



SURFACE IMPOUNDMENT CLOSURE PLAN

Possum Point Power Station – Ponds ABC and E

Permit #617

Submitted to:



Possum Point Power Station

19000 Possum Point Road

Dumfries, VA 22026

Submitted by:

Golder Associates Inc.

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Richmond, Virginia 23227

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Project # 166-2150

May 11, 2018

Revised September 2018

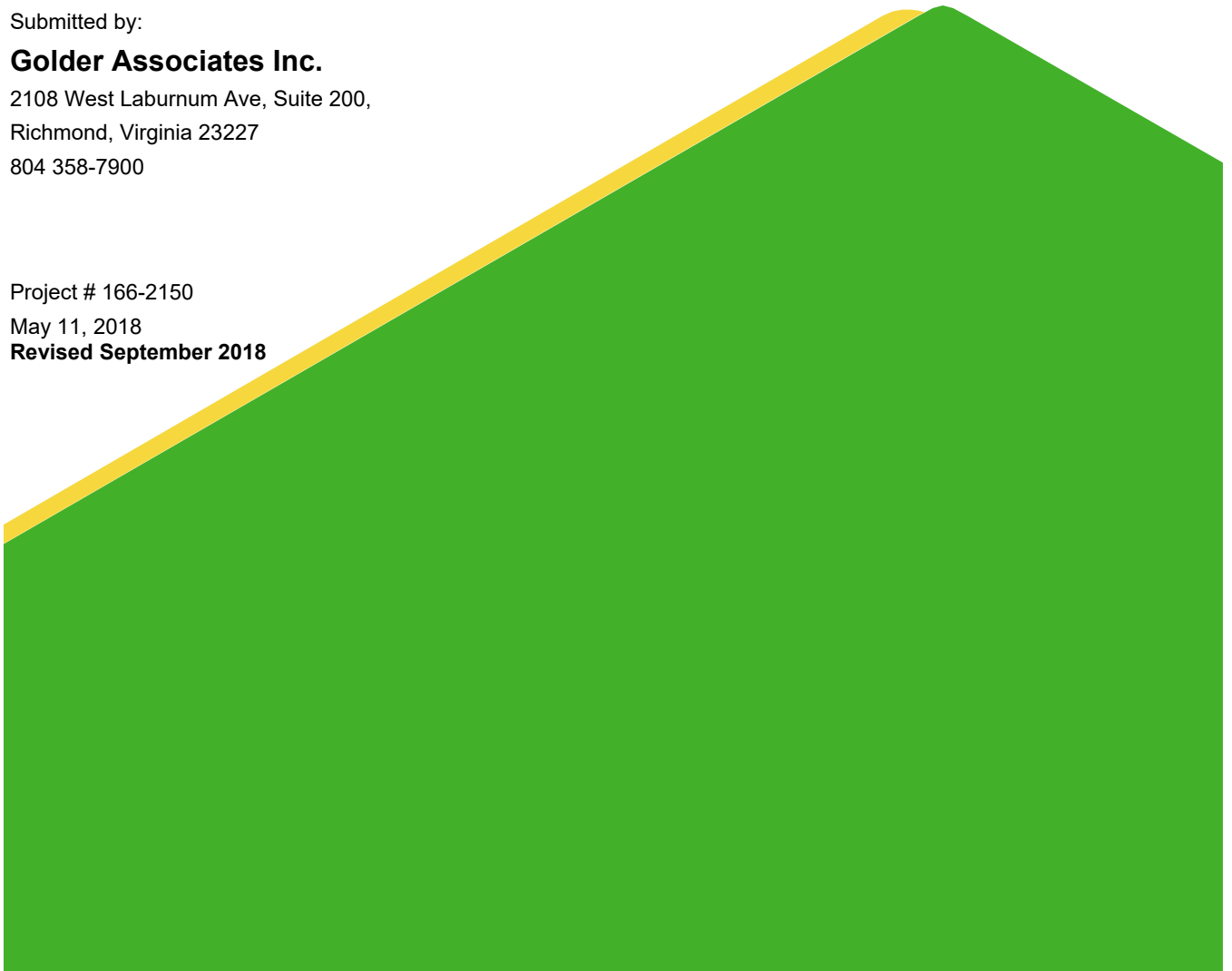


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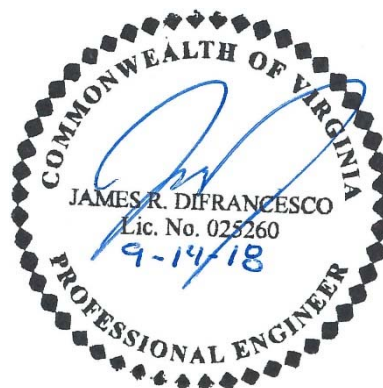
1.0 PLAN CERTIFICATION

This Closure Plan for the Possum Point Power Station's Ponds ABC and E was prepared by Golder Associates Inc. (Golder). The document and Certification/Statement of Professional Opinion are based on and limited to information that Golder has relied on from Dominion Energy and others, but not independently verified, as well as work products produced by Golder.

On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the Commonwealth of Virginia that this document has been prepared in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances, at the same time, and in the same locale. It is my professional opinion that the document was prepared consistent with the requirements in §257.102 of the United States Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," published in the Federal Register on April 17, 2015, with an effective date of October 19, 2015 (40 CFR §257.102), as well as with the requirements in §257.100 resulting from the EPA's "Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Extension of Compliance Deadlines for Certain Inactive Surface Impoundments; Response to Partial Vacatur" published in the Federal Register on August 5, 2016 with an effective date of October 4, 2016 (40 CFR §257.100).

The use of the word "certification" and/or "certify" in this document shall be interpreted and construed as a Statement of Professional Opinion, and is not and shall not be interpreted or construed as a guarantee, warranty, or legal opinion.

Ron DiFrancesco, P. E.
Printed Name of Professional Engineer



025260
Commonwealth of Virginia License No.

Signature and Date

2.0 INTRODUCTION

This Closure Plan (Plan) was prepared for the Possum Point Power Station's (Station) inactive Coal Combustion Residuals (CCR) surface impoundments, Ponds ABC and E. This Closure Plan was prepared in accordance with 40 CFR Part §257, Subpart D and is consistent with the requirements of 40 CFR §257.102 for closure of CCR surface impoundments, 40 CFR §257.100(e)(6)(i), and Virginia Solid Waste Management Regulations 9 VAC20-81-800. The Station, owned and operated by Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion), is located in Dumfries, Virginia at 19000 Possum Point Road, near the mouth of Quantico Creek.

Ponds ABC and E are being closed as CCR surface impoundments under the CCR rule provisions at 40 CFR §257. The ponds will be closed by removal of CCR pursuant to 40 CFR §257.102(c). All elevations noted in this document, unless stated otherwise, are in feet relative to the North American Vertical Datum of 1988 (NAVD-88).

