



Coal Combustion Residuals Ash Pond Initial & Post Closure Plan

FOR

**ELMER SMITH STATION
OWENSBORO MUNICIPAL UTILITIES**

4301 State Route 144
Owensboro, KY 42303

Original: October 17, 2016
Rev. 1: October 19, 2017

TABLE OF CONTENTS

Revision History	4
INTRODUCTION	5
Purpose of the Plan (40 CFR 257.80(a))	5
Part 1: Plan Administration	7
1.1 Management Approval and Designated Person	7
1.2 Professional Engineer Certification (40 CFR 257.102(b)(4))	8
1.3 Accessibility of the CCR Ash Pond Closure Plan	9
1.3.1 Placement in Operating Records	9
1.3.2 Publicly Accessible Internet Site Requirements	9
Part 2: General Facility Information	11
2.1 Facility Description	11
2.1.1 Description of CCR material generation at OMU – Elmer Smith Station	11
Part 3: CCR Ash Pond Initial Closure Plan	13
3.1 CCR Ash Pond Initial Closure Plan Contents (40 CFR 257.102(b))	13
3.1.1 Narrative Description of How the CCR Unit Will Be Closed Through Removal of CCR (40 CFR 257.102(b)(1))	13
3.1.2 Amendments to the Closure Plan (40 CFR 257.102(b)(3))	17
Part 4: CCR Ash Pond Post Closure Plan	19
4.1 CCR Ash Pond Post Closure Plan Contents (40 CFR 257.104(d))	19
4.1.1 Required Monitoring and Maintenance Activities (40 CFR 257.104(d)(1)(i))	19
4.1.2 Post-Closure Contact (40 CFR 257.104(d)(1)(ii))	19
4.1.3 Planned Uses of the Property (40 CFR 257.104(d)(1)(iii))	20
4.2 Amendments to the Post-Closure Plan (40 CFR 257.104(d)(3))	20
APPENDIX A	21

Revision History

- Revision 1 dated October 19th, 2017 added Production Environmental Engineer, Alex Conn, to the Facility Contacts listed under *Part 2: General Facility Information*. Also added in the revision was *Part 4: CCR Ash Pond Post Closure Plan*.

INTRODUCTION

Purpose of the Plan (40 CFR 257.80(a))

This Coal Combustion Residual (CCR) Initial Closure Plan (Plan) has been prepared to meet the requirements of Owensboro Municipal Utilities and Title 40, Code of Federal Regulations, Part 257, subpart 102 (40 CFR part 257.102). This plan describes how closure of the Owensboro Municipal Utilities' Elmer Smith Station (ESS) CCR surface impoundment (ash pond) will be effected. The purpose of this Plan is to provide a narrative of the closure procedures to be implemented and a milestone schedule and estimated date by which closure activities will be completed.

Part 1: Plan Administration

1.1 Owensboro Municipal Utilities is will update and implement this Coal Combustion Residuals CCR Surface Impoundment Initial Closure Plan for the Elmer Smith Station in accordance with the relevant requirements in 40 CFR Part 257.

The Director of Production is the responsible for plan implementation and has the authority to commit the necessary resources to implement this plan.

Authorized Facility Representative: Kevin Frizzell

Title: Director of Production

Signature:



Date:

10/17/14

1.2 Professional Engineer Certification (40 CFR 257.102(b)(4))

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR Part 257, I attest that this CCR Initial Closure Plan has been prepared in accordance with good engineering practices and meets the requirements of 40 CFR Part 257.102.

Engineer: Kevin Frizzell

Signature: *Kevin Frizzell*

Registration Number: 21475

State: Kentucky

Date: 10/17/16



SEAL

1.3 Accessibility of the CCR Ash Pond Closure Plan

1.3.1 Placement in Operating Records

In accordance with 40 CFR 257.107(i)(4), a complete copy of this CCR Initial Closure Plan and any subsequent plan amendments are maintained at the facility in the library located on the third floor of the office building. The front office is attended Monday through Friday 8 AM to 4:30 PM.

1.3.2 Publicly Accessible Internet Site Requirements

In accordance with CFR 257.105, OMU will post to the publicly accessible internet site the CCR Initial Closure Plan and subsequent amendments within 30 days of being placed in the operating record.

