

**Monticello, Utah, National  
Priorities List Sites  
Federal Facility Agreement  
(FFA) Quarterly Report:  
January 1–March 31, 2015**

**April 2015**



U.S. DEPARTMENT OF  
**ENERGY**

Legacy  
Management

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## Abbreviations

AOA	Area of Attainment
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
gpm	gallons per minute
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
LTS&M Plan	<i>Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites</i>
MMTS	Monticello Mill Tailings Site
MVP	Monticello Vicinity Properties
NPL	National Priorities List
OU	Operable Unit
TSF	Temporary Storage Facility
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation

## 1.0 Introduction

This quarterly report appraises 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) for the period of January through March 2015. Quarterly reports are submitted to EPA and UDEQ in January (for the October through December quarter), April (for the January through March quarter), July (for the April through June quarter), and October (for the July through September quarter).

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) assesses the status of the MVP and MMTS remedies through (1) routine inspections (monthly, quarterly, and annually) of site infrastructure and operations that are conducted in accordance with the *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (LTS&M Plan), (2) routine (semiannual) monitoring of groundwater and surface water quality and hydrologic conditions that is conducted in accordance with the *Record of Decision for the Monticello Mill Tailings (USDOE) Site Operable Unit III, Surface and Ground Water, Monticello, Utah, June 2004*, and (3) operation and monitoring of the Operable Unit (OU) III groundwater contingency remedy optimization system in accordance with DOE's *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah, May 2014*, guidelines.

The schedule and reporting requirements are determined in consultation with EPA and UDEQ and are also documented in the *Monticello Site Management Plan* (updated annually). Annual groundwater reports present comprehensive data evaluation for the OU III remedy. MVP and MMTS conditions are also documented in annual site inspection reports, and remedy protectiveness is evaluated in five-year reviews as mandated under the Comprehensive Environmental Response, Compensation, and Liability Act.

### 1.1 Quarterly Site Status

- Operation of the OU III contingency groundwater remedy optimization system began during this quarter. As described in Section 3.3.3, approximately 2 million gallons of groundwater was pumped from the alluvial aquifer in the Area of Attainment (AOA) and transmitted to Pond 4 for evaporative treatment.
- Routine surveillance noted no anomalous conditions for the MVP remedy.
- Routine surveillance noted no anomalous conditions for the MMTS remedy.
- Routine surveillance noted no anomalous conditions for the surface features of the disposal cell and Pond 4.
- Routine surveillance noted no anomalous operating conditions for the repository Leachate Collection and Removal Systems (LCRS).
- Operation of the OU III groundwater contingency remedy optimization system has resulted in increased water collection in the Pond 4 LCRS. The LCRS recirculation system is operating as intended and the action level leakage rate, as described in Section 3.4 of the LTS&M Plan, has not been exceeded.
- Routine surveillance noted no anomalous operating conditions for the repository and Pond 4 Leak Detection Systems (LDS).

## 2.0 Monticello Vicinity Properties

Long-term surveillance and maintenance (LTS&M) for the MVP consists of providing radiological control at municipal and commercial excavations in Monticello street and utility corridors, in Utah Department of Transportation (UDOT) rights-of-way, and at property MS-00176-VL (privately owned supplemental standards property). Surveillance observations for this quarter are:

- LM representatives continued to coordinate with City of Monticello officials regarding planned and ongoing construction and excavation activities by the City, UDOT, and utility companies at roadway and utility corridors through daily planning meetings. LM representatives indicate increased excavations are planned by the City of Monticello during 2015.
- There were no planned or unplanned excavations in City of Monticello street or utility corridors where radiological contaminated material was encountered.
- 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 for the MMTS consists of (1) operating the onsite disposal cell, (2) maintaining groundwater and land-use institutional controls (ICs) on the former mill site and peripheral properties, and (3) operating and monitoring the OU III groundwater contingency remedy optimization system.

### 3.1 Operable Unit I

OU I consists of the property of the former Monticello mill (mill site) and the waste disposal facility (repository). Solid wastes were removed from the MVP, 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 of Monticello 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 reporting period are:

- No anomalous conditions were observed at the repository with respect to the surveillance items included in the LTS&M repository area surveillance checklists (attached for this quarter in Appendix A).
- Water accumulation in Pond 4 has increased with the start-up of the OU III groundwater contingency remedy optimization system. Approximately 4 feet of water was in the pond at

the time of the March monthly pond inspection. Monthly Pond 4 surveillance checklists are attached for this quarter in Appendix A.

- Leachate production from the repository was normal. Leachate production is about 1,000 gallons per week combined for LCRS sumps LCRS 1 and LCRS 2. See Appendix B for a graphical depiction of leachate production history.
- Inspection and repairs were performed of the primary Pond 4 liner in 2013 and 2014. However, operation of the OU III groundwater contingency remedy optimization system has resulted in increased water collection in the Pond 4 LCRS. The LCRS recirculation system is operating as intended and the action level leakage rate, as described in Section 3.4 of the LTS&M Plan, has not been exceeded. Pond 4 LCRS performance history is summarized as a graph in Appendix B.
- The lower sumps (LDS) for the repository and Pond 4 received no water during the quarter. This is the normal condition. Graphs showing the performance history for the repository LDS and the Pond 4 LDS are included in Appendix B.
- Approximately 190 gallons of water was pumped from the repository LDS 2 sump in January 2015 during routine pump control maintenance activities. The water removed is considered remnant from past testing activities, rather than liner leakage. Historic water levels in the sump have remained essentially static.

### **3.1.2 Temporary Storage Facility**

Routine surveillance of the Temporary Storage Facility (TSF) ensures that maintenance and radiological controls that govern access to, and placement, storage, and transfer of, contaminated material in the TSF are current and effective. No anomalous conditions were observed for the TSF (see the surveillance checklist attached for this quarter in Appendix A).

No waste was placed in the TSF during the quarter. The inventory of contaminated material in the TSF remains at approximately 25 cubic yards. Approximately 4 cubic yards of the contaminated material derives from street and utility excavations from previous quarters. Radiologically contaminated material from supplemental standards properties has not been placed in the TSF since 2011. Approximately 21 cubic yards of the material in the TSF derives from maintenance and repairs to Pond 4 in August 2013.

LM initiates the transfer of TSF materials for permanent disposal at the LM Grand Junction, Colorado, Disposal Site when the contents reach 75 cubic yards. The most recent transfer of TSF materials to the Grand Junction disposal site occurred in June 2010.

### **3.1.3 Former Mill Site**

Surveillance of the former mill site (properties MP-00181-VL and MS-00893-VL) is conducted 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.

Observations 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. Surveillance of OU II properties is conducted to ensure compliance with ICs that were implemented to preserve the OU II remedy for soil and groundwater.

Observations 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 (no installation of domestic-use wells in the alluvial aquifer) were applied to several OU II properties under the 2004 covenant by which DOE transferred selected properties to the City of Monticello. No instance 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 rain in a 24-hour period occurred to require nonroutine surveillance of supplemental standards cleanup properties. Climatological data for the quarter are included in Appendix C.

### **3.3 Operable Unit III**

OU III consists of groundwater and surface water that were contaminated as a result of operation of the former Monticello mill. The contaminated groundwater lies within the alluvial aquifer beneath the valley of Montezuma Creek; contaminated surface water is present within Montezuma Creek.

#### **3.3.1 Groundwater Restricted Area**

Surveillance of properties where groundwater contamination is present is conducted semiannually in spring and fall to ensure compliance with the groundwater-use restriction (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 observations are:

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

### **3.3.2 Ex Situ Groundwater Treatment System**

In accordance with the OU III contingency remedy implemented under the January 2009 Explanation of Significant Difference, contaminated alluvial groundwater has been extracted from a single groundwater well and treated using zero-valent iron in two ex situ treatment vessels at the site in the past. This treatment system, located on private property, is approximately 600 feet east of the former mill site in the area where the alluvial groundwater is most contaminated. Treated groundwater from this system was either discharged to Montezuma Creek in compliance with established State of Utah discharge standards or discharged to an infiltration trench.

The new OU III groundwater contingency remedy optimization system (see Section 3.3.3) replaced the ex situ treatment as the active groundwater contingency remediation component for OU III. In concurrence with EPA and UDEQ, DOE indefinitely suspended the operation of the ex situ treatment system as a remedy component, effective December 29, 2014. Therefore, there are no groundwater treatment quantities or effluent monitoring results to report for this quarter.

DOE has not determined whether the ex situ treatment system is ready for decommissioning. Once this determination is made, discussions will be held among DOE, EPA, and UDEQ on the decommissioning/closure strategy for this treatment system.

### **3.3.3 OU III Groundwater Contingency Remedy Optimization System**

The groundwater contingency remedy has been optimized by an expanded pump-and-treat remediation in the AOA, where hydrogeologic boundaries and elevated concentrations of uranium in the alluvial groundwater are both well defined. The contingency remedy optimization is consistent in concept with the requirements of the Record of Decision and the Explanation of Significant Difference.

The optimized system, which became operational during the quarter, uses a network of eight vertical extraction wells (well numbers OR-1 through OR-8) strategically placed in the AOA to extract contaminated groundwater. The water is transmitted in buried pipelines to the Groundwater Transfer Building where it is batched in an aboveground tank and pumped via a buried pipeline to Pond 4, located about 1 mile south of the AOA, for evaporative treatment. Sixteen monitoring wells (well numbers MW-1, MW-3 through MW-17) were installed to monitor groundwater levels and quality in the AOA. A fixed time water right appropriation (number 09-2347) was obtained from the Utah Department of Natural Resources, Division of Water Rights for this system because evaporation is considered a consumptive use. Water use is limited under this water right to 16 acre-feet per year, which equates to approximately 5,213,600 gallons per year.

Major OU III groundwater contingency remedy optimization system activities occurring this quarter include:

- Phased system operations start-up began on January 14, 2015.
- Full system, continuous operations began on February 14, 2015.
- System operation refinement continues.

