

**Monticello, Utah, National
Priorities List Sites
Federal Facility Agreement
(FFA) Quarterly Report:
April 1–June 30, 2015**

July 2015



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

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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
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
PRB	permeable reactive barrier
TSF	Temporary Storage Facility
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
UDWR	Utah Department of Natural Resources, Division of Water Rights
ZVI	zero-valent iron

1.0 Introduction

This quarterly report is submitted by the U.S. Department of Energy (DOE) Office of Legacy Management (LM) to inform the U.S. Environmental Protection Agency (EPA) and 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 April through June 2015. 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 January (for October through December), April (January through March), July (April through June), and October (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* (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 and Ground Water, Monticello, Utah, May 2004*, and (3) CERCLA five-year reviews.

The primary LTS&M functions at the MVP and MMTS are 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 waste repository, (3) ensure that institutional controls on land and water restrictions remain effective, (4) monitor water-quality restoration progress, and (5) operate the pump-and-treat remediation system implemented under *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah, May 2014*.

Project milestones and guiding documents are further described in the *Monticello Site Management Plan* (updated annually). Annual groundwater reports present comprehensive data evaluation for the groundwater and surface water (Operable Unit [OU] III) remedy.

1.1 Quarterly Site Status

- Operation of the OU III contingency groundwater remedy optimization system began in January 2015. The system operated without unplanned shutdown through May 31, 2015, when a system failure in the control building necessitated system shutdown. Repairs and design improvements are ongoing. LM notified EPA of the system shutdown on June 1, 2015.
- Routine surveillance noted no anomalous conditions for the MVP remedy.
- Routine surveillance noted no violations of MMTS institutional controls regarding land and groundwater use restrictions.
- 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 is functional in recirculating water; however, the action level leakage rate was exceeded in the quarter (see Appendix B for graphs of leakage rates). DOE notified EPA and UDEQ of the exceedance on May 22, 2015. In response, DOE will review the action level, as documented in the LTS&M plan and as originally prescribed in *Operable Unit I Millsite Remediation, Repository and Pond 4 Groundwater Contingency Plan, Final, February 1998*, for relevance to current site conditions.
- Operation of the OU III groundwater contingency remedy optimization system has resulted in increased water collection in the Pond 4 Leak Detection System (LDS). The LDS is functional in recirculating water; however, the action level leakage rate was exceeded (see Appendix B for graphs of leakage rates). DOE notified EPA and UDEQ of the exceedance on May 22, 2015. DOE will review the action level, as documented in the LTS&M plan and originally prescribed in *Operable Unit I Millsite Remediation, Repository and Pond 4 Groundwater Contingency Plan, Final, February 1998*, for relevance to current site conditions.
- The potable water service to the LM field office was repaired during May. This required temporary suspension of electrical power to the office facility and to the sump pumps at the repository and Pond 4. Exceeding the action levels may be related in part to the power outage, as the pumps were inoperable for this period.

2.0 Monticello Vicinity Properties

Long-term surveillance and maintenance (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, 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 in daily planning meetings regarding construction and excavation activities by the City, UDOT, and utility companies in roadway and utility corridors. Significant improvements by the City of Monticello for roadways are expected during 2015. Normal LTS&M protocol will be followed to provide radiological control in the affected roadways.
- There were no planned or unplanned excavations in City of Monticello street or utility corridors where radiologically contaminated material was encountered that exceeded LTS&M threshold criteria for 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 disposal cell and operating the associated leachate collection and leak detection systems for the repository and Pond 4, (2) surveillance of properties affected by groundwater and land-use institutional controls (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 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 for the disposal cell and Pond 4 (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.
- Operation of the OU III groundwater remediation system has resulted in increased water collection in the Pond 4 LCRS and LDS that exceeds action levels documented in the LTS&M plan. The LCRS and LDS monitoring and pumping systems are functional. Pond 4 LCRS and LDS performance is graphically summarized in Appendix B.
- DOE notified EPA and UDEQ of the Pond 4 exceedances on May 22, 2015. DOE will review the action levels for relevance to current site conditions for future discussion with EPA and UDEQ.

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 latest 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 contamination resulting from operation of the former Monticello mill. 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. Montezuma Creek is used for limited irrigation and livestock watering.

Groundwater remediation efforts at OU III include (1) monitored natural attenuation with institutional controls, (2) treatment by a zero-valent iron (ZVI) in situ permeable reactive barrier (PRB), (3) pump-and-treat remediation using ex situ ZVI treatment, and (4) pump-and-treat by evaporation that was implemented as the groundwater contingency optimization system in January 2015.

3.3.1 Groundwater Restricted Area/Institutional Controls

Surveillance of properties where groundwater contamination is present is conducted 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 Permeable Reactive Barrier

The permeable reactive barrier was installed in 1999 as a technology demonstration project. The PRB is now considered a hydraulic barrier to groundwater flow because of internal mineral accumulation and serves as the downgradient boundary of a focused remediation effort in the Area of Attainment (AOA); see Section 3.3.4. Decommissioning the PRB is dependent on remediation progress in the AOA.

3.3.3 Ex Situ Remediation System

A pump-and-treat groundwater remediation was installed in May 2005 as a technology demonstration project. This system is located approximately 600 feet east of the former mill site on private property. The system operated using a single extraction well and two above-ground ZVI-based treatment vessels.

The operation of this system was suspended in December 2014 after extracting approximately 33 million gallons of contaminated groundwater and 77 pounds of uranium from the aquifer during 9.5 years of operation.

The OU III groundwater remedy optimization system replaces the ex situ treatment system as the active groundwater contingency remedy remediation component for OU III. The contingency remedy optimization is consistent in concept with the Record of Decision and the Explanation of Significant Difference (January 2009). The decommissioning/closure strategy for the ex situ system is yet to be determined.

3.3.4 OU III Groundwater Contingency Remedy Optimization System

Full operation of the OU III groundwater contingency remedy optimization system became effective in February 2015 in the AOA described in *Final Groundwater Contingency Remedy*

Eight vertical extraction wells are strategically placed in the AOA to extract contaminated groundwater. The water is transmitted in buried pipelines to an above-ground holding tank in the Groundwater Transfer Building from where it is pumped through a buried pipeline for about 1 mile to Pond 4 for evaporative treatment. Sixteen new monitoring wells were installed in the AOA.

A fixed time water right appropriation (number 09-2347) was obtained on March 9, 2011, from the Utah Department of Natural Resources, Division of Water Rights (UDWR) for consumptive use by evaporation. Consumptive use was initially limited to 16 acre-feet per year (approximately 5,213,600 gallons per year). A temporary water right appropriation of 34 acre-feet per year (number 09-2422) was obtained June 22, 2015, from UDWR to supplement existing water right 09-2347. The temporary right extends through June 22, 2016.

3.3.4.1 Quarterly Performance Summary

- Near-continuous operation in April and May. Typical flow rates are between 15 and 20 gallons per minute (gpm).
- System shutdown May 31, 2015, from control building mechanical failures (water-line breakage and transfer pump outage). DOE notified EPA of the situation on June 1, 2015. Approximately 20,000 gallons of groundwater are estimated to have leaked. Radiological surveys indicated that soil outside of the building remained at background levels. Additional analysis indicated that no CERCLA hazardous substance was released in excess of its reportable quantity.
- Repairs ongoing. Fail-safe components will be isolated to prevent similar system failure and a redundant fail-safe component will be installed.
- System restart scheduled for early July 2015.
- Treatment volumes and rates for the quarter and cumulatively are shown in Table 1.
- Concentration trending in groundwater in the AOA is documented in annual groundwater reports. Concentrations of uranium in the AOA remain approximately equal to baseline values.
- Water-quality monitoring consisted of
 - Monthly analysis of the transfer tank effluent to Pond 4 (April and May; tank not sampled in June 2015).
 - Analysis of extraction well effluent to the transfer tank for operational purposes.
 - Analysis of groundwater samples collected at AOA monitoring wells on May 18–19, 2015 (at approximately 3 million gallons of water extracted).
- Estimated mass of uranium removed from groundwater in the AOA is provided in Table 2.

Table 1. OU III Remedy Optimization Treatment Volumes and Rates: Calendar Month and Cumulative

Calendar Month	Approximate Volume Pumped ^a (gallons)	Effective Pumping Rate ^b (gpm)	Approximate Cumulative Volume (million gallons)
April 2015	678,000	15	2.7
May 2015	549,500	12	3.3
June 2015	6,090	0.3	3.3

Notes:

^a Total pumped from all eight extraction wells.