Part 2: General Facility Information

Facility Owner:	Owensboro Municipal Utilities
Facility Name:	Elmer Smith Station
Address:	4301 State Route 144 Owensboro KY, 42303 (270) 926-3200
Type:	Coal-fired electric generating plant
Facility Contacts:	Kevin Frizzell, Director of Production Work: (270) 926-3200 ext. 4298 Alex Conn, Production Environmental Engineer Work: (270) 926-3200 ext. 4322 Russ Evans, Production Technical Services Manager Work: (270) 926-3200 ext. 4114

2.1 Facility Description

2.1.1 Description of CCR material generation at OMU – Elmer Smith Station

Owensboro Municipal Utilities operates two coal-fired electric generating units. These units utilize an array of emission controls including but not limited to electrostatic precipitators and wet flue gas desulfurization units (WFGD). The operation of the plant produces bottom ash, fly ash, and synthetic gypsum; collectively known as coal combustion residuals.

The boilers utilized at the Elmer Smith Station burn coal to generate steam, which is used to turn steam turbines to create electricity. During the combustion process, ash is produced. The ash that falls beneath the combustion zone is called “bottom ash” and is collected in a wet collection system and is sluiced (evacuated) into a series of ash settling basins where the ash laden water settles, and ash is then dredged into dewatering piles

within the boundaries of the ash settling basin to dewater. The dewatered material is then removed from the ponds and transported offsite for a variety of beneficial reuses, or shipment to an approved offsite landfill.

Ash that does not fall out to the bottom of the boiler and instead becomes entrained in the flue gas stream is called “fly ash” and is collected and sent to ash silos for storage until ash is loaded and sent off site for beneficial reuse or landfilling. In addition to storage in the ash silos located at ESS, the ash can be conveyed in a wet system to the ash settling ponds, where the fly ash is then removed with bottom ash.

Limestone slurry, is a suspension of calcium carbonate in water, and is used in the WFGD to reduce sulfur dioxide, particulate matter and other pollutants in the flue gas stream. The result of the reaction between the limestone slurry and sulfur dioxide is gypsum. Synthetic gypsum is conveyed in a covered belt conveyor to a covered building, where it is stored until it can be shipped offsite for beneficial use in the wallboard industry, or landfilled at an approved facility.

The Site Plan and Facility Diagram included in Appendix A shows the location and physical layout of the facility. The facility diagram marks the location and contents of each CCR storage area, settling basin, and transfer locations.

Elmer Smith Station is located on the Ohio River just east of Owensboro, Kentucky on State Route 144.

Part 3: CCR Ash Pond Initial Closure Plan

3.1 CCR Ash Pond Initial Closure Plan Contents (40 CFR 257.102(b))

3.1.1 Narrative Description of How the CCR Unit Will Be Closed Through Removal of CCR (40 CFR 257.102(b)(1))

a. Description of Ash Pond Operation

ESS has an incised ash pond consisting of three unlined cells of less than 10 acres total. Plant terminology refers to the cells as Pond 1, 2, and 3. Pond 1 is used for Unit 1 boiler slag; Pond 2 receives all other ash; as well as water plant blowdown (lime softening sludge). Pond 3 receives no ash directly and is used for final settling prior to discharge. All other plant discharges; coal pile runoff, FGD blowdown, roof and floor drains, etc. are routed through the ponds.

ESS has no on site disposal capability. The pond was not intended for long term storage and as such, material must be continuously removed from the cells as they collect. The ash pond cells are continually dredged and materials are allowed to dewater from piles within the boundary of the cell back into the ponds.

Unsaleable products are currently transported to offsite disposal at a municipal solid waste facility or for beneficial reuse.

Fly ash: Fly ash can be collected dry via a hydroveyor conveying system to either of two storage silos. #1 silo collects all dry Unit 1 fly ash and Unit 2 fly ash; #2 silo collects only Unit 2 fly ash. The #1 Silo conditions ash via a pug mill for transport to off-site disposal. The #2 silo is primarily used to load pneumatic trucks for ash sales (also has pug mill capability). Fly ash can also be sluiced to the ash ponds.

Boiler Slag/Bottom Ash: Unit 1 boiler slag is sluiced to the ash ponds; it is typically segregated into #1 pond for future sales. Unit 2 bottom ash is sluiced to the #2 pond.

