APTIM

Inspection Report

To:	**John Shimshock (Conemaugh Generating Station)**
From:	**Richard Southorn, P.E., P.G.**
Re:	**Ash/Refuse Disposal Site – Annual CCR Unit Inspection Report**
Inspection Date:	**October 21, 2019**
Report Date:	**January 16, 2020**

INTRODUCTION

Title 40 Code of Federal Regulations (CFR) Part 257 addresses, in part, the management of Coal Combustion Residuals (CCR Rule, or Rule) in regulated units, including landfills. Specific to §257.84(b) of the Rule, existing and new CCR landfills must be inspected on an annual basis by a qualified professional engineer. For the Keystone-Conemaugh Projects, LLC-Conemaugh Generating Station, this inspection requirement applies to the existing Ash/Refuse Disposal Site (Ash Disposal Site). In support of this obligation, Mr. Richard Southorn (a qualified professional engineer with Aptim Environmental & Infrastructure, LLC [APTIM]) conducted an on-site inspection of the Ash Disposal Site on October 21, 2019. The findings from this annual inspection are summarized in the remaining sections of this correspondence.

As required, this report will be placed in the Conemaugh facility's operating record per §257.105(g)(9), noticed to the State Director per §257.106(g)(7), and posted to the publicly accessible internet site per §257.107(g)(7). Placement of the prior annual inspection report into the facility's operating record was accomplished on January 16, 2019. Per §257.84(b)(4), the current report will be entered into the facility's operating record no later than January 16, 2020.

BACKGROUND

The Ash Disposal Site consists of a valley fill located north of the Station proper, and is operated/maintained in accordance with Pennsylvania Department of Environmental Protection (PADEP) Solid Waste Permit No. 300876. The Ash Disposal Site consists of three stages, including Stage I (closed), Stage II (currently active), and Stage III (permitted contiguous horizontal and vertical expansion, construction activities completed in December 2018). The required construction certification report was submitted to the PADEP in February 2019; this agency issued its approval and authorization to initiate disposal activities in this area in April 2019.

Stage I occupies approximately 160 acres within the northernmost reaches of the valley and was brought online in 1970. Stage I was constructed as an unlined facility and was subsequently closed in 1987. Stage II (brought online in 1985) is presently maintained as the active disposal area, and utilizes a single liner comprised of a 50-mil polyvinyl chloride (PVC) geomembrane with

an accompanying leachate collection and detection system. Stage II occupies approximately 120 acres, and its northern side overlies the outslope of the Stage I disposal area (piggy-backs over Stage I); it extends approximately 2,000 feet southward into the valley from its interface with Stage I.

Construction of a composite base liner system was completed in Stage IIIA, which is the first phase of construction of Stage III. The composite liner includes, from top to bottom: type A non-woven cushion geotextile; 60-mil HDPE primary liner; geocomposite drainage net; 60-mil HDPE secondary liner; geosynthetic clay liner (GCL), 2"-3" sand friction layer; and 6" subbase.

At the time of inspection, a protective ash layer was being installed across the composite liner. Once complete, a total of 3.5 feet of protective ash will be placed on top of the composite liner, including one foot of fly ash (top layer) and 2.5 feet of bottom ash. The bottom ash is used to facilitate leachate drainage in addition to offering protection of the underlying geosynthetic materials.

Upon complete buildout, Stage III will occupy an area of approximately 110 acres. The northern side of Stage III will piggy-back over the Stage II disposal area and it will extend southward approximately 2,100 feet where its outslope will terminate approximately 600 feet north of the existing Ash Disposal Site Leachate Surge Pond. At such time when the permitted disposal capacity has been fully expended and final grades attained, any uncapped areas of the Ash Disposal Site will be capped and closed in accordance with the approved Closure Plan.

With respect to the Ash Disposal Site, APTIM's evaluation has focused on the following items as outlined in §257.84(b)(1)(i-ii):

- *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; and*
- *A visual inspection of the CCR unit to identify signs of distress or malfunction.*

Specific to APTIM's preparation of the annual inspection report, and per §257.84(b)(2)(i-iv), the following aspects have been addressed:

- *Any changes in geometry of the structure since the previous annual inspection;*
- *The approximate volume of CCR contained in the unit at the time of the inspection;*
- *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*
- *Any other change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection.*

OPERATING RECORDS REVIEW

Principal items reviewed as part of this year's inspection included, but were not limited to: Design Drawings, 2018/2019 Weekly and Periodic Landfill Inspection Reports that have been completed since the 2018 Annual Inspection, 2018 Annual Landfill Operations Report, 2019 Assessment of Corrective Measures Report, and the Solid Waste Permit No. 300876. During the site inspection, Mr. Southorn interviewed facility personnel to verify the information contained within the operating record.