^b Includes system downtime during month.

Table 2. Uranium Mass Removal from Groundwater in the AOA

Tank Effluent Sample Date	Uranium Concentration (micrograms per liter)	Volume Removed Between Tank Samples (gallons)	Uranium Removed (pounds) ^a	Cumulative Mass Uranium Removed (pounds)
March 12, 2015	704	--	--	9.0
April 9, 2015	994	813,208	5.8	14.8
May 7, 2015	792	612,888	4.6	19.3
June 2015 ^b	--	--	--	19.3

Notes:

^a Based on median concentration between sampling dates.

^b Tank effluent not sampled due to system shutdown.

Monitoring and reporting guidelines are described in *Final Groundwater Contingency Remedy Optimization Remedial Design/Remedial Action Work Plan for the Monticello Mill Tailings Site Operable Unit III, Monticello, Utah, May 2014*. Analysis of water quality trending toward meeting remediation goals in the AOA is beyond the scope of the FFA quarterly report but is documented in annual groundwater reports.

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
Recent	
Water-quality monitoring at 16 AOA monitoring wells: 3 million gallons pumped	Completed May 18–19, 2015
Semiannual OU III groundwater and surface water monitoring	Completed week of April 20, 2015
Monthly MMTS OU III technical meetings (DOE, EPA, and UDEQ)	Suspended by agreement. DOE will apprise EPA and UDEQ of significant activities as needed.
Water right no. 09-2347 resubmittal for increased water use during groundwater remediation/evaporative consumption	A temporary water right appropriation of 34 acre-feet per year (no. 09-2422) was obtained June 22, 2015, from UDWR to supplement existing water right 09-2347 (16 acre-feet per year). The temporary right extends through June 22, 2016.
Near-Term	
Semiannual FFA meeting (monthly meetings and updates were discontinued effective March 24, 2015)	Teleconference tentative for July 23, 2015. Main topics will include remediation system completion report and recent operation shutdown
Semiannual OU III groundwater and surface water monitoring	October 2015
Water-quality monitoring at 16 AOA monitoring wells: 4 million gallons pumped	August 2015
DOE submittal of FFA quarterly report: July–September 2015	Submit to EPA and UDEQ in October 2015
Seep 6 soil sampling for uranium concentrations as recommended by the Utah Department of Health	Fall 2015
Revegetate land disturbances associated with the construction of remediation system	July 2015
Groundwater remedy optimization system shutdown May 31, 2015, due to a water line break in the groundwater transfer building	Restart anticipated in early July
DOE submittal of draft final <i>Site Management Plan</i> , Section 5.0, Annual Update to EPA and UDEQ (penalty milestone)	Draft final to EPA and UDEQ by August 1, 2015
DOE submittal of draft <i>OU III Groundwater Contingency Remedy Optimization System Construction Remedial Action Completion Report</i> to EPA and UDEQ for review	Fall 2015
2015 annual site inspection	Week of September 14, 2015
Annual groundwater report	Fall 2015

Appendix A

Monthly and Quarterly Surveillance Checklists

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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	
Condition of:			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Noticed one strand broken. Will repair, South
Roads ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Boundary Fence.
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Site monuments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Drainage ditches ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Manholes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Signs faded But will replace soon.
Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Very good vegetation.
Evidence of erosion of:			
Top of disposal cell ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Disposal cell sideslopes ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of:			
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.

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

Additional comments:

None.

Signature: Frank Smith Monticello LM Representative Date: 4-29-15

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

Repository Area Surveillance Checklist

- Monthly surveillance
 Quarterly surveillance:
 February
 May
 August
 November
 Storm event triggered surveillance due to N/A inches of rainfall over the past 24 hours.

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
Condition of:			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Minor Boundary fence repairs only.</u>
Roads ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Faded But Legible.</u>
Site monuments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Drainage ditches ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Manholes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>storm water in vault 3.</u>
Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Looks great.</u>
Evidence of erosion of:			
Top of disposal cell ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Disposal cell sideslopes ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of:			
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"/>	<u>no sign of prairie dogs on cell.</u>
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.

Condition of:			
Settlement plate structures	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Manholes ^b	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>storm water in the manholes.</u>
Sediment ponds	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of:			
Structural instability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional comments:

Lots of rain this month.