Pug conditioned fly ash, gypsum blowdown, and off spec gypsum are also taken to permitted offsite disposal or for offsite beneficial use.

Unsaleable products are currently transported via truck to offsite disposal or beneficial reuse. Boiler slag is loaded onto barges for use as roofing material and sandblast grit or transported offsite for disposal. Typically between 100,000 and 150,000 tons of ash are sluiced to and subsequently removed from the pond annually.

Disposal for ESS was addressed through OMU's recent award of contracts for beneficial reuse and a contract for disposal at the Daviess County landfill. The county landfill is permitted under the municipal solid waste regulations and is exempt from 40 CFR 257. OMU has contracts with three vendors for beneficial use of gypsum, ash, and slag.

Unit 1 is currently planned to be shut down in 2019. Power supply studies are ongoing to determine the best option for OMU's source of power supply going forward considering market economics and current and future environmental requirements. Currently, it is anticipated that Unit 2 will continue to operate as a coal fired generator until 2021. Further analyses are ongoing to determine Unit 2's status beyond 2021. Options to be considered are to continue as a coal fired generator, convert the unit to natural gas, or retire the unit and replace it with another source of power.

b. Events That May Require Closure

40 CFR Part 257 contains three provisions that may trigger closure of the ESS ash pond:

- 1) Structural Integrity; 40 CFR 257.73 – October 17, 2016

The structural integrity requirement will not apply to ESS' ponds as they are incised or "in ground" ponds and do not have constructed dams.

- 2) Groundwater Monitoring; 40 CFR 257.94(b) – October 17, 2017

Existing surface impoundments must have installed GWM, collected and analyzed 8 samples, and initiated detection monitoring by October 17, 2017. 40 CFR 257.101(a)(1) requires that unlined ash ponds cease receiving CCR initiate

closure within 6 months of detecting a statistically significant levels above the groundwater protection of section 295.95(h).

3) Location Criteria; 40 CFR 257.60 – April 17, 2018

Ponds must be demonstrated to be above the uppermost aquifer and not located in a seismic impact zone. 40 CFR 257.101(b)(1) requires that a surface impoundment that has not demonstrated compliance with any of the location standards must cease accepting CCR within 6 months and initiate closure.

c. Description of Initial Closure Plan: Closure by Removal of CCR (40 CFR 257.102(c))

In the event closure of the pond is required; OMU intends to close by removal of all CCR from the pond per section 257.102(c).

It is anticipated that 50,000 to 100,000 tons of CCR may be contained within the pond at the time of closure. OMU will remove all CCR from the pond and decontaminate the adjacent areas by removing all visible CCR. If closure is anticipated well in advance, such as in a unit retirement scenario, then CCR removal activity will be increased while the pond is still in operation. Complete removal of CCR remaining in the pond after cessation of receipt of CCR is expected to take one to two years.

d. Description of Initial Closure Plan: Procedures for Closure by Removal of CCR (40 CFR 257.102(b)(1)(ii))

CCR will be removed from the pond using these procedures:

Flow to the pond will be stopped and the pond will be drained of free water via gravity and pumps as needed through the plant's KPDES permitted outfall. Non-CCR flows to the pond such as roof drains and other discharges will be re-routed through the plant's permitted KPDES outfalls and the KPDES permit will be modified accordingly.

Ash will be removed using dragline or shovel by placing in discrete dewatering areas within the pond (similar to plant operating procedures). Dewatered ash will

be loaded into trucks for removal offsite to the municipal solid waste facility or to approved beneficial use sites.

CCR will be removed sequentially beginning with Pond 1 and ending with Pond 3. Removal of ash is expected to take between one and two years depending upon the quantity of CCR in the pond at the time closure is initiated.

All visible CCR will be removed such that natural soil remains.

The site will be graded and backfilled to contours dependent upon the intended use of the area after all CCR is removed.

