

**2017 JTEC LANDFILL INSPECTION REPORT
CITY UTILITIES OF SPRINGFIELD, MISSOURI**

**PREPARATION DATE:
January 11, 2018**

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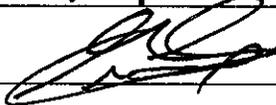
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JTEC LANDFILL INSPECTION REPORT CERTIFICATION

Gerald Fox, Missouri Professional Engineer, License Number 2013019048, hereby certifies that the 2017 JTEC Landfill Inspection Report herein meets the requirements of 40 CFR Section 257.84.

Name: Gerald Fox
Signature: 
Date: 1/11/2018

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 2017. 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 other than the soil depression described below 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 multiple weekly inspections. CU responded to the animal burrows by contacting the United State Department of Agriculture (USDA) to remediate the issue. Work orders to compact CCR piles were submitted and completed in a timely manner after discovery. In May 2017, following heavy extended rainfall, storm water (defined as leachate under CCR regulations) collected in the landfill storm water detention pond was released through the NPDES permitted Outfall 006. The controlled release was necessary to prevent the overtopping of the storm water and leachate pond whose design capacity would have been exceeded if the release had not occurred. The release was completed in a controlled fashion using the existing discharge valve. The discharge was reported to the Missouri Department of Natural Resources (MDNR) in the May 2017 Discharge Monitoring Report. In August 2017, a small soil depression was discovered at the outer toe of the southern perimeter landfill

berm well outside of area of active filling. In accordance with established landfill operating procedures, MDNR was notified, and the depression was barricaded and monitored. CU, under the direction of GeoEngineers and MDNR personnel, investigated and successfully remediated the soil collapse. Repair and investigation activities are documented in GeoEngineer's report titled "Karst Feature Investigation and Repair Report" dated January 5, 2018, included with the landfill operating records. This did not disrupt the stability of the landfill berm nor will it hinder landfill operations in the future. Overall the weekly landfill inspections and processes in place appear functional and appropriate in ensuring the JTEC landfill is operated properly.

2. ANNUAL LANDFILL INSPECTION REVIEW

On January 5, 2018 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:

- 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

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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. According to the CCR operating record, on November 27-29, 2017, three borings were advanced through the northern capped portion of the JTEC landfill to determine the amount (if any) of free moisture present in the fill. Upon visual inspection of the boring sites, one of the boring holes has been left open and capped for monitoring and two boring holes appear to have been backfilled and sealed. Based on the information reviewed in the operating record and visual inspection of the boring sites, all construction and backfilling of the boring holes appear to have been performed following good engineering practices and should have no adverse impacts to the function or operation of the JTEC landfill.

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 dozer GPS-control technology was implemented to more efficiently and accurately perform final grading. A refined CAD file depicting the top of the final permitted final cover was developed and loaded into the GPS control system. A section of ash fill on the east side of the landfill that had previously received final cover was reworked to conform to the newly established limits of fill within the established MDNR permit limits. This work included extension of the perimeter berm to ensure that all storm water runoff from the reworked area properly drains to the landfill storm water detention pond. On the west side of the landfill a section was deemed full where placed CCR had reached the permitted horizontal and vertical limits. At that point, CU began to apply final clay and top soil cover. The final cover was completed in September 2017. Once the final survey drawings were completed, it was discovered that the incorrect clay depth offset was used in the GPS dozer control file, and the clay layer depth did not meet the minimum 18 inches required by CCR regulations. CU plans to remediate the final cover section in order to meet the standard. A preliminary schedule of March 2018 has been set to begin the work so that the area can be

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seeded during the spring seeding season. Other geometry changes included lifts to the active working face of the landfill.

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 of 2017. The official survey report has not been finalized but preliminary estimates are available. The current estimated capacity of the landfill, including the 30-inch thick final cover, is 3,314,000 cubic yards. At the time of the survey the JTEC landfill had 1,517,000 cubic yards of CCR within the landfill leaving the remaining volume of approximately 1,704,000 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 practicably as possible. As well as address any animal burrows that become active this spring.

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

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 Below
F. Approx. volume of CCR in unit?	1,517,000 cubic yards		
G. Liner system maintained and operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

ADDITIONAL COMMENTS:

No major issues found at the JTEC landfill during the annual inspection. In 2017 a section of ash fill on the east side of the landfill that had previously received final cover was reworked to conform to the newly established limits of fill within the established MDNR permit limits. This work included extension of the perimeter berm to ensure that all storm water runoff from the reworked area properly drains to the landfill storm water detention pond. Other geometry changes included vertical lifts to the active working face of the landfill.

Inspector Signature and Seal: