2015

J. M. Stuart Station
Landfill No 9 Annual Inspection

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

The Dayton Power & Light Company

Prepared by:
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The Dayton Power & Light Company

Date: December 21, 2015

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 Engineer registered with the State of Ohio employed by the Dayton Power & Light Company. 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.

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 $1X10^{-7}$ 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 is outleted 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

A thorough review of weekly facility inspections was conducted. These periodic inspections indicated issues with slope erosion in limited areas.

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

Landfill No. 9 is in good structural condition. Maintenance items were noted during the field inspection. Also noted was ongoing maintenance on the leachate-runoff perimeter ditch along the east and south sides consisting of installing hard lining inside the ditch bottom. Additional work was being performed at the outlet of the storm water-leachate pond consisting of installing new piping that will discharge directly to the Ohio River (Ohio EPA Permit to Install 1042125). At the completion of work, a floating skimmer will be installed to maintain level in the pond.

Three erosion rills were found on the north slope of the first and second expansion area. Voids were also discovered around the bench drains in this area. These defects require interim measures to control the erosion until permanent repairs can be made in the spring.

Several small surface erosion defects were also noted on the south slope of the south area of the second expansion. These items should be repaired in the spring.

No active filling was occurring at this time as ash disposal activities are typically seasonal at this facility.

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 15.4 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 impounding structure since the previous annual inspection.

Visual Inspection of Hydraulic Structures

Landfill No. 9 has a perimeter ditch that conveys storm water, contact water and leachate to the Landfill No. 9 Stormwater/Leachate Retention Pond. Noted during the inspection was maintenance on the leachate-runoff perimeter ditch along the east and south sides consisting of installing hard lining inside the ditch bottom. Additional work was being performed at the outlet of the storm water-leachate pond consisting of installing new piping that will discharge directly to the Ohio River (Ohio EPA Permit to Install 1042125). At the completion of work, a floating skimmer will be installed to maintain level in the pond. The ditches, pond and outlet works were in good condition.

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
- 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
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): Dec. 2015
Weather/Surface Conditions During Inspection: cloudy, damp, temperatures 40 - 50 F

	ACTION			
	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 generally adequate predominately grass with little broad leaf species. Some areas need a more dense cover. Over seed in thin areas and continue frequent mowing.				
EROSION	☐	☐	☒	☐
DESCRIPTION AND LOCATION: Two areas of erosion were noted. First being the northern slope of the first expansion. Three erosion rills were noted in this area between the first and second bench from the bottom. One between on which was approximately 18" deep. Rills start near the second bench and continue downward. Erosion was also noted on the south side from the east end of the retention pond eastward approximately 500 feet in various locations. These rills were not large but should be repaired and reseeded to stop erosion.				
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:	☒	☐	☐	☐

	ACTION			
	NONE	MONITOR	MAINTENANCE	ENGINEER
DESCRIPTION: Grownwater monitoring well are located outside of the landfill perimeter. CONDITION:				
OTHER (rodent burrows, ruts, etc.)				
DESCRIPTION AND LOCATION:	☐	☐	☐	☐
DESCRIPTION AND LOCATION:	☐	☐	☐	☐
DESCRIPTION AND LOCATION:	☐	☐	☐	☐
DESCRIPTION AND LOCATION:	☐	☐	☐	☐
HYDRAULIC STRUCTURES				
LEACHATE DRAINS	☐	☐	☒	☐
DESCRIPTION: Leachate drains outlet approximately every 100 feet along the southern portion of the landfill. CONDITION: The ends of some drains had been cut or crimped from mowing activities.				
BENCH DRAINS	☐	☐	☒	☐
DESCRIPTION: 24" diameter pipe with inlets on each bench. Material varries. CONDITION: Void were present around some of the drains. These voids may allow water infiltration in the future. Recommend filling void with bentonite. OBSTRUCTION NOTED: (☐ YES ☒ NO) DESCRIBE IF YES:				
PERIMETER DITCH	☐	☐	☒	☐
DESCRIPTION: Clay lined ditch with grass cover. Concrete gutters have been (and are being) added is some areas. CONDITION: Guttering is incompete and needs to be complete. Repair grass cover in the work area when complete. Riprap check dam drop structures near the north east corner have been disloged and need to be reconstructed with other materials or larger stone. SEEPAGE NOTED: (☐ YES ☒ NO) DESCRIBE IF YES:				
WATER COLLECTION POND	☒	☐	☐	☐
DESCRIPTION: 26 acre clay lined incised pond with stone shoreline protection. Finger dikes provided to lengthen water flow path. CONDITION: Good condition. Continue modifications to outlet structure. EROSION NOTED: (☐ YES ☒ NO) DESCRIBE IF YES:				
INLET	☒	☐	☐	☐
DESCRIPTION: Concrete apron transitioning to riprap. CONDITION: Good condition. OBSTRUCTION NOTED: (☐ YES ☒ NO) DESCRIBE IF YES:				
FOREBAY	☒	☐	☐	☐
DESCRIPTION: Large forebay area. CONDITION: Little material accumulation.				
OUTLET STRUCTURE:	☒	☐	☐	☐
DESCRIPTION: Concrete structure with valving to control discharge flow. Low level 8"				

	ACTION			
	NONE	MONITOR	MAINTENANCE	ENGINEER
diameter inlet pipe. A floating skimmer with be added to provide enhanced settling of solids. CONDITION: Good condition. OBSTRUCTION NOTED: (☐ YES ☒ NO) DESCRIBE IF YES:				
CONDUIT DESCRIPTION: 14" fused SDR 17, HDPE pipe. CONDITION: New	☒	☐	☐	☐
DISCHARGE STRUCTURE: DESCRIPTION: Riprap lined outlet area CONDITION: Good condition but need to monitor impacts of changes to flow	☐	☒	☐	☐

Appendix D
CCR Unit Maintenance Recommendations

1. Repair erosion rills on north slope of expansion 1 and 2. A temporary repair using bentonite to fill deeper rills until a vegetative cover can be established in the Spring is recommend.
2. Fill voids around slope drains with bentonite.
3. Repair erosion on south slope of south expansion area (expansion 2).
4. Repair or replace rock-check drop structures.
5. Overseed areas with less than dense grass cover.
6. Complete ongoing projects on perimeter ditch and pond discharge. Include protection of leachate drains.

Continued Monitoring

1. Monitor erosion areas weekly until repairs are complete.
2. Monitor progress of current maintenance and outlet modification.
3. Monitor Retention Pond discharge erosion protection.