- Some minor, follow-up construction associated with the new system occurred during the quarter. Similar follow-up activities are scheduled for spring 2015, and revegetation of land disturbed during system construction is scheduled for July 2015.
- As shown on Table 1, the system removed approximately 2 million gallons of groundwater from the alluvial aquifer during the quarter. Table 1 provides approximate monthly quantities of pumped groundwater and average monthly pumping rates.

*Table 1. Volumes of Groundwater Pumped for Evaporative Treatment per Calendar Month and Cumulatively*

<b>Calendar Month</b>	<b>Approximate Volume Pumped per Calendar Month<sup>a</sup> (gallons)</b>	<b>Approximate Average Pumping Rate for Calendar Month<sup>b</sup> (gallons per day)</b>	<b>Approximate Cumulative Volume Pumped Since System Start-up<sup>a</sup> (million gallons)</b>
January 2015	346,900	20,000	0.3
February 2015	718,900	26,000	1.1
March 2015	889,200	29,000	2.0

<sup>a</sup> Total pumped from all eight extraction wells.

<sup>b</sup> Sixteen day period of operation since start-up for January 2015. Averages for February and March include periods when system was shut down.

- System monitoring consisted of:
  - The batch tank effluent was sampled for uranium on January 15, February 12, and March 12, 2015. These samples were analyzed at the DOE Environmental Sciences Laboratory. Table 2 provides sampling results.
  - Extraction well sample ports located in the Groundwater Transfer Building were sampled on March 12, 2015, to evaluate extraction well productivity (uranium mass removal per well) for system operation purposes. These samples were analyzed at the DOE Environmental Sciences Laboratory.
  - The planned 1 million gallons pumped (approximately) AOA monitoring well sampling could not be conducted because snowstorms posed a risk to worker safety. The system was turned off between February 27 and March 5, 2014, for this sampling event.
  - The 2 million gallons pumped (approximately) AOA monitoring well sampling was conducted on March 31 and April 1, 2015. The system was turned off between March 28 and April 1, 2014, for this sampling event. These samples will be analyzed at the DOE subcontracted laboratory.
- Approximately 9.0 pounds of uranium were removed from the alluvial aquifer by the OU III groundwater contingency remedy optimization system between January 14, 2015, and March 12, 2015 (see Table 2).
- To date, the OU III groundwater contingency remedy optimization system has cumulatively removed approximately 9.0 pounds of uranium from the alluvial aquifer since system start-up began on January 14, 2015 (see Table 2).

Table 2. Uranium Mass Removal

Tank Effluent Sample Date	Total Uranium Concentration in Tank Effluent Sample <sup>a</sup> (micrograms per liter)	Approximate Volume Removed Between Samples <sup>b</sup> (gallons)	Approximate Calculated Mass Uranium Removed During Pumping Interval (pounds)	Approximate Cumulative Mass Uranium Removed Since System Start-up <sup>b</sup> (pounds)
January 15, 2015	937	59,000	0.5	0.5
February 12, 2015	791	575,000	3.8	4.3
March 12, 2015	704	800,000	4.7	9.0

<sup>a</sup> Samples were analyzed at the DOE Environmental Sciences Laboratory.

<sup>b</sup> System start date was January 14, 2015 (phased start-up).

System monitoring and reporting guidelines are described in DOE’s Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah, May 2014.

## 4.0 Schedule of Activities and Deliverables

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

Table 3. Recent and Near-Term Activities and Deliverables

Activity/Deliverable	Schedule
<b>Recent</b>	
Began full operation of OU III groundwater contingency remedy optimization system.	February 14, 2015. See Section 3.3.3 of this report for recent activities.
Monitoring of 16 AOA monitoring wells at 2 million gallons pumped by new OU III groundwater contingency remedy optimization system.	March 31 and April 1, 2015.
Monthly MMTS OU III groundwater contingency remedy optimization system technical meetings and email status updates with DOE, EPA, and UDEQ.	Monthly meetings held January 22, and February 19, 2015. Monthly email status update submitted on March 24, 2014.
DOE submittal of 2014 Water Use Report for Water Right Number 09-2347 to Utah Division of Water Rights.	March 31, 2015.
<b>Near-Term</b>	
Next semiannual meeting with DOE, EPA, and UDEQ per FFA. <b>Note:</b> Monthly meetings and email status updates were discontinued effective March 24, 2015. Semiannual meetings will resume per FFA.	Date to be determined.
UDEQ site visit of OU III groundwater contingency remedy optimization system.	April 20, 2015.
Semiannual OU III groundwater and surface water monitoring.	Week of April 20, 2015.