Signature: Fred Smith  Date: 5-29-15
Monticello LM Representative

^aInspections required following a significant storm event
^bOpen 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	
Condition of:			
Fences, gates, and locks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Minor Boundary repairs needed on fence.</u>
Roads ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Signs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Need new permit confined space.</u>
Site monuments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Drainage ditches ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Manholes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Vegetation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>very good vegetation.</u>
Evidence of erosion of:			
Top of disposal cell ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Disposal cell sideslopes ^a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surrounding area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Evidence of:			
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.

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

Additional comments:
IACA on site this month. Went well.

Signature: [Signature] Monticello LM Representative Date: 6-30-15

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

Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 ~ 3 feet 6 inches

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
Condition of:			
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"/>	
Evidence of erosion of:			
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"/>	
Evidence of:			
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:

Fence has been delivered to the site for a bottom row around Pond 4 attached to the existing fence. This work will occur soon.

Monticello LM Representative: Fred Smith *FS* Date: 4-29-15

Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 3 4 feet

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
Condition of:			
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"/>	
Evidence of erosion of:			
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"/>	
Evidence of:			
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 pond has app. 3 million gallons of water. Both the LOS & LCR have been pumped. We have swallows, Salamanders (water dogs), and pods in the pond. Plus water fowl.

Monticello LM Representative: Fred Smith *Fred Smith* Date: 5-29-15

Monthly Pond 4 Surveillance Checklist

Level of water in Pond 4 3.8 feet

Inspection Item	Acceptable		Comments and Recommendation
	Yes	No	
Condition of:			
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"/>	<i>Installed another new rope ladder.</i>
Evidence of erosion of:			
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"/>	
Evidence of:			
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 evaporation from pond 4 is going well. We have not added more water due to the transfer pump not operating.

Monticello LM Representative: *Frank Smith* Date: 6-30-15

**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.)?

assup. 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 north gate was corrected by David Dille.
The weeds are scheduled to be sprayed. They
will be cut soon and the sprayed.

