CCR COMPLIANCE
LOCATION RESTRICTIONS DEMONSTRATION REPORT
CHESWICK ASH DISPOSAL SITE

Prepared for:

NRG Power Midwest LP
Cheswick Generating Station
Springdale, Pennsylvania

Prepared by:

Aptim Environmental & Infrastructure, Inc.
St. Charles, Illinois

October 2018

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Figure 1 – Site Location Plan

1.0 INTRODUCTION AND PURPOSE

NRG Power Midwest LP, a subsidiary of GenOn Energy, Inc. (GenOn), operates the coal-fired Cheswick Generating Station located in Springdale, Pennsylvania. The Station uses the captive Lefever Landfill (Ash Disposal Site), located approximately 3.5 miles northwest of the Station proper, for the purpose of disposing 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. 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 requires that CCR landfills cannot be located within an unstable area. This report has been prepared to demonstrate that the Ash Disposal Site is appropriately located to comply with this location restriction. Demonstration of compliance with §257.64 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 been placed in the operating record and on the owner or operator's publicly accessible CCR internet site [CFR §257.107(e)].

2.0 OVERVIEW OF LANDFILL

As noted, the Ash Disposal Site is used for the disposal of CCR materials and other residual wastes generated at the Cheswick Station, and is operated/maintained in accordance with Pennsylvania Department of Environmental Protection (PADEP) Solid Waste Permit No. 300720. Active operations are ongoing in the South Valley (Phase I; 51 acres), while the North Valley (Phase II; 31 acres) remains as an unpermitted potential future phase within the Solid Waste Permit boundary. If constructed, the North Valley would be considered a new CCR Landfill per the Rule and the required location restriction assessment (§§257.60-257.64) would be completed at that time. The general location of the Ash Disposal Site is shown on **Figure 1**.

3.0 LOCATION DEMONSTRATIONS

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 Disposal Site for the presence of on-site or local unstable areas as defined in §257.53. Evaluations 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 Disposal Site is not located within an unstable area and 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;

The Ash Disposal Site is underlain by a layer of colluvial/residual soils consisting of silty clay, sandy silt, and trace rock fragments, and the bedrock which consists of the Casselman and Glenshaw Formations of the Conemaugh Group. The colluvial/residual soils average 15 feet in thickness. There are areas under the Ash Disposal Site which are made up of decomposed siltstone or silty claystone, and are classified as soft. However, based upon review of boring logs and known geology of these areas, it has been determined that they are not likely loess deposits which can be collapsible under applied loads. Additionally based on the current topography and prior inspections by the certifying engineer, there is no evidence of significant differential settlement. Based on this information, APTIM concludes that the on-site soils do not constitute an unstable condition and will not cause excessive settlement of the Ash Disposal Site.

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

On-site or local geologic or geomorphologic features;

The Ash Disposal Site was evaluated for the presence of on-site or local geologic and geomorphologic features, including the presence of karst terrain, steep slopes, and sinkholes. The Ash Disposal Site is underlain by the Casselman Formation, which displays cyclical patterns of claystone, sandstone, shale, coal, and limestone, and the Glenshaw Formation, which displays patterns of interbedded claystone, siltstone, sandstone, shale, and limestone. The limestone within these units is typically thin and not conducive to karst development. Carbonate beds that play a large role in karst development were not encountered in either of the rock formations, as determined through a review of boring logs. Additionally, no karst development, sinkholes, or underground caves are known to have occurred on site. Based on a review of this information and site inspections by the certifying engineer, it was concluded that there is a low probablitity that local geologic or geomorphologic features would feasibly result in an unstable condition at the Ash 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).

The location of the Ash Disposal Site was evaluated for the presence of on-site or local human-made features or events, including surface and subsurface mines, extensive oil and gas extractions, and sources of rapid groundwater drawdown that could feasibly impact the Ash Disposal Site.

Deep mining of the Upper Freeport Coal has occurred beneath the Ash Disposal Site. Coal was mined from the Monarch and Harwick mines until operations ceased in 1970. The potential for mine collapse and subsidence has been previously evaluated and reported in GAI Consultants, Inc. *Final Report – Geotechnical Summary – Proposed Fly Ash Disposal Area – South and North Valley (1979)*. This report indicates that the pillar extraction method was utilized accompanied by a clean roof break. This method

reportedly results in complete subsidence of the ground within a few years, making future subsidence issues unlikely. GAI indicated that if subsidence were to occur, it would likely be equal to 40 to 60 percent of the thickness of the mined coal seam. This would result in a total subsidence of 3-4 feet and would not lead to unsafe conditions.

It is additionally noted that GAI recommended operational actions to ensure stability of the Ash Disposal Site, which have been followed. Therefore, it may be concluded that the site will not be impacted by adverse effects related to deep mining or human-made features.

Based on the evidence presented above in Sections 3.1.1 through 3.1.3, the Ash 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).

4.0 SUMMARY AND CONCLUSIONS

It is the opinion of APTIM that the Ash Disposal Site is appropriately located to conform with the location restriction established in §257.64.

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 meet 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.