2.1 General Impoundment Information

Ponds ABC are approximately 15.7-acres and were used for the storage of CCR from the Station. It was built as three ponds, A, B, and C; however, the ponds shared a common downstream embankment and decant outlet structure, so they are collectively known as Ponds ABC for convenience. The embankment top elevation is 20 feet. Ponds ABC contained approximately 155,000 cubic yards (CY) of CCR prior to the start of excavation activities.

Ponds ABC is currently regulated under the following permits:

- Virginia Department of Environmental Quality (DEQ) Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0002071
- Virginia Department of Conservation and Recreation (DCR) Operation and Maintenance Certificate, Inventory No. 153001 (Legacy No. 00788)

Pond E is an approximately 39.2-acre impoundment that was used for the storage of CCR from the Station. The embankment top elevation is 40 feet. Pond E contained approximately 730,000 CY of CCR prior to the start of excavation activities.

Pond E is currently regulated under the following permits:

- Virginia Department of Environmental Quality (DEQ) Virginia Pollutant Discharge Elimination System (VPDES) Permit No. VA0002071
- Virginia Department of Conservation and Recreation (DCR) Operation and Maintenance Certificate, Inventory No. 153021 (Legacy No. 15321)

3.0 CLOSURE IMPLEMENTATION

3.1 Overview of Closure Approach

This plan provides for the closure of Ponds ABC and E by removal of the CCR material. Closure is considered complete under 40 CFR 257.102 and 9 VAC20-81-810 when:

1. A professional engineer licensed in Virginia certifies all CCR has been removed from the units followed by an over-excavation of approximately 6 inches of soil.
2. The unit's downgradient groundwater monitoring wells do not exhibit levels in excess of a maximum contaminant limit (MCL) or established groundwater protection standard for any CCR Appendix IV constituent *on or after a minimum of ten sampling events have occurred after CCR material has been verified as removed by a professional engineer licensed in Virginia.*

At the time of writing, the vast majority of CCR in the ponds had been removed to Pond D. Final CCR removal will either be consolidated in the Pond D CCR impoundment or disposed of in an off-site designated facility. After CCR removal and certification, the former pond subgrade will be shaped to drain through opening(s) in the embankment. Due to the breach of the embankment, the former ponds will not retain water and will no longer be regulated as impounding structures by DCR. During and after closure, the existing network of groundwater monitoring wells will be sampled and tested to determine the monitored constituent concentrations (40 CFR §257 Appendix IV).

CCRs identified in what appears to be a former laydown area west of Pond C will be removed and disposed offsite in an authorized disposal facility. This area is separate from the surface impoundments and will have dedicated erosion and sediment controls installed. After removal of these materials, a Virginia-licensed professional engineer will visually inspect the area to verify that all CCR is effectively removed.

4.0 CLOSURE TIMEFRAMES

Table 1 below outlines the estimated sequence of scheduled closure activities.

Table 1: Closure Schedule

Activity	Tentative Date
Completion of CCR Removal	By October 2018
Completion of Closure Construction	By January 2019
Certification of Construction Completion	By April 2019

Closure is considered complete when the elements of this Closure Plan specified above have been performed as certified by a Professional Engineer licensed in the Commonwealth of Virginia. This certification will be included as part of a closure certification report. In accordance with 40 CFR §257.102(h), Dominion will prepare a notification of closure of the CCR unit within 30 days of completion of closure, and place the notification in the operating record.

5.0 INVENTORY REMOVAL AND DISPOSAL

5.1 Waste Removal, Decontamination and Disposal

The protocol for closure by removal of Ponds ABC and E will involve removing accumulated CCR such that no residual materials remain visible, followed by over-excavating the removal footprint by approximately 6 inches. Removed CCR and CCR-mixed soil will either be consolidated in the Pond D CCR impoundment or taken to an off-site disposal facility. To facilitate stormwater management, construction, and/or structural stabilization of embankments or excavations, closure by removal of areas within the ponds may be achieved in phases. Phased closures may be sequenced as necessary to support traffic patterns, stormwater controls, etc.

Material removal against embankments may involve excavation of the upstream embankment face to near-vertical condition. Immediately after excavation and inspection of these areas for certification, fill soil will be placed and compacted against the embankment to re-establish stable slopes of no steeper than 2 horizontal to 1 vertical (2H:1V). For rock, existing concrete designated to remain, or other similar hard surfaces (e.g. pipes or foundation supports to remain), the surface will be cleaned to a visually-clean condition through mechanical means such as pressure washing. The soils surrounding said hard areas will be removed to the 6-inch over-excavation criterion.

In environmentally-sensitive areas outside of the defined CCR unit boundary, such as Resource Protection Areas (RPAs), stream channels, groundwater monitoring wells, or wetlands, a modified excavation protocol will be followed for removal of identified CCR. The CCR will be removed to a visually clean condition using methods that minimize impact to surrounding soils (e.g. hand-digging around wells). The 6-inch over-excavation will not be performed in these areas in order to limit the impact to subgrade soils. Following CCR removal, the area will be stabilized to prevent erosion with material suitable for the area.

There may be instances when, during excavation near the CCR unit boundary, the CCR material is found to extend horizontally beyond the defined unit boundary and excavation cannot continue due to other permit conditions, future construction, or property access constraints. When these conditions occur, the horizontal and vertical extents of the CCR will be identified on a sketch map and photographed. Most likely, these areas will then be covered with soil to prevent commingling with cleaned areas. Once the constraining issue is resolved, Dominion will evaluate the area for management of the remaining CCR.

After CCR removal and certification, the former pond subgrade will be shaped to drain and openings will be made in the embankments to preclude water storage in the former pond areas. Vegetative stabilization will be established to prevent erosion. The final configuration of the design grades and

embankment breach geometry will be developed through the Prince William County and DCR permitting processes. Final grades shown in the plan drawings are conceptual.

5.2 Sampling and Testing Program

After removal of the 6-inch over-excavation material from within the ponds, these areas will be visually inspected to verify the CCR and over excavation has been achieved. The ponds will be further inspected by targeted soil cores for visual inspection to a depth of at least 6 inches at a frequency of at least one core per acre. The soil cores will be dug by hand using a hand auger or similar tool and be a minimum of 6-inches deep.

Verification surveys of the pond closure will be prepared by a Virginia-Licensed Land Surveyor and will consist of a survey of the “visually clean” surface and a survey of the “overexcavation” surface to verify the minimum 6-inch removal. Certification of the closure by removal will be provided by a Virginia-licensed Professional Engineer.

