

Monticello, Utah, National Priorities List (NPL) Sites Federal Facility Agreement (FFA) Quarterly Report: January 1–March 31, 2024

May 2024



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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

gpad gallons per acre per day

gpm gallons per minute

GRO Groundwater Remedy Optimization

IC institutional control

LCRS Leachate Collection and Removal System

LDS Leak Detection System

LM Office of Legacy Management

LTS&M long-term surveillance and maintenance

LTS&M Plan Long-Term Surveillance and Maintenance Plan

MMTS Monticello Mill Tailings Site

MVP Monticello Vicinity Properties

NCP National Contingency Plan

NPL National Priorities List

OU Operable Unit

PRB permeable reactive barrier

P&T pump-and-treat

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), collectively called the LM Monticello, Utah, Disposal and Processing Sites, for January 1 through March 31, 2024. The MVP and MMTS are National Priorities List (NPL) sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as described in Title 42 *United States Code* Section 9601 et seq. (42 USC 9601 et seq.). Quarterly reports are submitted to EPA and UDEQ in February (for October through December), May (for January through March), August (for April through June), and November (for July through September).

LM assesses MVP and MMTS conditions and remedy protectiveness through (1) monthly, quarterly, and annual inspections of site infrastructure and operations as specified under the Long-Term Surveillance and Maintenance Plan for Monticello NPL Sites (LMS/MNT/S00387), also called the Long-Term Surveillance and Maintenance Plan (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 Review reports.

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 uranium 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 (P&T) groundwater contingency remedy optimization system. This system, implemented in January 2015, focuses on groundwater remediation within a specified region of the alluvial aquifer called the Area of Attainment (AOA).

Annual groundwater reports present comprehensive data evaluation for the groundwater and surface water OU III remedy. LM has utilized the data presented in the most recent annual groundwater report to evaluate water quality restoration progress and assess the performance of the P&T contingency remedy.

Project milestones and guiding documents are further described in the *Monticello Site Management Plan* (GJO-2003-493-TAC). Section 5.0 of that document is updated annually.

1.1 Quarterly Site Status

In summary, the activities and observations for this quarter consist of the following:

- The Groundwater Remedy Optimization (GRO) system operated from January 1 to March 31 this quarter. The system pumped approximately 608,000 gallons of water from the AOA.
- The previous period's Federal Facility Agreement (FFA) quarterly report was sent to EPA and UDEQ in February 2024.

- Weekly site inspections were performed by site personnel to verify the integrity of the site's systems and monitor activities that might occur in supplemental standards properties (e.g., City of Monticello streets and utility corridors).
- Site personnel performed monthly and quarterly site inspections in accordance with the LTS&M Plan.
- Routine surveillance did not note any anomalous conditions for the MVP remedy.
- Routine surveillance did not note any violations of MMTS ICs that restrict land and groundwater use.
- Routine surveillance did not note any anomalous conditions for the surface features of the disposal cell and Pond 4, the engineered solar evaporation pond.
- Routine surveillance noted no operational deficiencies for the Temporary Storage Facility (TSF).

2.0 **MVP**

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

Surveillance results for this quarter are as follows:

- No anomalous conditions for the MVP remedy were noted.
- LM representatives continued to coordinate with city and UDOT officials via telecommunications regarding construction and excavation activities by the city, UDOT, and utility companies in roadway and utility corridors. LM follows the normal LTS&M protocol to provide radiological control in the affected roadways.
- No excavations occurred in city streets this quarter. No unauthorized excavations were observed or reported.
- A small amount of erosion was noticed during the 2023 Annual Inspection on the U.S. Highway 191 embankment at Montezuma Creek (a supplemental standards property). The erosion is located near the top of the embankment near the highway right-of-way. The erosion area was scanned by the site Safety and Health technician for radiological contamination. No radiologically contaminated material was found. UDOT is aware of the erosion issue and has stabilized the erosion on the embankment until permanent repairs can be performed. Site personnel continue to monitor for excessive erosion.
- A surveillance of property MS-00176-VL identified no excessive erosion of supplemental standards material or violation of the land-use restriction on building construction.

3.0 MMTS

LTS&M activities for the MMTS consist of (1) maintaining the onsite repository and operating the associated Leachate Collection and Removal System (LCRS) and Leak Detection

System (LDS) for the disposal cell and Pond 4, (2) surveillance of properties affected by groundwater-use and land-use ICs on the former Monticello mill (mill site) and peripheral properties, and (3) operation and maintenance of the OU III GRO system.

3.1 OU I

OU I consists of the properties that contain the mill site and 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 completed in 1999. LM owns and manages the repository, and the city owns the former mill site and manages it as a public park.

3.1.1 Repository and Pond 4

Monthly, quarterly, and annual inspections of the repository ensure that remedy controls remain intact, and the waste remains isolated from the environment.

