

ATTACHMENT V

Post-Closure Care Plan



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Post-Closure Care Plan

Virginia Electric and Power Company
Possum Point Power Station
Coal Combustion Residual Surface Impoundment Closures
Dumfries, Virginia

GAI Project Number: C150132.00

December 2015



DominionSM

Prepared by: GAI Consultants, Inc.
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Prepared for: Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen, Virginia 23060-3308

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1.0 Introduction

This Post-Closure Care Plan was prepared on behalf of the Virginia Electric and Power Company d/b/a Dominion Virginia Power (Dominion) by GAI Consultants, Inc. This report was prepared in conjunction with a Closure Plan for Coal Combustion Residual (CCR) Impoundments A, B, C, D, and E located at the Possum Point Power Station (Station).

The purpose of this report is to provide a Post-Closure Care Plan for CCR Surface Impoundment D. Impoundment D will be closed in place by constructing an engineered cover system over the CCR surface as described in the Closure Plan. A Post-Closure Care Plan is not required for Impoundments A, B, C, or E because they will be closed by removal of CCRs. The information provided in this report follows the format guidelines for Solid Waste Disposal Facilities as described in Submission Instruction No. 6, provided by the Virginia (VA) Department of Environmental Quality (VDEQ) in 2012.

2.0 Post-Closure Activities

2.1 Post-Closure Period

The VA Solid Waste Management Regulations (VSWMR) require post-closure care for a 10-year period after complete closure of industrial landfill facilities. Post-closure care will start after Surface Impoundment D closure is complete.

2.2 Post-Closure Contact

Cathy C. Taylor of Dominion is designated as the contact person during the post-closure period of 10 years. The contact information is as follows:

Cathy C. Taylor
Director, Electric Environmental Services
5000 Dominion Boulevard
Glen Allen, VA 23060
804-273-2929

2.3 Security

Surface Impoundment D is located on Dominion property adjacent to the Station. The impoundment is not fenced, but the access roads to Impoundment D are secured with locked gates. Surface Impoundment D is also screened by wooded areas, natural topography and the Impoundment D earthen embankment that limits the visibility from Possum Point Road and Cockpit Road. Numerous private property and no trespassing signs are located around Surface Impoundment D.

2.4 Inspection Plan

Inspections will be performed by a Dominion employee or independent registered engineer or other qualified person. The CCR Surface Impoundment Inspection Checklist, or equivalent, provided in **Attachment A**, will be used to document inspections. The closed CCR impoundment will be inspected at a frequency appropriate to maintain environmental and structural integrity of the cover system.

2.5 Maintenance Plan

During the post-closure care period, the impoundment will receive routine maintenance to meet post-closure care requirements. The following items will receive maintenance as needed:

2.5.1 Erosion Damaged Areas

Areas of the cover system that have been eroded will be backfilled according to the approved cover system design. The areas will be seeded, then mulched or protected with erosion control matting to deter new erosion.

Other areas that have been eroded will be graded to allow positive drainage, seeded, and mulched or protected with erosion control matting to deter new erosion.

2.5.2 Correction of Settlement, Subsidence, and Displacement

Any minor settlement, subsidence, or displacement will be corrected by grading to promote positive surface drainage. Suspected geomembrane damage will be inspected and repairs made as needed. Major settlement, subsidence, or displacement may require an engineering evaluation of the cause; the remedy for any major damage will be based on addressing the cause of the damage.

2.5.3 Run-On and Run-Off Control Structures

Eroded channels and pipe entrance/exits will be returned to design conditions as soon as possible. Clogs will be removed from pipes and basin riser structures to allow the free flow of water. If problems with underground pipes are suspected (e.g., joints coming apart, low spots in alignment, and crushed pipe), the pipes will be video surveyed, visually surveyed, or excavated to confirm damage and ascertain the best remedy.

2.5.4 Groundwater Wells

Repairs to groundwater wells will be made in accordance with the Groundwater Water Monitoring Plan that is part of the Part B Permit Application.

2.5.5 Mowing

The cover system for surface Impoundment D will be mowed a minimum of once per year or as necessary to deter the growth of woody vegetation, deter habitation by vectors, and to allow inspection and access to the landfill cap features and landfill related structures (e.g., wells and stormwater channels).

2.5.6 Seeding and Fertilization

Bare areas will be seeded and fertilized as needed to deter erosion.

2.6 Monitoring Plan

Monitoring of landfill related systems will be conducted in accordance with the inspection plan described in this report and the Groundwater Monitoring plan as discussed below.

2.6.1 Groundwater Monitoring

Groundwater monitoring will be performed for Surface Impoundment D throughout the post-closure care period. A Groundwater Monitoring Plan (GWMP) was prepared and is being submitted to DEQ for approval. Please refer to the GWMP for additional information on groundwater monitoring activities associated with Surface Impoundment D.