Groundwater monitoring will be conducted in accordance with the approved Groundwater Monitoring Plan to meet the closure by removal standard set forth in 40 CFR 257.102(c) and the Virginia Solid Waste Management Regulations.

5.3 Other Areas

CCRs identified in what appears to be a former laydown area west of Pond C will be removed, materials screened, and the inert materials such as concrete, asphalt, and CCR moved to Pond D or taken offsite to an authorized disposal facility. Any remaining materials from the screening process will be disposed offsite in an authorized disposal facility. This area is separate from the surface impoundments and will have dedicated erosion and sediment controls installed. After removal of these materials, a Virginia-licensed professional engineer will visually inspect the area to verify that all CCR is effectively removed.

6.0 CLOSURE OF SUPPORT PONDS AND BASINS

There are no supporting ponds or basins associated with Ponds ABC and E.

7.0 CLOSURE IMPLEMENTATION

7.1 Posting

One sign will be posted at the site entrance to each pond notifying all persons of the final closure and prohibition against further receipt of CCR. Unauthorized access to the site will be controlled by natural barriers or lockable gates across the access roads.

7.2 Certification

Upon completion of closure construction, a certification statement signed by a licensed professional engineer will be placed in the operating record and submitted to the DEQ along with the documentation from the Sampling and Testing Program. The certification statement shall read as follows:

I certify that closure has been completed in accordance with the Closure Plan dated [DATE] for solid waste permit number 617 issued to Dominion, with the exception of the following discrepancies: [To Be Determined]

In addition, a sign(s) was (were) posted on [DATE] at the site entrance notifying all persons of the closing [and state other notification procedures if applicable] and barriers [indicate type] were installed at [location] to prevent new waste from being deposited.

[Signature, date and stamp of Professional Engineer]

7.3 Post-Closure Uses

No post-closure use of the area is proposed. The former pond areas will be allowed to revegetate and return to a natural habitat area.

8.0 CLOSURE COST ESTIMATE

The closure cost estimate for Ponds ABC and E is \$5,629,735. This estimated amount covers the remaining excavation, inspection, testing, and certification as proposed in this Plan.

DOMINION ENERGY

POSSUM POINT POWER STATION

CLOSURE BY REMOVAL PLAN

POND ABC & POND E

SOLID WASTE PERMIT No. 617

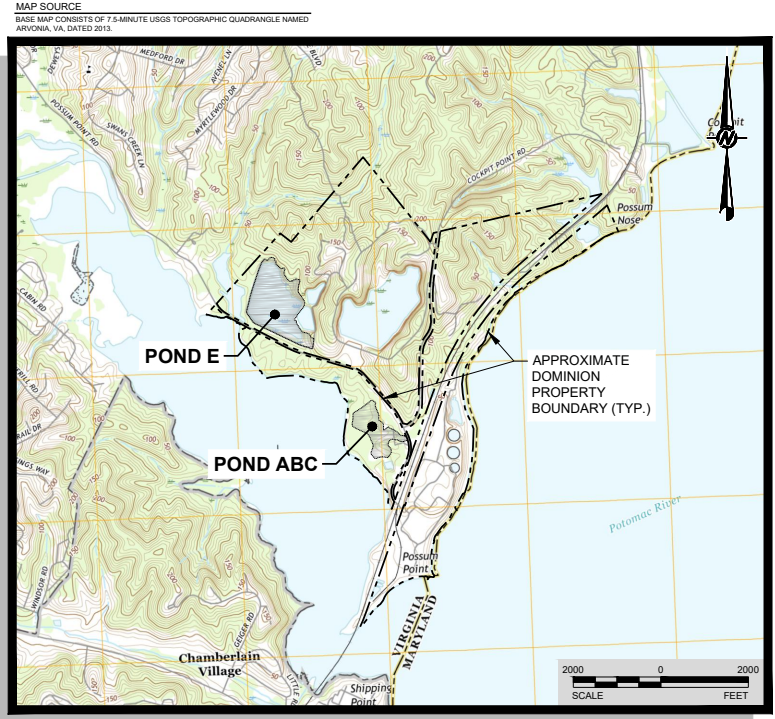
PRINCE WILLIAM COUNTY, VIRGINIA

SEPTEMBER 2018



VICINITY MAP

DRAWING INDEX	
DRAWING No.	DRAWING TITLE
CBR-1	COVER SHEET
CBR-2	POND ABC PRE-CLOSURE TOPOGRAPHY (APPROXIMATE BOTTOM OF POND)
CBR-3	POND ABC CLOSURE BY REMOVAL PLAN
CBR-4	POND ABC CONCEPTUAL FINAL GRADING PLAN
CBR-5	POND ABC CROSS-SECTIONS
CBR-6	POND E PRE-CLOSURE TOPOGRAPHY (APPROXIMATE BOTTOM OF POND)
CBR-7	POND E CLOSURE BY REMOVAL PLAN
CBR-8	POND E CONCEPTUAL FINAL GRADING PLAN
CBR-9	POND E CROSS-SECTIONS



SITE LOCATION MAP

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REV.	MMDDYY	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
1	09/14/18	RESPONSE TO DEQ TR COMMENTS	DPM	BPG	ATN	DPM
0	05/07/18	ISSUED FOR PERMIT	DPM	BPG	ATN	DPM

CLIENT
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PROFESSIONAL ENGINEER
JAMES A. DIFRANCO
E.C. No. 022500
4-1-18