Inspection observations and maintenance activities for the quarter consisted of the following:

- No area of the repository cover showed settling, slumping, fracturing, seepage, ponding, or significant erosion.
- No anomalous surface feature conditions were observed at the disposal cell or Pond 4. Surveillance checklists for this quarter are attached as Appendix A. No further minor burrowing by voles and small ground squirrels was observed this quarter on the disposal cell and Pond 4 berm.
- The disposal cell LCRS and LDS were operated in accordance with the requirements specified in the LTS&M Plan. Findings for the disposal cell LCRS and LDS this quarter include the following:
 - Leachate production from the disposal cell was approximately 730 gallons per week combined for sumps LCRS 1 and LCRS 2. 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.
- Operation of the OU III GRO system resulted in increased water collection in the Pond 4 LCRS. Pond 4 LCRS and LDS action levels, approved by EPA and UDEQ, were formally developed in the *Repository and Pond 4 Groundwater Contingency Plan-Final* (DOE 1998) and are also found in Appendix D, Section 5.0 of the LTS&M Plan. The leakage rate action level established for the Pond 4 LCRS is 851 gallons per acre per day (gpad) (2000 gallons per day), and the leakage rate action level for the LDS is 20 gpad (47 gallons per day), which is averaged over a 7-day period. These leakage rates are based on the area of the floor of Pond 4, which is 2.35 acres. Currently, the LCRS and LDS monitoring and pumping systems are functioning as designed to recirculate water back into Pond 4.
- Findings for the Pond 4 LCRS and LDS for this quarter are as follows:
 - Water collection at the Pond 4 LCRS continued but did not exceed the action level this quarter (Appendix B)
 - Water collection at the Pond 4 LDS remained below the action level (Appendix B)

3.1.2 TSF

Routine surveillance of the TSF ensures that the maintenance and radiological controls that govern the access to and placement, storage, and transfer of contaminated material in the TSF are current and effective. Surveillance this quarter (see the surveillance checklists in Appendix A) revealed that:

• The TSF cover, fencing, radiological controls, and signs have been maintained in accordance with the LTS&M Plan, and the TSF has been inspected and verified as being ready to receive contaminated materials.

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

- No excavated soil from city streets was added to the TSF during January 1–March 31.
- Approximately 6 cubic yards of soil excavated from the city streets is currently stored in the TSF. All 6 cubic yards of soil originated from an excavation that occurred on July 26, 2022.

3.1.3 Mill Site

LM conducts surveillance of the mill site (properties MP-00181-VL and MS-00893-OT) to ensure compliance with ICs implemented to preserve the OU I remedy for soil and groundwater. ICs applicable to the mill site include prohibitions on installing domestic-use wells in the alluvial aquifer, using the property for residential purposes, constructing habitable structures, and overnight camping, as well as preserving the property for day use as a public park.

Surveillance results for this quarter revealed:

• No nonconformance with water-use and land-use restrictions.

3.2 **OU II**

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

Surveillance results for this quarter are summarized below for the different components of OU II.

- Montezuma Creek Restrictive Easement Area (supplemental standards properties, both city-owned and privately owned): No evidence of nonconformance with land-use restrictions (e.g., prohibitions on soil removal and construction of habitable structures in supplemental standards properties) was observed.
- **Groundwater-Use Restrictions:** These were applied to several OU II properties under the 2000 quitclaim deed by which DOE transferred selected properties to the city. No evidence of nonconformance with these restrictions (e.g., prohibition on installing domestic-use wells in the alluvial aquifer) was observed.
- **Property MP-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-use and groundwater-use restrictions was observed.
- Excessive Erosion: No storm events resulted in more than 2.8 inches of precipitation in 24 hours, which would require surveillance of supplemental standards cleanup properties for excessive erosion.

3.3 **OU III**

OU III consists of groundwater and surface water contamination resulting from operation of the mill site. Routine monitoring of OU III (water quality and water level) is normally performed semiannually in April (spring) and October (fall). The fall semiannual groundwater sampling event took place from October 16–19, 2023.

The contaminated groundwater is within the alluvial aquifer beneath the valley of Montezuma Creek, some sections of which are contaminated by the influent of contaminated groundwater. A portion of the aquifer is subject to ICs restricting use. Montezuma Creek is used for limited irrigation and livestock watering. There are no ICs restricting surface water use.

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

3.3.1 Groundwater Restricted Area

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 State of Utah 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 GRO System

The GRO system includes eight vertical extraction wells strategically placed in the AOA to extract contaminated groundwater and an associated monitoring system. The water from the extraction wells 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 22 wells installed in the AOA. Sixteen of the 22 wells were installed south of Montezuma Creek in 2014, and 6 wells were installed north of

Montezuma Creek in 2017. These 22 monitoring wells are sampled recurrently following the extraction of approximately 1,000,000 gallons of water from the GRO system as stated in Section 1.5 of the *Remedial Action Completion Report for Operable Unit III Groundwater Contingency Remedy Optimization System, Monticello Mill Tailings Site, Monticello, Utah* (DOE 2016).

• A 1,000,000-gallon sampling event was performed from November 1–2, 2023.

3.3.2.1 GRO System Quarterly Performance Summary

The GRO system performance for the quarter is summarized here.

- Groundwater extraction during the quarter was approximately 608,000 gallons, equivalent to an average flow rate of 4.64 gallons per minute (gpm). Assuming the uranium concentration in groundwater extracted throughout the quarter was equal to the uranium concentration of the holding tank effluent on November 2, 2023 (the date of the most recent sample collected), approximately 3.0 pounds of uranium was removed during this quarter.
- During the quarter, the volume of water stored in Pond 4 increased by approximately 800,000 gallons. The GRO system operates by balancing the extraction rate and the Pond 4 evaporation rate while maintaining the Pond 4 storage volume between 5,000,000 and 8,000,000 gallons (the maximum storage volume of Pond 4 is approximately 15,600,000 gallons).
- Water-level monitoring during the quarter consisted of:
 - Continuous water-level monitoring in AOA extraction and monitoring wells using pressure transducers and dataloggers (programmed to record at 5-minute intervals) connected to the LM System Operation and Analysis at Remote Sites (SOARS) system.
- Cumulatively, the system has removed 32,000,000 gallons of contaminated groundwater from the aquifer since system startup in January 2015 (Table 1).
- Assuming a minimum AOA uranium plume pore volume of 2,400,000 gallons and a maximum pore volume of 3,300,000 gallons, the GRO system has removed between 9.7 and 13.3 pore volumes since system startup.
- From January 2015 through November 2, 2023, the GRO system removed approximately 155 pounds of uranium from the AOA aquifer (Table 2). Estimates of the cumulative uranium mass removed are updated only at sampling events.

