Cumulative Mass Uranium Removed[b] (pounds)
December 28, 2017	536	0.52	2.3	86.7
January 18, 2018	560	0.26	1.2	87.9
February 22, 2018	610	0.52	2.5	90.4
March 15, 2018	560	0.24[c]	1.2	91.6

Notes:
[a] Based on median concentration between sampling dates.
[b] Since GRO system startup in January 2015.

Abbreviation:
µg/L = micrograms per liter

Monitoring and reporting guidelines are described in the *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah* (DOE 2014). Analysis of water quality trending toward meeting remediation goals, in the AOA and sitewide, is beyond the scope of this Federal Facility Agreement (FFA) quarterly report but is provided in annual groundwater reports that are submitted to EPA and UDEQ, typically in October.

4.0 Schedule of Activities and Deliverables

Table 3 summarizes the completion of recent and planned near-term activities and deliverables for the Monticello National Priorities List (NPL) sites.

Table 3. Monticello Sites Recent and Near-Term Activities and Deliverables

Activity or Deliverable	Schedule
Recent	
2017 Annual Water Use Report	Submitted to Utah Division of Water Resources February 9, 2018
Monticello, Utah, National Priorities List Sites Federal Facility Agreement (FFA) Quarterly Report: October 1–December 31, 2017 (DOE 2017)	Submitted to EPA and UDEQ February 14, 2018 (not subject to review)
Near-Term	
Semiannual OU III groundwater and surface water monitoring	Week of April 16, 2018
LM submittal of FFA quarterly report: January–March 2018	Submit to EPA and UDEQ May 15, 2018
Semiannual FFA meeting	Spring 2018; date to be determined
Results of well ranking test	May of 2018

5.0 References

DOE (U.S. Department of Energy), 2003. *Monticello Site Management Plan*, GJO-2003-493-TAC, Section 5 (this section is continually updated), Office of Legacy Management, October.

DOE (U.S. Department of Energy), 2004. *Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface Water and Ground Water, Monticello, Utah*, DOE-LM/GJ629-2004, May.

DOE (U.S. Department of Energy), 2007. *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites*, DOE-LM/1465-2007, Office of Legacy Management, June.

DOE (U.S. Department of Energy), 2014. *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah*, LMS/MNT/S10629, Office of Legacy Management, May.

DOE (U.S. Department of Energy), 2017. *Monticello, Utah, National Priorities List Sites Federal Facility Agreement (FFA) Quarterly Report: October 1–December 31, 2017*, LMS/MNT/S18159, Office of Legacy Management.

Appendix A

Monthly and Quarterly Surveillance Checklists

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Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 8.277

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	☒	☐	
Roads	☒	☐	
Signs	☒	☐	
Visible piping	☒	☐	
Visible liner and anchors	☒	☐	
Rescue equipment	☒	☐	Boat remains at the pond.
Evidence of erosion of:			
Top of Pond 4 berm	☒	☐	
Pond 4 sideslopes	☒	☐	
Ditches	☒	☐	
Surrounding area	☒	☐	
Seepage from Pond 4	☒	☐	
Overtopping of Pond 4	☒	☐	
Evidence of:			
Vandalism	☒	☐	
Intrusion by wildlife	☒	☐	
Intrusion by humans	☒	☐	
Accumulation of trash	☒	☐	

Additional comments: Approximately 1200 ft of Rad-Rope was replaced around the berm of the pond. There appears be several rodent holes in the berm road area. The pond is still nearly frozen.

Monticello LM Representative: Gary McKinney Date: 1/29/2018

U.S. Department of Energy Office of Legacy Management

Repository Area Surveillance Checklist

☒ Monthly surveillance ☐ Quarterly surveillance: ☐ February ☐ May ☐ August ☐ November

☐ Storm event triggered surveillance due to _____ inches of rainfall over the past 24 hours.

