

2017

J. M. Stuart Station Landfill No 9 Annual Inspection

EPA Permit to Install: 06-1179, 06-1452, and
06-4248



**Prepared by:
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Date: December 21, 2017

Purpose

I have conducted the following annual inspection in compliance of the Federal CCR Rule, 40 CFR Part 257.

Statement of Qualifications

I am a practicing Civil/Geotechnical Professional Engineer registered in the State of Ohio employed by the AES Ohio Generation, LLC. I am experienced in the design, maintenance and operation of landfills.

Review of Landfill Documentation [§ 257.84(b)(1)(i)]

Design, History, and Operation of the Facility

Landfill No. 9 was originally permitted and constructed in 1984. An expansion was permitted in 1986 and another in 1995 under Ohio EPA Division of Surface Water exempt waste rules.

Permanent side slopes at the facility are 3:1 slope with a 20-foot wide bench for every 20 feet of vertical rise. The liner is two feet of compacted clay with a permeability of 1×10^{-7} or lower. Drainage media consists of a minimum of one foot of bottom ash. The bottom is sloped to the south where the leachate is intercepted by a perimeter drain which outlets approximately every 100 feet.

Fly ash, the primary disposal material, is moisture conditioned and compacted to 90% maximum dry density. Inactive areas are covered with temporary cover. All areas, except one small disposal area and a bottom ash stockpile, were covered with temporary or permanent cover.

A perimeter ditch collects storm water, contact water and leachate and conveys them to the Stormwater-Leachate Retention Pond on the south side of the facility.

Periodic Inspections

Weekly inspections have been performed throughout 2017. A thorough review of weekly facility inspections was conducted. These periodic inspections indicated no issues with slope stability.

Visual Inspection of Landfill [§ 257.84(b)(1)(ii)]

Landfill No. 9 is in good structural condition. Work on the perimeter ditch adjacent to the east and south cells noted in the 2016 annual inspection report had been completed. Modification to the storm water-leachate retention pond was also complete. A modification was completed to the perimeter ditch near the northwest corner of the landfill to meet the CCR Rule run-on/run-off requirements. Many erosion repairs were made in 2017. Vegetative cover in these areas was established but should be monitored through the next year.

Active filling was limited to CCR from plant material housekeeping activities. This material consisting of mixed fly ash and bottom ash was placed in the southwest expansion area. Bottom ash was placed in the northern portion of the southwest expansion area.

Changes in Geometry [§ 257.84(b)(2)(i)]

There were no changes to slopes in the form of slides, sloughs or bulges or other indication of deformation or other indicators of instability.

Volume of CCR [§ 257.84(b)(2)(ii)]

Landfill 9 contains approximately 15.5 million cubic yards of CCR material.

Structural Weakness [§ 257.84(b)(2)(iii)]

No indication was found of an actual or potential structural weakness of the CCR unit or any existing condition that was disrupting or had the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.

Other Changes [§ 257.84(b)(2)(iv)]

No changes were found to the CCR unit which could affect the stability or operation of the structure since the previous annual inspection.

Appendix A

CCR Rule Requirements for Landfill Inspections

§ 257.84 Inspection and Reporting Requirements for CCR Landfills.

(a) *Inspections by a qualified person.*

- (1) All CCR landfills and any lateral expansion of a CCR landfill must be examined by a qualified person as follows:
 - (i) At intervals not exceeding seven days, inspect for any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit; and
 - (ii) The results of the inspection by a qualified person must be recorded in the facility's operating record as required by § 257.105(g)(8).
- (2) *Timeframes for inspections by a qualified person—*
 - (i) *Existing CCR landfills.* The owner or operator of the CCR unit must initiate the inspections required under paragraph (a) of this section no later than October 19, 2015.
 - (ii) *New CCR landfills and any lateral expansion of a CCR landfill.* The owner or operator of the CCR unit must initiate the inspections required under paragraph (a) of this section upon initial receipt of CCR by the CCR unit.

(b) *Annual inspections by a qualified professional engineer.*

- (1) Existing and new CCR landfills and any lateral expansion of a CCR landfill must be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection must, at a minimum, include:
 - (i) A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (*e.g.*, the results of inspections by a qualified person, and results of previous annual inspections); and
 - (ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.
- (2) *Inspection report.* The qualified professional engineer must prepare a report following each inspection that addresses the following:
 - (i) Any changes in geometry of the structure since the previous annual inspection;
 - (ii) The approximate volume of CCR contained in the unit at the time of the inspection;
 - (iii) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit; and
 - (iv) Any other change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection.
- (3) *Timeframes for conducting the initial inspection—*
 - (i) *Existing CCR landfills.* The owner or operator of the CCR unit must complete the initial inspection required by paragraphs (b)(1) and (2) of this section no later than January 18, 2016.
 - (ii) *New CCR landfills and any lateral expansion of a CCR landfill.* The owner or operator of the CCR unit must complete the initial annual inspection required by paragraphs (b)(1) and (2) of this section no later than 14 months following the date of initial receipt of CCR in the CCR unit.
- (4) *Frequency of inspections.* The owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the initial inspection report is the basis for establishing the deadline to complete the first subsequent inspection. Any required inspection may be conducted prior to the required deadline provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. For purposes of this

section, the owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record as required by § 257.105(g)(9).

- (5) If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.
- (c) The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in § 257.105(g), the notification requirements specified in § 257.106(g), and the internet requirements specified in § 257.107(g).