Table 1. GRO System Treatment: Monthly Vo	olumes and Rates for This Quarter and
Cumulative Volumes Sii	ince January 2015

Calendar Month	Approximate Volume Pumped (millions of gallons)	Effective Pumping Rate (gpm)	Approximate Cumulative Volume ^a (millions of gallons)		
January 2024	0.09	2.12	31.5		
February 2024	0.16	3.71	31.6		
March 2024	0.36	8.02	32.0		

Note:

^a Cumulative volume is based on the volume of groundwater extracted by the GRO system since system startup in January 2015.

Table 2. Uranium Mass Removal from Groundwater in the AOA

Tank Effluent Sample Date ^a	Effluent Tank Uranium Concentration (µg/L)	Volume Removed Between Tank Samples (millions of gallons)	Uranium Removed (pounds) ^b	Cumulative Mass of Uranium Removed ^c (pounds)
June 14, 2023	355	1.04	4.2	150
November 2, 2023	591	1.13	4.5	155

Notes:

- ^a Sampling occurs following the extraction of approximately 1,000,000 gallons.
- ^b Uranium removed since last sampling event. Estimate is based on the median concentration between sampling dates.
- ^c Since GRO system startup in January 2015. Estimates of cumulative mass removed are updated every sampling event.

Abbreviation:

μg/L = micrograms per liter

Monitoring and reporting guidelines for the GRO system 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). Evaluation of water quality trends and whether remediation goals are being met, in the AOA and sitewide, is beyond the scope of this FFA quarterly report but is provided in annual groundwater reports submitted to EPA and UDEQ.

3.3.3 OU III Closure Strategy

Regarding the OU III closure strategy, LM continued to develop the draft Feasibility Study for OU III. Several scenarios are being evaluated to develop a closure strategy for OU III; these are detailed in the *OU III Closure Strategy for the Monticello Mill Tailings Site, Monticello, Utah* (DOE 2018). Work focused on an additional follow-up action from the 2022 Sixth Five-Year Review report aimed at supporting the Feasibility Study, which assesses IC options for restricting the use of Montezuma Creek as a drinking water source. Preferred IC options were evaluated against the nine criteria of the National Contingency Plan (NCP) and will be incorporated into the MMTS OU III Feasibility Study. Note that one action among these follow-up actions required a reissue of the Monticello site LTS&M Plan.

4.0 Schedule of Activities and Deliverables

Table 3 summarizes the completion dates of recently completed and near-term planned activities and deliverables for the Monticello NPL sites.

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

Activity or Deliverable	Schedule
Revising the <i>Quality Assurance Project Plan, Monticello, Utah, Disposal and Processing Sites</i> (LM-Plan-3-21-1.0, LMS/MNT/S27252)	The Quality Assurance Project Plan was submitted to regulators on September 7, 2023.
Monticello, Utah, National Priorities List (NPL) Sites Federal Facility Agreement (FFA) Quarterly Report: October 1–December 31, 2023 (DOE 2023)	Submitted to EPA and UDEQ on February 28, 2024.
CERCLA Sixth Five-Year Review reports for the MVP and MMTS:	
Sixth Five-Year Review Report for Monticello Mill Tailings (USDOE) Site, San Juan County, Monticello, Utah (DOE 2022a)	Submitted to EPA and UDEQ on May 2, 2022.
Sixth Five-Year Review Report for Monticello Radioactively Contaminated Properties Superfund Site, San Juan County, Monticello, Utah (DOE 2022b)	Way 2, 2022.
Five-Year Review addendum activities include the following:	Submittal and proposed dates for Five-Year Review addendum documents:
Submittal and resolution of errata sheets	Errata sheets were resolved and submitted on April 6, 2023.
DOE to confirm human health risk evaluation using EPA Preliminary Remediation Goals calculator	Submitted on July 29, 2022.
LTS&M Plan clarification letter regarding Table 7	Letter submitted on March 2, 2023.
DOE to create and send an informational letter to landowners with deed restrictions that clearly explains the restrictions on their property	Letters were sent to landowners on December 19, 2022.
DOE to update the Uniform Federal Policy for <i>Quality Assurance Project Plan</i> , Sampling and Analysis Plan, Program Directive 2021-10-MNT, and the LTS&M Plan to be consistent regarding the monitoring well network	Update was submitted on April 5, 2023.
DOE to evaluate ecological risk to aquatic organisms and terrestrial wildlife using current Utah water quality standards	Ecological Risk Evaluation response to EPA and UDEQ comments was submitted to EPA and UDEQ on December 31, 2023. DOE received approval from EPA and UDEQ via email on February 1, 2024, requesting inclusion in the Feasibility Study.
DOE to evaluate risk to human health and environment using current Utah water quality standards	Submitted on December 31, 2023.
DOE to complete a Feasibility Study to evaluate:	
IC options to prevent human consumption of water from Montezuma Creek as a domestic drinking water source against the nine criteria of the NCP	Draft Feasibility Study will be submitted by June 30, 2024.
Remedial alternatives for achieving the water quality restoration Remedial Action Objectives	
DOE to complete a vulnerability and resilience assessment for Monticello sites, provide the assessment to EPA and UDEQ, and schedule a meeting to discuss findings	Assessment will be submitted by December 31, 2025.