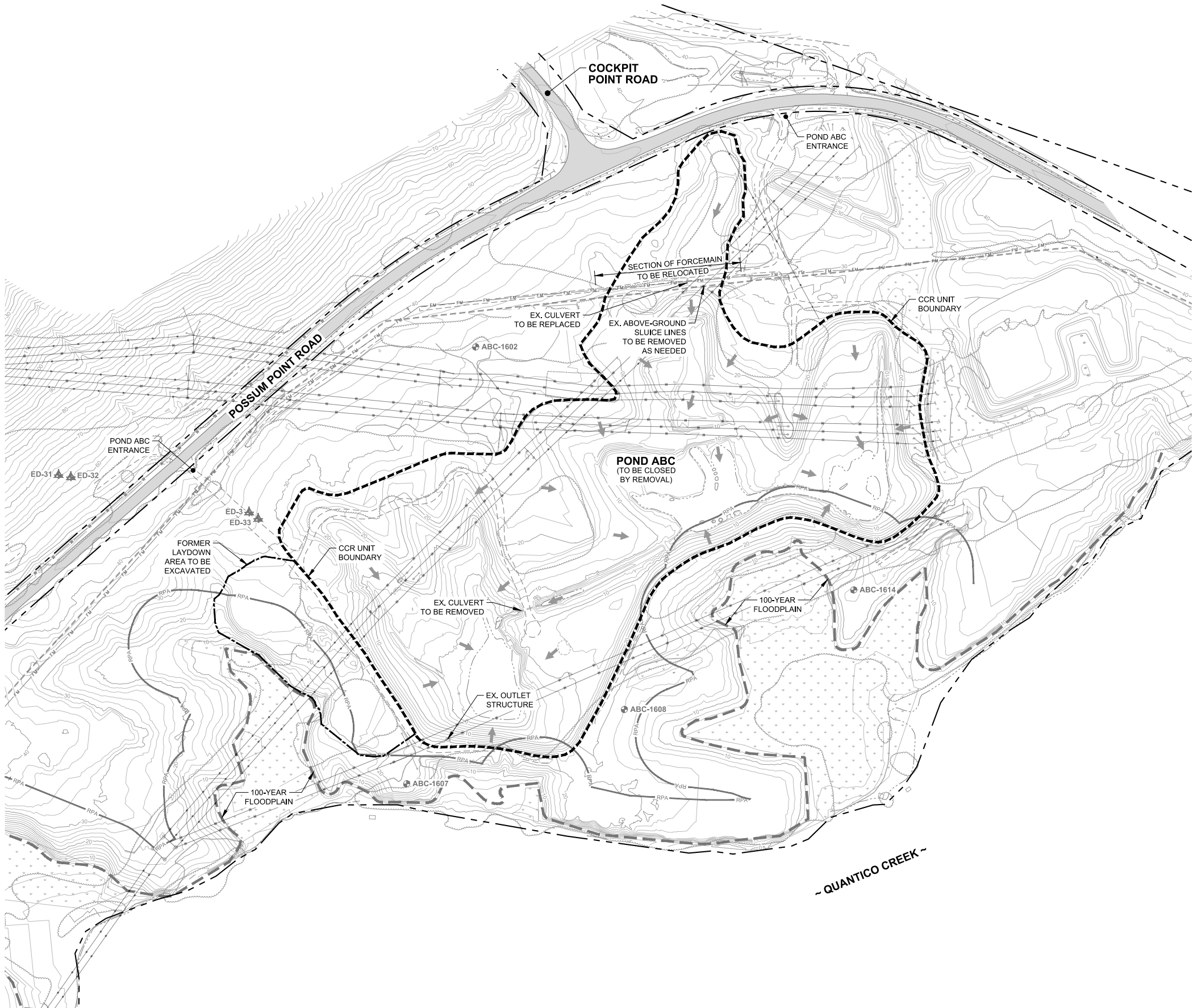
PROJECT
CLOSURE BY REMOVAL PLAN
POND ABC AND POND E
SOLID WASTE PERMIT No. 617

TITLE
COVER SHEET

PROJECT NO.
16-62150

REV. 1 of 9
DRAWING
CBR-1

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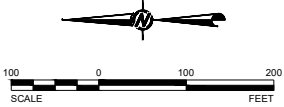


LEGEND

- DOMINION PROPERTY BOUNDARY
- CCR UNIT BOUNDARY
- EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS)
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- WETLANDS
- RESOURCE PROTECTION AREA BOUNDARY
- APPROXIMATE EDGE OF SURFACE WATER
- LIMITS OF 100-YR FLOODPLAIN
- EXISTING TREE LINE
- EXISTING OVERHEAD UTILITY LINE
- EXISTING WATER LINE
- EXISTING FORCEMAIN
- EXISTING MONITORING WELL LOCATION AND IDENTIFICATION
- EXISTING PIEZOMETER LOCATION AND IDENTIFICATION
- EXISTING SURFACE WATER FLOW DIRECTION

GENERAL NOTES

- EXISTING CONDITIONS COMPILED FROM AERIAL TOPOGRAPHIC SURVEY PREPARED BY MCKENZIE SNYDER, INC., DATE OF AERIAL PHOTOGRAPH: 4/28/17.
- SITE DATUM: NAD83/NAVD88
- WETLANDS, RESOURCE PROTECTION AREA BOUNDARY, AND 100-YEAR FLOOD PLAIN TAKEN FROM DRAWING TITLED, "EXISTING CONDITIONS PLAN," DATED 10/6/16, BY GAI CONSULTANTS, INC.
- LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD LOCATE ALL UNDERGROUND UTILITIES IN ADVANCE OF CONSTRUCTION AND TAKE MEASURES TO PROTECT THEM FROM DAMAGE DURING CONSTRUCTION.
- THE MAJORITY OF WATER AND ASH HAS BEEN REMOVED FROM POND ABC, AND ONLY MANAGED CONTACT STORMWATER IS PRESENT.



PROJECT
CLOSURE BY REMOVAL PLAN
POND ABC AND POND E
SOLID WASTE PERMIT NO. 617

TITLE
POND ABC
PRE-CLOSURE TOPOGRAPHY
(APPROXIMATE BOTTOM OF POND)

PROJECT NO.
16-62150

CLIENT
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POSSUM POINT POWER STATION
PRINCE WILLIAM COUNTY, VIRGINIA

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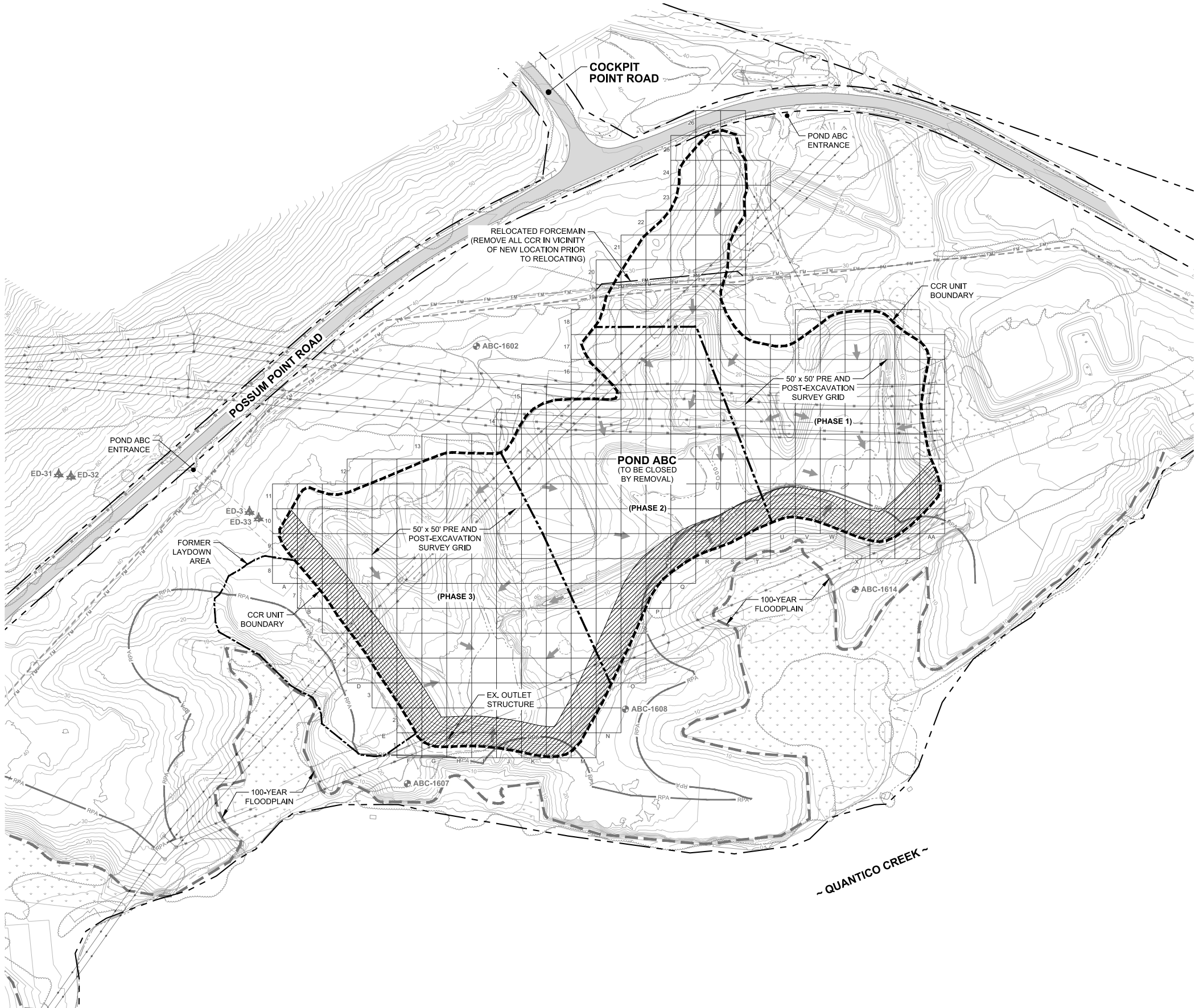


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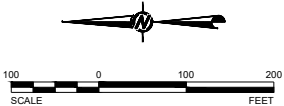
- DOMINION PROPERTY BOUNDARY
- CCR UNIT BOUNDARY
- EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS)
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- WETLANDS
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- APPROXIMATE EDGE OF SURFACE WATER
- LIMITS OF 100-YR FLOODPLAIN
- EXISTING TREE LINE
- EXISTING OVERHEAD UTILITY LINE
- EXISTING WATER LINE
- EXISTING FORCEMAIN
- EXISTING MONITORING WELL LOCATION AND IDENTIFICATION
- EXISTING PIEZOMETER LOCATION AND IDENTIFICATION
- EXISTING SURFACE WATER FLOW DIRECTION
- APPROXIMATE CLEAN CLOSURE PHASE LIMITS (SUBJECT TO CHANGE BASED ON FIELD CONDITIONS DURING EXCAVATION AND MAY INCLUDE SUB-PHASES)
- DENOTES APPROXIMATE LIMITS OF CRITICAL AREAS SUBJECT TO BACKFILL FOR ACCESS AND SLOPE STABILITY

GENERAL NOTES

- EXISTING CONDITIONS COMPILED FROM AERIAL TOPOGRAPHIC SURVEY PREPARED BY MCKENZIE SNYDER, INC., DATE OF AERIAL PHOTOGRAPH: 4/28/17.
- SITE DATUM: NAD83/NAVD88
- WETLANDS, RESOURCE PROTECTION AREA BOUNDARY, AND 100-YEAR FLOOD PLAIN TAKEN FROM DRAWING TITLED, "EXISTING CONDITIONS PLAN," DATED 10/6/16, BY GAI CONSULTANTS, INC.
- LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD LOCATE ALL UNDERGROUND UTILITIES IN ADVANCE OF CONSTRUCTION AND TAKE MEASURES TO PROTECT THEM FROM DAMAGE DURING CONSTRUCTION.

CLOSURE BY REMOVAL NOTES

- TOPOGRAPHY SHOWN WITHIN LIMITS OF THE PONDS REPRESENTS THE POND BOTTOM BASED ON AERIAL SURVEY BY MCKENZIE SNYDER, INC. ON 4/28/17. ACTUAL FIELD CONDITIONS MAY VARY.
- PHASED CLOSURE OF THE PONDS MAY BE SEQUENCED AS NECESSARY TO ADDRESS ISSUES RELATED TO ACCESS AND SLOPE STABILITY, AND TO MINIMIZE CONTACT STORMWATER AREAS. SUB-PHASES MAY BE REQUIRED FOR REGULATORY APPROVAL.
- ANY AREA CERTIFIED AS ACHIEVING CLOSURE BY REMOVAL IS TO BE PROTECTED FROM CCR AND CONTACT STORMWATER, AND MAY BE FILLED AND/OR RESHAPED AS NEEDED PRIOR TO ACHIEVING FINAL GRADES.
- ACCUMULATED CCR SHALL BE REMOVED FROM SURFACES WITHIN THE POND LIMITS SUCH THAT NO CCR REMAINS VISIBLE.
- FOLLOWING VISUAL-CLEAN CONDITIONS, OVER-EXCAVATE THE REMOVAL FOOTPRINT BY AT LEAST SIX INCHES.
- VISUAL INSPECTION AND TARGETED SUBGRADE VISUAL SAMPLING TO BE OVERSEEN BY OWNER'S ENGINEER REPRESENTATIVE. SAMPLING TO BE PERFORMED AT A FREQUENCY OF AT LEAST ONE TEST PER ACRE. TARGETED SAMPLING TO CONSIST OF HAND-DUG HOLES AT LEAST SIX INCHES DEEP.
- EXCAVATION OF SLOPES STEEPER THAN 2:1 SHALL BE SEQUENCED SUCH THAT THE SLOPES CAN BE EXCAVATED, INSPECTED, AND BACKFILLED IN THE SHORTEST TIME POSSIBLE. BACKFILL SLOPES WITH CLEAN SOIL FILL AT NO STEEPER THAN 2:1.
- EXCAVATED CCR AND SOIL-CCR MIXTURES SHALL BE CONSOLIDATED IN POND D OR TAKEN TO AN OFF-SITE DISPOSAL FACILITY AS DIRECTED BY DOMINION.



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PROJECT
CLOSURE BY REMOVAL PLAN
POND ABC AND POND E
SOLID WASTE PERMIT NO. 617

TITLE
POND ABC
CLOSURE BY REMOVAL PLAN

PROJECT NO.
16-62150

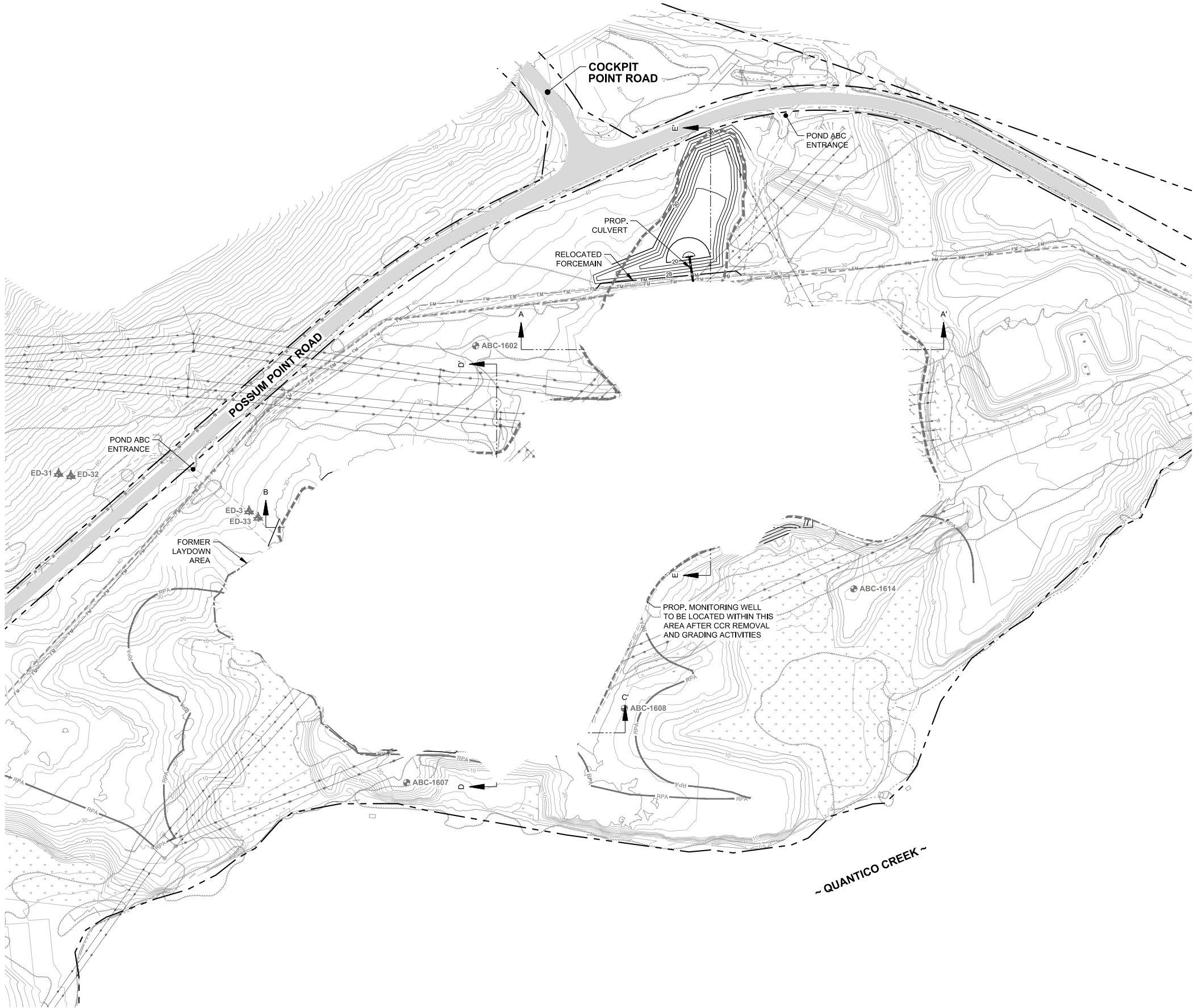
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3 of 9
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CBR-3

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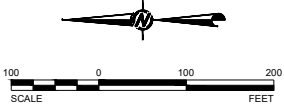
- DOMINION PROPERTY BOUNDARY
- CCR UNIT BOUNDARY
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- EXISTING WATER LINE
- EXISTING FORCEMAIN
- EXISTING MONITORING WELL LOCATION AND IDENTIFICATION
- EXISTING PIEZOMETER LOCATION AND IDENTIFICATION
- PROPOSED MONITORING WELL LOCATION AND IDENTIFICATION

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CONCEPTUAL FINAL GRADING NOTE

- CONCEPTUAL FINAL GRADING IS SHOWN FOR REFERENCE ONLY. THIS PLAN SHALL NOT BE IMPLEMENTED PRIOR TO PRINCE WILLIAM COUNTY SITE PLAN APPROVAL.



REV.	MMDDYY	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
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CLIENT
DOMINION ENERGY
POSSUM POINT POWER STATION
PRINCE WILLIAM COUNTY, VIRGINIA