Inspection Item	Acceptable Yes	Acceptable No	Comments and Recommendation
Condition of:			
Fences, gates, and locks	☐	☒	One fence gate was found open on the east end of Hammonds/DOE property line located under the high voltage electrical lines. No human or livestock trespassing was noticed. The gate was closed and the inspection continued.
Roads[a]	☒	☐	
Signs	☒	☐	
Site monuments	☒	☐	
Drainage ditches[a]	☒	☐	
Manholes	☒	☐	
Vegetation	☒	☐	
Evidence of erosion of:			
Top of disposal cell[a]	☒	☐	
Disposal cell sideslopes[a]	☒	☐	
Ditches	☒	☐	
Surrounding area	☒	☐	
Evidence of:			
Vandalism	☒	☐	
Intrusion by livestock	☒	☐	
Burrowing animal damage	☒	☐	
Intrusion by humans	☒	☐	
Accumulation of trash	☒	☐	

Additional Quarterly Surveillance Requirements

Note: *All transects, shown in Figure 3-1, must be walked during this inspection.*

Condition of:			
Settlement plate structures	☐	☐	
Manholes[b]	☐	☐	
Sediment ponds	☐	☐	
Evidence of:	☐	☐	
Structural instability	☐	☐	

Additional comments: The site appears to be in good condition.

Signature: Gary McKenzie Date: 1/29/2018

Monticello LM Representative

LMS 5502MON
07/15/2013

MONTHLY CLIMATOLOGICAL SUMMARY for JAN. 2018

NAME: Monticello Office CITY: STATE:
ELEV: 7069 ft LAT: 37° 54' 00" N LONG: 109° 18' 00" W

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	37.8	50.3	2:00p	27.4	6:30a	27.2	0.0	0.00	4.4	22.0	2:00p	WNW
2	34.8	42.2	2:30p	27.6	3:00a	30.2	0.0	0.00	10.2	25.0	1:00p	NW
3	28.7	42.2	1:00p	12.9	6:30a	36.3	0.0	0.00	5.4	22.0	1:30p	SW
4	32.5	48.3	2:00p	22.5	3:00a	32.5	0.0	0.00	2.9	11.0	2:30p	W
5	33.2	42.3	3:30p	25.7	5:00a	31.8	0.0	0.00	2.3	10.0	1:00p	WSW
6	34.5	46.7	2:00p	28.1	2:00a	30.5	0.0	0.00	4.8	24.0	12:00p	SE
7	33.8	43.3	3:00p	25.9	11:00p	31.2	0.0	0.00	8.6	26.0	5:00a	NW
8	33.4	40.6	11:00a	24.3	2:30a	31.6	0.0	0.01	6.1	26.0	10:00a	SSE
9	41.6	50.4	3:00p	33.1	1:30a	23.4	0.0	0.03	8.0	30.0	10:30p	S
10	35.1	43.3	12:30a	29.1	12:00m	29.9	0.0	0.13	9.4	35.0	10:30p	SSE
11	28.6	36.1	4:30p	20.9	8:00a	36.4	0.0	0.00	7.5	30.0	4:00a	NW
12	31.0	42.9	1:30p	17.4	1:30a	34.0	0.0	0.00	6.6	30.0	12:30p	WNW
13	33.9	43.8	1:00p	25.0	7:30a	31.1	0.0	0.00	5.4	21.0	3:00p	NNW
14	36.7	48.1	4:00p	29.3	11:30p	28.3	0.0	0.00	4.3	14.0	2:00a	WNW
15	34.9	46.4	1:00p	25.4	8:00a	30.1	0.0	0.00	6.4	22.0	10:00p	NW
16	29.7	41.4	3:00p	19.3	8:00a	35.3	0.0	0.00	3.1	13.0	1:30a	WNW
17	33.3	44.4	3:30p	22.7	1:00a	31.7	0.0	0.00	6.1	23.0	1:00p	NW
18	35.4	50.3	2:30p	24.2	2:00a	29.6	0.0	0.00	3.1	21.0	12:00m	SE
19	38.8	48.4	3:30p	28.6	2:30a	26.2	0.0	0.00	10.9	30.0	1:30p	SE
20	34.5	39.4	12:30a	26.5	12:00m	30.5	0.0	0.00	9.4	30.0	12:30p	S
21	22.0	26.7	12:30a	17.9	10:00p	43.0	0.0	0.00	15.8	39.0	11:00a	NW
22	19.8	32.3	4:00p	11.4	3:30a	45.2	0.0	0.00	3.2	19.0	12:30a	WNW
23	22.8	32.3	2:30p	11.9	3:30a	42.2	0.0	0.00	6.3	22.0	2:30p	ENE
24	26.8	38.7	3:00p	10.1	6:00a	38.2	0.0	0.00	6.8	23.0	4:30p	SE
25	34.6	41.8	3:30p	28.1	12:00m	30.4	0.0	0.00	9.8	40.0	1:00p	S
26	25.8	34.6	1:00a	15.3	9:00p	39.2	0.0	0.00	7.5	23.0	4:30a	NW
27	25.3	35.8	3:00p	10.0	7:30a	39.7	0.0	0.00	5.8	24.0	1:30p	WSW
28	34.8	41.2	4:00p	28.1	5:30a	30.2	0.0	0.00	10.1	30.0	11:30a	ENE
29	36.9	51.4	3:00p	25.4	6:00a	28.1	0.0	0.00	3.7	15.0	12:30a	ENE
30	37.6	50.4	3:30p	24.8	7:00a	27.4	0.0	0.00	5.8	23.0	1:00p	SE
31	30.9	37.7	9:30a	26.2	7:00a	13.5	0.0	0.00	2.8	12.0	3:00a	SE
	32.2	51.4	29	10.0	27	994.9	0.0	0.17	6.5	40.0	25	NW

