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 23, 2018**
Report Date:	**January 16, 2019**

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 Conemaugh Generating Station (operated by GenOn Northeast Management Company), 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, Inc. [APTIM]) conducted an on-site inspection of the Ash Disposal Site on October 23, 2018. 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 18, 2018. Per §257.84(b)(4), the current report will be entered into the facility's operating record no later than January 18, 2019.

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 currently under construction). The permit modification for Stage III was issued by PADEP on August 26, 2015.

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 the composite liner for Phase IIIA (first phase) of Stage III was finalized in 2018. 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, 2017/2018 Weekly and Periodic Landfill Inspection Reports that have been completed since the 2017 Annual Inspection, 2017 Annual Landfill Operations Report, and the Solid Waste Permit No. 300876. During the site inspection, Mr. Southorn interviewed facility personnel (Mr. John Shimshock) 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 2018 Landfill Construction

i. The Stage III-Phase IIIA composite liner installation was completed in 2018 (portions were constructed in 2017). Protective ash was being placed over the composite liner at the time of construction.

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, with the exception of damage to run-on/run-off controls that was observed on August 8, 2018 following a large storm event.

ii. Annual inspections: The previous annual inspection report (for Calendar Year 2017) noted no deficiencies or releases, actual or potential structural weaknesses, or concern to the stability of the land form. All environmental control systems were in good operating condition and functioning as intended. Recommendations from the prior report (related to landfill operations and maintenance) are being implemented.

CCR Disposal

i. The total in-place disposal quantity of CCR materials is presently estimated at approximately 67,196,028 tons (66,490,373 tons through December 2017 plus 705,655 tons through December 2018).

SURFICIAL (NON-GROUNDWATER) CCR RELEASE

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. Upon discovery, Conemaugh Station informed PADEP, who conducted an inspection of the area on August 9, 2018. Conemaugh Station prepared and submitted a formal report of this incident to PADEP on August 13, 2018. As included in the report, the release most likely occurred during an extremely intense precipitation event on July 30, 2018, when contact stormwater overtopped a berm that had been temporarily lowered to facilitate access to the Stage III construction area. Pursuant to the requirements of §257.96(a) and (f), GenOn initiated an assessment of corrective measures on August 8, 2018 (the date of discovery), including corresponding notification to PADEP [§257.106(h)(7)], placement of such into the Station's operating records [§257.105(h)(9)], and posting to the publicly accessible website [§257.107(h)(7)].

APTIM representatives visited the site on September 26 and 28, 2018 to assess the extent of the CCR release to the ground surface, and to evaluate the adequacy of the interim measures undertaken thus far (CCR removal by vacuum truck) by Conemaugh Station and its contractor (R&L Development). APTIM walked the entire path of the CCR release starting at the access road located just south of the active portion of the Stage II landfill to the lower reaches of the East Valley Stream mitigation area. During this visit, APTIM confirmed that Conemaugh Station and

its contractor removed the majority of visible CCR from this area and effectively repaired the onsite erosion and sedimentation controls. However, several peripheral CCR deposits were identified for further cleaning, and which were addressed (again using the vacuum truck) by Conemaugh Station and its contractor on October 1-2, 2018.

During this year's annual inspection (conducted on October 23, 2018), I personally walked down the release area and obtained visual confirmation that the residually impacted locations had been appropriately addressed. Soil and surface water samples were subsequently collected to quantitatively document the adequacy of the overall cleanup efforts and corrective measures implementation. The final Assessment of Corrective Measures Report, further detailing the activities described herein, will be placed in the Conemaugh Station's operating record per §257.105(h)(10), noticed to PADEP per §257.106(h)(8), and posted to the publicly accessible website per §257.107(h)(8). The Assessment of Corrective Measures Report will also be incorporated into the 2018 Annual CCR Groundwater Monitoring and Corrective Action Report (completed no later than January 31, 2019) as required by §257.96(a).

SITE INSPECTION

The site inspection was performed on October 23, 2018 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 visible Stage III base liner system appeared to be constructed to the intent of the design and was appropriate.

Stormwater controls that were impacted during the surficial release event had been appropriately restored. The original height of the diversion berm has been restored to minimize the potential of recurrence (see Photo 2744 in attached Photo Log).