[Signature]
Signature of Monticello LM Representative

5-29-15
Date of Inspection

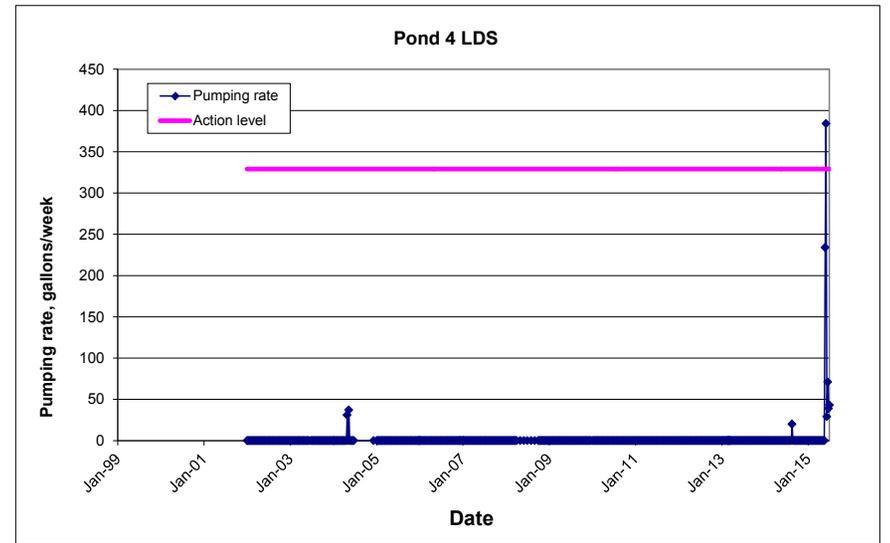
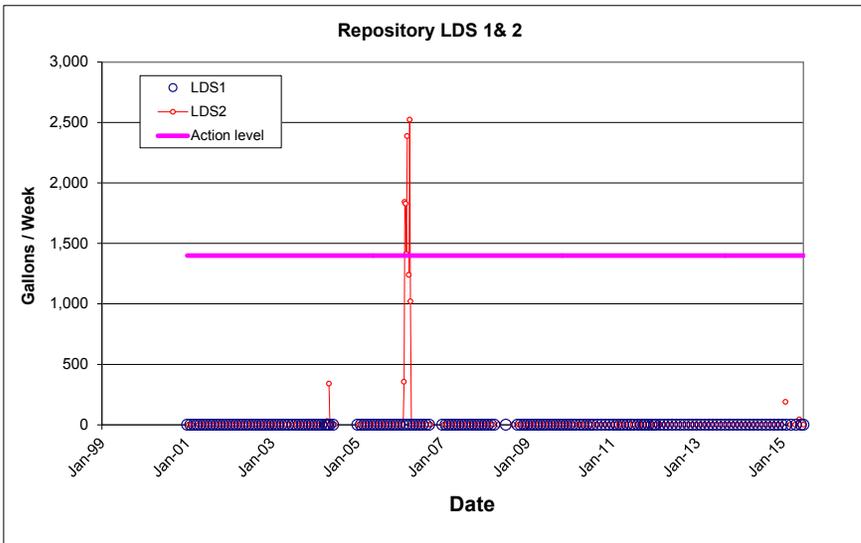
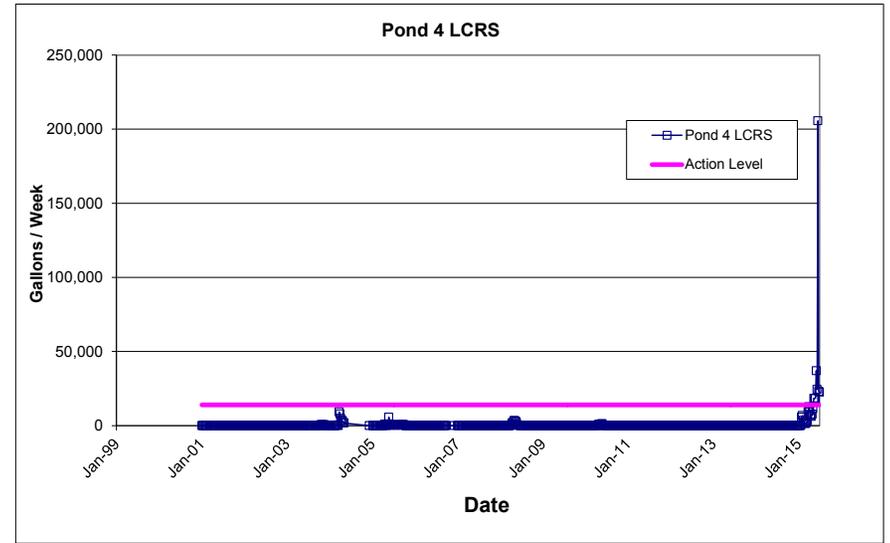
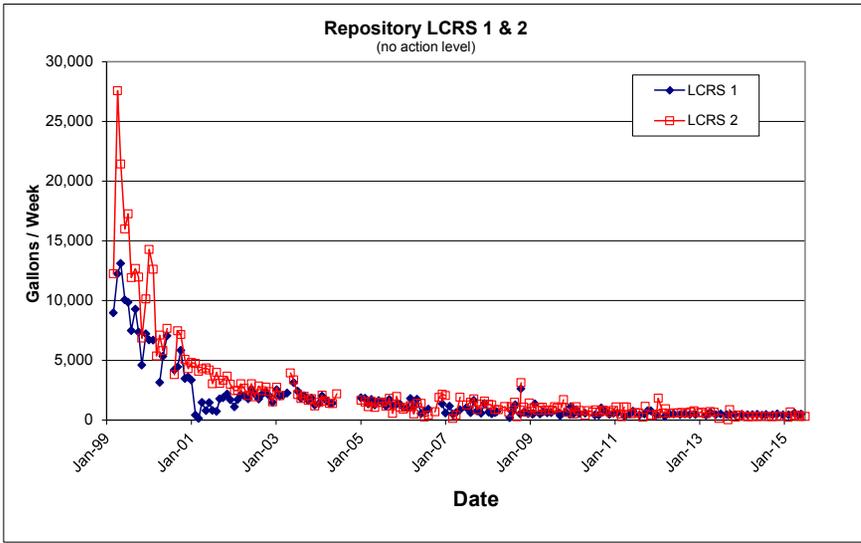
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Appendix B

