COAL COMBUSTION RESIDUAL CLOSURE PLAN

FOR

BRUNNER ISLAND ASH BASIN No. 6
EAST MANCHESTER TOWNSHIP
YORK COUNTY, PENNSYLVANIA

Prepared for:
BRUNNER ISLAND, LLC

Prepared by:
ADVANCED GEOSERVICES CORP.

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Project No.:2011-2740

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1.0 CERTIFICATION

This document provides a written Closure Plan for Brunner Island Ash Basin No. 6 located in East Manchester Township, York County, Pennsylvania and provides the information identified in 40 CFR Parts 257.102(b).

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Senior Project Consultant

2.0 INTRODUCTION

This Closure Plan for Brunner Island Ash Basin No. 6 (the Basin) was prepared by Advanced GeoServices Corp. (Advanced GeoServices) on behalf of Brunner Island, LLC. The planned closure complies with the recent Combustion Coal Residual (CCR) regulations developed by the United States Environmental Protection Agency (Section 257.102 (b) of the Federal Register, Vol. 80, No. 74, published on April 17, 2015), referred to in this document as the CCR Closure Regulations.

The closure plan describes the steps necessary to close the Basin at any point during its active life consistent with recognized and generally accepted good engineering practices as described in section 257.101(b) of the Federal Register. According to section 257.102 of the Federal Register, the written closure plan shall include the following elements:

- A narrative description of how the CCR unit will be closed.
- A description of the procedures to remove the CCRs, if the CCRs are to be removed for closure.
- A description of the final cover system, if the CCRs are to remain in place for closure. Since the CCRs are being removed, this portion of the plan is unnecessary.
- An estimate of the maximum inventory of CCRs over the active life of the CCR unit.
- A schedule for completing all activities necessary to satisfy the closure criteria.

Details regarding these elements (CCR Closure) are described in this document and include the CCR requirements associated with sections 257 and 261 of the Federal Register.

The CCR unit (Basin) is also regulated by the Pennsylvania Department of Environmental Protection (PADEP) as a Residual Waste Disposal Impoundment under Chapter 289 of the PADEP Residual Waste Regulations (Permit No. 301300). It also has a Dam Safety Permit (Permit No. D67-496) and an NPDES Industrial Waste Discharge Permit (Permit No. PA 0008281). Brunner Island LLC has received PADEP approval for closure (PADEP Closure) of the Basin by excavating and transporting all the CCRs off-site for beneficial use. In some cases, the specific requirements of the closure approved by the PADEP and the CCR Closure are different. However, the general approach for closure of the Basin will be to remove the CCRs from the CCR unit and beneficially reuse these materials at an off-site location.

More detailed engineering plans and details associated with the phased PADEP Closure are provided with the December 2013 Residual Waste Major Permit Modification prepared by Advanced GeoServices, which was approved by PADEP on November 24, 2014.

3.0 PROJECT DESCRIPTION NARRATIVE

The Basin is located at the Brunner Island Steam Electric Station along the Susquehanna River in East Manchester Township, York County, Pennsylvania. A Site Location Plan and Site Plan of the Basin are provided as Figure 1 and Figure 2, respectively.

The Basin is a continuous ring dam and the northern and central portions of the Basin contain several stockpiles of soil and ash. The grades at the southern portion of the Basin are relatively lower and precipitation which falls on the Basin footprint is discharged at the south end. The water from the coal ash storage area of the Basin is initially discharged to a Polishing Pond through a stop log structure at the south end of the Basin. The Polishing Pond allows additional holding time of the water which facilitates sedimentation processes before the water is discharged to the Susquehanna River.

In its existing condition, the Basin has a maximum height above the surrounding grade of approximately 39 feet with interior slopes of 2.5H:1V and exterior slopes of 2H:1V, and an area of contained ash and water of about 70 acres. The interior slopes of the Basin are lined with clay.

Fly ash and bottom ash is currently being excavated from the Basin for beneficial use in accordance with the PADEP Solid Waste Permit submitted in December 2013 and approved by the PADEP on November 24, 2014. The Basin also currently receives bottom ash sluice water (CCR) and non-CCR wastewater for treatment under the PADEP NPDES Industrial Waste Discharge Permit. The Basin has a pH control building on the earthen dike located between the southern portion of the Basin and the Polishing Pond. Water discharges from the Polishing Pond to the Susquehanna River through two 60-inch diameter risers and a 48-inch diameter concrete pipe. The concrete pipe has a flapper valve at the discharge end to prevent the flow of the Susquehanna River from entering the Polishing Pond.