5.0 References

- 42 USC 9601 et seq. "Comprehensive Environmental Response, Compensation, and Liability Act" as amended, *United States Code*.
- DOE (U.S. Department of Energy), 1998. *Repository and Pond 4 Groundwater Contingency Plan-Final*, MAC-MRAP 3.5.8, February.
- 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, Office of Legacy Management, May.
- 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), 2016. Remedial Action Completion Report for Operable Unit III Groundwater Contingency Remedy Optimization System, Monticello Mill Tailings Site, Monticello, Utah, LMS/MNT/S13373, Office of Legacy Management, May.
- DOE (U.S. Department of Energy), 2018. OU III Closure Strategy for the Monticello Mill Tailings Site, Monticello, Utah, LMS/MNT/S18146, Office of Legacy Management, May.
- DOE (U.S. Department of Energy), 2022a. Sixth Five-Year Review Report for Monticello Mill Tailings (USDOE) Site, San Juan County, Monticello, Utah, LMS/MNT/S35986, Office of Legacy Management, July.
- DOE (U.S. Department of Energy), 2022b. Sixth Five-Year Review Report for Monticello Radioactively Contaminated Properties Superfund Site, San Juan County, Monticello, Utah, LMS/MNT/S36208, Office of Legacy Management, June.
- DOE (U.S. Department of Energy), 2023. *Monticello, Utah, National Priorities List (NPL) Sites Federal Facility Agreement (FFA) Quarterly Report: October 1–December 31, 2023*, LMS/MNT/43572, Office of Legacy Management, March.

Long-Term Surveillance and Maintenance Plan for Monticello NPL Sites, LMS/MNT/S00387, continually updated, prepared by the LMS contractor for the U.S. Department of Energy Office of Legacy Management.

Monticello Site Management Plan, GJO-2003-493-TAC, E03991, continually updated, prepared by the LMS contractor for the U.S. Department of Energy Office of Legacy Management.

Quality Assurance Project Plan, Monticello, Utah, Disposal and Processing Sites, LM-Plan-3-21-1.0, LMS/MNT/S27252, continually updated, prepared by the LMS contractor for the U.S. Department of Energy Office of Legacy Management.

Appendix A

Monthly and Quarterly Surveillance Checklists



Monthly Pond 4 Surveillance Checklist

Inspection Item	Acce	ptable	Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	\boxtimes		
Roads	\boxtimes		
Signs	\boxtimes		
Visible piping	\boxtimes		
Visible liner and anchors	\boxtimes		
Rescue equipment	\boxtimes		
Evidence of erosion of:			
Top of Pond 4 berm	\boxtimes		
Pond 4 sideslopes	\boxtimes		
Ditches	\boxtimes		
Surrounding area	\boxtimes		
Seepage from Pond 4	\boxtimes		
Overtopping of Pond 4	\boxtimes		
Evidence of:			
Vandalism	\boxtimes		
ntrusion by wildlife	\boxtimes		
ntrusion by humans	\boxtimes		
Accumulation of trash	\boxtimes		
Additional comments: Pond a	ppears to be i	in aood ca	ondition. Inpected South Vault and CSMNT-10 vault. No issue
	•		

Monticello City and Repository Site Routine Inspection, Surveillance, and Monitoring Procedures, Monticello, Utah (LMS/MNT/S10320) LMS 5501 MNT

Page 1 of 1



Repository Area Surveillance Checklist

Storm event triggered surveillance due to inches of rainfall over the past 24 hours. Inspection Item Acceptable Comments and Recommendation		Qua	rterly su	urveillance: 🗌 February 🔲 May 📗 August 🔲 November				
Yes No Condition of: Fences, gates, and locks	Storm event triggered surveillance due to inches of rainfall over the past 24 hours.							
Fences, gates, and locks	Inspection Item		•	Comments and Recommendation				
Signs Sign	Condition of:							
Signs	Fences, gates, and locks	\boxtimes		Fences and gates in good conditon				
Site monuments	Roads ^a	\boxtimes						
Site monuments	Signs	\boxtimes						
Drainage ditches	Site monuments	\boxtimes						
Manholes	Drainage ditches	\boxtimes						
Evidence of erosion of: Top of disposal cella	Manholes	\boxtimes						
Evidence of erosion of: Top of disposal cella	Vegetation	\boxtimes						
Disposal cell sideslopes ^a	Evidence of erosion of:							
Disposal cell sideslopesa	Top of disposal cell ^a	\boxtimes						
Surrounding area	Disposal cell sideslopes ^a	\boxtimes						
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 Manholesb Sediment ponds Evidence of: Structural instability Additional comments: Things appear to be in good condition. Date: 1/31/2024	Ditches	\boxtimes						
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 Manholesb Sediment ponds Evidence of: Structural instability Additional comments: Things appear to be in good condition. Date: 1/31/2024	Surrounding area	\boxtimes						
Intrusion by livestock	Evidence of:							
Burrowing animal damage	Vandalism	\boxtimes						
Intrusion by humans	Intrusion by livestock	\boxtimes						
Intrusion by humans	Burrowing animal damage	\boxtimes						
Additional Quarterly Surveillance Requirements Note: All transects, shown in Figure 3-1, must be walked during this inspection. Condition of: Settlement plate structures Manholesb Sediment ponds Evidence of: Structural instability Additional comments: Things appear to be in good condition. Date: 1/31/2024	Intrusion by humans	\boxtimes						
Note: All transects, shown in Figure 3-1, must be walked during this inspection. Condition of: Settlement plate structures	Accumulation of trash	\boxtimes						
Condition of: Settlement plate structures	Additional Quarterly Surve	illance	Requi	rements				
Settlement plate structures Manholesb Sediment ponds Evidence of: Structural instability Additional comments: Things appear to be in good condition. Date: 1/31/2024	Note: All transects, shown in Fi	igure 3-1	, must b	ne walked during this inspection.				
Manholes ^b	Condition of:							
Sediment ponds Evidence of: Structural instability Additional comments: Things appear to be in good condition. Signature: Date: 1/31/2024	Settlement plate structures	\boxtimes						
Structural instability Additional comments: Things appear to be in good condition. Signature: Date: 1/31/2024	Manholes ^b	\boxtimes						
Structural instability Additional comments: Things appear to be in good condition. Signature: Date: 1/31/2024	Sediment ponds	\boxtimes						
Additional comments: Things appear to be in good condition. Signature: Date: 1/31/2024	Evidence of:	\boxtimes						
Signature: Date:1/31/2024	Structural instability	\boxtimes						
	Additional comments: Th	ings ap	oear to	be in good condition.				
				<u> </u>				
	Signature:		Montio	Date: 1/31/2024				