Environmental Control System Overview

i. Bottom Liner System

a. The bottom liner system of the Stage II landfill area is a 50-mil PVC geomembrane.

b. The bottom liner system of the Stage III landfill area is a composite liner, comprised from the top to bottom:
- Type A non-woven cushion geotextile
- Primary 60-mil high-density polyethylene (HDPE) liner
- Geocomposite Drainage Net (Geonet) for leak detection
- Secondary 60-mil HDPE liner
- Geosynthetic Clay Liner (GCL)
- 6-inch subbase

ii. Leachate Collection System

a. The leachate collection systems of Stages II and III utilize gravity flow through the bottom ash material to a contact water underdrain channel, which in turn drains to the Surge Pond. From the pond, leachate is routed to the Leachate Wastewater Treatment Plant (WWTP), with treated effluent managed in accordance with the Station's National Pollutant Discharge Elimination System (NPDES) Permit.

iii. Stormwater Management

a. "Non-contact" stormwater run-off from the closed Stage I area is managed in accordance with the current NPDES permit. Stormwater run-off from the Stage I area is discharged into a stormwater channel separate from the "contact" stormwater of the Stage II area.

b. "Contact" stormwater falling on currently active areas of Stage II and future active areas of Stage III is combined with leachate in the underdrain system and is conveyed to the Surge Pond south of the disposal site.

iv. Cover System

a. Stage I disposal area is capped and has established vegetative cover.

b. The southwest and northeast sideslopes of Stage II have intermediate cover.

c. Portions of the Stage II disposal area currently have an intermediate cover in place with established vegetation. These areas include the sideslopes and plateau areas adjacent to Stage I.

Summary of 2019 Landfill Construction

i. A protective ash layer was being placed over the Stage IIIA composite liner at the time of inspection.

ii. The Stage II disposal area is currently accepting CCR.

Review of Prior Inspections

i. Weekly inspections: A review of weekly inspections has concluded that no significant deficiencies occurred at the facility that required remedial actions.

ii. 2018 Annual Inspection/2019 Assessment of Corrective Measures Report: The previous Annual Inspection report indicates that on August 8, 2018, a surficial (non-groundwater) release of CCR from the Stage II active area was discovered during the performance of a routine weekly inspection of the landfill (as required by the Rule) and established erosion and sedimentation control features. The release most likely occurred during an extremely intense precipitation event on July 30, 2018, which was localized and rare. Contact stormwater overtopped a diversion berm that had been temporarily lowered to facilitate access to the Stage IIIA construction area.

Conemaugh Station responded to the ash release through a series of actions relative to PADEP notification, immediate cleanup activities, and implementation of CCR Rule corrective measures assessment requirements, including the retention of professional engineering services.

At the time of the 2018 Annual Inspection on October 23, 2018, stormwater controls that were impacted during the surficial release event had been restored. The original height of the diversion berm had been restored to minimize the potential of recurrence. In addition, all significant quantities of released CCR material were observed to have been removed. However, an Assessment of Corrective Measures was in the process of being completed to determine whether the immediate and subsequent CCR removal activities had mitigated the threat to public health welfare, and safety and/or whether additional measures should be taken.

The Assessment of Corrective Measures report was finalized and placed into the operating record on January 9, 2019. The report indicates that CCR removal activities were appropriate and that no further action is warranted based on the observed conditions of the facility and laboratory testing of the soils and surface water.

The previous annual inspection report does not note any other deficiencies or releases, actual or potential structural weaknesses, or concern to the stability of

the land form. All environmental control systems were found to be in good operating condition and functioning as intended. Recommendations from the prior report (related to landfill operations and maintenance) were found to have been implemented.

CCR Disposal

i. The total in-place disposal quantity of CCR materials is presently estimated at approximately 67,745,590 tons (67,196,028 tons through December 2018 plus 549,562 tons through December 2019).