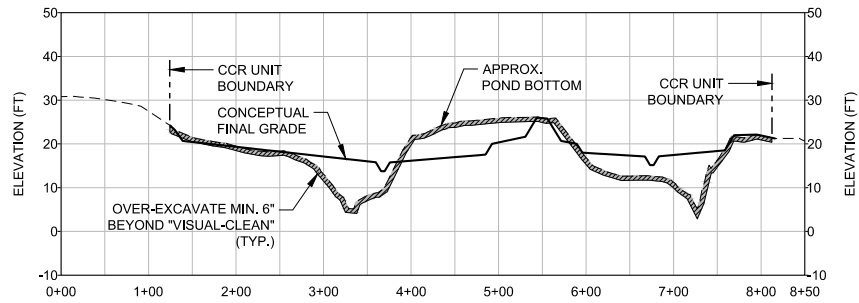
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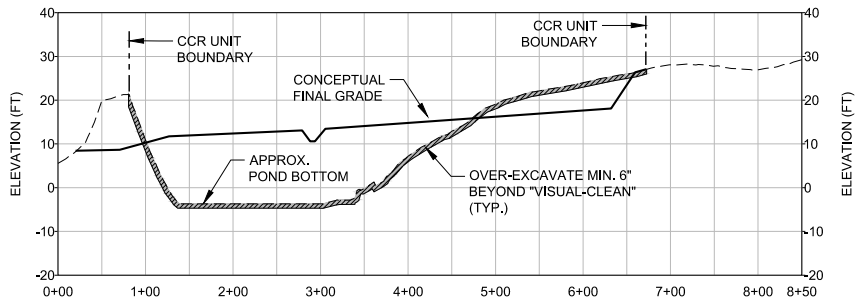
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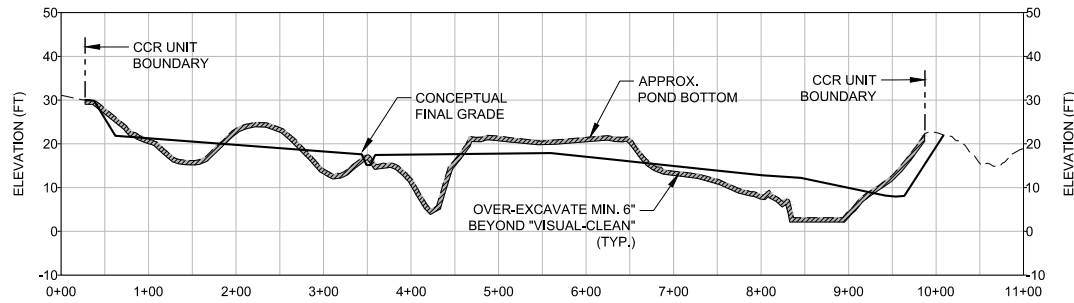
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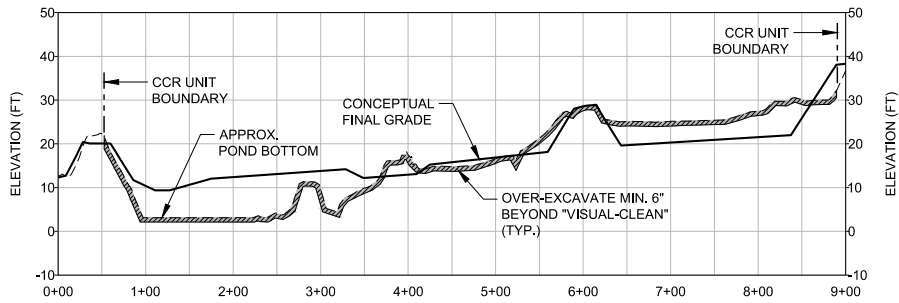
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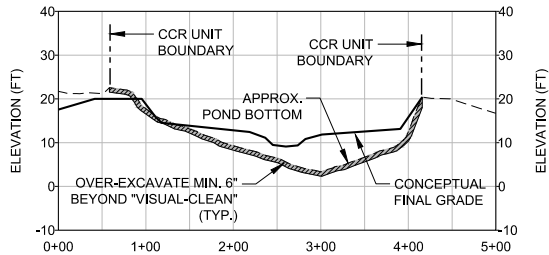
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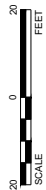
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SECTION E - E'



SECTION C - C'



PROJECT
CLOSURE BY REMOVAL PLAN
POND ABC AND POND E
SOLID WASTE PERMIT No. 617

TITLE
POND ABC
CROSS-SECTIONS

PROJECT NO.
16-62150

CLIENT
DOMINION ENERGY
POSSUM POINT POWER STATION
PRINCE WILLIAM COUNTY, VIRGINIA

CONSULTANT

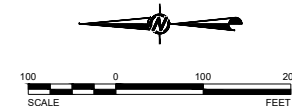
GOLDER ASSOCIATES INC.
2108 WEST LABURNUM AVENUE
SUITE 200
RICHMOND, VA 23227
(804)398-7900
www.golder.com



REV.	MMDDYY	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
1	09/14/18	RESPONSE TO DEQ TR COMMENTS	DPM	BPG	ATN	DPM
0	05/07/18	ISSUED FOR PERMIT	DPM	BPG	ATN	DPM



IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ARCH D



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LEGEND

- DOMINION PROPERTY BOUNDARY
- CCR UNIT BOUNDARY
- EXISTING TOPOGRAPHIC CONTOURS (2' INTERVALS)
- CONCEPTUAL FINAL GRADE CONTOURS (2' INTERVALS)
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- WETLANDS
- RESOURCE PROTECTION AREA BOUNDARY
- APPROXIMATE EDGE OF SURFACE WATER
- EXISTING TREE LINE
- EXISTING OVERHEAD UTILITY LINE
- EXISTING WATER LINE
- EXISTING FORCEMAIN
- EXISTING MONITORING WELL LOCATION AND IDENTIFICATION
- EXISTING PIEZOMETER LOCATION AND IDENTIFICATION
- PROPOSED MONITORING WELL LOCATION AND IDENTIFICATION

GENERAL NOTES

- EXISTING CONDITIONS COMPILED FROM AERIAL TOPOGRAPHIC SURVEY PREPARED BY MCKENZIE SNYDER, INC., DATE OF AERIAL PHOTOGRAPH: 4/28/17.
- SITE DATUM: NAD83/NAVD88
- WETLANDS AND RESOURCE PROTECTION AREA BOUNDARY TAKEN FROM DRAWING TITLED, "EXISTING CONDITIONS PLAN," DATED 10/6/16, BY GAI CONSULTANTS, INC.
- LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD LOCATE ALL UNDERGROUND UTILITIES IN ADVANCE OF CONSTRUCTION AND TAKE MEASURES TO PROTECT THEM FROM DAMAGE DURING CONSTRUCTION.

CONCEPTUAL FINAL GRADING NOTE

- CONCEPTUAL FINAL GRADING IS SHOWN FOR REFERENCE ONLY. THIS PLAN SHALL NOT BE IMPLEMENTED PRIOR TO PRINCE WILLIAM COUNTY SITE PLAN APPROVAL.

REV.	MMDDYY	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
1	09/14/18	RESPONSE TO DEQ TR COMMENTS	DPM	BPG	ATN	DPM
0	05/07/18	ISSUED FOR PERMIT	DPM	BPG	ATN	DPM



CLIENT
DOMINION ENERGY
POSSUM POINT POWER STATION
PRINCE WILLIAM COUNTY, VIRGINIA

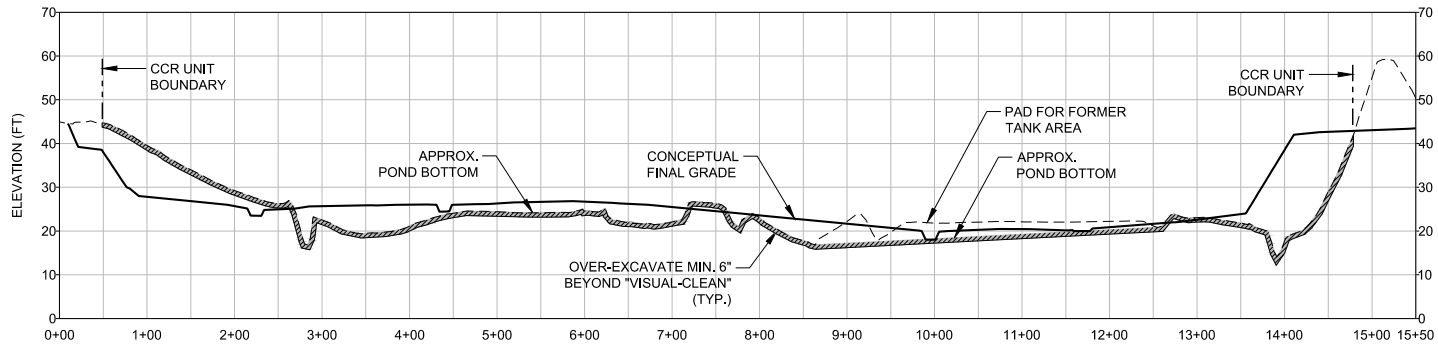
CONSULTANT
GOLDER ASSOCIATES INC.
2108 WEST LABURNUM AVENUE
SUITE 200
RICHMOND, VA 23227
(804) 358-7900
www.golder.com