Max >= 90.0: 0
Max <= 32.0: 1
Min <= 32.0: 30
Min <= 0.0: 0
Max Rain: 0.13 ON 01/10/18
Days of Rain: 2 (>.01 in) 1 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: Integration

U.S. Department of Energy Office of Legacy Management

Repository Area Surveillance Checklist

☐ Monthly surveillance ☒ Quarterly surveillance: ☒ February ☐ May ☐ August ☐ November

☐ Storm event triggered surveillance due to _____ inches of rainfall over the past 24 hours.

Inspection Item	Acceptable Yes	Acceptable No	Comments and Recommendation
Condition of:			
Fences, gates, and locks	☒	☐	
Roads[a]	☒	☐	
Signs	☒	☐	
Site monuments	☒	☐	
Drainage ditches[a]	☒	☐	
Manholes	☒	☐	
Vegetation	☒	☐	
Evidence of erosion of:			
Top of disposal cell[a]	☒	☐	
Disposal cell sideslopes[a]	☒	☐	
Ditches	☒	☐	
Surrounding area	☒	☐	
Evidence of:			
Vandalism	☒	☐	
Intrusion by livestock	☒	☐	
Burrowing animal damage	☒	☐	
Intrusion by humans	☒	☐	
Accumulation of trash	☒	☐	

Additional Quarterly Surveillance Requirements

Note: *All transects, shown in Figure 3-1, must be walked during this inspection.*

Condition of:			
Settlement plate structures	☒	☐	
Manholes[b]	☒	☐	
Sediment ponds	☒	☐	
Evidence of:	☒	☐	
Structural instability	☒	☐	

Additional comments: The site has a few inches of snow on the ground but appears to be in good condition.