Table 3 (continued). Recent and Near-Term Activities and Deliverables

Activity/Deliverable	Schedule
<b>Recent</b>	
3 million gallons pumped (approximately) AOA monitoring well sampling.	Tentatively scheduled for early May 2015.
DOE submittal of FFA quarterly report: April–June 2015.	Submit to EPA and UDEQ in July 2015.
Seep 6 soil sampling for uranium concentrations as recommended by the Utah Department of Health.	Tentatively scheduled for July 2015.
Revegetate land disturbances associated with OU III groundwater contingency remedy optimization system construction.	July 2015.
DOE submittal of draft final Site Management Plan, Section 5.0, Annual Update to EPA and UDEQ (penalty milestone).	Draft final to be submitted to EPA/UDEQ by August 1, 2015.
DOE submittal of draft OU III Groundwater Contingency Remedy Optimization System Construction Remedial Action Completion Report to EPA and UDEQ for review.	September 2015 time frame.
2015 Annual Site Inspection.	September 14–16, 2015.

## **Appendix A**

### **Monthly and Quarterly Surveillance Checklists**

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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		Comments and Recommendation
	Yes	No	
<b>Condition of:</b>			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Roads <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>muddy with ruts but holding okay.</i>
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Site monuments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Drainage ditches <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Manholes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of erosion of:</b>			
Top of disposal cell <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Disposal cell sideslopes <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of:</b>			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by livestock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Burrowing animal damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>no animals seen this time.</i>
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

**Additional Quarterly Surveillance Requirements**

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

<b>Condition of:</b>			
Settlement plate structures	<input type="checkbox"/>	<input type="checkbox"/>	
Manholes <sup>b</sup>	<input type="checkbox"/>	<input type="checkbox"/>	
Sediment ponds	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of:</b>			
Structural instability	<input type="checkbox"/>	<input type="checkbox"/>	

**Additional comments:**

*5 snow has melted and site is muddy.*

Signature: *Frank Smith*  
 Monticello LM Representative

Date: 1-28-15

**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		Comments and Recommendation
	Yes	No	
<b>Condition of:</b>			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Roads <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Site monuments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Drainage ditches <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Manholes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>covered in snow.</i>
<b>Evidence of erosion of:</b>			
Top of disposal cell <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Disposal cell sideslopes <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
<b>Evidence of:</b>			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Intrusion by livestock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Burrowing animal damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

**Additional Quarterly Surveillance Requirements**

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

<b>Condition of:</b>			
Settlement plate structures	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Manholes <sup>b</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Sediment ponds	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Appear good from a distance. Too much snow.</i>
<b>Evidence of:</b>			
Structural instability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

**Additional comments:**

Signature: *[Signature]* Monticello LM Representative

Date: 2-26-15

<sup>a</sup>Inspections required following a significant storm event

<sup>b</sup>Open to inspect quarterly

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 0/1 inches of rainfall over the past 24 hours.

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
<b>Condition of:</b>			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Roads <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Fading But still okay.</i>
Site monuments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Drainage ditches <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Manholes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of erosion of:</b>			
Top of disposal cell <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Disposal cell sideslopes <sup>a</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of:</b>			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by livestock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Burrowing animal damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>prairie dogs &amp; voles are on the repository but</i>
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>no apparent damage.</i>
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

**Additional Quarterly Surveillance Requirements**

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

**Condition of:**

Settlement plate structures	<input type="checkbox"/>	<input type="checkbox"/>	
Manholes <sup>b</sup>	<input type="checkbox"/>	<input type="checkbox"/>	
Sediment ponds	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of:</b>			
Structural instability	<input type="checkbox"/>	<input type="checkbox"/>	

**Additional comments:**

Signature: *Paul Smith* Monticello LM Representative      Date: 3-27-15

<sup>a</sup>Inspections required following a significant storm event  
<sup>b</sup>Open to inspect quarterly

Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 ≈ 18-inches

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
<b>Condition of:</b>			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Roads	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>need to install red signs on ramps.</i>
Visible piping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Visible liner and anchors	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rescue equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of erosion of:</b>			
Top of Pond 4 berm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pond 4 sideslopes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Seepage from Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Overtopping of Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of:</b>			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by wildlife	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

**Additional comments:**

*The groundwater system is pumping water into Pond 4. The LCR is pumping about every 12-hours.*

Monticello LM Representative: *[Signature]* Date: 1-28-15

**Monthly Pond 4 Surveillance Checklist**

Level of water in Pond 4 ≈ 3.33 feet

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
<b>Condition of:</b>			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Roads	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Visible piping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Visible liner and anchors	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rescue equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of erosion of:</b>			
Top of Pond 4 berm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pond 4 sideslopes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Seepage from Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Overtopping of Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of:</b>			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by wildlife	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

**Additional comments:**

*The outside of the Berm is covered in snow. NO evidence of rodents.  
Pond continues to fill with water from the well field.*

Monticello LM Representative: *Frank Smith* Date: 2-26-15

Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 ~ 4'

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
<b>Condition of:</b>			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Roads	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Visible piping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Visible liner and anchors	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rescue equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of erosion of:</b>			
Top of Pond 4 berm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pond 4 sideslopes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Seepage from Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Overtopping of Pond 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Evidence of:</b>			
Vandalism	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Intrusion by wildlife	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>1 fox drowned in the pond.</i>
Intrusion by humans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Accumulation of trash	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Additional comments:</b>			

*Apex was found dead in the water of Pond 4. No explanation or evidence of where the animal got in.*

Monticello LM Representative: *[Signature]* Date: 3-27-15

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

Acceptable?  
Yes / No

yes Was the gate locked upon arrival?

yes Are signs posted in accordance with Section 3.4.4?

yes Are all postings legible?

yes Are enclosures on the concrete bin and stored drum containers tight?

yes Are containers in good physical condition (no rust, no holes, no bulges, etc.)?

