

**2018 JTEC LANDFILL INSPECTION REPORT
CITY UTILITIES OF SPRINGFIELD, MISSOURI**

**PREPARATION DATE:
January 11, 2019**

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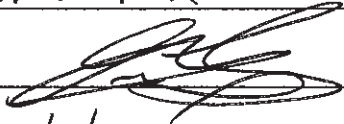
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JTEC LANDFILL INSPECTION REPORT CERTIFICATION

Gerard Fox, Missouri Professional Engineer, License Number 2013019048, hereby certifies that the 2018 JTEC Landfill Inspection Report herein meets the requirements of 40 CFR Section 257.84.

Name: Gerard Fox

Signature: 

Date: 1/11/19

Affix Seal Here:



1. WEEKLY LANDFILL INSPECTIONS REVIEW

A City Utilities of Springfield MO (CU) qualified person performed weekly landfill visual inspections of the JTEC landfill for the year 2018. Inspections were completed using a Landfill Inspection Checklist prepared by CU. Inspection items include:

- Visible settlement or depressions
- Visible sign of structural weakness
- Proper function/maintenance of run-off system
- Condition present that may disrupt operation
- Surface water percolation minimized
- Adequate vegetation (Capped Areas)
- Visible erosion
- Transverse, longitudinal, or desiccation cracks
- Cap system maintained and operational (Capped Areas)
- Proper placement of waste (Uncapped Areas)
- Dust controlled
- Transverse, longitudinal, or desiccation cracks
- Visible depressions, bulges, sloughs, or slides
- Visible animal burrows
- Presence of leachate collection
- Visible sign of leachate leaving system

During this process each weekly Landfill Inspection Checklist was reviewed along with the corrective action(s) taken for each condition noted on the weekly Landfill Inspection Checklist. CU performed the weekly inspections at least every 7 days as required by the Coal Combustion Residual (CCR) rule pursuant to 40 CFR 257.84(a)(1)(i). No major concerns were noted on the weekly inspections reviewed. Visible erosion on the active section of the landfill was noted after heavy rainfall events. Work orders to regrade and compact the affected areas were submitted and completed in a timely manner after discovery of visible erosion. Animal burrows were discovered and noted on the weekly inspections. CU responded to the animal burrow by contacting the United State Department of Agriculture (USDA) to remediate the issue. Work orders to replace the rock track out pad entering the landfill were submitted and completed in a timely manner. Work orders to compact CCR piles were submitted and completed in a timely manner after discovery.

2. ANNUAL LANDFILL INSPECTION REVIEW

On January 8, 2019 a CU qualified professional engineer performed an annual inspection on the JTEC Landfill. The inspection was completed using the Landfill Inspection Checklist – Annual form. The annual inspection checklist is attached to this report. Inspection items include:

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- Visible settlement or depressions
- Visible sign of structural weakness
- Proper function/maintenance of run-off system
- Condition present that may disrupt operation
- Surface water percolation minimized
- Adequate vegetation (Capped Areas)
- Visible erosion
- Transverse, longitudinal, or desiccation cracks
- Cap system maintained and operational (Capped Areas)
- Proper placement of waste (Uncapped Areas)
- Dust controlled
- Transverse, longitudinal, or desiccation cracks
- Visible depressions, bulges, sloughs, or slides
- Visible animal burrows
- Presence of leachate collection
- Visible sign of leachate leaving system
- Review of available operating records
- Review results of weekly inspections
- Review previous annual inspections
- Any visible sign of stress/malfunction of unit or structures
- Any visible changes in geometry
- Approx. volume of CCR in unit
- Liner system maintained and operational

The JTEC landfill appears to be in good working/operating condition. Results of the inspection checklist attached show no actual or potential structural weakness present in or around the JTEC landfill that will disrupt the operation and safety of the CCR unit. The finished or capped portion of the landfill appears to be functioning properly and is being maintained with adequate vegetation presently. The water run-off system appears to be working properly in both the capped and uncapped areas with no ponding or visible signs of surface water. CU is placing the CCR in a conditioned state within the landfill as required by the CCR rule. No fugitive dust was observed during the inspection. The landfill leachate system is in good working condition maintaining containment of the leachate water. The area where the depression was located and repaired shows no signs of further degradation.

The landfill operating records were reviewed. The landfill operating record includes daily amount of ash hauled to the landfill as well as records of any maintenance activities including but not limited to; final cover placement, seeding and mowing, outfall water releases, soil cement application, fugitive dust incidents and state inspection reports. On January 9, 2018 CU received GeoEngineer's report titled "JTEC Karst Feature Investigation and Repair" detailing the repair and investigation activities of the karst