Review of Previously Recommended Actions

No corrective actions were required based on the findings of the 2017 Annual Inspection. 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 1,460 feet mean sea level, with an average active disposal elevation of approximately 1,430 feet mean sea level.

ii. Composite liner construction, as previously described.

In-Place CCR Disposal Quantities

The total in-place disposal quantity of CCR materials is presently estimated at approximately 67,196,028 tons (66,490,373 tons through December 2017 plus 705,655 tons through December 2018).

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

As previously noted, a surficial release occurred in 2018 during a heavy rain event that resulted in stormwater conveyance and run-off controls to be overwhelmed. Contact stormwater overtopped a diversion berm that had been temporarily lowered to facilitate access to the Stage III construction area. Based on review of completed site activities, it is the initial opinion of the certifying engineer that the appropriate repairs and clean-up activities appear to have been completed. The original height of the diversion berm has been restored to minimize the potential of future releases. These actions have been fully implemented and are currently deemed appropriate. No further action is considered necessary at this time. A final determination will be provided in The Assessment of Corrective Measures Report, which will also be incorporated into the 2018 Annual CCR Groundwater Monitoring and Corrective Action Report (completed no later than January 31, 2019) as required by §257.96(a).

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.

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).

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: RICHARD SOUTHORN

Date: JAN 16, 2019

01/16/2019

LICENSE EXPIRES 9/30/2019

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

Professional Engineer Registration No. PE 085411

Aptim Environmental & Infrastructure, Inc.

