



CCR COMPLIANCE LOCATION RESTRICTIONS DEMONSTRATION REPORT CONEMAUGH ASH/REFUSE DISPOSAL SITE

Prepared for:



GenOn Northeast Management Company
Conemaugh Generating Station
New Florence, Pennsylvania

Prepared by:

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FIGURES

Figure 1 – Site Location Plan



1.0 INTRODUCTION AND PURPOSE

GenOn Northeast Management Company (GenOn) operates the coal-fired Conemaugh Generating Station located in New Florence, Pennsylvania. The Station utilizes the captive Ash/Refuse Disposal Site, located directly north of the generating station, for the purpose of managing coal combustion residuals (CCR).

In 2015, the *Disposal of Coal Combustion Residuals from Electric Utilities Final Rule* (CCR Rule) was enacted within the Federal Register under 40 CFR §257. The CCR Rule establishes technical requirements for CCR landfills and surface impoundments under Subtitle D of the Resource Conservation and Recovery Act (RCRA), which is the primary law regulating solid waste. Under the CCR Rule, the Conemaugh Station Ash/Refuse Disposal Site is designated as an “existing CCR landfill” as defined in §257.53. Multiple location restrictions are identified for landfills and surface impoundments to ensure that they are not placed in environmentally sensitive areas. These location requirements are defined under 40 CFR §257.60 through §257.64.

Per the requirements of §257.64, CCR landfills cannot be located within an unstable area. This report has been prepared to demonstrate that the Ash/Refuse Disposal Site is appropriately located to comply with this location restriction. Demonstration of compliance with §257.64 for an existing CCR landfill is required to be placed in the facility’s operating record [§257.105(e)] by October 17, 2018. In addition, the owner or operator must notify the State Director [§257.106(e)] that this demonstration has been placed in the operating record and on the owner or operator’s publicly accessible CCR internet site [§257.107(e)].

2.0 OVERVIEW OF LANDFILL

The Ash/Refuse Disposal Site is a landfill used for the disposal of CCR materials and other residual wastes generated at the Conemaugh Generating Station, and is operated/maintained in accordance with Pennsylvania Department of Environmental Protection (PADEP) Solid Waste Permit No. 300876. The Ash/Refuse Disposal Site is a valley fill landfill comprised of three stages. Stage I is located on the northern portion of the site and was closed prior to the implementation of the CCR Rule. Active operations are ongoing in Stage II and Stage III, located south of Stage I. The general location of the Ash/Refuse Disposal Site is shown on **Figure 1**.

3.0 LOCATION DEMONSTRATION

3.1 Unstable Areas (§257.64(a))

Per §257.64 of the Rule, “an existing or new CCR landfill, existing or new CCR surface impoundment, or any lateral expansion of a CCR unit must not be located in an unstable area unless the owner or operator demonstrates by the dates specified in paragraph (d) of this section that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted.”

APTIM evaluated the location of the Ash/Refuse Disposal Site for the presence of on-site or local unstable areas as defined in §257.53. Evaluation of the conditions listed in §257.64(b)(1)-(3) were conducted and are discussed in the following subsections. Based on this evaluation, APTIM concludes that the Ash/Refuse Disposal Site is not located within an unstable area is compliant with the requirements of §257.64(a).



The owner or operator must consider all of the following factors, at a minimum, when determining whether an area is unstable:

3.1.1 Unstable Factors Considered: Differential Settling (§257.64(b)(1))

On-site or local soil conditions that may result in significant differential settling;

Soils underlying the Ash/Refuse Disposal Site are comprised of silty sand and clayey silt to silty clay with varying quantities of sand and rock fragments. The soil zone beneath the Ash/Refuse Disposal site ranges in thickness from 3.5 to 46 feet thick with a typical thickness ranging from 18 to 27 feet. The in-place density of the granular soils is generally medium to very dense and the in-place consistency of the cohesive soils is generally stiff to hard but mostly very stiff.