4.0 PLANNED CLOSURE APPROACH

A Solid Waste Permit amendment to close the Basin through excavation and removal of CCRs for beneficial use has been obtained from the PADEP and activities at the Basin are proceeding in general accordance with the approach and sequencing provided below. Closure under the CCR Rule will follow the same approach.

4.1 SEQUENCING OF CLOSURE (REMOVAL FOR BENEFICIAL USE)

Phase 1 - Scavenging Phase (This phase has been initiated and is ongoing)

1. Mobilize the necessary labor, materials, equipment, and field facilities for the proper completion of the work. Establish vertical and horizontal survey control, as needed, and surveying of construction operations to establish locations and elevations.

2. Prepare the Site including the establishment of construction entrances and installation of the vehicle wash area.

3. Remove the soil and ash piles within the Basin and subsurface ash to within two feet of the saturated ash elevation. These activities may be performed simultaneously with the Phase 2 work activities.

Phase 2 - Dewatering

1. Modify the discharge structure of the ash storage area of the Basin as necessary to equip the outlet structure with skimmer(s) to facilitate dewatering to create a sedimentation basin at the southern end of the Basin.

2. Dewater the Basin to the bottom of the drop inlet structure in the sedimentation basin. Water will likely remain in the sedimentation basin below the level of the Basin water intake. The water level will continue to be controlled by the use of the skimmers throughout the CCR removal activities.

Phase 3A - Bulk Excavation Phase

1. After the Basin is dewatered, bulk excavation of the ash will be performed. The Basin will be divided into excavation areas and the bulk removal activities will proceed northward from the sedimentation basin area.

2. Brunner Island, LLC will evaluate the stability of the berms and exposed ash surfaces near recently dewatered areas before initiating ash removal activities in the designated excavation areas. The evaluation may include soil sampling and geotechnical analysis.

3. Following approval of the geotechnical conditions of the sloped working face, ash removal activities on the dewatered working slope will begin.

4. The excavated ash will be loaded onto trucks with excavators and front end loaders. During this phase of the project, stormwater runoff will continue to be managed through the existing discharge structure at the southern end of ash storage portion of the Basin. All ash removal activities are within the Basin footprint which is encompassed by the haul road. The existing sedimentation basin area will continue to be utilized to reduce turbidity prior to discharge of water to the Polishing Pond, and eventually to the Susquehanna River, under the existing PADEP NPDES Industrial Waste Discharge Permit.

5. After removal of the ash in each area, including the Polishing Pond, ash removal activities within the Basin will be documented by a Professional Engineer and periodically reviewed by PADEP. The end point for ash removal for the PADEP Closure will be based on visual observations that all ash has been removed. Survey documentation of ash removal areas will be performed once ash removal is complete.

6. Upon completion of the survey documentation, the ash removal areas will be stabilized with vegetation unless a stabilized rock face/subgrade exists.

Phase 3B - CCR Closure Decontamination (not required for the PADEP Closure)

This phase will involve decontamination of any releases from the Basin through removal and/or natural attenuation to meet CCR standards identified in Section 257.102 (c). Any soils removed will be managed in accordance with PADEP residual waste and PADEP Act 2 regulations. The excavation of contaminated soils will be accomplished with the same equipment used to excavate the CCRs which are being beneficially reused. CCR Closure will be considered complete when groundwater monitoring concentrations do not exceed groundwater protection standards established pursuant to Section 257.95(h) for Appendix IV constituents.

Phase 4 - Dike Breaching and Soil Cover Phase

After the removal of all visual ash under Phase 3A and any soils under Phase 3B is complete, the excavation subgrade of the Basin will be covered with up to two feet of soil. The soil will be obtained from breaching the existing dikes at the southeastern corner of the Basin. The breach will be created to direct surface water runoff to the Susquehanna River. The planned breach activities are as follows:

1. Remove the existing outlet structure and piping associated with the sedimentation basin discharge to the Polishing Pond.

2. Remove the pH control building and associated above ground storage tanks and fencing.

3. Excavate and remove the Polishing Pond concrete discharge pipe and associated water management features (valve, riser structure, etc.), and construct a swale from Polishing Pond to the Susquehanna River.