SITE INSPECTION

The site inspection was performed on October 21, 2019 by Mr. Southorn, and during which time efforts were focused on identification of standard geotechnical signs of distress or malfunction. Specific aspects such as slumping at the toe of slope, tensile cracking, abnormal or excessive erosion on the side slopes, slope bulging, and groundwater/surface water seepage or ponding were assessed. If present, these readily visible signs are potential indicators of structural weakness of the CCR Landfill unit.

Visual signs of distress or malfunction

No visual signs of distress or malfunction were observed during the inspection. Stormwater drainage features, slope appearance and stability, leachate conveyance mechanisms, and overall site conditions were assessed. Closed portions of the landfill exhibited well established vegetative cover.

Review of environmental control systems

Stage II disposal area stormwater channels, leachate collection, and intermediate cover areas are functioning as intended. With no evidence to the contrary, the bottom liner system for the Stage II disposal area is believed to be in good operating condition and functioning as intended.

Review of the protective ash layer over the Stage IIIA composite liner system appears to be constructed to the intent of the design and appropriate.

Stormwater controls that were impacted during the 2018 surficial release event were appropriately restored in 2018, but vegetation had not yet been established. At the time of the 2019 inspection, vegetation was observed to be healthy and well established (see Images 3437 and 3443 in the attached Photograph Log), and no CCR deposits were observed (Image 3531).

Review of Previously Recommended Actions

There were no deficiencies or releases identified during the 2018 annual inspection that required the owner or operator to perform corrective actions per §257.84(b)(5) other than actions that were already being performed associated with the CCR release. Recommendations were limited to the continued operation and maintenance of the facility and maintaining access to closed portions of the landfill for inspection purposes. These recommendations were found to have been followed, based on site conditions and the review of weekly inspection logs.

CONCLUSIONS

Changes in geometry

i. As of the date of the inspection, peak fill elevation in the active disposal area is approximately 1,465 feet mean sea level, with an average active disposal elevation of approximately 1,432 feet mean sea level.

ii. Stage IIIA protective ash layer placement, as previously described.

In-Place CCR Disposal Quantities

The total in-place disposal quantity of CCR materials is presently estimated at approximately 67,745,590 tons (67,196,028 tons through December 2018 plus 549,562 tons through December 2019).

Appearances of an actual or potential structural weakness of CCR unit

At the time of inspection, there were no signs of distress or malfunction that would indicate actual or potential structural weakness at the Ash Disposal Site.

Changes that may affect the stability or operation of the CCR Unit

There have been no changes to the inspected areas of the Ash Disposal Site that pose a threat or concern to the stability of the land form.

Other Items of Concern

No items of concern are noted.

RECOMMENDATIONS

1. Continue operation and maintenance in the active areas as currently performed.

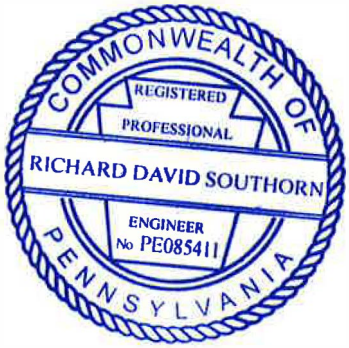
2. Ensure adequate access to the closed portions of the landfill to maintain the ability to perform weekly visual site structural inspections.

PROFESSIONAL ENGINEER'S CERTIFICATION

In accordance with §257.84(b) of the Rule, I hereby certify based on a review of available information within the facility's operating records and observations from my personal on-site inspection (including the photographs contained in Attachment 2), that the Conemaugh Ash Disposal Site does not exhibit any appearances of actual/potential structural weakness that would be disruptive to the normal operations of the Stage II/III CCR Unit. The unit is being operated and maintained consistent with recognized and generally accepted good engineering standards and practices.

Certified by: _____

Date: JAN 16, 2020



Richard Southorn, P.E., P.G.
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ATTACHMENTS

1. Site Map
2. Inspection Photo Log

REFERENCES

1. 2018 Conemaugh Generating Station Annual Landfill Operations Report.
2. Weekly and Periodic Landfill Inspection Reports, Nov 2018 – Oct 2019.
3. Major Permit Modification Application—Stage III Liner System, April 2014.
4. Conemaugh Stage III Permit Application Drawings, March 2014.
5. Assessment of Corrective Measures Report, January 2019.
6. 40 Code of Federal Regulations Part 257.

Attachment 1

Site Map

Attachment 2

Photo Log