Groundwater monitoring will continue until concentrations do not exceed the groundwater protection standard established in section 257.95(h).

e. Description of Initial Closure Plan: Estimate of maximum inventory of CCR ever on-site (40 CFR 257.102(b)(1)(iv))

It is estimated that the maximum amount of CCR ever stored in the pond was 250,000 tons.

f. Description of Initial Closure Plan: Schedule (40 CFR 257.102(b)(1)(vi))
Milestone Schedule for Closure

Dewatering of pond	6 months after last receipt of CCR
CCR removal	1 to 2 years after dewatering completed
Decontamination of adjacent areas	6 months after all CCR removed
Final grading and backfill	1 year after decontamination

Total cumulative estimated (maximum) time to complete closure - 5 years

Depending upon which requirement of 40 CFR Part 257 triggers closure, it is estimated that closure will be completed no later than October 17, 2023.

g. Alternative Closure Requirements 40 CFR 257.103

OMU is currently updating its integrated Resource Plan (IRP) to evaluate alternatives to continued used of coal at ESS. Due to the uncertainty as to the future generation resources and potential that the plant may be retired as a coal

fired facility, and the rule requirement that triggers closure, and the fact that the plant has no alternative CCR management facilities to the ash pond, OMU may be required to utilize the alternative closure requirements in 40 CFR Part 257.103.

As described in the preamble to the rule on page 21493 of the April 17, 2015 Federal Register:

“The Agency recognizes that the circumstance may arise where a facility’s only disposal capacity, both on-site and off-site, is in a CCR unit that has triggered the closure requirements in § 257.101(a), (b)(1), or (d). As a result, the facility may be faced with either violating the closure requirements in § 257.101 by continuing to place CCR in a unit that is required to close, or having to cease generating power at that facility because there is no place in which to dispose of the resulting waste. For example, while it is possible to transport dry ash off-site to alternate disposal facility that simply is not feasible for wet-generated CCR. Nor can facilities immediately convert to dry handling systems. As noted previously, the law cannot compel actions that are physically impossible, and it is incumbent on EPA to develop a regulation that does not in essence establish such a standard.”

3.1.2 Amendments to the Closure Plan (40 CFR 257.102(b)(3))

- a. This closure plan will be amended whenever
 - a. There is a change in the operation of the CCR unit that would substantially affect the written plan in effect.
 - b. Before or after closure activities have commenced, unanticipated events necessitate a revision to the written closure plan.
- b. At such time as one of the rule requirements triggers closure, or OMU’s IRP determines a timeline for conversion from coal or plant closure, this plan will be updated.

- c. The closure plan will be amended at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise the closure plan.
- d. If the written closure plan is revised after closure activities have commenced, the closure plan will be amended no later than 30 days following the triggering event.

Part 4: CCR Ash Pond Post Closure Plan

Pursuant to 40 CFR 275.104(a)(2), “An owner or operator of a CCR unit that elects to close a CCR unit by removing CCR as provided by 257.102(c) is not subject to the post-closure care criteria under this section”. The following plan has been written however for if OMU ever elects to close a CCR unit in place instead.

4.1 CCR Ash Pond Post Closure Plan Contents (40 CFR 257.104(d))

4.1.1 Required Monitoring and Maintenance Activities (40 CFR 257.104(d)(1)(i))

a. Final Cover System

ESS will perform periodic site inspections ensuring the integrity and effectiveness of the final cover system throughout the 30-year post-closure period on no less than an annual basis. If items require maintenance or repair, ESS will schedule and conduct repairs promptly to correct the effects of settlement, subsidence, erosion, or other events. Repairs will be fully documented and placed into the site’s operating record.

b. Groundwater Monitoring System

ESS will maintain the groundwater monitoring system and monitor the groundwater in accordance with the requirements of §257.90 through §257.98 throughout the 30-year post-closure period. The groundwater monitoring wells will be inspected for conditions essential to provide adequate and representative ground water samples. Maintenance and repairs will be fully documented and placed into the site’s operating record.

4.1.2 Post-Closure Contact (40 CFR 257.104(d)(1)(ii))

Should a written post-closure plan ever be deemed necessary, updated facility contact information will be added at such time. 4.1.3 Planned Post-Closure Property Use (40 CFR 257.104(d)(1)(iii))