Signature: _____ Monticello LM Representative Date: 2/27/2018

[a]Inspections required following a significant storm event
[b]Open to inspect quarterly

U.S. Department of Energy Office of Legacy Management

Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 8.6725

Inspection Item	Acceptable Yes	Acceptable No	Comments and Recommendation
Condition of:			
Fences, gates, and locks	☒	☐	
Roads	☒	☐	
Signs	☒	☐	
Visible piping	☒	☐	
Visible liner and anchors	☒	☐	
Rescue equipment	☒	☐	Boat remains at the pond.
Evidence of erosion of:			
Top of Pond 4 berm	☒	☐	
Pond 4 sideslopes	☒	☐	
Ditches	☒	☐	
Surrounding area	☒	☐	
Seepage from Pond 4	☒	☐	
Overtopping of Pond 4	☒	☐	
Evidence of:			
Vandalism	☒	☐	
Intrusion by wildlife	☒	☐	
Intrusion by humans	☒	☐	
Accumulation of trash	☒	☐	

Additional comments: The pond is still nearly frozen.

Monticello LM Representative: Date: 2/27/2018

MONTHLY CLIMATOLOGICAL SUMMARY for FEB. 2018

NAME: UT Monticello CITY: STATE:
ELEV: 7069 ft LAT: 37° 06' 00" N LONG: 109° 06' 00" W

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	42.7	53.3	1:30p	34.0	7:30a	22.3	0.0	0.00	4.6	20.0	4:30p	NW
2	42.9	53.8	2:00p	33.3	7:00a	22.1	0.0	0.00	5.4	23.0	12:30p	NW
3	43.0	52.0	3:00p	35.4	11:30p	22.0	0.0	0.00	8.8	28.0	9:30a	NW
4	41.7	55.2	2:00p	30.3	6:00a	23.3	0.0	0.00	5.7	25.0	3:30p	NW
5	43.9	54.6	3:30p	33.0	7:30a	21.1	0.0	0.00	5.5	24.0	1:30p	NW
6	33.8	39.8	3:00p	28.1	12:00m	31.2	0.0	0.00	9.4	25.0	5:30a	NW
7	35.0	49.3	3:30p	23.4	5:30a	30.0	0.0	0.00	5.0	18.0	11:30a	NNW
8	39.1	53.0	4:00p	27.7	5:00a	25.9	0.0	0.00	3.9	18.0	2:00p	NNW
9	41.6	54.5	2:00p	31.2	5:30a	23.4	0.0	0.00	5.3	24.0	12:00p	S
10	33.4	41.8	12:30p	21.2	12:00m	31.6	0.0	0.00	11.6	36.0	6:00p	NW
11	26.3	37.3	2:30p	15.0	7:30a	38.7	0.0	0.00	8.9	28.0	10:00p	SSE
12	32.0	36.9	3:00p	26.3	12:30a	33.0	0.0	0.10	10.7	30.0	3:30a	S
13	35.3	44.6	4:00p	30.8	9:30p	29.7	0.0	0.13	4.7	15.0	1:30p	SSE
14	35.2	39.8	3:00p	31.0	2:30a	29.8	0.0	0.01	8.0	28.0	12:00p	S
15	31.2	38.6	11:30a	22.8	12:00m	33.8	0.0	0.09	10.3	28.0	11:00p	NW
16	26.2	37.1	4:00p	12.9	6:30a	38.8	0.0	0.00	6.2	23.0	1:00p	SSE
17	34.1	47.2	3:00p	21.3	1:30a	30.9	0.0	0.00	6.9	25.0	4:30p	S
18	39.0	49.7	4:00p	28.5	7:30a	26.0	0.0	0.00	14.0	40.0	11:00p	S
19	31.6	42.5	11:00a	18.4	11:00p	33.4	0.0	0.00	15.8	53.0	10:30a	S
20	15.3	21.7	2:00p	4.2	8:00p	49.7	0.0	0.00	4.4	16.0	12:30a	SSW
21	18.7	27.7	1:30p	3.9	7:00a	46.3	0.0	0.00	5.8	29.0	10:30a	WSW
22	22.9	29.4	4:00p	14.4	1:30a	42.1	0.0	0.00	6.2	26.0	3:30p	SSW
23	20.2	24.5	3:00p	16.3	11:00p	44.8	0.0	0.00	6.4	21.0	4:00p	SSE
24	18.5	24.3	3:00p	10.2	4:30a	46.5	0.0	0.00	7.4	30.0	3:30p	WNW
25	22.9	34.1	4:00p	10.8	2:30a	42.1	0.0	0.00	5.5	19.0	9:30a	NE
26	30.6	41.0	3:30p	20.6	12:30a	34.4	0.0	0.00	11.9	32.0	2:30a	S
27	33.8	44.4	4:00p	18.3	6:30a	31.2	0.0	0.00	6.2	23.0	3:00p	SE
28	32.4	39.7	3:30p	23.4	7:30a	32.6	0.0	0.00	3.9	15.0	1:00p	SSW
	32.3	55.2	4	3.9	21	916.7	0.0	0.33	7.4	53.0	19	S

Max >= 90.0: 0
Max <= 32.0: 5
Min <= 32.0: 24
Min <= 0.0: 0
Max Rain: 0.13 ON 02/13/18
Days of Rain: 3 (>.01 in) 1 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: Integration

Monticello Long-Term Surveillance and Maintenance
Temporary Storage Facility (TSF) Record Book
Inspection Report

Acceptable?

Yes	No	
☒	☐	Was the gate locked upon arrival?
☒	☐	Are signs posted in accordance with Section 3.4.4?
☒	☐	Are all posting legible?
☒	☐	Are enclosures on the concrete bin and stored drum containers tight?
☒	☐	Are containers in good physical condition (no rust, no holes, no bulges, etc.)?
☒	☐	How much radiologically contaminated material is in the concrete bin? Note: the material should be shipped when the volume in storage approaches 75 percent of the storage capacity.
☒	☐	Is the surface area of the TSF in good physical condition (no erosion, no flood damage, no excessive vegetation growth, etc.)?
☒	☐	Has radiological monitoring been conducted in accordance with Section 3.4.5?
☒	☐	Is the security fence in good condition?

Comments: Gate was hard to open, needs some work.
cover on concrete bin has some roof screws coming out that need to be repaired.
There is no contaminated material in the concrete bin.

Bill Cary / Bill Cary
Signature of Monticello LM Representative

2/27/18
Date of Inspection

U.S. Department of Energy Office of Legacy Management

Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 8.870

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	☒	☐	
Roads	☒	☐	
Signs	☒	☐	
Visible piping	☒	☐	
Visible liner and anchors	☒	☐	
Rescue equipment	☒	☐	Boat remains at the pond. Replaced three ring buoys.
Evidence of erosion of:			
Top of Pond 4 berm	☒	☐	
Pond 4 sideslopes	☒	☐	
Ditches	☒	☐	
Surrounding area	☒	☐	
Seepage from Pond 4	☒	☐	
Overtopping of Pond 4	☒	☐	
Evidence of:			
Vandalism	☒	☐	
Intrusion by wildlife	☒	☐	
Intrusion by humans	☒	☐	
Accumulation of trash	☒	☐	

Additional comments: Things appear to be in good shape.

Monticello LM Representative: Doug McKinney Date: 3/29/2018

U.S. Department of Energy Office of Legacy Management

Repository Area Surveillance Checklist

☒ Monthly surveillance ☐ Quarterly surveillance: ☐ February ☐ May ☐ August ☐ November

☐ Storm event triggered surveillance due to _____ inches of rainfall over the past 24 hours.