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 Recovery 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 APR. 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	51.0	60.8	12:30p	41.4	11:00p	14.0	0.0	0.00	5.6	33.0	2:00p	SE
2	43.6	55.1	2:00p	31.8	12:00m	21.4	0.0	0.00	10.8	44.0	11:30a	NNE
3	35.5	48.4	4:30p	24.0	6:30a	29.5	0.0	0.00	7.4	26.0	3:00a	N
4	43.4	57.9	4:00p	26.1	5:00a	21.6	0.0	0.00	5.8	24.0	4:00p	SSW
5	49.1	61.1	4:30p	34.8	7:30a	15.9	0.0	0.00	7.7	31.0	3:00p	SW
6	49.5	60.2	4:30p	34.3	6:30a	15.5	0.0	0.00	11.6	35.0	1:30p	SSW
7	46.0	57.4	4:00p	28.8	6:00a	19.0	0.0	0.00	11.6	36.0	4:00p	NNE
8	40.3	48.2	1:00p	28.8	12:00m	24.7	0.0	0.00	13.6	38.0	1:00a	NNE
9	38.6	52.6	6:00p	26.1	5:00a	26.4	0.0	0.00	3.3	16.0	3:00p	SSE
10	46.8	59.7	4:30p	33.3	3:30a	18.2	0.0	0.00	6.1	25.0	12:30p	SSW
11	51.0	60.6	4:00p	40.5	7:30a	14.0	0.0	0.00	6.7	28.0	3:00p	E
12	49.6	55.5	5:00p	42.2	9:30p	15.4	0.0	0.00	11.6	34.0	11:30a	SE
13	53.2	66.5	3:30p	38.1	7:00a	11.8	0.1	0.00	5.0	19.0	5:30p	NW
14	53.8	63.4	5:00p	41.4	7:00a	11.2	0.0	0.00	11.6	38.0	5:30p	SSW
15	32.3	53.0	12:30a	25.4	7:30a	32.7	0.0	0.00	11.5	34.0	1:00a	NNW
16	29.0	39.8	5:30p	21.4	6:00a	36.0	0.0	0.01	7.1	22.0	8:30a	ESE
17	30.6	33.3	12:30a	26.9	6:30a	34.4	0.0	0.00	5.6	18.0	4:30a	S
18	40.2	53.1	5:00p	26.1	7:30a	24.8	0.0	0.28	9.2	30.0	10:30p	N
19	44.6	55.1	5:30p	35.2	7:00a	20.4	0.0	0.00	5.6	21.0	5:00a	NNE
20	47.3	57.9	3:30p	36.6	4:30a	17.7	0.0	0.00	5.3	26.0	12:30p	SSE
21	51.1	62.0	6:30p	40.9	2:30a	13.9	0.0	0.02	5.3	36.0	1:30p	SSE
22	51.6	62.4	4:30p	41.2	7:30a	13.4	0.0	0.00	6.1	27.0	9:30a	SSW
23	48.2	58.9	1:30p	35.5	7:00a	16.8	0.0	0.00	6.1	27.0	2:30p	SW
24	46.9	56.8	5:00p	36.4	7:00a	18.1	0.0	0.00	7.3	31.0	2:00p	NNE
25	41.7	49.9	6:30p	35.7	11:00p	23.3	0.0	0.22	8.1	29.0	6:30p	NNE
26	40.4	48.7	3:30p	35.7	5:00a	24.6	0.0	0.14	10.1	34.0	5:30p	SE
27	45.7	55.7	4:00p	37.4	6:30a	19.3	0.0	0.00	10.4	25.0	4:30a	SSE
28	50.2	61.6	7:00p	39.1	6:30a	14.8	0.0	0.00	3.1	14.0	12:30p	NW
29	54.4	68.2	4:30p	37.6	6:30a	10.9	0.4	0.00	4.2	17.0	10:00a	WSW
30	58.6	69.7	1:30p	46.2	5:00a	7.3	0.9	0.00	3.1	22.0	3:30p	W