4. Regrade the Polishing Pond utilizing primarily soils from the adjacent berm.

5. Stabilize the soil cover and all disturbed areas.

6. Following stabilization, remove all temporary erosion and sediment controls.

Breach planning and permitting shall be coordinated with the PADEP Dam Safety Office. The specific work scope may vary to address required regulations at the time the work is completed. As noted above, Phase 4 activities are not associated with the CCR regulations or the CCR closure.

4.2 DESCRIPTION OF FINAL COVER SYSTEM

The CCR regulations require a description of the final cover system. Current plans call for the complete removal and beneficial reuse of the CCRs in the Basin. Since the CCRs are being removed, a final cover system for the Basin is not required and this portion of the plan is unnecessary.

However, if for some reason removal and beneficial reuse of the CCRs is not possible, the maximum area which is associated with current conditions which would need to be capped is about 70 acres. As work proceeds and coal ash is removed from the Basin for beneficial reuse purposes, the volume and area of coal ash will be reduced.

5.0 INVENTORY OF CCRS AND SCHEDULE OF CLOSURE ACTIVITIES

A description of the maximum inventory of CCRs within the Basin as well as a schedule of the closure activities is provided below.

5.1 MAXIMUM INVENTORY OF CCRS

The maximum inventory of CCRs within the Basin is estimated to be about 2,396,000 tons of CCRs on a dry weight basis. This estimate was provided by Brunner Island, LLC based on a feasibility study of site conditions completed by a vendor who is beneficially reusing the CCRs. In addition, the maximum amount of water in the ash has been estimated to be about 225 million gallons.

As the CCRs are removed and the Basin is dewatered, the water and CCRs present will be reduced.

5.2 SCHEDULE OF CLOSURE ACTIVITIES

In preparation of the PADEP Closure, Brunner Island, LLC coordinated an effort to develop a reasonable estimate of the amount of materials which could be sent off-site each year. The following significant factors were considered in the analysis:

- The CCR requirements for onsite storage and utilization rates of the vendors who are beneficially reusing the CCRs. The beneficial reuse of CCRs at off-site locations is dictated in part by economic conditions and localized market conditions. To address market uncertainties, Brunner Island, LLC has established a long-term agreement with a primary off-site vendor who is beneficially reusing the CCRs.

- The concerns of regulators (PADEP and PennDOT) associated with truck traffic to haul the CCRs to the off-site vendor and management of the onsite CCR removal process.

- The concerns of the community associated with excavation and off-site trucking of the CCRs.

Based on the analysis and input described above, Brunner Island, LLC developed an estimate of about 150,000 dry tons of CCRs per year which could reasonably and feasibly be sent off-site. Considering this annual removal rate, the removal of the 2,396,000 tons of CCRs present within the Basin will provide an estimated 16 year supply of materials to be beneficially reused.

Closure under the CCR Rule will similarly be accomplished by removal and excavation of CCR followed by decontamination of the Basin. CCR removal began in July 2015. The timeframe required to complete CCR Closure will depend on when closure is initiated under the CCR Rule in accordance with Section 257.102.(e)(4). The need for extensions under Section 257.102(f)(2) will be determined based on the date closure is initiated and amount of ash remaining in the Basin at that time.

6.0 REFERENCES

Advanced GeoServices Corp., 2013, Residual Waste Clean Closure Major Permit Modification, East Manchester Township, York County, PA