2.6.2 Landfill Gas Monitoring System

A Landfill Gas Monitoring System is not required for the facility.

2.6.3 Leachate Collection System

Liquid wastes generated by stormwater run-on and dewatering of the surface impoundments

will be managed in accordance with the Station's VPDES Permit No. VA0002071.

2.7 Post-Closure Uses

It is anticipated the area of closed Surface Impoundment D will be used as open space or managed turf.

A deed restriction will be placed on the property to ensure that there is no impact to the closed Surface Impoundment D. Post-closure use of the property is not expected to disturb the integrity of the final cover, liner system, or any other components of the closed CCR impoundment unless necessary to meet the requirements for post-closure care. The VDEQ may approve other disturbances if those disturbances will not increase the potential threat to human health or the environment.

2.8 Training

Personnel responsible for conducting maintenance, inspection, and monitoring tasks will be competent individuals trained to perform their assigned tasks. Updated training will be required as necessary.

2.9 Post-Closure Care Cost Estimate

The post-closure care cost estimate is provided in **Attachment B**. The estimated annual cost for post-closure care is \$450,000.

2.10 Post-Closure Care Termination

The VSWMR requires a post-closure care period of at least 10 years. At the end of the 10 year period, Dominion may submit a request for termination of post-closure care activities. DEQ may extend the post-closure care associated with Surface Impoundment D in accordance with the provisions of the VSWMR.

ATTACHMENT A

CCR Surface Impoundment Inspection Checklist



Dominion CCR SURFACE IMPOUNDMENT INSPECTION CHECKLIST

Site Name		Weather	
Date of Inspection		Temperature	
Inspected By		Rain in Last 24 Hours?	

Embankment Slope and Crest

Conditions Present	Comments	Monitor	Investigate	Repair	Escalate
Animal Burrows					
Bare Spots/Erosion					
Horizontal Alignment					
Sinkhole/Depression					
Seeps, Standing Water					
Slide, Slough, Bulges					
Vegetation – High					
Vegetation – Stressed					

Inside of Pond/Outlet Structure

Conditions Present	Comments	Monitor	Investigate	Repair	Escalate
Erosion/Slough Slope					
Stop Logs Operational					
Outlet Not Obstructed					
Floating Solids Control					
Visual of Effluent					
Walkway Condition					
Vegetation Inside Pond					



Dominion CCR SURFACE IMPOUNDMENT INSPECTION CHECKLIST

Previous Conditions for Repair or Escalation have been mitigated and the condition has returned to monitor status? If no, provide date for completion in Comments box below.	Yes	No

Definitions

Monitor	Observation indicates a safe condition protective of the environment.
Investigate	Observation indicates a condition that has changed from a monitor condition and requires investigation to determine whether condition is unsafe or not protective of the environment.
Repair	Observation indicates a condition that requires a near term repair to ensure that condition does not worsen and become a serious concern.
Escalate	Observation indicates a condition that must be addressed immediately to ensure the safety of the surface impoundment, facilities, or public or protection of the environment.

General Comments [Document any unusual events or conditions]:

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ATTACHMENT B

Post-Closure Care Cost Estimate

**Dominion Possum Point Power Station
 CCR Surface Impoundment Closures
 Surface Impoundment D Post-Closure Care Cost Estimate**

Worksheet CEW-02: FORMAT FOR THE ESTIMATION OF POST-CLOSURE COSTS

FILL IN THE BOXES. THE REST WILL BE CALCULATED FOR YOU

I. Groundwater Monitoring

		Calculation or Conversion	
a. Total number of monitoring wells	<input type="text" value="7"/> wells		
b. Total number of sampling events/year	<input type="text" value="2"/> events/yr	a x b	14 samples/yr
c. Quantity of additional samples (e.g. QA/QC)	<input type="text" value="3"/> samples/event	a x c	21 samples/yr
d. Total samples per year		b + c	35 samples/yr
e. Analysis unit cost (Table 3.1 constituents)	<input type="text" value="\$2,500.00"/> /sample		
f. <i>Total Analysis cost</i>		d x e	\$87,500.00 /yr
g. GW Monitoring unit cost	<input type="text" value="\$5,000.00"/> /event		
i. <i>Total sampling cost</i>		f + (g x b)	\$97,500.00 /yr
j. Engineering fees & reports	<input type="text" value="\$25,000"/> /yr		
Yearly Groundwater Monitoring Cost		f + i + j	\$210,000 /yr