75% yd 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.

yes Is the surface area of the TSF in good physical condition (no erosion, no flood damage, no excessive vegetation growth, etc.)?

yes Has radiological monitoring been conducted in accordance with Section 3.4.5?

yes Is the security fence in good condition?

Comments: The surface area is covered in snow.  
The north gate - west side needs minor adjustment  
when the snow is gone.

[Signature]  
Signature of Monticello LM Representative

2-26-15  
Date of Inspection

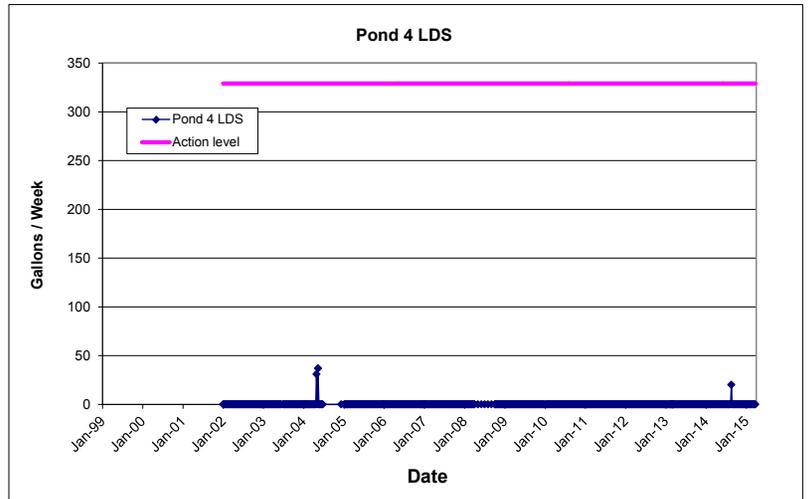
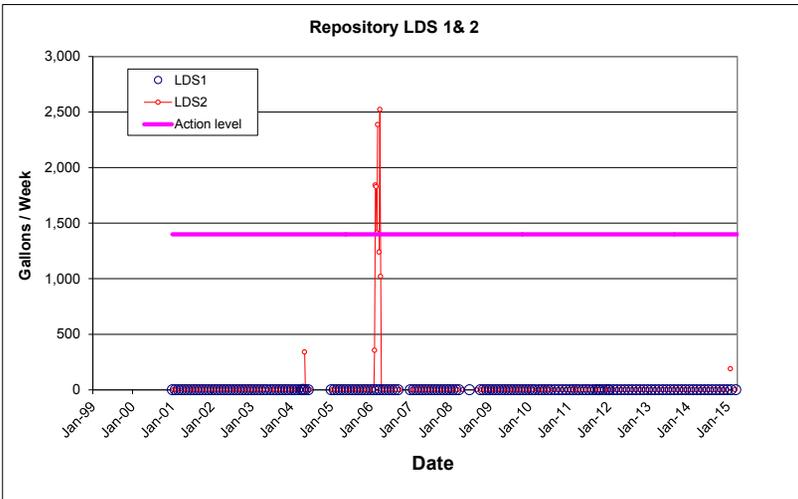
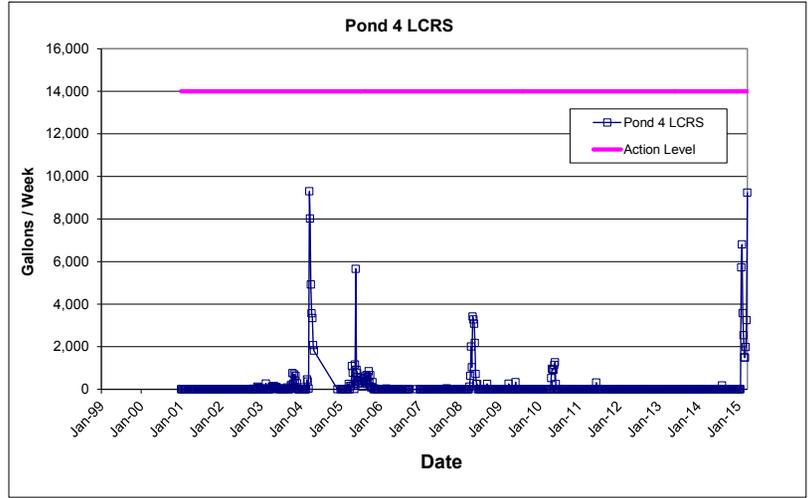
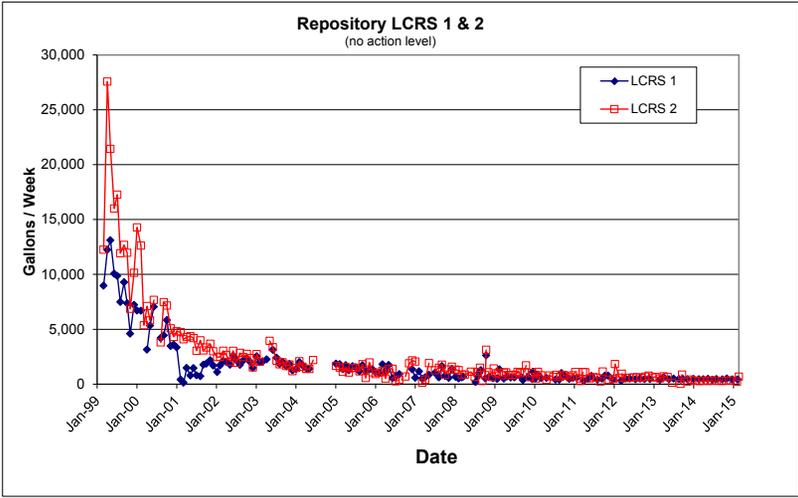
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## **Appendix B**