The valley in which the Ash/Refuse Disposal Site is located has a history of industrial activities that include surface mining of coal and construction and operation of the disposal area itself. These industrial activities have resulted in significant disturbance of the soil zone underlying the valley bottom. Based on a review of historical test boring logs, the soils in the valley bottom are characterized by fill consisting of strip mine overturn and reworked alluvium. In contrast to the soils underlying the valley bottom, the slopes on either side of the valley where industrial activities have not occurred are underlain by residual soils created by in-place weathering of the bedrock.

The thickness of the residual soil zone is typically in the range of 10 to 15 feet. As noted, the fill in the valley bottom is largely comprised of strip mine overturn material consisting of silty sand and rock fragments. Settlement of the residual soil zone (on the valley sideslopes) under applied loads is expected to be minor based on the results of the Standard Penetration tests which indicate that granular soils are generally dense and the cohesive soils are generally stiff. Dense granular soil and stiff cohesive soil have low compressibility and undergo very minor settling when exposed to overburden forces. Similarly, the strip mine overturn material and reworked alluvium that underlie the valley bottom are generally non-compressible dense granular soils and not subject to appreciable settling under applied loads. Additionally, no loess deposits, which are glacial soils that can be collapsible under applied loads, underlie any portions of the Ash/Refuse Disposal Site, nor do any soils that would be subject to developing a “quick” condition.

Based on the information presented above, the Ash/Refuse Disposal Site is not underlain by soils that would result in significant differential settling.

3.1.2 Unstable Factors Considered: Geologic/Geomorphologic Features (§257.64(b)(2))

On-site or local geologic or geomorphologic features;

The Ash/Refuse Disposal Site is underlain by rocks of the Glenshaw Formation (Conemaugh Group) of the Pennsylvanian System and the upper part of the Allegheny Group. The Conemaugh Group is typically about 650 to 700 feet thick and comprised of interbedded sandstone, siltstone, shale, and claystone. Four (4) thin marine limestone beds are present in the Glenshaw Formation including the Ames, Woods Run, Pine Creek, and Brush Creek. The Ames, Woods Run, and Pine Creek limestone beds are typically in the range of 0.5 to 3 feet thick and are not conducive to karst development. The Brush Creek limestone bed can be up to 10 feet thick, but it commonly contains silt and clay and is also not conducive to karst development. The uppermost 150 feet of the Allegheny

Group underlying the Glenshaw Formation is also largely comprised of clastic sedimentary rocks, including the Butler and Freeport sandstones. No carbonate beds capable of karst development are present in the upper part of the Allegheny Group. Because of the absence of carbonate beds capable of karst development in either the Conemaugh Group or in the rock units of the upper portion of the Allegheny Group, no on-site or local geologic or geomorphic features capable of producing unstable conditions exist within the area of the Ash/Refuse Disposal Site.

3.1.3 Unstable Factors Considered: Human-made Features or Events (§257.64 (b)(3))

On-site or local human-made features or events (both surface and subsurface).

Deep mining of the Upper Freeport Coal, Lower Freeport Coal, and Lower Kittanning Coal Beds occurred within the Conemaugh Generating Station property. According to a study conducted by the John T. Boyd Company (Boyd), the Upper Freeport Coal Bed, which is discontinuous and of varying thickness in the area, was deep mined in the Florence Mining Company's Florence No. 2 Mine. This mine is located mostly west and southwest of the Ash/Refuse Disposal Site. The mine operated from 1970 to 1992 when it was abandoned and sealed. Per the Boyd report, the Upper Freeport Coal Bed ranges from 36 to 84 inches thick in the area where it was mined, but is only 0 to 24 inches thick in the area of the Ash/Refuse Disposal Site and has not been deep mined beneath the Stage II and Stage III disposal areas.