Appendix B

Reference Documents Reviewed

- ❖ Landfill permits
- ❖ Previous weekly inspection reports
- ❖ 2015 & 2016 J. M. Stuart Station Landfill No 9 Annual Inspection Report
- ❖ Landfill Run-on/Run-off Plans
- ❖ Drawings
 - 300-46 1009A
 - 300-46 1106
 - 300-46 1107
 - 300-46 1108
 - 300-46 1151
 - 300-46 1159
 - 300-46 1160
 - 300-46 1161
 - 300-46 1162
 - 300-46 1163
 - 300-46 1164
 - 300-46 1165
 - 300-46 1166
 - 300-46 1167
 - 300-46 1168
 - 300-46 1170 SH 1 THROUGH 14

Appendix C
Inspection Check List

Landfill Field Inspection Report

LANDFILL ANNUAL FIELD INSPECTION FORM

Unit Name: Landfill No. 9

Facility Name: J.M. Stuart Station

Permits: 06-1179, 06-1452, 06-4248

CCR Unit

ACTION

Bottom Liner Material: Compacted clay < 1X10E-7 Thickness: 24 inches

Leachate Drainage Media: Bottom ash Thickness: 12 inches

Cover Material: Compacted clay < 1X10E-7 Thickness: 24 inches

Vegetative Cover Material: 6 inches

Other details:

Inspection Date(s): Nov/Dec 2017

Weather/Surface Conditions During Inspection: cloudy, damp, temperatures 40 - 50 F

NONE
 MONITOR
 MAINTENANCE
 ENGINEER

PERMANENT COVER

Gradient: Horizontal: 3 Vertical: 1 (est. meas.)

VEGETATION

Trees:

DESCRIPTION AND LOCATION:

Brush:

DESCRIPTION AND LOCATION:

Ground Cover:

DESCRIPTION: Grass

CONDITION: Cover is good with few broadleaf species. Recently seeded areas general have a thick stand of grass with fewer broad leaf species than previous inspections. Some areas still need a more dense cover. Over seed in thin areas and continue frequent mowing.

EROSION

DESCRIPTION AND LOCATION:

Some small erosion rills were noted starting to develop on the south slope of the south expansion. Areas were staked and coordinates recorded.

INSTABILITIES: (SLIDES, CRACKS, BULGES, etc.)

SLIDES/SLOUGHS:

DESCRIPTION AND LOCATION:

CRACKS:

DESCRIPTION AND LOCATION:

BULGES:

DESCRIPTION AND LOCATION:

OTHER:

DESCRIPTION AND LOCATION:

SEEPAGE/WET AREA

DESCRIPTION AND LOCATION:

MONITORING INSTRUMENTATION:

DESCRIPTION: Groundwater monitoring wells are located outside of the landfill perimeter.

CONDITION: All wells are in good condition.

	ACTION			
	NONE	MONITOR	MAINTENANCE	ENGINEER
OTHER (rodent burrows, ruts, etc.)				
DESCRIPTION AND LOCATION: Possible small rodent burrow identified on the south slope of the south expansion area. Location staked and coordinates recorded.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION: Two holes located on north side of east expansion on 3 rd bench resulting from temporary 4" corrugated piping not entirely removed.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION AND LOCATION:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HYDRAULIC STRUCTURES				
LEACHATE DRAINS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Leachate drains outlet approximately every 100 feet along the southern portion of the landfill.				
CONDITION: Leachate drains are in good condition.				
BENCH DRAINS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: 24" diameter pipe with inlets on each bench. Material varies.				
CONDITION: Bench Drains are in good condition.				
OBSTRUCTION NOTED: (<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO) DESCRIBE IF YES:				
PERIMETER DITCH	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Clay lined ditch with grass cover. Concrete gutters have been added in some areas.				
CONDITION: Perimeter ditch is in good condition. Areas reworked in 2016 have established grass cover.				
SEEPAGE NOTED: (<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO) DESCRIBE IF YES:				
WATER COLLECTION POND	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: 26 acre clay lined incised pond with stone shoreline protection. Finger dikes provided to lengthen water flow path.				
CONDITION: Good condition.				
EROSION NOTED: (<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO) DESCRIBE IF YES:				
INLET	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Concrete apron transitioning to riprap.				
CONDITION: Good condition.				
OBSTRUCTION NOTED: (<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO) DESCRIBE IF YES:				
FOREBAY	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Large forebay area.				
CONDITION: Little material accumulation.				
OUTLET STRUCTURE:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: Concrete structure with valving to control discharge flow. Low level 8" diameter inlet pipe with a floating skimmer for normal discharge.				
CONDITION: Good condition.				
OBSTRUCTION NOTED: (<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO) DESCRIBE IF YES:				
CONDUIT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIPTION: 14" fused SDR 17, HDPE pipe.				

ACTION

NONE
MONITOR
MAINTENANCE
ENGINEER

CONDITION: Good Condition.

DISCHARGE STRUCTURE:

DESCRIPTION: Riprap lined outlet area

CONDITION: Good condition

Appendix D

CCR Unit Maintenance Recommendations

1. Repair erosion rills on south slope of south expansion (expansion 2) area and re-establish vegetative cover. Recommend that repair be executed in the spring when grass cover will germinate thus lessening the potential for additional erosion.
2. Fill temporary 4" corrugated pipe found on the north side of the east expansion with bentonite grout and re-establish grass cover.
3. Continue frequent mowing.

Continued Monitoring

1. Monitor erosion areas weekly until repairs are complete.