Inspection Item	Acceptable Yes	Acceptable No	Comments and Recommendation
Condition of:			
Fences, gates, and locks	☒	☐	
Roads[a]	☒	☐	
Signs	☒	☐	
Site monuments	☒	☐	
Drainage ditches[a]	☒	☐	
Manholes	☒	☐	
Vegetation	☒	☐	
Evidence of erosion of:			
Top of disposal cell[a]	☒	☐	
Disposal cell sideslopes[a]	☒	☐	
Ditches	☒	☐	
Surrounding area	☒	☐	
Evidence of:			
Vandalism	☒	☐	
Intrusion by livestock	☒	☐	
Burrowing animal damage	☒	☐	
Intrusion by humans	☒	☐	
Accumulation of trash	☒	☐	

Additional Quarterly Surveillance Requirements
Note: *All transects, shown in Figure 3-1, must be walked during this inspection.*

Condition of:			
Settlement plate structures	☐	☐	
Manholes[b]	☐	☐	
Sediment ponds	☐	☐	
Evidence of:	☐	☐	
Structural instability	☐	☐	

Additional comments: The site appears to be dry but in good condition.

Signature: _____ Date: 3/29/2018
Monticello LM Representative

[a]Inspections required following a significant storm event
[b]Open to inspect quarterly

MONTHLY CLIMATOLOGICAL SUMMARY for MAR. 2018

NAME: Monticello Office CITY: STATE:
ELEV: 7069 ft LAT: 37° 54' 00" N LONG: 109° 18' 00" W

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	33.6	42.3	4:30p	25.1	1:00a	31.4	0.0	0.00	8.2	28.0	2:30p	SSE
2	39.8	52.8	4:00p	25.0	7:00a	25.2	0.0	0.00	12.0	37.0	2:30p	SSE
3	42.7	54.4	4:00p	29.5	7:30a	22.3	0.0	0.00	13.7	36.0	12:30p	SSE
4	31.0	39.7	12:30a	17.5	12:00m	34.0	0.0	0.00	13.4	41.0	9:30a	S
5	24.5	35.7	4:00p	14.0	5:00a	40.5	0.0	0.00	5.9	21.0	1:30p	NNW
6	29.5	41.6	4:30p	17.6	3:00a	35.5	0.0	0.00	6.9	21.0	1:30p	NNW
7	36.2	50.7	3:30p	22.4	3:00a	28.8	0.0	0.00	2.6	14.0	1:30p	NW
8	42.5	55.7	2:00p	30.1	7:00a	22.5	0.0	0.00	3.3	19.0	4:00p	WNW
9	44.9	56.0	4:30p	32.7	1:30a	20.1	0.0	0.00	4.6	18.0	3:00p	WSW
10	43.8	53.7	3:30p	32.6	5:30a	21.2	0.0	0.00	6.0	21.0	10:30a	NNW
11	41.3	47.8	2:30p	35.2	12:00m	22.7	0.0	0.00	6.4	21.0	11:30a	S
12	39.9	52.4	3:00p	29.0	8:00a	25.1	0.0	0.00	5.4	18.0	10:30a	SSE
13	41.4	51.7	4:30p	29.1	4:30a	23.6	0.0	0.00	5.5	20.0	3:00p	NE
14	48.0	57.6	4:30p	35.9	5:00a	17.0	0.0	0.00	15.0	51.0	7:30p	WNW
15	37.8	47.1	12:30a	28.7	11:00p	27.2	0.0	0.00	14.8	46.0	1:00a	WNW
16	33.5	45.4	5:00p	18.0	8:00a	31.5	0.0	0.00	6.3	26.0	4:00p	SSE
17	37.2	46.6	4:30p	29.6	4:00a	27.8	0.0	0.00	11.1	40.0	2:00p	WNW
18	28.2	38.0	12:30a	22.7	11:30p	36.8	0.0	0.00	13.5	44.0	3:00p	ENE
19	27.3	37.0	5:00p	21.0	6:00a	37.7	0.0	0.00	8.3	22.0	12:30p	E
20	32.6	43.7	6:00p	18.3	7:00a	32.4	0.0	0.00	4.8	21.0	5:00p	NE
21	41.8	54.5	4:00p	27.5	12:30a	23.2	0.0	0.00	8.6	30.0	3:00p	WNW
22	47.7	56.5	4:30p	41.1	1:30a	17.3	0.0	0.00	13.6	61.0	11:30p	WNW
23	44.1	52.6	3:00p	31.7	12:00m	20.9	0.0	0.00	14.9	64.0	1:30a	NW
24	41.9	51.2	3:30p	30.4	1:00a	23.1	0.0	0.00	9.9	40.0	4:00p	NW
25	41.0	50.9	4:00p	32.5	6:00a	24.0	0.0	0.00	15.0	49.0	12:30p	WNW
26	35.2	42.9	2:30p	28.7	6:30a	29.8	0.0	0.00	9.5	26.0	10:00a	ENE
27	36.9	47.6	4:30p	27.9	7:30a	28.1	0.0	0.00	14.7	30.0	11:00a	NW
28	41.6	52.1	6:00p	29.2	6:30a	23.4	0.0	0.00	12.6	34.0	3:00p	NW
29	41.5	53.0	4:00p	28.3	7:30a	23.5	0.0	0.00	8.4	26.0	5:00p	NW
30	47.6	60.4	5:00p	34.7	3:30a	17.4	0.0	0.00	7.0	18.0	2:30p	WNW
31	53.6	65.8	4:00p	37.8	5:30a	11.4	0.0	0.00	6.4	25.0	2:00p	WNW
	39.0	65.8	31	14.0	5	805.4	0.0	0.00	9.3	64.0	23	WNW