Per the Boyd Report, the Lower Kittanning Coal Bed is 0 to 83 inches thick, has an average thickness of 52 inches, and was mined in the Conemaugh No. 1 Mine by various companies, including the North American Coal Company between 1914 and 1982. The Conemaugh No. 1 mine was later renamed the Penelec No. 5 Mine which was operated by the Pennsylvania Electric Company from 1940 to 1989. According to a map showing the limits of the Conemaugh No. 1/Penelec No. 5 Mine, the Lower Kittanning Coal Bed was underground mined mostly east of the Ash/Refuse Disposal Site, but the mine did extend beneath the current southern limits of the Stage III disposal area.

The potential for mine collapse and subsidence has been previously evaluated and reported by GAI Consultants, Inc. (GAI). GAI evaluated the strain on the Ash/Refuse Disposal Site bottom liner system that would result from a mine subsidence event near the Ash/Refuse Disposal Site. GAI determined that the ground strain due to settlement is unlikely to exceed the maximum strength properties of the bottom liner systems beneath Stage II and Stage III. Therefore, key environmental safeguards within the bottom liner system will not be adversely impacted.

4.0 SUMMARY AND CONCLUSIONS

Based on the evidence presented above in Sections 3.1.1 through 3.1.3, the Ash/Refuse Disposal Site is not located in an unstable area and meets the requirements of §257.64(b)(1)-(3), and in turn, the requirements of §257.64(a).



5.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION (§257.64(c))

I, the undersigned Professional Engineer licensed in the Commonwealth of Pennsylvania, am familiar with the requirements of the CCR Rule Section 257. It is my professional opinion that the CCR landfill described in this report meets the requirements of §257.64(a). The basis of this professional opinion is described within this report and is limited to the available information known to APTIM. This professional opinion is not to be interpreted or construed as a guarantee, warranty, or legal opinion.

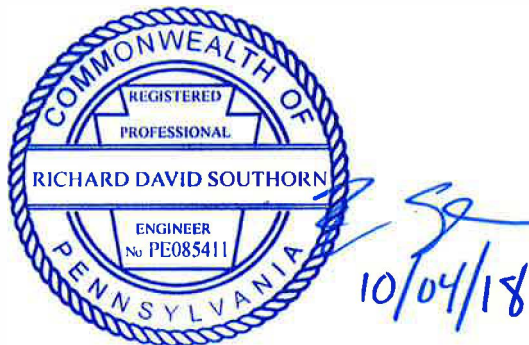
Name of Professional Engineer: Richard Southorn, P.E., P.G.,

Company: APTIM

PE Registration State: Pennsylvania

PE Registration Number: PE085411

Professional Engineer Seal:



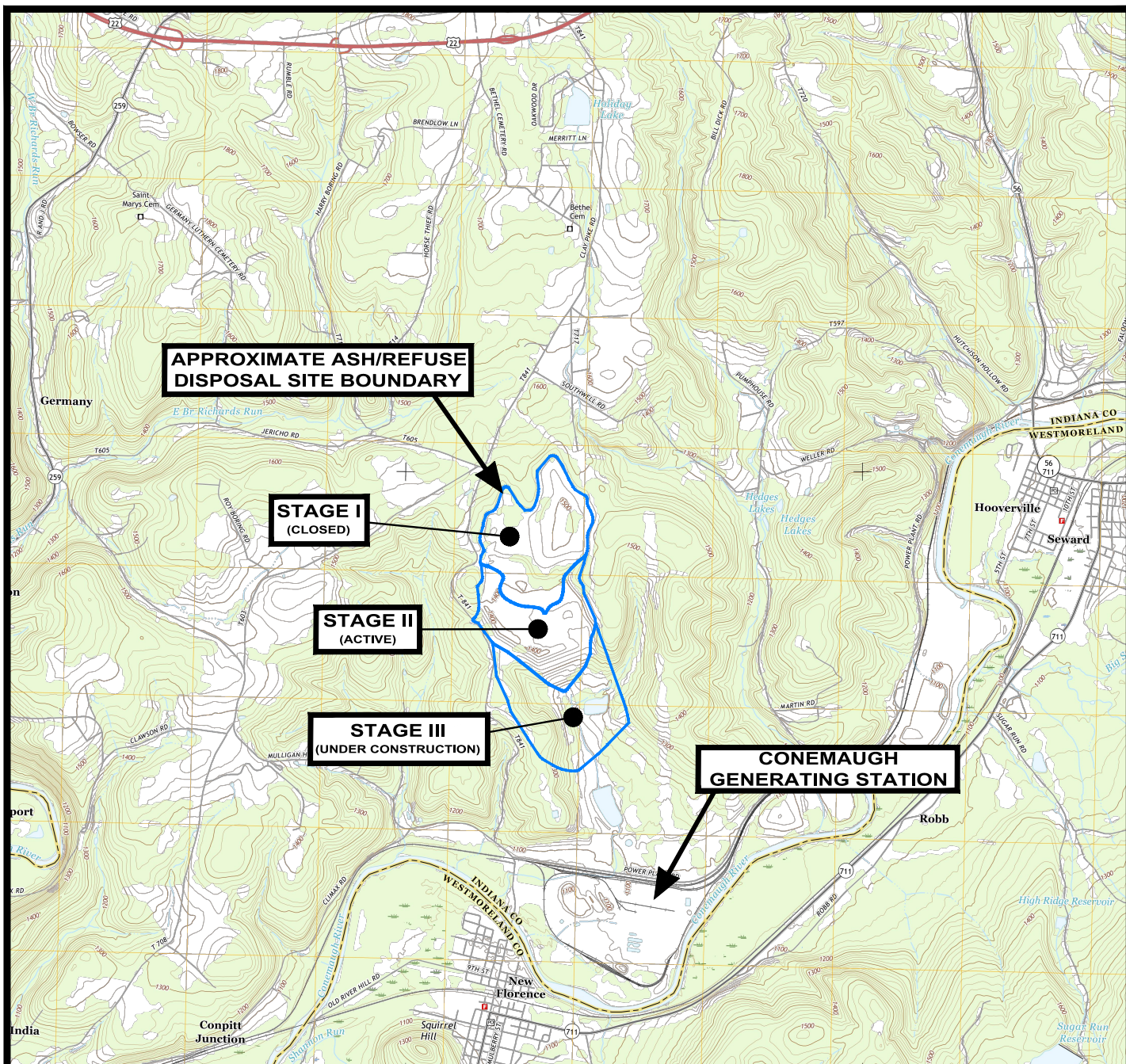
6.0 REFERENCES

“Coal and Mineral Resource Study Conemaugh Generating Station Residual Waste Disposal Site, Indiana County Pennsylvania,” John T. Boyd Company, December 1994.

“Pennsylvania Department of Environmental Protection Residual Waste Major Permit Modification, Conemaugh Station Disposal Site, New Florence, Pennsylvania, Volume 1, Form 6R – Geologic Information,” GAI Consultants, Inc., May 1997.

U.S. Environmental Protection Agency (2015), Hazardous Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, Federal Register Volume 80, No. 74 40 CFR Parts 257 and 261, April 17, 2015.



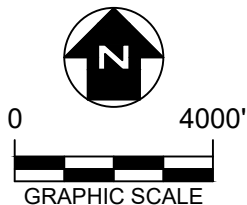


LEGEND

APPROXIMATE CCR UNIT BOUNDARY

NOTES

1. TOPOGRAPHY OBTAINED FROM USGS 7.5-MINUTE SERIES, NEW FLORENCE QUADRANGLE, PENNSYLVANIA, 2016.
2. ALL BOUNDARIES ARE APPROXIMATE



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**CONEMAUGH
GENERATING STATION**

**FIGURE 1
SITE LOCATION PLAN**

| | | |
|------------------|-----------------------|------------------|
| APPROVED BY: RDS | PROJ. NO.: 1009144003 | DATE: SEPT. 2018 |
|------------------|-----------------------|------------------|