ATTACHMENTS

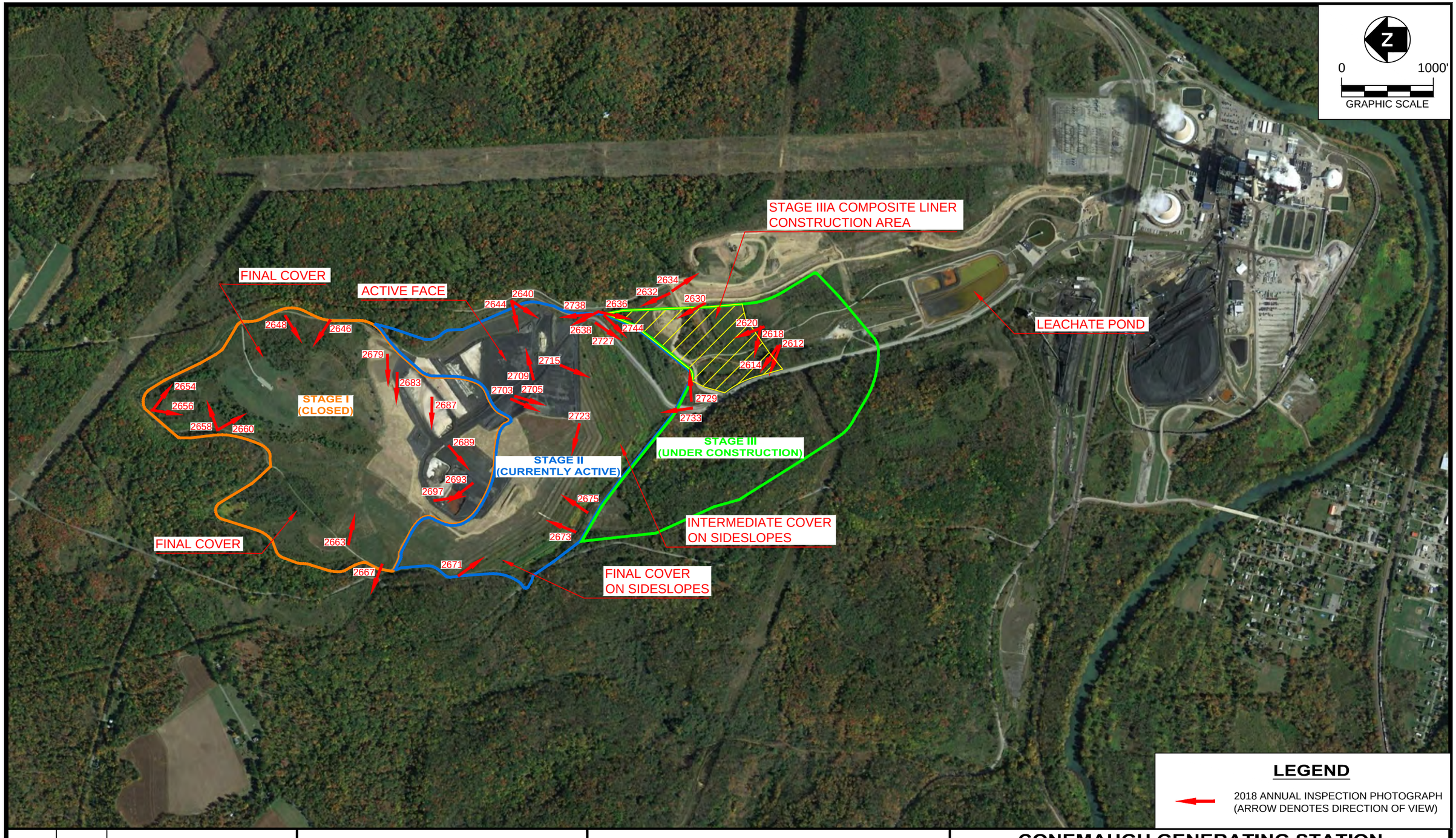
1. Site Map
2. Inspection Photo Log

REFERENCES

1. 2017 Conemaugh Generating Station Annual Landfill Operations Report.
2. Weekly and Periodic Landfill Inspection Reports, Nov 2017 – Oct 2018.
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



REV. NO.	DATE	DESCRIPTION

APTIM Environmental & Infrastructure, Inc.

CONEMAUGH GENERATING STATION
NEW FLORENCE, PENNSYLVANIA

PHOTOGRAPH LOCATION MAP

DRAWN BY:	APPROVED BY:	PROJ. NO.:	DATE:
BWM	RDS	1009144033	DECEMBER 2018

Attachment 2

Photo Log

Image: 2612 Date: 10/23/2018 Time: 9:14 AM Direction: West Description: Contact water channels – at toe of slope of Phase IIIA.	

Image: 2614 Date: 10/23/2018 Time: 9:15 AM Direction: Northwest Description: Leachate collection pipes.	

Image: 2618 Date: 10/23/2018 Time: 9:17 AM Direction: West Description: Phase IIIA construction area, placing bottom ash material over the drainage layer.	

Image: 2620 Date: 10/23/2018 Time: 9:17 AM Direction: North Description: Phase IIIA construction area, placing bottom ash material over the drainage layer.	

Image: 2630 Date: 10/23/2018 Time: 9:20 AM Direction: Northwest Description: Western edge of Stage III construction. Geotextile component of Phase IIIA drainage layer being installed.	

Image: 2632 Date: 10/23/2018 Time: 9:22 AM Direction: Northwest Description: Stage II stormwater run-on diversion channel (non-contact water). Clear, free of obstructions.	

Image: 2634 Date: 10/23/2018 Time: 9:22 AM Direction: Southeast Description: Stage II stormwater run-on diversion channel (non-contact water). Clear, free of obstructions.	

Image: 2636 Date: 10/23/2018 Time: 9:24 AM Direction: South Description: Stage II stormwater run-on diversion channel (non-contact water). Clear, free of obstructions. Phase IIIA construction area in background.	

Image: 2638 Date: 10/23/2018 Time: 9:24 AM Direction: Northwest Description: Stage II stormwater run-on diversion channel (non-contact water). Clear, free of obstructions.	

Image: 2640 Date: 10/23/2018 Time: 9:26 AM Direction: Southwest Description: Stage II active area. Well maintained. No ponding water.	

Image: 2644 Date: 10/23/2018 Time: 9:26 AM Direction: West Description: Gypsum pile in Stage II active area. Well maintained and graded. No sign of washouts or erosional issues.	

Image: 2646 Date: 10/23/2018 Time: 9:29 AM Direction: Northwest Description: Stage I Final Cover showing healthy vegetation that has no bare spots. No evidence of erosion or signs of instability.	

Project: Conemaugh 2018 Annual Inspection
Photographer: Richard Southorn

Image: 2648 Date: 10/23/2018 Time: 9:29 AM Direction: Southwest Description: Stage I Final Cover showing healthy vegetation that has no bare spots. No evidence of erosion or signs of instability.	

Image: 2654 Date: 10/23/2018 Time: 9:33 AM Direction: Southeast Description: Stage I Final Cover showing healthy vegetation that has no bare spots. No evidence of erosion or signs of instability.	

