



**CCR COMPLIANCE
LOCATION RESTRICTIONS DEMONSTRATION REPORT
NEW CASTLE ASH LANDFILL**

Prepared for:



NRG Power Midwest LP
New Castle Generating Station
West Pittsburg, Pennsylvania

Prepared by:

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

October 2018

TABLE OF CONTENTS

1.0 INTRODUCTION AND PURPOSE	1
2.0 OVERVIEW OF LANDFILL	1
3.0 LOCATION DEMONSTRATIONS	2
3.1 UNSTABLE AREAS (§257.64(A)).....	2
3.1.1 Unstable Factors Considered: Differential Settling (§257.64(b)(1)) ...	2
3.1.2 Unstable Factors Considered: Geologic/Geomorphologic Features	
(§257.64 (b)(2))	2
3.1.3 Unstable Factors Considered: Human-made Features or Events	
(§257.64 (b)(3))	3
4.0 SUMMARY AND CONCLUSIONS	3
5.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION (§257.64(C)).....	4
6.0 REFERENCES.....	5

FIGURES

Figure 1 – Site Location Plan



1.0 INTRODUCTION AND PURPOSE

NRG Power Midwest LP, a subsidiary of GenOn Energy (GenOn), operates the coal-fired New Castle Generating Station located in West Pittsburg, Pennsylvania. The Station utilizes the New Castle Plant Ash Landfill (Ash Landfill) located directly north of the generating station, 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, CCR landfills cannot be located within an unstable area. This report has been prepared to demonstrate that the Ash Landfill 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 Landfill is situated north of the New Castle Generating Station proper. Prior to Landfill development, an impoundment occupying an area of approximately 120 acres was utilized for the disposal of sluiced fly ash and bottom ash. These operations took place from approximately 1939 to 1978. Following the installation of electrostatic precipitators at the Station, "dry" fly ash was disposed on the dewatered impoundment area from 1978 to 1984. Beginning in 1984, CCR (including "dry" fly ash and dredged bottom ash) have been placed in this area.

In 1997, the Pennsylvania Department of Environmental Protection (PADEP) issued Solid Waste Permit No. 300818 for the Ash Landfill, permitting construction and operation of Stages 1, 2, and 3A. In April 2008, a permit modification was issued for Stages 4, 5, 6, and 7, which together comprise a vertical expansion of the Ash Landfill over top of the previously PADEP-permitted stages. Stage 4 is currently the active disposal area.

The currently permitted Ash Landfill occupies an area of approximately 60 acres. In June 2016, the Station successfully completed a natural gas addition project and began operating with this new fuel source (the ability to run on coal has still been maintained). As a result, disposal of CCR in the Stage 4 area has significantly decreased since this conversion. Intermediate cover has been installed over the majority of the previous active face of Stage 4. The general location of the Ash Landfill 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 Landfill 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 evaluated and are discussed in the following subsections. Based on this evaluation, APTIM concludes that the Ash Landfill 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 Landfill is located along the southeastern edge of the Allegheny Plateau consisting of glacial outwash deposits. The Ash Landfill is generally underlain by a layer of interbedded silt, silty sand and gravel, sandy silt, sandstone, and the bedrock which consists of the Pennsylvania-Pottsville Formation. The soil zone beneath the Ash Landfill is generally composed of silt, silty sand and gravel, and sandy silt. This soil zone ranges from 10 to approximately 40 feet thick with a typical thickness of 25 feet. Based upon review of boring logs and known geology of this area, it has been determined that the presence of loess deposits is not likely, as these deposits 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 believes the on-site soils do not constitute an unstable condition and will not cause excessive settlement of the Ash Landfill.

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

On-site or local geologic or geomorphologic features;

As described above, the Ash Landfill is located on the southeastern edge of the glaciated portion of the Allegheny Plateau. Glacial outwash was deposited in the Beaver River valley during the glacial periods. Bedrock underlying the outwash in the vicinity of the site consists of Pennsylvanian-age Homewood sandstone and Mercer shale. The outwash thickness in the vicinity of the Ash Landfill is approximately 30 feet thick. The glacial outwash in this area is not conducive to karst development. Carbonate beds that play a large role in karst development were not encountered in either of the rock formations. Additionally no karst development, sinkholes, or underground cavers are known to have occurred on site and are not believed to be a hazard for future formation within the



bedrock. Based on a review of this information and site inspections, it was concluded that there are no local geologic or geomorphologic features that could feasibly result in an unstable condition at the Ash Landfill.

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 Landfill 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 Landfill.

A review of the PADEP Mine Map Atlas as well as the Oil and Gas Mapping application indicate that there are no surface mines, subsurface mines, or oil and gas extraction zones located within a 5 mile radius of the Ash Landfill. 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 Landfill 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 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.

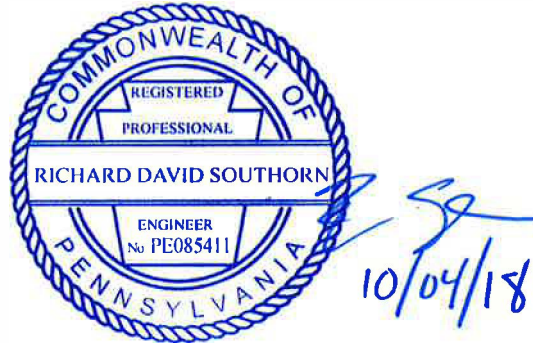
Name of Professional Engineer: Richard Southorn, P.E.,P.G.