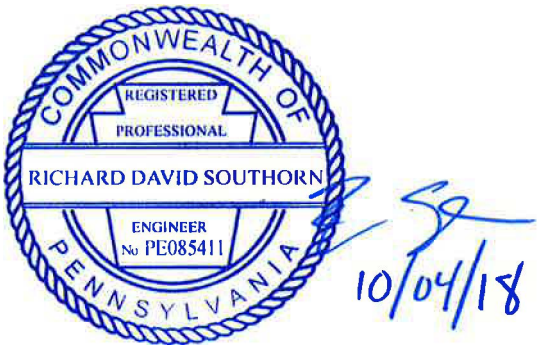
Name of Professional Engineer: Richard Southorn, P.E.,P.G.

Company: APTIM

PE Registration State: Pennsylvania

PE Registration Number: PE085411

Professional Engineer Seal:



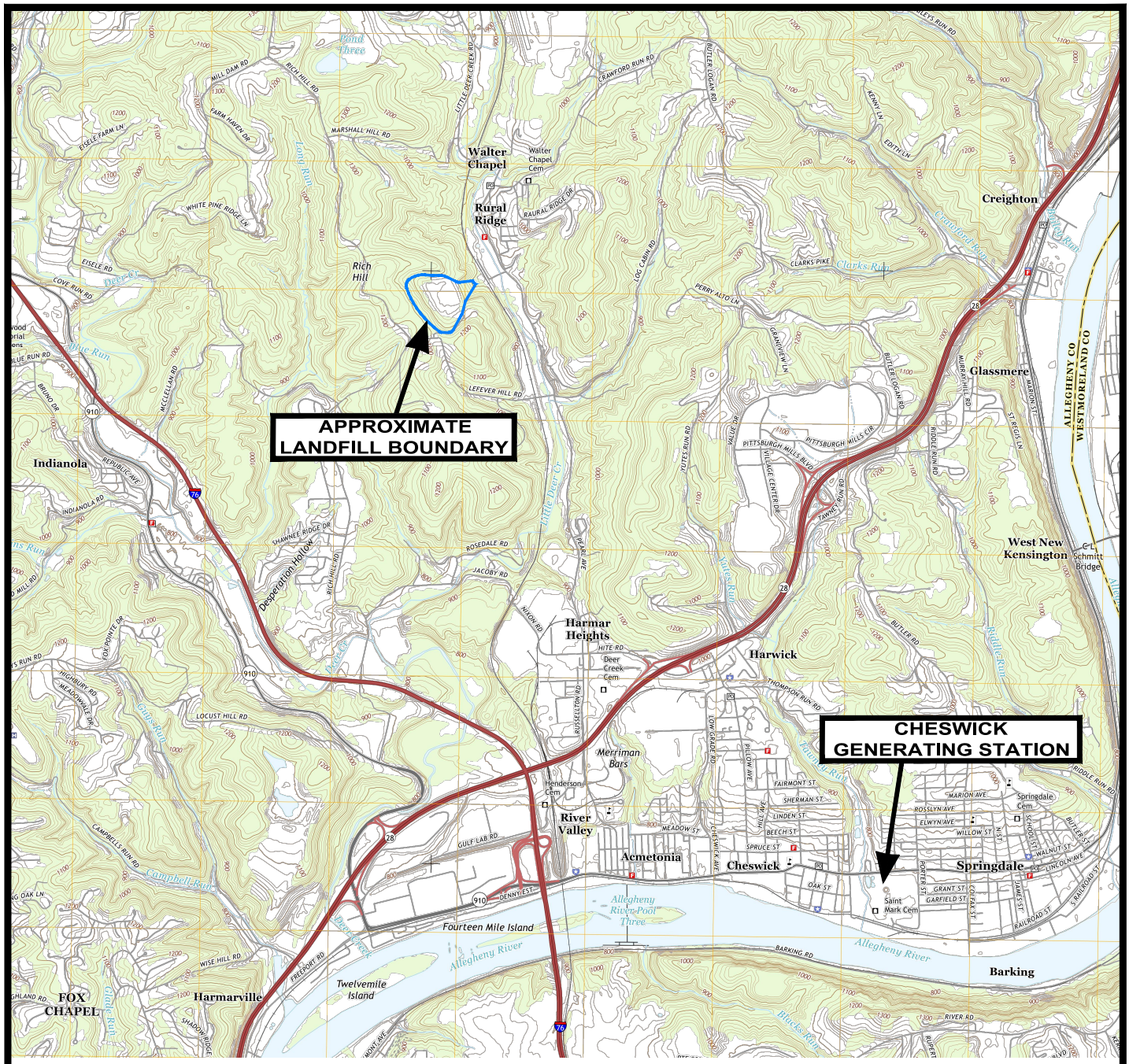
6.0 REFERENCES

APTIM (2018), CCR Compliance Groundwater Monitoring and Corrective Action Annual Report Bottom Ash Ponds and Ash Disposal Site.

Duquesne Light Company (1979), Cheswick Power Station Application for Permit for Solid Waste Disposal Facilities Cheswick Disposal Area.

GAI Consultants, Inc., Final Report – Geotechnical Summary – Proposed Fly Ash Disposal Area – South and North Valley (1979).

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

N

0 4000'

GRAPHIC SCALE

NOTES

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

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GenOn

CHESWICK GENERATING STATION

FIGURE 1
SITE LOCATION PLAN

APPROVED BY:	RDS	PROJ. NO.:	1009134004	DATE:	SEPT. 2018

T:\AutoCAD\Projects\NRG\CCR - Location Evaluation Figures\Cheswick\Landfill\Figure 1 - Site Location (Landfill).dwg, 9/26/2018 2:55:42 PM, AutoCAD PDF (High Quality Print).pc3