feature found near the JTEC landfill in August 2017. This report was sent and accepted by MDNR on February 9, 2018. According to the CCR operating record, on May 18, 2018 the last of the three observation wells that were drilled through the closed portion of the landfill in 2017 was closed by Palmerton and Parrish. The operating record states, the well casings were cut two feet below grade, the holes were filled with grout to where the casing was cut, and the remaining 2 feet was backfilled and seeded. According to the CCR operating record, sections on the west and east side of the landfill had final clay and topsoil layers applied. Upon completion of the topsoil layer, hydro seeding followed to establish adequate vegetation. It was also noted that the JTEC landfill received two MDNR landfill inspections. One inspection was completed in June 2018 and the other in November 2018. Both inspections resulted in inspection reports stating the landfill was in compliance with MDNR utility waste landfill regulations. During the month of October, the JTEC landfill received CCR from vacuuming activities occurring during a unit outage. Two vacuum trucks were dumped per day for nine total days, approximately 200 tons of CCR. This CCR was not conditioned through the JTEC CCR conditioning equipment on-site. In order to condition the ash prior to placement, CU used a water truck to spray water into the CCR as it was dumping from the vacuum truck. CU also used a dust boss water atomizing unit to control any fugitive dust that was generated from these dumping events. Per the USEPA's CCR Rule 40 CFR 257.64 a CCR unit that is located in an "unstable area" is required to demonstrate that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted. On October 17, 2018 CU received a report titled "Landfill Stability Demonstration – John Twitty Energy Center Utility Waste Landfill." This report was the result of an investigation performed by GeoEngineers to fulfill the requirements set forth in CCR Rule 40 CFR 257.64. On November 19 and 20, 2018 GeoEngineers completed two borings within the JTEC landfill as part of there Alternative Source Demonstration investigation. The purpose of the borings was to collect CCR samples to analyze for Antimony concentrations. Upon completing the soil sampling, the cuttings from the boring procedure were put back into the boring hole and the remaining unfilled portion of the hole was filled/sealed with bentonite clay.

As stated in the Weekly Inspection Report Review section of this report the weekly landfill inspections were reviewed, verified and determined to be satisfactory.

The CCR rule states that any geometry changes since the last annual inspection and the previous annual inspections reports are to be reviewed as part of this report. In 2017 there was section of the landfill that was completed but later discovered towards the end of the year that the final cover was not applied according the CCR regulations. In April 2018 the clay and topsoil of that area was redone and completed according to CCR regulations. Upon completion of the final cover, hydro seeding was applied. In May 2018 a section of the east side of the landfill was completed and final cover was applied. Upon completion of the final cover, hydro seeding was applied. Several vertical lifts have also occurred in the active portion of the landfill in 2018.

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As part of this annual inspection, CU is required to estimate the amount of CCR within the JTEC landfill. CU performed a landfill survey in December 2017. The official survey report has not been finalized but preliminary estimates are available. The current estimated capacity of the landfill, not including the 30-inch thick final cover, is 3,221,000 cubic yards. At the time of the survey, the JTEC landfill had 1,517,000 cubic yards of CCR within the landfill. In 2018 CU placed approximately 65,000 cubic yards of CCR within the landfill. At the conclusion of 2018, there is approximately 1,582,000 cubic yards within the landfill leaving the remaining volume of approximately 1,639,000 cubic yards available for CCR placement.

In conclusion, the JTEC landfill appears to be in good working condition with no major issues. CU continues to watch for visible erosion during heavy rainfall events and remedy the situation as quickly and practically as possible.

APPENDIX A
(Annual Landfill Inspection Checklist)



LANDFILL INSPECTION CHECKLIST-ANNUAL INSPECTION BY PROFESSIONAL ENGINEER

The CCR landfill is visually examined by a licensed professional engineer as required by §257.84 and is recorded in the facility's operating record as required by § 257.105.

ID: JTEC Landfill	Date Inspected: 1/8/2019	Inspector: Gerad Fox PE	
	YES	NO	COMMENTS
CAPPED (INACTIVE)			
A. Visual settlement or depressions?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
B. Visible sign of structural weakness?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
C. Proper function/maintenance of run-off system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D. Condition present that may disrupt operation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
E. Surface water percolation minimized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
F. Adequate vegetation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
G. Visible erosion?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
H. Transverse, longitudinal, or desiccation cracks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
I. Cap system maintained and operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
J. Visible animal burrows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
UNCAPPED (ACTIVE)			
A. Visible settlement?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
B. Signs of structural weakness?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
C. Proper function/maintenance of run-off system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D. Condition present that may disrupt operation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
E. Proper placement of waste?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Note 1 Below
F. Surface water percolation minimized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
G. Dust controlled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
H. Visible erosion?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
I. Transverse, longitudinal, or desiccation cracks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
J. Visible depressions, bulges, sloughs, or slides?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
K. Visible animal burrows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
LEACHATE COLLECTION			
A. Presence of leachate collection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
B. Visible sign of leachate leaving system?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

LANDFILL INSPECTION CHECKLIST (continued)

	YES	NO	COMMENTS
ADDITIONAL ANNUAL INSPECTION ITEMS			
A. Review of available operating records?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
B. Review results of weekly inspections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
C. Review previous annual inspections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D. Any visible sign of stress/malfunction of unit or structures?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
E. Any visible changes in geometry?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Note 2 Below
F. Approx. volume of CCR in unit? 1,582,000 CY			
G. Liner system maintained and operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

ADDITIONAL COMMENTS:

Note 1: A few piles of CCR were present inside the active portion of the landfill that need to be compacted otherwise the placement of CCR looks great.

Note 2: See 2018 Annual JTEC Landfill Inspection Report for geometry change details.

Inspector Signature and Seal: 