Company: APTIM

PE Registration State: Pennsylvania

PE Registration Number: PE085411

Professional Engineer Seal:



6.0 REFERENCES

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

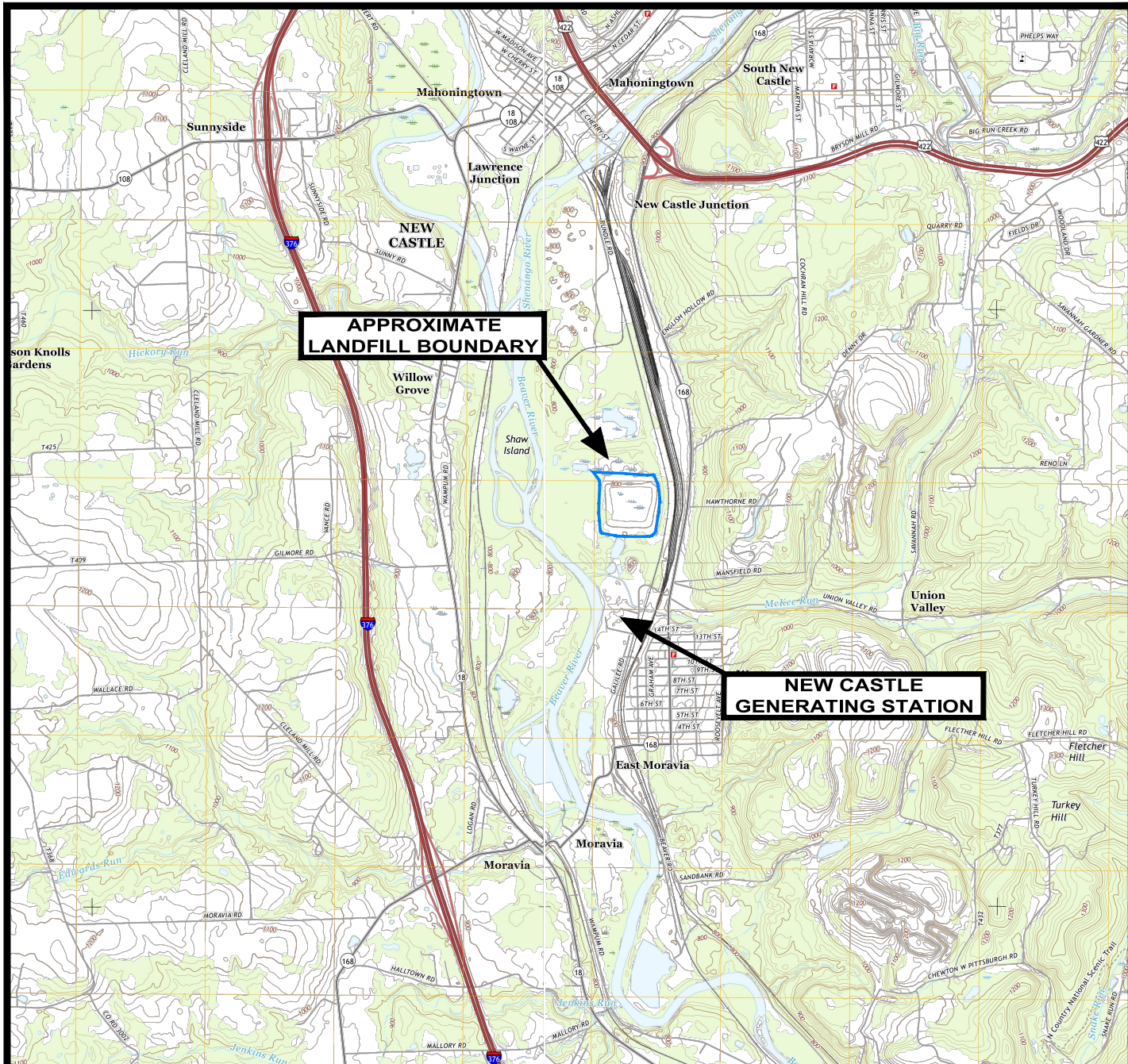
Civil & Environmental Consultants, Inc. (2008), Application for Major Permit Modification for Vertical Expansion and Permit Renewal

Pennsylvania Department of Environmental Protection (2018) Pennsylvania Oil and Gas Mapping Application

Pennsylvania Department of Environmental Protection (2018) Pennsylvania Mine Map Atlas and Pennsylvania Historic Underground Mine Map Inventory System (PHUMMIS)

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.





**APPROXIMATE
LANDFILL BOUNDARY**

**NEW CASTLE
GENERATING STATION**

LEGEND

— APPROXIMATE CCR UNIT BOUNDARY

NOTES

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



**APTIM Environmental
& Infrastructure, Inc.**

APTIM Environmental & Infrastructure, Inc. has prepared this document for a specific project or purpose. All information contained within this document is copyrighted and remains intellectual property of APTIM Environmental & Infrastructure, Inc. This document may not be used or copied, in part or in whole, for any reason without expressed written consent by APTIM Environmental & Infrastructure, Inc.



**NEW CASTLE
GENERATING STATION**

**FIGURE 1
SITE LOCATION PLAN**

APPROVED BY: RDS	PROJ. NO.: 1009194003	DATE: SEPT. 2018
------------------	-----------------------	------------------