### **Graphs Showing Performance History for Repository and Pond 4 Leachate Collection and Removal Systems and Leak Detection Systems**

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### Graphs Showing Performance History for Repository and Pond 4 Leachate Collection and Removal System (LCRS) and Leak Detection System (LDS)



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## **Appendix C**

### **Monthly Climatological Summaries for the Quarter**

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MONTHLY CLIMATOLOGICAL SUMMARY for JAN. 2015

NAME: Monticello Office CITY: STATE:  
 ELEV: 0 ft. LAT: LONG:

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	15.9	21.8	2:30a	7.4	9:30p	49.1	0.0	0.00	1.8	16.0	2:00p	ESE
2	16.9	24.9	3:00p	-90.0	5:00a	48.1	0.0	0.03	4.1	14.0	1:30p	NNE
3	27.3	35.2	11:00a	13.3	12:30a	37.7	0.0	0.00	12.0	40.0	12:30p	NNW
4	25.8	34.4	4:00p	17.5	3:30a	39.2	0.0	0.00	3.3	15.0	11:30a	SSE
5	29.3	43.6	4:00p	17.9	5:30a	35.7	0.0	0.00	0.9	11.0	11:30a	WSW
6	38.0	46.4	3:30p	28.1	6:30a	27.0	0.0	0.00	4.7	20.0	6:30p	NNE
7	44.0	55.1	2:30p	-90.0	5:00a	21.0	0.0	0.00	3.4	13.0	12:30a	SW
8	37.8	47.1	2:30p	-90.0	4:30a	27.2	0.0	0.00	2.1	16.0	11:30a	NNE
9	36.0	43.9	3:00p	29.4	2:00a	29.0	0.0	0.00	6.0	21.0	11:30a	S
10	34.7	39.6	4:00p	30.5	12:00m	30.3	0.0	0.00	4.8	18.0	4:30a	SSW
11	31.4	36.2	2:30p	25.1	11:30p	33.6	0.0	0.02	1.1	14.0	3:00a	S
12	31.0	35.1	12:00p	-90.0	5:30a	34.0	0.0	0.04	3.1	16.0	11:30a	S
13	32.1	34.1	1:00p	29.7	12:00m	32.9	0.0	0.30	2.6	14.0	7:00p	N
14	29.0	32.9	12:30p	19.8	12:00m	36.0	0.0	0.06	6.1	17.0	5:00a	N
15	25.8	40.9	4:00p	16.2	8:00a	39.2	0.0	0.12	2.1	12.0	3:30a	SSE
16	25.4	30.5	12:00p	18.2	5:00a	39.6	0.0	0.00	2.8	19.0	1:30p	S
17	29.0	39.1	3:30p	19.6	7:00a	36.0	0.0	0.00	3.3	17.0	1:30p	NNE
18	29.6	40.7	3:00p	16.8	2:30a	35.4	0.0	0.01	1.1	10.0	11:30p	NE
19	32.4	41.5	2:30p	-90.0	5:30a	32.6	0.0	0.00	1.9	14.0	6:30p	E
20	33.2	41.3	2:00p	26.9	8:00a	31.8	0.0	0.00	4.2	14.0	4:30a	NW
21	26.9	32.5	12:30p	15.8	12:00m	38.1	0.0	0.00	13.2	33.0	5:00p	NNW
22	21.8	30.2	5:00p	13.9	6:00a	43.2	0.0	0.00	8.8	30.0	3:00a	SE
23	29.0	37.1	11:30a	-90.0	6:00a	36.0	0.0	0.00	8.5	20.0	11:30p	NNW
24	33.4	40.1	2:30p	-90.0	5:30a	31.6	0.0	0.00	8.6	32.0	4:00a	SSE
25	41.6	48.1	3:30p	34.8	7:00a	23.4	0.0	0.00	8.3	20.0	2:00a	NNW
26	43.0	56.7	3:00p	28.2	7:00a	22.0	0.0	0.00	3.7	19.0	4:00a	SW
27	41.5	47.0	12:30p	36.0	8:30p	23.5	0.0	0.00	5.9	26.0	2:00p	SW
28	38.4	47.6	2:30p	-90.0	5:30a	26.6	0.0	0.00	2.1	9.0	2:30p	NW
29	38.8	43.8	3:00p	34.1	6:00a	26.2	0.0	0.04	4.1	16.0	11:00p	SSW
30	32.7	36.4	12:30a	30.7	5:00a	32.3	0.0	0.06	6.1	18.0	1:00p	SSW
31	33.0	37.3	12:30p	30.2	3:00a	32.0	0.0	0.14	6.0	24.0	5:00p	NNW
	31.8	56.7	26	-90.0	2	1030.3	0.0	0.82	4.7	40.0	3	NNW