Image: 2656 Date: 10/23/2018 Time: 9:33 AM Direction: South Description: Stage I Final Cover showing healthy vegetation that has no bare spots. No evidence of erosion or signs of instability.	

Image: 2658 Date: 10/23/2018 Time: 9:35 AM Direction: East Description: Stage I Final Cover showing healthy vegetation that has no bare spots. No evidence of erosion or signs of instability.	

Image: 2660 Date: 10/23/2018 Time: 9:35 AM Direction: Southeast Description: Stage I Final Cover showing healthy vegetation that has no bare spots. No evidence of erosion or signs of instability.	

Image: 2663 Date: 10/23/2018 Time: 9:38 AM Direction: East Description: Stage I Final Cover showing healthy vegetation that has no bare spots. No evidence of erosion or signs of instability.	

Image: 2667 Date: 10/23/2018 Time: 9:39 AM Direction: West Description: Revetment mat that has been installed on final cover area of Stage I to improve drainage and eliminate water that was found to pond in this area. Water is not ponding and construction appears to have effectively remediated drainage concern.	

Image: 2671 Date: 10/23/2018 Time: 9:41 AM Direction: Southeast Description: Stage II sideslope terraces are well maintained with healthy vegetation. No evidence of instability or erosion.	

Image: 2673 Date: 10/23/2018 Time: 9:44 AM Direction: North Description: Stage II final cover downchute with revetment lining. Clear of obstructions. No structural damage observed.	

Image: 2675 Date: 10/23/2018 Time: 9:45 AM Direction: South Description: Vegetation on final cover along perimeter road of Stage II. Road is well maintained. Slopes show no signs of instability.	

Image: 2679 Date: 10/23/2018 Time: 9:55 AM Direction: West Description: Vegetation on final cover along perimeter road of Stage II. Road is well maintained. Slopes show no signs of instability.	

Image: 2683 Date: 10/23/2018 Time: 9:55 AM Direction: West Description: Stage II Intermediate cover area. Vegetation is healthy with no bare areas. No evidence of instability or erosion.	

Image: 2687 Date: 10/23/2018 Time: 9:55 AM Direction: West Description: Stage II Intermediate cover area. Vegetation is healthy with no bare areas. No evidence of instability or erosion.	

Image: 2689 Date: 10/23/2018 Time: 9:57 AM Direction: Southwest Description: Stage II active area. Good housekeeping, well graded. No signs of erosion or instability.	

Image: 2693 Date: 10/23/2018 Time: 9:57 AM Direction: Northwest Description: Stage II active area. CCR material is appropriately spread and compacted.	

Image: 2697 Date: 10/23/2018 Time: 9:59 AM Direction: South Description: Stage II active area. CCR material is appropriately spread and compacted.	

Image: 2703 Date: 10/23/2018 Time: 10:01 AM Direction: Southwest Description: Gypsum pile in Stage II active area.	

Image: 2705 Date: 10/23/2018 Time: 10:01 AM Direction: South Description: Gypsum pile in Stage II active area. Slopes are maintained to prevent erosion.	

Image: 2709 Date: 10/23/2018 Time: 10:01 AM Direction: East Description: A lift of CCR material placed in the active area of Stage II. Well maintained.	

Image: 2715 Date: 10/23/2018 Time: 10:03 AM Direction: South Description: Traffic control measures in the active area of Stage II.	

Image: 2723 Date: 10/23/2018 Time: 10:05 AM Direction: West Description: Intermediate cover area of Phase II. Vegetation is healthy with full coverage.	

Image: 2727 Date: 10/23/2018 Time: 10:07 AM Direction: Southwest Description: Contact water channel on inside toe of main haul road. Clear of debris.	

Image: 2729 Date: 10/23/2018 Time: 10:09 AM Direction: East Description: Spreading bottom ash protective material on the drainage layer of Phase IIIA leachate collection layer.	

Image: 2733 Date: 10/23/2018 Time: 10:10 AM Direction: North Description: Main haul road to active area. Road is well maintained.	

Image: 2738 Date: 10/23/2018 Time: 10:18 AM Direction: North Description: Contact water channel. Free of debris. Good condition.	

Image: 2744 Date: 10/23/2018 Time: 10:21 AM Direction: South Description: Newly constructed diversion berm along main haul road to prevent run-off water from leaving the landfill during rainstorms.