	45.5	69.7	30	21.4	16	587.0	1.4	0.67	7.6	44.0	2	NNE

Max >= 90.0: 0
 Max <= 32.0: 0
 Min <= 32.0: 10
 Min <= 0.0: 0
 Max Rain: 0.28 ON 04/18/15
 Days of Rain: 4 (>.01 in) 3 (>.1 in) 0 (>1 in)
 Heat Base: 65.0 Cool Base: 65.0 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for MAY, 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	60.7	71.6	3:30p	48.6	7:00a	5.6	1.4	0.00	3.9	25.0	2:30p	ESE
2	59.3	72.0	4:00p	48.1	4:00a	6.6	0.9	0.00	3.3	26.0	12:30p	ESE
3	54.7	64.3	5:30p	45.6	11:30p	10.3	0.0	0.17	6.4	26.0	2:30p	NE
4	51.4	62.8	2:00p	40.9	5:30a	13.6	0.0	0.02	2.9	21.0	3:00p	W
5	46.6	51.8	3:00p	43.4	8:30a	18.4	0.0	0.75	3.9	16.0	3:00p	SSW
6	50.1	59.6	5:00p	41.9	5:30a	14.9	0.0	0.01	5.8	29.0	4:30p	NNE
7	50.7	61.2	4:30p	39.1	4:30a	14.3	0.0	0.01	7.6	29.0	2:30p	S
8	45.8	54.9	1:30p	35.3	12:00m	19.2	0.0	0.20	8.5	32.0	2:00p	SSE
9	37.1	44.7	4:30p	31.1	7:00a	27.9	0.0	0.10	4.7	21.0	11:30a	SSW
10	40.7	50.1	4:00p	31.2	2:00a	24.3	0.0	0.00	4.8	23.0	12:30p	SSE
11	46.8	60.8	5:30p	30.9	6:30a	18.2	0.0	0.00	2.6	18.0	4:30p	NE
12	53.8	67.3	5:00p	43.9	6:30a	11.4	0.2	0.00	7.3	36.0	3:30p	NE
13	52.5	62.6	5:30p	42.7	7:00a	12.5	0.0	0.00	7.0	31.0	2:30p	NNE
14	52.0	64.2	6:30p	43.1	4:30a	13.0	0.0	0.08	6.9	35.0	5:30p	NNE
15	42.3	52.5	12:30a	33.4	8:30a	22.7	0.0	0.28	8.2	31.0	6:00a	SSW
16	40.6	48.5	6:00p	34.0	6:30a	24.4	0.0	0.15	5.0	23.0	8:00p	S
17	47.7	58.6	4:00p	36.3	6:30a	17.3	0.0	0.00	4.4	18.0	10:30a	SSE
18	51.3	63.5	2:30p	41.6	5:00a	13.7	0.0	0.08	7.0	35.0	4:00p	S
19	45.7	57.7	6:30p	36.1	9:30a	19.3	0.0	0.26	4.0	29.0	9:00a	S
20	51.3	61.6	4:00p	39.9	4:00a	13.7	0.0	0.00	4.2	21.0	3:30p	W
21	54.7	65.9	3:30p	44.7	3:30a	10.3	0.0	0.00	5.7	37.0	5:00p	S
22	50.8	61.3	3:00p	39.8	5:00a	14.2	0.0	0.00	6.5	29.0	4:30p	S
23	42.0	47.8	11:00a	35.2	6:30a	23.0	0.0	0.03	8.6	28.0	11:00a	SSW
24	45.0	52.5	6:00p	37.6	1:00a	20.0	0.0	0.10	3.9	18.0	12:30p	S
25	48.4	58.8	4:30p	40.0	6:00a	16.6	0.0	0.01	3.6	23.0	6:30p	NW
26	52.1	62.9	1:30p	41.2	6:30a	12.9	0.0	0.03	5.0	26.0	2:00p	S
27	56.8	66.6	2:30p	43.1	5:00a	8.3	0.1	0.00	6.0	28.0	11:00p	S
28	55.3	65.5	1:00p	44.7	6:30a	9.7	0.0	0.12	5.4	35.0	6:00p	NNE
29	51.7	63.6	12:30p	43.2	6:30a	6.9	0.0	0.00	3.1	22.0	12:30p	E
30												
31												