Max >= 90.0: 0  
 Max <= 32.0: 4  
 Min <= 32.0: 28  
 Min <= 0.0: 8  
 Max Rain: 0.30 ON 01/13/15  
 Days of Rain: 9 (>.01 in) 3 (>.1 in) 0 (>1 in)  
 Heat Base: 65.0 Cool Base: 65.0 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for FEB. 2015

NAME: Monticello Office CITY: STATE:  
 ELEV: 0 ft LAT: LONG:

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	34.0	41.0	4:00p	28.3	12:00m	31.0	0.0	0.00	7.5	23.0	1:00a	N
2	36.7	48.1	3:00p	26.7	1:00a	28.3	0.0	0.00	4.8	16.0	3:00a	S
3	38.9	46.5	1:30p	31.2	7:30a	26.1	0.0	0.00	1.9	14.0	3:00a	E
4	42.0	50.9	3:00p	33.5	4:30a	23.0	0.0	0.00	3.5	23.0	1:30p	SE
5	43.1	53.3	1:30p	35.9	6:00a	21.9	0.0	0.00	3.9	15.0	2:00p	SSE
6	44.8	53.2	3:30p	37.9	12:00m	20.2	0.0	0.00	8.6	26.0	2:00p	SSW
7	43.6	55.4	3:30p	34.0	7:30a	21.4	0.0	0.00	4.1	20.0	1:30p	WNW
8	44.6	57.3	2:30p	31.7	5:30a	20.4	0.0	0.00	2.1	15.0	4:30p	WNW
9	46.4	55.7	4:00p	35.3	7:00a	18.6	0.0	0.00	7.3	25.0	12:00p	S
10	41.4	49.1	12:30p	33.9	5:30a	23.6	0.0	0.00	7.9	23.0	11:00a	SE
11	36.7	47.5	3:30p	29.9	7:00a	28.3	0.0	0.00	8.0	26.0	3:00a	SE
12	41.2	52.5	2:30p	31.5	2:00a	23.8	0.0	0.00	4.3	18.0	3:30p	NW
13	46.8	56.3	3:00p	39.7	1:30a	18.2	0.0	0.00	7.1	15.0	3:30a	NNW
14	43.9	57.0	3:00p	33.0	7:00a	21.1	0.0	0.00	2.3	14.0	12:00p	WNW
15	41.9	54.6	11:00a	31.7	10:00p	23.1	0.0	0.00	8.5	34.0	2:30p	NNW
16	31.9	41.0	1:00p	24.5	12:00m	33.1	0.0	0.00	11.7	35.0	1:00p	NNW
17	28.9	37.9	2:30p	21.2	3:30a	36.1	0.0	0.00	8.0	24.0	2:30p	NNW
18	38.0	49.5	1:00p	25.6	6:30a	27.0	0.0	0.00	5.6	24.0	1:30p	ESE
19	43.0	56.6	2:30p	29.7	6:30a	22.0	0.0	0.00	2.7	14.0	3:00p	E
20	39.5	51.6	12:00p	27.8	7:00a	25.5	0.0	0.00	6.1	31.0	2:30p	SE
21	34.4	41.3	4:30p	30.0	2:00a	30.6	0.0	0.00	4.9	22.0	4:30p	NNW
22	27.4	33.2	12:30a	21.7	12:00m	37.6	0.0	0.26	3.3	17.0	12:30a	N
23	23.4	27.7	4:00p	18.8	8:30a	41.6	0.0	0.00	2.1	11.0	4:30a	NNE
24	28.1	32.7	5:30p	20.7	5:00a	36.9	0.0	0.00	9.4	24.0	3:30p	N
25	33.0	40.7	4:30p	23.1	7:00a	32.0	0.0	0.04	7.1	32.0	3:00p	NNW
26	26.0	34.2	1:00p	19.7	9:30p	39.0	0.0	0.00	4.7	22.0	2:00p	SSE
27	22.8	29.0	3:30p	13.6	5:30a	42.2	0.0	0.00	4.3	16.0	1:00p	S
28	27.6	31.0	12:00p	22.6	4:00a	37.4	0.0	0.03	5.3	21.0	12:30p	S
-----												
	36.8	57.3	8	13.6	27	790.0	0.0	0.38	5.6	35.0	16	NNW