4.1.3 Planned Uses of the Property (40 CFR 257.104(d)(1)(iii))

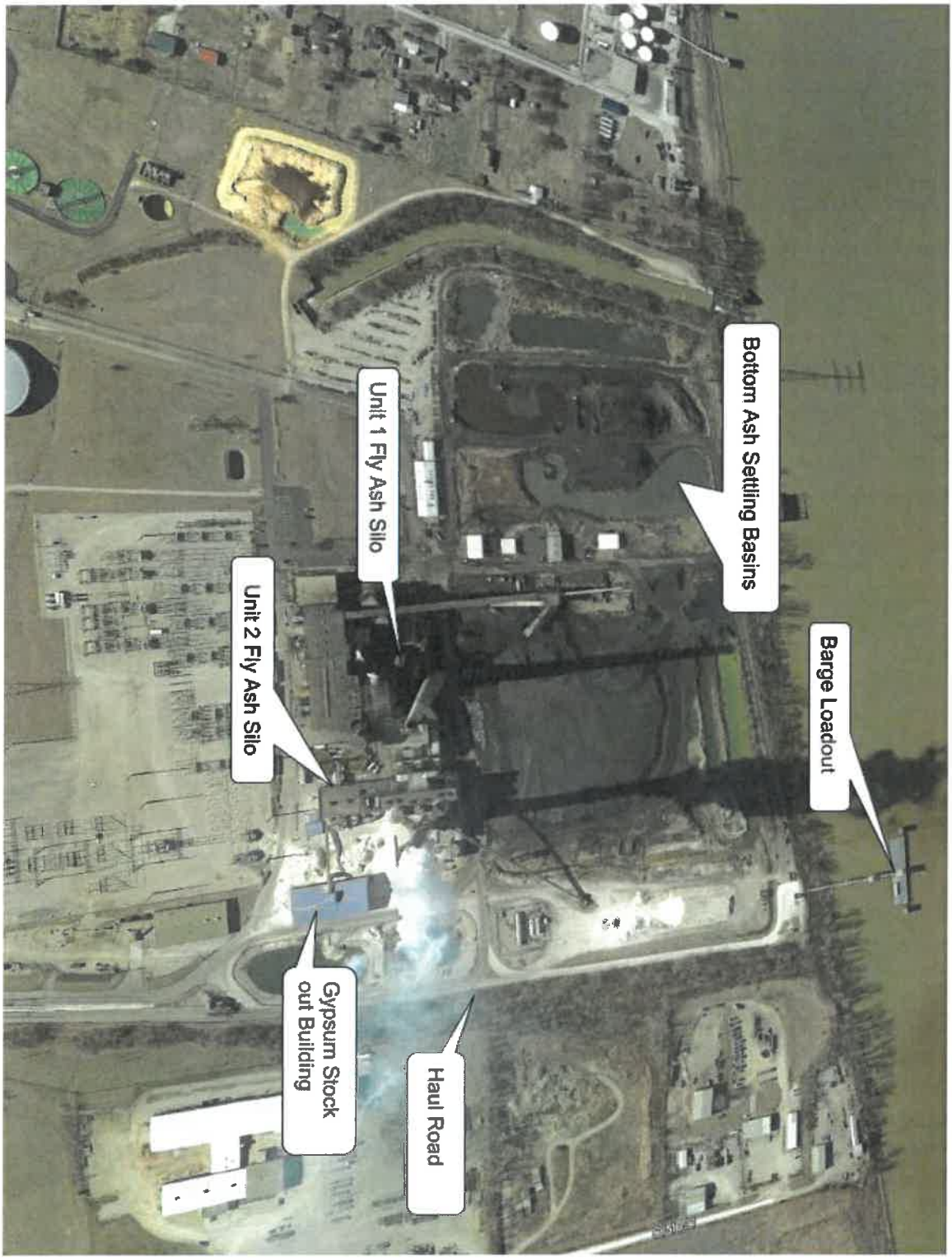
ESS plans to have limited access around the CCR units during the post-closure period to reduce potential for damage to the final cover system and the associated ground water monitoring wells. The perimeter will be adequately marked and secured to deter unwanted entrance.

4.2 Amendments to the Post-Closure Plan (40 CFR 257.104(d)(3))

- a. This closure plan will be amended whenever
 - a. There is a change in the operation of the CCR unit that would substantially affect the written plan in effect.
 - b. Before or after closure activities have commenced, unanticipated events necessitate a revision to the written closure plan.
- b. ESS will amend the post-closure plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event. After post-closure activities have commenced, ESS will amend the post-closure plan no later than 30 days following the triggering event.

APPENDIX A

APPENDIX A Site Map





Ash Pond