



Retrofit Plan for CCR Surface Impoundments

Clover Power Station
Clover, Virginia

May 2016
Updated July 2017

*Prepared For
Virginia Electric and Power Company*

A blue ink signature of R. Kent Nilsson, written in a cursive style.

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*TRC Environmental Corporation | Virginia Electric and Power Company
Retrofit Plan for CCR Surface Impoundments
Clover Power Station, Clover, Virginia
Final*

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Section 1

Introduction

Virginia Electric and Power Company d/b/a Dominion Virginia Power (Dominion) owns¹ and operates the Clover Power Station (Station). The Station currently operates two Sludge Sedimentation Basins (North and South Basins; basins), which meet the definition of coal combustion residual (CCR) surface impoundments under the United States Environmental Protection Agency (USEPA) Disposal of Coal Combustion Residuals From Electric Utilities Final Rule (CCR Rule). This Plan describes the activities associated with the retrofit of the basins to meet the requirements of 40 Code of Federal Regulations (CFR) 257.102(k)(2) in the CCR rule. This Plan was prepared for Dominion by TRC Environmental Corporation (TRC).

1.1 Regulatory Background

The basins have previously been regulated through the Station's Virginia Pollutant Discharge Elimination System (VPDES) permit. With the finalization of the USEPA's CCR Rule and Virginia's adoption into the Virginia Solid Waste Management Regulations (VSWMR), the basins are being retrofitted in accordance with 40 CFR 257.102(k) and permitted as Solid Waste Management Units (SWMUs) under the VSWMR.

1.2 Site Information

The Station is located on the Staunton River in Halifax County, Virginia near the Town of Clover at approximately latitude 36°52'11.79"N, longitude 78°42'6.47"W. The Station has two coal-fired units that produce CCRs, including flue gas desulfurization (FGD) sludge. There are currently two existing basins at the Station (North and South), which cover a total area of approximately 4 acres.

The basins are located on the eastern side of the Station and consist of earthen impoundments, with a maximum basin depth of approximately nine feet. A gravel-surfaced road extends along the top of the containment berm along the east, south and north sides of the basins, with downward-sloping ramps on the east side providing heavy equipment access to each basin's interior for removal of accumulated solids.

¹ Old Dominion Electric Cooperative owns a 50% undivided interest in the Station.

Section 2

Retrofit Plan

2.1 Retrofit Description

The current basins will be retrofitted in compliance with 40 CFR 257.102(k)(1) through the removal of the existing liner materials and subsoils, and installation of a composite liner system compliant with 40 CFR 257.72. Retrofitting will be conducted during the 2017 and 2018 construction seasons as described below.

In 2017, CCR, including FGD sludge, will be removed from the basins as part of routine Station maintenance. Prior to retrofit activities, plant flows will be diverted to the South Basin. Construction will commence in the North Basin through removal of the existing liner system. The existing liner system is composed of, from top to bottom, protective concrete and riprap, sand, and a geomembrane liner. CCR material observed in subsoils below the geomembrane will also be removed. CCR material and subsoils will be disposed of at the Station's on-site permitted landfill. All other material will be disposed of at off-site landfills. After removal of the existing liner system and any observed CCR materials, the North Basin will be retrofitted by restoring and establishing subbase grades, and constructing the new liner system. The new liner system will be composed from top to bottom of the following elements:

- Concrete cover,
- Geotextile cushion,
- 60-mil high density polyethylene (HDPE) geomembrane, and
- 24 inch-thick compacted clay layer with a maximum hydraulic conductivity of 1×10^{-7} centimeters per second (cm/s).

The liner system for the southeast corner of the North Basin surrounding the pump station will not be constructed during 2017. A temporary dam and pump structure will be constructed to allow active use of the Basin during the 2018 construction season, and will provide a dry working area for constructing the permanent pump structure and tie-in to the North Basin.

In 2018, CCR, including FGD sludge, will be removed from the basins as part of routine Station maintenance. Prior to retrofit activities, plant flows will be diverted to the retrofitted North Basin. The South Basin will be cleaned by removing the existing liner system. The existing liner system is composed of, from top to bottom, protective concrete and riprap, sand, and a geomembrane liner. CCR material observed in subsoils below the geomembrane liner will also be removed. After removal and the existing liner system and any observed CCR materials, the

existing pump station and flow split box will be demolished. The South Basin will be retrofitted by restoring or establishing subbase grades and constructing the new liner and liner protection (concrete) systems. A new pump station and flow split box will be constructed after installation of the new liner system. During 2018, the southeastern portion of the North Basin will be lined and tied into the 2017 construction.

It is anticipated that flow will be diverted to the retrofitted South Basin in 2018, to allow removal of the temporary dam and temporary pump structure.

2.2 Schedule of Retrofit Activities

As discussed in Subsection 2.1, retrofit activities will occur during the construction seasons of 2017 and 2018 and is anticipated to be completed in 2018. A detailed schedule for completing retrofit activities is provided in Appendix A.

2.3 CCR Removal Volume and Area Estimate

The basins are normally operated in sequence and are periodically taken offline to remove accumulated solids for disposal in the Station's onsite landfill. It is estimated that a maximum of 5,000 cubic yards (CY) and 19,000 CY of CCR material will be removed from the North and South Basins, respectively, prior to and during retrofit activities. This material will be excavated from an area of approximately 4.0 acres (approximate combined footprint of the North and South Basins). In total, approximately 4.7 acres will be affected by the retrofit operation.