Max >= 90.0: 0  
 Max <= 32.0: 3  
 Min <= 32.0: 20  
 Min <= 0.0: 0  
 Max Rain: 0.26 ON 02/22/15  
 Days of Rain: 3 (>.01 in) 1 (>.1 in) 0 (>1 in)  
 Heat Base: 65.0 Cool Base: 65.0 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for MAR. 2015

NAME: Monticello Office CITY: STATE:  
 ELEV: 0 ft LAT: LONG:

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	30.0	33.9	12:00m	22.4	4:30a	35.0	0.0	0.50	2.5	16.0	11:00p	SSW
2	33.3	37.4	3:00p	28.0	11:30p	31.7	0.0	1.38	11.7	28.0	3:30p	S
3	28.4	34.3	2:30p	23.9	12:00m	36.6	0.0	0.03	9.6	30.0	12:30a	SW
4	23.0	28.7	4:30p	16.5	7:30a	42.0	0.0	0.00	11.3	29.0	8:00a	NNW
5	26.9	38.1	4:30p	12.4	5:30a	38.1	0.0	0.00	2.7	13.0	10:30p	ESE
6	33.7	41.9	3:00p	23.5	5:00a	31.3	0.0	0.00	6.1	18.0	3:30p	NNE
7	38.8	51.1	4:30p	29.3	7:00a	26.2	0.0	0.00	2.9	10.0	12:30a	S
8	39.8	48.6	3:30p	30.0	7:00a	24.1	0.0	0.00	6.7	18.0	4:00p	NNE
9	39.3	45.7	4:30p	33.0	3:00a	25.7	0.0	0.00	6.2	17.0	2:30p	ESE
10	42.2	51.0	4:00p	34.2	2:00a	22.8	0.0	0.00	6.5	15.0	6:30a	SSE
11	41.7	52.6	1:30p	32.0	5:30a	23.3	0.0	0.00	3.6	19.0	1:30p	E
12	42.9	47.9	3:30p	38.5	12:00m	22.1	0.0	0.00	6.0	18.0	9:30a	SE
13	44.9	54.7	5:00p	38.4	2:00a	20.1	0.0	0.00	5.9	20.0	1:00a	NNE
14	45.7	56.7	3:30p	36.3	1:30a	19.3	0.0	0.00	3.3	13.0	10:30a	NNE
15	50.5	65.6	5:30p	35.6	5:00a	14.5	0.0	0.00	2.3	14.0	3:00p	WNW
16	50.5	63.3	3:00p	39.4	3:30a	14.5	0.0	0.00	4.1	21.0	11:00a	WNW
17	52.8	63.2	5:30p	40.8	4:00a	12.2	0.0	0.00	5.1	23.0	10:00a	E
18	49.4	56.4	4:00p	41.6	12:00m	15.6	0.0	0.01	3.6	20.0	8:00p	SSF
19	45.2	53.1	3:00p	39.4	6:30a	19.8	0.0	0.00	10.7	27.0	4:30p	N
20	45.8	58.4	5:00p	34.9	7:30a	19.2	0.0	0.00	4.8	17.0	5:30p	ENE
21	47.7	61.1	5:30p	32.5	8:00a	17.3	0.0	0.00	4.0	19.0	2:30p	SSE
22	49.0	61.8	4:00p	36.2	7:00a	16.0	0.0	0.00	5.0	25.0	3:00p	S
23	49.2	59.1	5:00p	36.7	8:00a	15.8	0.0	0.00	9.5	33.0	11:30p	WSW
24	45.2	57.5	4:00p	29.3	6:30a	19.8	0.0	0.00	7.6	42.0	4:00p	NNW
25	41.5	46.7	4:30p	34.4	12:00m	23.5	0.0	0.00	15.4	37.0	11:30a	NNW
26	43.0	54.7	5:00p	27.8	5:30a	22.0	0.0	0.00	7.3	21.0	3:00p	SSE
27	53.0	65.6	3:30p	41.0	5:30a	12.1	0.0	0.00	6.9	23.0	5:30p	ESE
28	56.5	69.3	5:00p	42.2	1:30a	9.0	0.5	0.00	4.5	26.0	6:00p	W
29	56.8	66.8	3:00p	45.5	11:00p	8.4	0.2	0.00	9.0	27.0	3:00p	NNW
30	56.1	67.7	1:30p	45.5	7:00a	8.9	0.1	0.00	4.5	23.0	4:00p	WNW
31	56.4	65.7	4:00p	42.9	7:30a	8.6	0.0	0.00	6.0	31.0	4:30p	NNE
-----												
	43.8	69.3	28	12.4	5	655.5	0.8	1.92	6.3	42.0	24	NNW

Max >= 90.0: 0  
 Max <= 32.0: 1  
 Min <= 32.0: 11  
 Min <= 0.0: 0  
 Max Rain: 1.38 ON 03/02/15  
 Days of Rain: 3 (>.01 in) 2 (>.1 in) 1 (>1 in)  
 Heat Base: 65.0 Cool Base: 65.0 Method: Integration

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