

2019

J. M. Stuart Station Carter Hollow Landfill

EPA Permit to Install: 06-08445



Prepared by:
John Hendrix, PE



Date: December 6, 2019

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 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

Carter Hollow Landfill No. was permitted in 2012 as a residual waste landfill. This facility is valley fill design with 2½:1 side slopes. The facility is designed with an under-drain system, 3 feet of re-compacted soil liner, geosynthetic, leachate collection piping, drainage media and 18 inches of protective cover. Construction of phase 1A was completed in 2017; however, work may continue on subsequent phases at a later date. The facility is licensed and ready to receive waste. This facility is permitted to receive approximately 20 million tons of CCR material when all phases are complete.

Provisions in the design redirect all surface water around the landfill so that there will be no run-on water. This landfill is planned to receive predominately gypsum from the flue gas desulfurization systems at the Stuart and Killen Stations. An operating license was issued for this facility in 2017 and was renewed for 2018 and 2019. An application has been submitted for 2020. This facility has not received any waste as of this time.

Periodic Inspections

A thorough review of weekly facility inspections and daily operational inspections was conducted. These periodic inspections indicated required cleaning of discharge pipe at the leachate collection basin and control of woody vegetation. In previous years repair was required to address erosion issues. This was not the experience in 2019; however, rainfall in the later part of the year was below average.

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

Carter Hollow Landfill is in good structural condition. There are no maintenance items at this time.

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

There were no changes to geometry that would indicate structural weakness or failure. Structural fill, liner, leachate media and protective cover have been completed in Phase 1A.

Volume of CCR [§ 257.84(b)(2)(ii)]

No waste material has been placed in the Carter Hollow Landfill as of this time

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 CCR Unit 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 permit documents
- ❖ Previous weekly inspection reports
- ❖ Previous annual inspection report
- ❖ Run-on and Run-off Control Plan Landfill 11, Haley & Aldrich 2016
- ❖ Drawings
 - Carter Hollow Landfill Permit Drawings
 - Carter Hollow Landfill Construction Drawings.

Appendix C
Inspection Check List

Landfill Field Inspection Report

LANDFILL ANNUAL FIELD INSPECTION FORM

Unit Name: Carter Hollow Landfill

Facility Name: J.M. Stuart Station

Permits: 06-08445

CCR Unit

ACTION

Bottom Liner Material: Compacted clay < 1X10⁻⁷ Thickness: 36 inches

Leachate Drainage Media: Bottom ash/stone Thickness: 12 inches

Cover Material: Compacted clay < 1X10⁻⁷ Thickness: 24 inches

Vegetative Cover Material: 6 inches

Other details: The bottom liner is sloped to the south for drainage.

Inspection Date(s): November 20, 2019

Weather/Surface Conditions During Inspection: Very cloudy and calm. Damp from yesterday's precipitation. Temperature in the 40's.

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: Protective cover. Sparse grass covering protective cover.

CONDITION: Protective cover is in place to protect the liner from freezing. No waste has been placed so there is no temporary or permanent cover at this time.

EROSION

DESCRIPTION AND LOCATION:

Some erosion to protective cover and frequent repairs during the layover period. two rills on the east side need to be monitored.

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: Ground water monitoring wells are located downstream of the landfill cell. The underdrain directly under the cell will also be monitored.

CONDITION: The wells are in good condition. An adjustment had been made to UAS-1.

OTHER (rodent burrows, ruts, etc.)

ACTION

NONE
MONITOR
MAINTENANCE
ENGINEER

DESCRIPTION AND LOCATION:

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION AND LOCATION:

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION AND LOCATION:

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION AND LOCATION:

NONE MONITOR MAINTENANCE ENGINEER

HYDRAULIC STRUCTURES

LEACHATE DRAINS

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION: Chimney drains convey contact water from the surface to the leachate collection system. Leachate drains are collected in a central pipe line that conveys leachate/contact water to the leachate basin. Another pipe conveys leachate/contact water to the landfill No. 9 for additional retention or treatment prior to discharge in the Ohio River.

CONDITION: System is in good condition.

BENCH DRAINS

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION: Benches will be drained with surface channels. No benches have been installed at this time.

CONDITION: N/A

OBSTRUCTION NOTED: (YES NO) DESCRIBE IF YES:

PERIMETER DITCH

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION: The landfill is designed with a perimeter berm to divert run-on storm water away from the cell.

CONDITION: This berm is in good condition.

SEEPAGE NOTED: (YES NO) DESCRIBE IF YES:

WATER COLLECTION POND

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION: The Leachate/contact water pipe discharges to the leachate/contact water basin. This basin is lined with 36" of recompact soil liner, 30 mill synthetic liner and bottom ash/stone protective cover.

CONDITION: Pond is in good condition. Many trees sprouted which have largely been controlled with herbicide. Monitor and control growth of trees and woody vegetation.

EROSION NOTED: (YES NO) DESCRIBE IF YES:

INLET

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION: HDPE pipe with animal control screen

CONDITION: Good Condition. Review of inspections indicate that the outlet pipe screen had to have leaves removed several times in 2018 & 2019.

OBSTRUCTION NOTED: (YES NO) DESCRIBE IF YES:

FOREBAY

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION: Not applicable.

CONDITION:

OUTLET STRUCTURE:

NONE MONITOR MAINTENANCE ENGINEER

DESCRIPTION: HDPE pipe with animal screen.

CONDITION: Good condition

ACTION

NONE
MONITOR
MAINTENANCE
ENGINEER

OBSTRUCTION NOTED: (YES NO) DESCRIBE IF YES:

CONDUIT

DESCRIPTION: 24" HDPE pipe conveys water from the leachate/contact water basins to the Landfill No. 9 Perimeter ditch.

CONDITION: Pipe is in good condition.

DISCHARGE STRUCTURE:

DESCRIPTION: A structure is in place to discharge leachate/contact water into the perimeter ditch. Provision is made for NPDES sample collection and flow measurement.

CONDITION: good condition

Appendix D

CCR Unit Maintenance Recommendations

1. Outside of the cell area material has slid down on the leachate conveyance pipe access road. Clear slide material road.

Continued Monitoring

1. Monitor landfill protective cover for erosion.
2. Continue monitoring leachate basin outlet for plugging. Particularly in the fall when leaves are falling.
3. Monitor water (leachate) collection pond for growth of trees and woody vegetation.