Max >= 90.0: 0
Max <= 32.0: 0
Min <= 32.0: 23
Min <= 0.0: 0
Max Rain: 0.00 ON 03/01/18
Days of Rain: 0 (>.01 in) 0 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: Integration

Appendix B

Graphs Showing Performance History for Disposal Cell and Pond 4 LCRS and LDS

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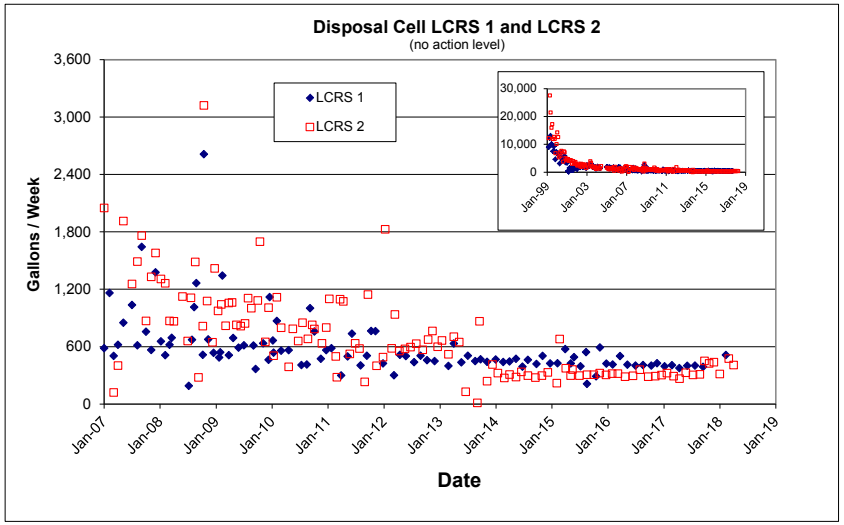
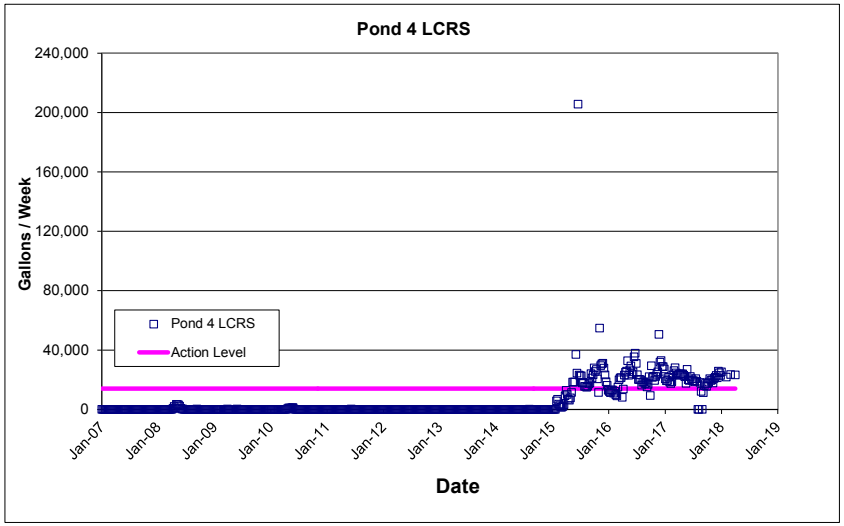
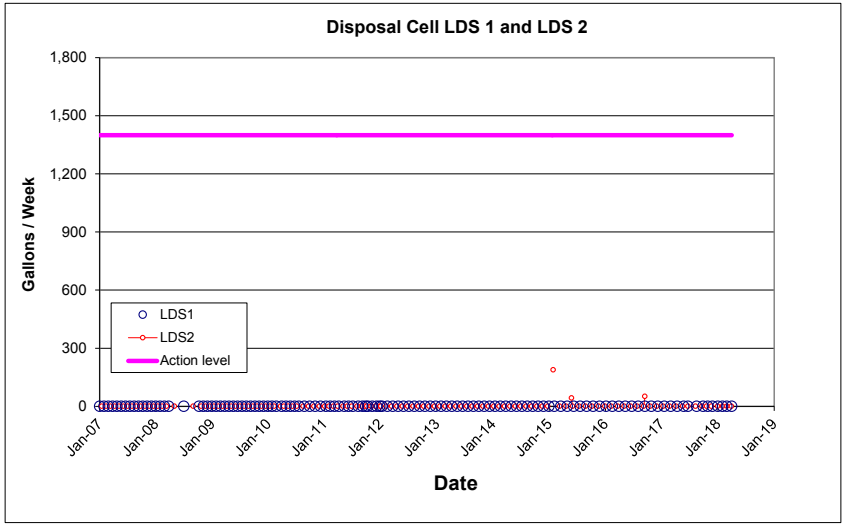
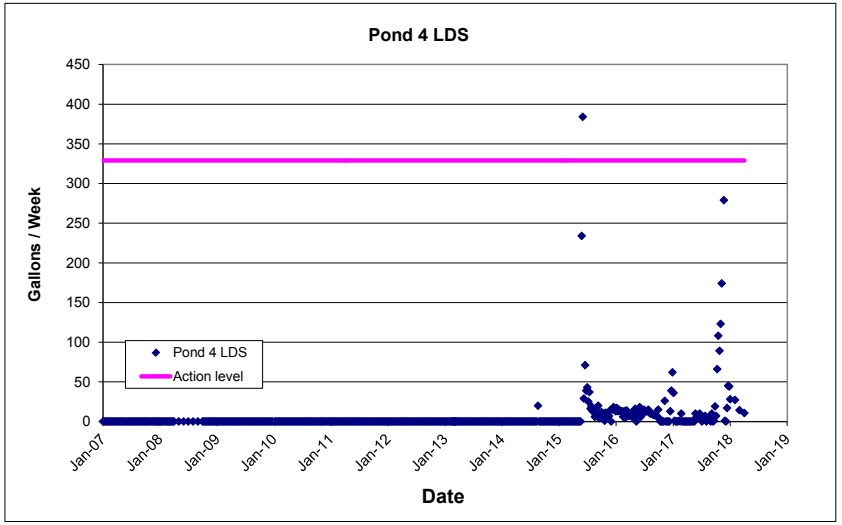
Graphs Showing Performance History for Disposal Cell and Pond 4 LCRS and LDS









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