	49.6	72.0	2	30.9	11	443.2	2.6	2.40	5.4	37.0	21	S

Max >= 90.0: 0
 Max <= 32.0: 0
 Min <= 32.0: 3
 Min <= 0.0: 0
 Max Rain: 0.75 ON 05/05/15
 Days of Rain: 14 (>.01 in) 7 (>.1 in) 0 (>1 in)
 Heat Base: 65.0 Cool Base: 65.0 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for JUN. 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	68.8	80.4	5:30p	56.9	3:30a	1.8	5.6	0.00	7.1	29.0	4:00p	NNF
2	64.1	76.4	5:00p	49.1	6:30a	4.2	3.3	0.00	5.1	32.0	2:00p	NNE
3	62.2	74.1	3:30p	46.7	6:00a	5.5	2.7	0.00	7.6	28.0	4:00p	SSW
4	62.6	76.4	5:30p	44.3	6:30a	5.3	2.9	0.00	7.9	29.0	1:30p	S
5	54.9	62.9	12:30a	49.0	7:30a	10.2	0.0	0.39	10.8	31.0	5:30a	S
6	49.2	57.3	7:30p	45.2	7:30a	15.8	0.0	0.81	6.9	28.0	12:30a	SSE
7	57.2	68.3	4:30p	46.4	12:30a	8.1	0.3	0.00	5.1	22.0	5:00p	S
8	61.6	74.5	5:30p	48.5	1:00a	5.6	2.3	0.00	2.9	13.0	2:30p	W
9	65.3	75.6	3:00p	53.2	5:30a	3.2	3.6	0.01	4.0	22.0	2:00p	WNW
10	57.6	64.4	5:30p	53.5	12:00m	7.4	0.0	0.32	5.3	23.0	5:00p	S
11	54.3	61.1	10:30a	48.7	6:30a	10.7	0.0	0.32	3.3	18.0	2:00p	NW
12	59.3	69.6	5:30p	48.4	1:30a	6.6	0.9	0.00	5.6	23.0	3:30p	MNW
13	63.7	73.7	2:30p	54.7	2:00a	3.5	2.2	0.00	3.5	21.0	11:30p	NW
14	66.3	79.2	5:30p	49.0	4:30a	3.6	4.8	0.00	4.9	19.0	11:30p	N
15	66.8	77.6	4:30p	55.3	5:30a	2.1	3.9	0.00	5.5	24.0	11:30a	S
16	69.1	79.5	5:30p	59.8	4:30a	1.1	5.2	0.00	7.9	27.0	10:00a	SSW
17	71.2	82.3	5:00p	56.7	6:00a	0.8	7.0	0.00	6.7	23.0	11:30a	W
18	71.7	84.4	4:00p	55.7	6:30a	1.1	7.8	0.00	5.8	25.0	4:00p	W
19	72.1	83.5	4:30p	58.6	3:00a	0.9	8.0	0.00	6.9	26.0	11:30a	SSW
20	74.2	87.0	4:30p	58.3	4:30a	0.8	9.9	0.00	4.5	17.0	11:00a	S
21	75.9	87.6	5:30p	60.6	6:00a	0.2	11.1	0.00	4.9	22.0	2:30p	S
22	76.0	87.7	4:30p	57.3	6:30a	0.4	11.4	0.00	5.4	30.0	3:00p	SSW
23	75.2	87.7	2:30p	60.6	6:30a	0.3	10.5	0.00	4.1	20.0	3:00p	WSW
24	71.0	84.4	4:00p	60.5	9:30p	0.6	6.7	0.23	5.4	23.0	6:00a	SW
25	74.0	86.0	6:30p	62.5	12:30a	0.1	9.1	0.01	4.8	25.0	4:30a	W
26	76.4	87.7	4:00p	57.8	5:30a	0.2	11.7	0.00	5.4	24.0	4:00p	NNE
27	75.9	88.9	4:30p	62.7	6:30a	0.2	11.0	0.00	4.2	18.0	10:30a	NW
28	74.0	88.2	4:30p	62.3	6:00a	0.2	9.2	0.01	6.5	30.0	6:00p	S
29	76.3	88.3	7:00p	66.9	6:00a	0.0	11.3	0.00	6.1	21.0	9:30a	SSW
30	78.2	92.7	5:30p	64.3	2:30a	0.0	13.2	0.00	4.6	21.0	5:00a	SSE

	67.5	92.7	30	44.3	4	100.5	175.6	2.10	5.6	32.0	2	S

Max >- 90.0: 1
 Max <- 32.0: 0
 Min <= 32.0: 0
 Min <= 0.0: 0

Max Rain: 0.81 ON 06/06/15

Days of Rain: 5 (>.01 in) 5 (>.1 in) 0 (>1 in)

Heat Base: 65.0 Cool Base: 65.0 Method: Integration

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