II. Landfill Gas Monitoring, Maintenance, and Control

a. Frequency of LFG compliance monitoring	<input type="text"/> events/yr		
b. LFG Monitoring unit cost	<input type="text"/> /event		
c. <i>Total perimeter LFG monitoring cost</i>		a x b	\$0 /yr
d. Frequency of surface monitoring (air permit)	<input type="text"/> events/yr		
e. Surface monitoring unit cost	<input type="text"/> /event		
f. <i>Total surface monitoring cost</i>		d x e	\$0 /yr
g. Control system operating unit cost	<input type="text"/> /yr		
h. Frequency of LFG control system inspections	<input type="text"/> events/yr		
i. Control system inspection cost	<input type="text"/> /event		
j. <i>Total control system cost</i>		g + (h x i)	\$0 /yr
Yearly Landfill Gas Monitoring, Maintenance, & Control Cost		c + f + j	\$0 /yr

III. Leachate Management

a. Quantity of leachate generated gal/yr

On-site Leachate Management or Pre-Treatment

b. On-site treatment operating unit cost /gal

c. *Total on-site management cost* a x b \$0 /yr

Leachate Disposal

d. Private disposal unit cost /gal

e. POTW disposal unit cost /gal

f. Direct discharge to POTW unit cost /gal

g. Pump & Haul unit cost /gal

h. Subtotal leachate disposal unit cost d + e + f + g \$0.00

i. *Total leachate disposal cost* a x h \$0 /yr

j. Leachate sampling & analysis unit cost /sample

k. Frequency of leachate sampling & analysis sample/yr

l. *Total leachate sampling & analysis cost* j x k \$0.00 /yr

Yearly Leachate Management Cost c + i + l **\$0 /yr**

IV. Cap Maintenance & Repair

a. Closed Landfill Area acres

Mowing & Fertilization

b. Mowing frequency visits/yr

c. Mowing unit cost /acre/visit

d. *Total mowing cost* a x b x c \$64,000 /yr

e. Fertilizer frequency visits/yr

f. Fertilizer unit cost /acre/visit

g. *Total fertilizer cost* a x e x f \$32,000 /yr

Cap Erosion & Repair

h. Area to reseed/year		33% x a	21.3 acres
i. Reseeding unit cost	<input type="text" value="\$1,000.00"/> /acre		
j. Total reseeding cost		h x i	\$21,333.33 /yr
k. Area of cap erosion/year		10% x a	6.4 acres
l. Cap erosion repair unit cost	<input type="text" value="\$10,000.00"/> /acre		
m. Mobilization/Demobilization	<input type="text" value="\$5,000.00"/> /yr		
n. Total cap erosion repair cost		(k x l) + m	\$69,000 /yr
Yearly Cap Maintenance & Repair cost		d + g + j + n	\$186,333 /yr

V. Sediment Basin Maintenance & Repair

a. Sediment basin cleanout frequency, 1 per	<input type="text" value="N/A"/> years	1 / a	- event/yr
b. Sediment basin cleanout unit cost	<input type="text"/> /event		
c. Mobilization/Demobilization	<input type="text"/> /event		
d. Total sediment basin maintenance cost		a x (b + c)	\$0 /yr
e. Total number of stormwater sampling locations	<input type="text"/> locations		
f. Stormwater sampling frequency	<input type="text"/> events/yr		
g. Total number of stormwater samples		e x f	0 samples/yr
h. Analysis unit cost (VPDES permit parameters)	<input type="text"/> /sample		
i. Total Analysis cost		g x h	\$0 /yr
j. Mobilization unit cost	<input type="text"/> /event		
k. Technician field unit cost	<input type="text"/> /event		
l. Total sampling cost		f x (j + k)	\$0.00 /yr
m. Engineering fees & reports	<input type="text"/> /yr		
n. Total Stormwater Sampling & Analysis cost		f + i + j	\$0 /yr
Yearly Sediment Basin Maintenance & Repair		d + n	\$0 /yr

VI. Vector & Rodent Control

a. Vector and rodent control unit cost	<input type="text" value="\$10,000"/> /yr		
Yearly Vector and Rodent Control Cost		a	\$10,000 /yr

VII. Post-Closure Care General Inspections

a. General Inspection unit cost	<input type="text" value="\$10,000"/> /inspection		
b. Number of inspections per year	<input type="text" value="4"/>		
Yearly Post-Closure Care General Inspection Cost		a x b	\$40,000 /yr

Annual Post-Closure Care Cost (APCC) I + ... + VII \$450,000 /yr

Length of post-closure care (LPCC) years

Post-Closure Care Cost APCC x LPCC \$4,500,000

Engineering & Documentation Engineering Sum \$120,000

Post-Closure Care Evaluation	<input type="text" value="\$40,000"/>
Post-Closure Care Certification	<input type="text" value="\$40,000"/>
Cost for survey and deed notation (if not completed at time of landfill closure)	<input type="text" value="\$40,000"/>

FA Mechanism Maintenance Cost /yr FA maintenance x LPCC \$0

Total Post-Closure Care Cost Post-Closure Cost + Engineering + FA Maintenance **\$4,700,000**

ATTACHMENT VII

CQA Plan and Technical Specifications

(Included in Attachment IV)