^aInspections required following a significant storm event ^bOpen to inspect quarterly

MONTHLY CLIMATOLOGICAL SUMMARY for JAN. 2024

NAME: Monticello Office Station CITY: Monticello STATE: Utah

ELEV: 7069 ft LAT: 37° 48' 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	30.9	41.5	1:30p	21.6	7:30a	34.1	0.0	0.00	3.7	16.0	2:30p	S	
2	30.4	41.7	3:30p	21.6	11:00p	34.6	0.0	0.00	3.8	12.0	1:30p	W	
3	31.0	38.2	3:00p	20.5	4:30a	34.0	0.0	0.00	6.2	22.0	11:00a	SSE	
4	30.1	35.0	12:30a	27.8	6:00a	34.9	0.0	0.00	13.6	33.0	12:30p	ИМ	
5	27.2	32.0	1:30p	23.9	7:00a	37.8	0.0	0.00	12.5	33.0	2:30a	ИM	
6	25.4	32.4	1:30p	20.0	8:00a	39.6	0.0	0.00	9.0	27.0	4:00a	S	
7	22.4	26.2	2:00p	19.8	12:00m	42.6	0.0	0.00	10.5	34.0	12:00m	SSE	
8	17.6	21.8	3:00p	11.6	12:00m	47.4	0.0	0.00	20.4	43.0	3:00a	WNW	
9	17.7	32.5	12:00m	8.2	7:30a	47.3	0.0	0.00	5.6	22.0	11:30p	SE	
10	20.7	34.3	12:30a	7.3	7:30a	44.3	0.0	0.00	8.9	29.0	7:00p	SSW	
11	19.0	26.6	12:30a		7:30p	46.0	0.0	0.00	13.9	37.0	1:00p	NW	
12	16.4	31.3	12:00m	7.0	5:00a	48.6	0.0	0.00	9.4	33.0	3:00p	SSE	
13	27.7	32.9	11:00a	18.8	3:00a	37.3	0.0	0.00	10.5	35.0	10:30p	SSE	
14	30.5	39.8	4:30p	22.9	8:30a	34.5	0.0	0.00	6.9	31.0	1:00a	SE	
15	29.5	39.3	2:30p	19.0	12:00m	35.5	0.0	0.00	5.0	26.0	9:00a	WNW	
16	24.6	36.9	3:00p	15.1	6:30a	40.4	0.0	0.00	2.7	13.0	10:30a	NNW	
17	28.5	34.4	4:00p	21.5	q00:8	36.5	0.0	0.00	11.2	30.0	6:00a	SSE	
18	33.7	44.5	2:30p	23.4	8:00a	31.3	0.0	0.00	3.4	26.0	12:30a	S	
19	34.9	45.8	4:00p	24.7	6:30a	30.1	0.0	0.00	3.0	14.0	11:00p	SSE	
20	37.7	42.8	1:30p	32.1	1:30a	27.3	0.0	0.00	8.0	23.0	11:00a	S	
21	33.4	38.0	1:00a		7:00a	31.6	0.0	0.06	8.0	21.0	2:00a	SSE	
22	33.2	36.4	2:30p	31.2	11:00p	31.8	0.0	0.09	4.7	15.0	1:30p	SSE	
23	35.0	40.6	3:30p	31.0	1:00a	30.0	0.0	0.07	3.0	10.0	12:30p	SSE	
24	33.7	40.6	1:30p	28.0	9:30p	31.3	0.0	0.00	2.3	12.0	4:30a	WNW	
25	31.7	33.4	4:30p	28.4	3:30a	33.3	0.0	0.03	5.5	18.0	11:30p	SSE	
26	33.1	38.6	2:30p	29.0	11:30p	31.9	0.0	0.00	12.7	28.0	10:00a	MM	
27	34.3	42.0	3:30p	27.6	5:00a	30.7	0.0	0.00	8.0	19.0	11:30a	MNM	
28	40.4	50.5	3:00p	32.2	5:30a	24.6	0.0	0.00		18.0	11:00a	WNW	
29	42.8	52.4	3:00p	34.1	6:00a	22.2	0.0	0.00	4.9	15.0	3:00p	WNW	
30	39.5	50.9	4:00p		7:30a	25.5	0.0	0.00		16.0	12:30p	SSE	
31	39.7	51.2 	3:30p		8:00a 	25.3 	0.0	0.00	4.8	19.0	12:30p	SSE	_
	30.1	52.4	29	7.0	12 1			0.25	7.5	43.0	8	SSE	