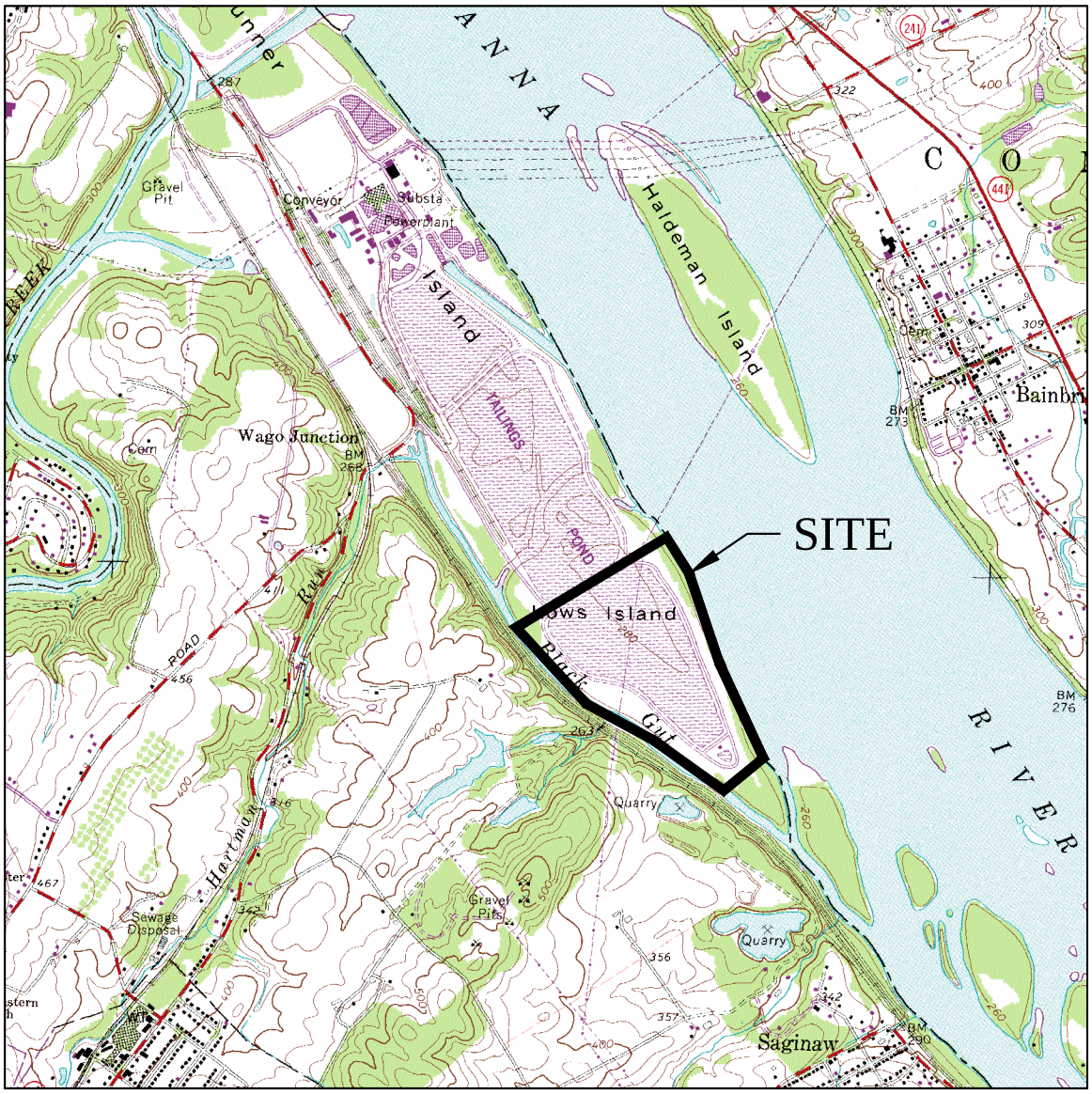
Advanced GeoServices Corp., 2013, Application for Letter of Authorization, Dam Permit D 67-496, PPL Brunner Island SES Ash Basin No. 6 Clean Closure, Each Manchester Township, York County, PA

Environmental Protection Agency, April 17, 2015, Disposal of Coal Combustion Residuals From Electric Utilities, 40 CFR Parts 257 and 261,

PADEP, November 24, 2014, Major Permit Modification Approval Letter, Ash Basin No. 6, Clean Closure, Letter from Anthony Rathfon of PADEP to Glenn Amey of PPL

PADEP, March 18, 2014, Letter of Amendment, Outlet Modification, Brunner Island Ash Basin No. 6 Dam, Letter from Richard Reisinger of PADEP to Glenn P. Amey of PPL

FIGURES



LOCATION MAP

SCALE: 1"=2000'

REF: USGS YORK HAVEN, PA, 1992

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FIGURE 1
SITE LOCATION MAP
ASH BASIN NO. 6
BRUNNER ISLAND

EAST MANCHESTER TOWNSHIP
YORK COUNTY, PENNSYLVANIA

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FIGURE 2
SITE PLAN
ASH BASIN No. 6
BRUNNER ISLAND FACILITY
East Manchester Township
York County, Pennsylvania