2.4 Notifications

In accordance with the CCR Rule (40 CFR 257.102(k)), Dominion will post an Intent to Initiate Retrofit notice to the operating record prior to initiating retrofit activities. This plan will become part of the Station's operating record. In addition, a Notification of Completion of Retrofit with an engineer's certification will be posted to the operating record within 30 days of completion of retrofit activities (40 CFR 257.102(k)). The retrofit plan and notifications will also be posted to Dominion's publicly accessible internet site.

Section 3 Certification

I, the undersigned Virginia Professional Engineer, hereby certify that I am familiar with the technical requirements of 40 CFR 257.102. I also certify that it is my professional opinion that, to the best of my knowledge, information, and belief, that the activities outlined in this retrofit plan are in accordance with current good and accepted engineering practice(s) and standard(s) appropriate to the nature of the project and the technical requirements of 40 CFR 257.102 (k)(2).

For the purpose of this document, "certify" and "certification" shall be interpreted and construed to be a "statement of professional opinion". The certification is understood and intended to be an expression of my professional opinion as a Virginia Licensed Professional Engineer, based upon knowledge, information, and belief. The statement(s) of professional opinion are not and shall not be interpreted or construed to be a guarantee or a warranty of the retrofit activities.

R. Kent Nilsson

026477

Printed Name of Professional Engineer

Commonwealth of Virginia License Number



July 14, 2017

Signature of Professional Engineer

Date



Appendix A

Retrofit Schedule

Clover Retrofit Schedule

ID	Task Name	Duration	Start	Finish	2017				2018					
					May	Jul	Sep	Nov	Jan	Mar	May	Jul	Sep	
1	North Basin	106 days	Mon 7/31/17	Mon 12/25/17		▶								
2	North Basin Maintenance Cleaning	19 days	Mon 7/31/17	Thu 8/24/17		▶								
3	Excavate CCR from Basin	15 days	Mon 7/31/17	Fri 8/18/17		■								
4	Material Solidification/Load Out/T & D	17 days	Wed 8/2/17	Thu 8/24/17		■								
5	North Basin Retrofit	90 days	Mon 8/21/17	Fri 12/22/17		▶								
6	Remove Existing Cover & Liner	19 days	Mon 8/21/17	Thu 9/14/17		■								
7	Demolish Misc Structures	3 days	Mon 8/21/17	Wed 8/23/17		■								
8	Remove Rip Rap, Concrete and Liner System	15 days	Fri 8/25/17	Thu 9/14/17		■								
9	Install New Basin Lining	71 days	Fri 9/15/17	Fri 12/22/17			■							
10	Finish Grade, Shape and Proof Roll Cell	5 days	Fri 9/15/17	Thu 9/21/17			■							
11	Install Clay Liner	15 days	Fri 9/22/17	Thu 10/12/17			■							
12	Install Geosynthetic Liner System	5 days	Fri 10/13/17	Thu 10/19/17				■						
13	Install Concrete Liner and Access Ramps	35 days	Fri 10/20/17	Thu 12/7/17				■						
14	Install Gravel Cover	10 days	Fri 12/8/17	Thu 12/21/17					■					
15	Re-Vegetate	1 day	Fri 12/22/17	Fri 12/22/17					■					
16	Demobilization	1 day	Mon 12/25/17	Mon 12/25/17					■					
17	South Basin	130 days	Mon 4/16/18	Fri 10/12/18						▶				
18	South Basin Maintenance Cleaning	25 days	Mon 4/16/18	Fri 5/18/18						▶				
19	Excavate CCR from Basin	23 days	Mon 4/16/18	Wed 5/16/18						■				
20	Material Solidification/Load Out/T & D	20 days	Mon 4/23/18	Fri 5/18/18						■				
21	South Basin Retrofit	89 days	Mon 5/21/18	Thu 9/20/18						▶				
22	Remove Existing Cover & Liner	21 days	Mon 5/21/18	Mon 6/18/18						■				
23	Demolish Misc Structures	3 days	Mon 5/21/18	Wed 5/23/18						■				
24	Remove Rip Rap, Concrete and Liner System	21 days	Mon 5/21/18	Mon 6/18/18						■				
25	Install New Basin Lining	68 days	Tue 6/19/18	Thu 9/20/18						■				
26	Finish Grade, Shape and Proof Roll Cell	3 days	Tue 6/19/18	Thu 6/21/18						■				
27	Install Clay Liner	15 days	Fri 6/22/18	Thu 7/12/18						■				
28	Install Geosynthetic Liner System	5 days	Fri 7/13/18	Thu 7/19/18							■			
29	Replace North/South Diversion Berm Around Pump	10 days	Mon 8/20/18	Fri 8/31/18							■			
30	Install Concrete Liner and Access Ramps	35 days	Fri 7/20/18	Thu 9/6/18							■			
31	Install Gravel Cover	10 days	Fri 9/7/18	Thu 9/20/18								■		
32	Re-Vegetate	2 days	Fri 9/7/18	Mon 9/10/18								■		
33	Infrastructure Modifications	119 days	Mon 4/16/18	Thu 9/27/18						▶				
43	Demobilization	12 days	Thu 9/27/18	Fri 10/12/18									■	