Max >= 90.0: 0

 $Max \le 32.0: 5$ Min $\le 32.0: 28$

Min $\leq 0.0: 0$

Max Rain: 0.09 ON 01/22/24

Days of Rain: 4 (>.01 in) 0 (>.1 in) 0 (>1 in)

Heat Base: 65.0 Cool Base: 65.0 Method: Integration



Monthly Pond 4 Surveillance Checklist

Inspection Item	Acce	ptable	Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	\boxtimes		
Roads	\boxtimes		
Signs	\boxtimes		
Visible piping	\boxtimes		
Visible liner and anchors	\boxtimes		
Rescue equipment	\boxtimes		
Evidence of erosion of:			
Top of Pond 4 berm	\boxtimes		
Pond 4 sideslopes	\boxtimes		
Ditches	\boxtimes		
Surrounding area	\boxtimes		
Seepage from Pond 4	\boxtimes		
Overtopping of Pond 4	\boxtimes		
Evidence of:			
Vandalism	\boxtimes		
ntrusion by wildlife	\boxtimes		
Intrusion by humans	\boxtimes		
Accumulation of trash			

Monticello City and Repository Site Routine Inspection, Surveillance, and Monitoring Procedures, Monticello, Utah (LMS/MNT/S10320) LMS 5501 MNT

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April 19, 2021



Repository Area Surveillance Checklist

			urveillance: 🛛 February 🔲 May 🔲 August 🔲 November
Storm event triggered su	urveilland	e due	to inches of rainfall over the past 24 hours.
Inspection Item	Acce p Yes	otable No	Comments and Recommendation
Condition of:			
Fences, gates, and locks			Fences and gates in good conditon. 1 broken wire repaired on north fence line.
Roads ^a	\boxtimes		
Signs	\boxtimes		
Site monuments	\boxtimes		
Drainage ditches ^a	\boxtimes		
Manholes	\boxtimes		
Vegetation	\boxtimes		
Evidence of erosion of:			
Top of disposal cella	\boxtimes		
Disposal cell sideslopes ^a	\boxtimes		
Ditches	\boxtimes		
Surrounding area	\boxtimes		
Evidence of:			
Vandalism	\boxtimes		
Intrusion by livestock	\boxtimes		
Burrowing animal damage	\boxtimes		
Intrusion by humans	\boxtimes		
Accumulation of trash	\boxtimes		
Additional Quarterly Surv	eillance	Requi	rements
Note: All transects, shown in F	igure 3-1,	must b	pe walked during this inspection.
Condition of:			
Settlement plate structures	\boxtimes		
Manholesb	\boxtimes		
Sediment ponds	\boxtimes		
Evidence of:	\boxtimes		
Structural instability	\boxtimes		
Additional comments: The	nings app	ear to	be in good condition.
Signature:	→ 	Montic	Date: 2/29/2024

^aInspections required following a significant storm event

bOpen to inspect quarterly

MONTHLY CLIMATOLOGICAL SUMMARY for FEB. 2024

NAME: Monticello Office Station CITY: Monticello STATE: Utah ELEV: 7069 ft LAT: 37° 48' 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. 2	39.4 33.9	47.9 37.3	2:30p 2:30p	32.6 30.4	3:00a 12:00m		0.0	0.15 0.38	6.5 8.9	33.0 24.0	8:30p 8:30a	S SSE	
3	30.6	37.7	2:30p		10:30p		0.0	0.01	6.4	29.0	11:00a	WNW	
4	28.9	38.2	3:00p		7:30a		0.0	0.00	4.5	18.0	10:00p	WSW	
5	36.7	44.7	2:30p	27.2	7:30a		0.0	0.00	8.4	25.0	12:30p	S	
6	39.1	45.0	9:30a		10:30p		0.0	0.37	11.9	40.0	1:30p	S	
7	31.6	36.2	2:00p	28.1	7:00p		0.0	0.10	12.1	36.0	9:00a	SSE	
8	27.5	30.1	1:00p	24.0	12:00m		0.0	0.00	8.4	24.0	10:30p	SSE	
9	22.5	25.3	2:00p	19.1	11:00p		0.0	0.02	8.4	24.0	1:00a	SSE	
10	23.7	28.7	1:30p	17.2	3:00a		0.0	0.00	10.0	30.0	8:30p	NW	
11	23.2	30.6	4:00p	16.6	7:30a		0.0	0.00	10.6	33.0	2:30a	NW	
12	27.4	40.6	2:30p	15.8	3:30a		0.0	0.04	3.4	10.0	7:00a	WNW	
13	31.3	40.7	4:00p	20.1	7:00a		0.0	0.00	5.6	17.0	11:30a	SW	
14	35.0	42.2	2:30p	27.3	8:30a		0.0	0.00	7.3	21.0	3:00p	SSE	
15	35.3	42.9	5:00p	29.9	7:30a		0.0	0.00	7.5	28.0	10:00a	SSE	
16	35.3	43.2	1:30p	27.6	6:30a	29.7	0.0	0.00	3.5	11.0	3:30a	WSW	
17	31.3	39.1	3:30p	23.3	11:30p	33.7	0.0	0.00	7.3	24.0	12:30p	NM	
18	34.6	46.3	3:30p	23.4	1:30a	30.4	0.0	0.00	6.2	23.0	1:30p	SSE	
19	38.6	49.4	3:00p	25.0	6:00a	26.4	0.0	0.00	5.1	19.0	11:30a		
20	41.5	48.1	3:30p	34.9	3:30a	23.5	0.0	0.00	6.0	20.0	12:30p		
21	41.4	49.6	2:30p	31.9	11:30p	23.6	0.0	0.00	9.0	25.0	1:30a	S	
22	35.3	43.8	2:30p	27.6	6:00a		0.0	0.00	8.8	25.0	1:30a	ИM	
23	35.3	45.2	4:00p	26.2	6:00a		0.0	0.00	6.4	19.0	1:00p	MNM	
24	37.3	50.1	3:00p	26.3	7:00a	27.7	0.0	0.00	4.3	18.0	q0E:E	M	
25	43.0	52.7	2:00p	32.9	12:30a	22.0	0.0	0.00	7.8	24.0	1:30p	SE	
26	45.2	52.5	2:00p	37.7	7:00a		0.0	0.00	12.5	33.0	11:00a	SSW	
27	31.8	40.2	2:00a	19.0	12:00m		0.0	0.03	12.1	31.0	9:00a	NM	
28	29.4	46.2	4:00p	15.1	1:00a		0.0	0.00	4.6	15.0	3:00p	SE	
29	38.1	50.8	q00:6	25.2	5:00a	26.9	0.0	0.00	7.2	24.0	10:30a	S	
	33.9	52.7	25	15.1	28	900.9	0.0	1.10	7.6	40.0	6	SSE	

Max > = 90.0: 0Max <= 32.0: 4

Min <= 32.0: 24 Min <= 0.0: 0

Max Rain: 0.38 ON 02/02/24

Days of Rain: 7 (>.01 in) 3 (>.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

Are t	hese	areas acceptable?
Yes	No	
\boxtimes		Was the gate locked upon arrival?
\boxtimes		Are signs posted in accordance with 10 CFR 835.602[a]?
\boxtimes		Are all postings legible?
\boxtimes		Are enclosures on the concrete bin and stored drum containers tight?
\boxtimes		Are containers in good physical condition (no rust, no holes, no bulges, etc.)?
\boxtimes		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.
\boxtimes		Is the surface area of the TSF in good physical condition (no erosion, no flood damage, no excessive vegetation growth, etc.)?
\boxtimes		Has radiological monitoring been conducted in accordance with 10 CFR 835.405[d]?
\boxtimes		Is the security fence in good condition?
Com	ments	
The	e conc	rete bin contains 6 cubic yards of radiologically contaminated material.

A GERT sign was replaced durning inspection.



2/29/2024

Signature of Monticello LM Representative

Date of Inspection



Monthly Pond 4 Surveillance Checklist

Inspection Item	Acce	otable	Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	\boxtimes	Total Auditor	
Roads	\boxtimes		
Signs			Radioloigcal rope protective barrier reapleed around perimeter of Pond 4
Visible piping	\boxtimes		
√isible liner and anchors	\boxtimes		
Rescue equipment	\boxtimes		
Evidence of erosion of:			
Top of Pond 4 berm	\boxtimes		
Pond 4 sideslopes			
Ditches	\boxtimes		
Surrounding area			
Seepage from Pond 4	\boxtimes		
Overtopping of Pond 4			
Evidence of:			
√andalism	\boxtimes		
ntrusion by wildlife	\boxtimes		
Intrusion by humans	\boxtimes		
Accumulation of trash	\boxtimes		

Monticello LM Representative:
Monticello City and Repository Site Routine Inspection, Surveillance, and
Monitoring Procedures, Monticello, Utah (LMS/MNT/S10320) LMS 5501 MNT

Date: 3/28/2024



Repository Area Surveillance Checklist

		•	surveillance: February May August November
Storm event triggered surveillance due			· ·
Inspection Item	Acce _l Yes	ptable No	Comments and Recommendation
Condition of:			
Fences, gates, and locks	\boxtimes		Fences and gates in good conditon.
Roads ^a	\boxtimes		
Signs	\boxtimes		
Site monuments	\boxtimes		
Drainage ditchesª	\boxtimes		
Manholes	\boxtimes		
Vegetation	\boxtimes		
Evidence of erosion of:			
Top of disposal cell ^a	\boxtimes		
Disposal cell sideslopesª	\boxtimes		
Ditches	\boxtimes		
Surrounding area	\boxtimes		
Evidence of:			
Vandalism	\boxtimes		
Intrusion by livestock	\boxtimes		
Burrowing animal damage	\boxtimes		
Intrusion by humans	\boxtimes		
Accumulation of trash	\boxtimes		
Additional Quarterly Surve	illance	Requ	irements
Note: All transects, shown in Fi	igure 3-1	, must	be walked during this inspection.
Condition of:			
Settlement plate structures			
Manholes ^b			
Sediment ponds			
Evidence of:			
Structural instability			

^aInspections required following a significant storm event

^bOpen to inspect quarterly

MONTHLY CLIMATOLOGICAL SUMMARY for MAR. 2024

NAME: Monticello CITY: STATE:

ELEV: 7070 ft LAT: 37° 48' 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	39.2	51.2	4:00p	29.7	6:30a		0.0	0.00	8.8	30.0	2:30p	SSE	
2	40.7	53.3	3:30p	28.4	5:00a		0.0	0.03	16.1	49.0	1:00p	S	
3	34.5	44.1	4:00p	21.0	6:00a		0.0	0.17	9.0	33.0	1:00a	SSW	
4	34.0	46.0	q00:E	23.7	5:00a		0.0	0.00	5.9	26.0	1:30p	S	
5	37.2	47.8	1:00p	29.2	6:30a		0.0	0.00	4.1	21.0	1:30p	S	
6	38.5	47.7	2:30p	30.6	4:30a	26.5	0.0	0.00	5.7	22.0	1:00p	S	
7	33.0	39.7	4:00p	28.7	5:00a	32.0	0.0	0.09	4.7	17.0	4:00p	WNW	
8	34.0	41.8	3:30p	28.3	12:00m		0.0	0.00	11.8	27.0	3:30p	NW	
9	34.2	46.4	3:00p	24.2	3:30a	30.8	0.0	0.00	4.2	19.0	12:30a	MNM	
10	37.8	50.7	4:00p	24.1	7:00a	26.1	0.0	0.00	5.8	22.0	2:00p	SSE	
11	40.9	51.1	5:30p	32.3	3:30a		0.0	0.00	11.9	38.0	12:00p	NE	
12	38.5	48.5	1:30p	26.5	7:00a	26.5	0.0	0.00	9.6	37.0	12:30p	ESE	
13	34.9	41.0	5:30p	29.6	12:00m		0.0	0.01	8.7	32.0	1:30p	NM	
14	31.4	42.2	3:30p	24.5	8:00a	33.6	0.0	0.02	7.5	23.0	3:30a	NM	
15	34.5	39.6	5:30p	30.7	1:30a	30.5	0.0	0.77	4.0	21.0	7:00p	SSE	
16	33.2	41.7	4:30p	29.1	12:00m		0.0	0.18	4.7	22.0	12:30a	SSE	
17	34.1	43.6	6:00p	27.8	2:00a	30.9	0.0	0.05	3.8	12.0	1:30p	MNM	
1.8	40.1	51.6	6:00p	29.3	7:30a	24.9	0.0	0.01	3.5	11.0	12:30p	ESE	
19	41.3	52.1	5:00p	30.4	6:00a		0.0	0.00	5.0	20.0	6:00p	WSW	
20	42.8	55.7	4:30p	31.4	5:30a		0.0	0.00	3.4	17.0	5:00p	SW	
21	45.6	58.5	4:30p	32.6	7:00a	19.4	0.0	0.00	5.0	33.0	7:30p	SW	
22	47.5	58.7	4:30p	36.3	5:00a	17.5	0.0	0.00	5.3	21.0	5:30p	S	
23	44.0	54.4	3:00p	36.1	5:30a		0.0	0.00	9.8	35.0	3:30p	SSE	
24	35.2	41.2	5:30p	30.7	9:30p	29.8	0.0	0.01	7.6	30.0	3:00p	MNM	
25	33.4	41.7	5:30p	27.4	5:30a		0.0	0.00	11.5	28.0	5:30p	NW	
26	31.5	40.7	6:00p	24.3	6:30a		0.0	0.01	5.2	23.0	4:00p	MNM	
27	35.1	47.4	5:00p	23.3	3:30a		0.0	0.00	7.0	24.0	5:30a	MNM	
28	42.0	55.0	5:00p	30.0	2:00a	23.0	0.0	0.00	9.2	33.0	2:00p	S	
29	45.0	52.4	1:30p	36.3	8:00a	20.0	0.0	0.00	7.8	30.0	1:30p	S	
30	47.8	58.0	3:00p	38.0	7:00a	17.2	0.0	0.00	13.2	38.0	1:30p	S	
31	37.2	46.0	12:30a	31.2	11:00p	27.8	0.0	0.04	10.1	34.0	9:30a	SSE	
	38.0	58.7	22	21.0	3	834.8	0.0	1.39	7.4	49.0	2	S	

Max >= 90.0: 0Max <= 32.0: 0

 $Min \le 32.0: 25$ $Min \le 0.0: 0$

Max Rain: 0.77 ON 03/15/24

Days of Rain: 8 (>.01 in) 3 (>.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

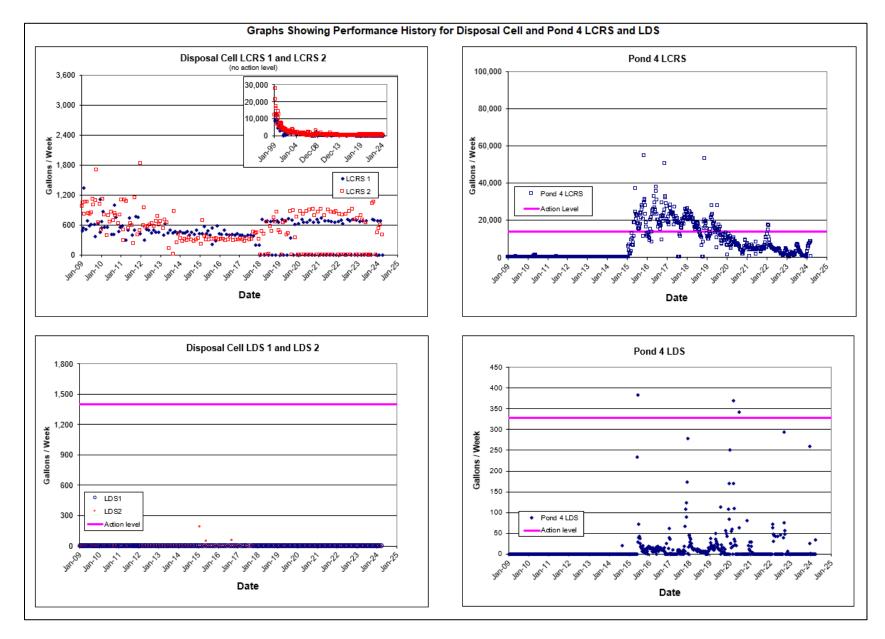


Figure B-1. Graphs Showing Performance History for Disposal Cell and Pond 4 LCRS and LDS