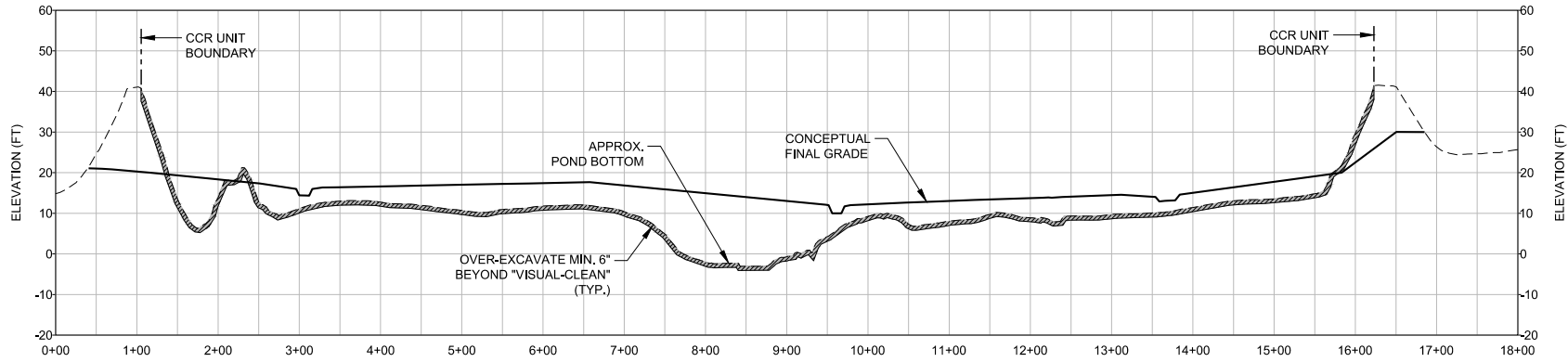
PROJECT CLOSURE BY REMOVAL PLAN POND ABC AND POND E SOLID WASTE PERMIT No. 617	TITLE POND E CONCEPTUAL FINAL GRADING PLAN	PROJECT NO. 16-62150
REV. 1	8 of 9	DRAWING CBR-8

1" IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN COPIED FROM: ARCH D

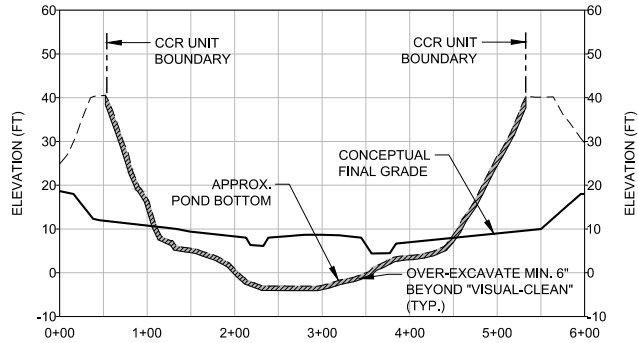
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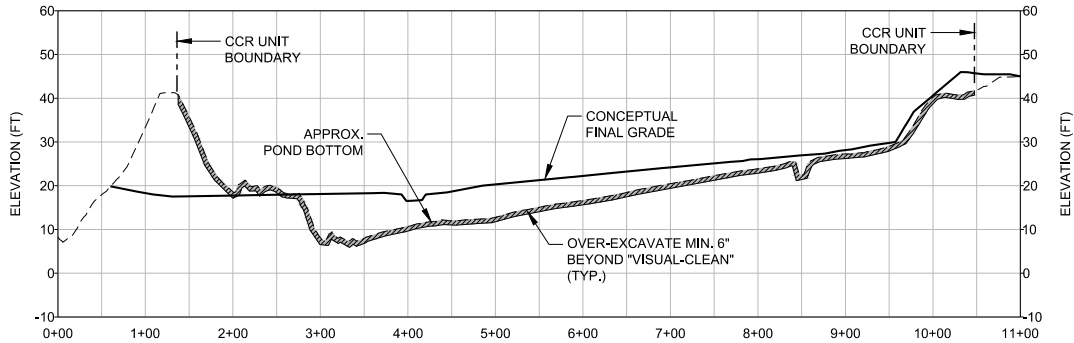
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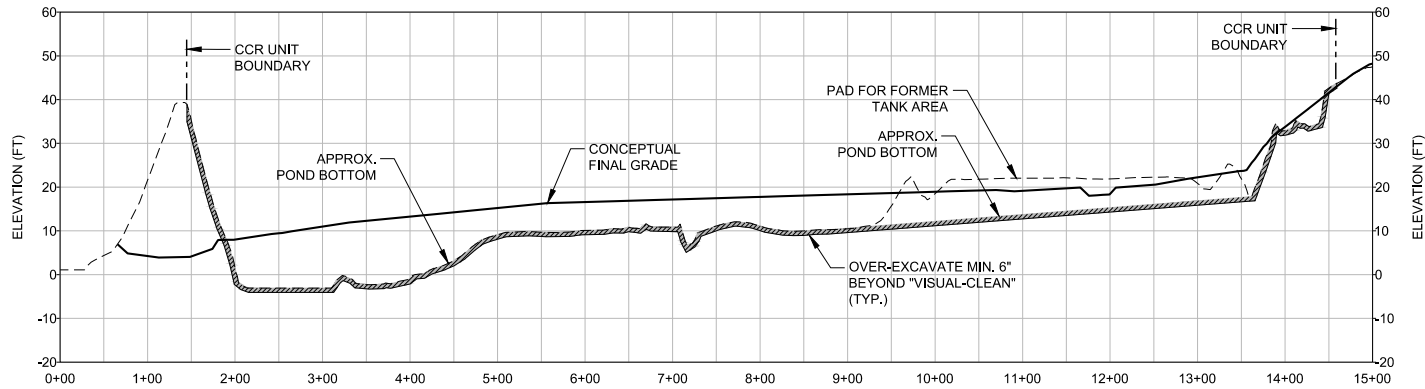
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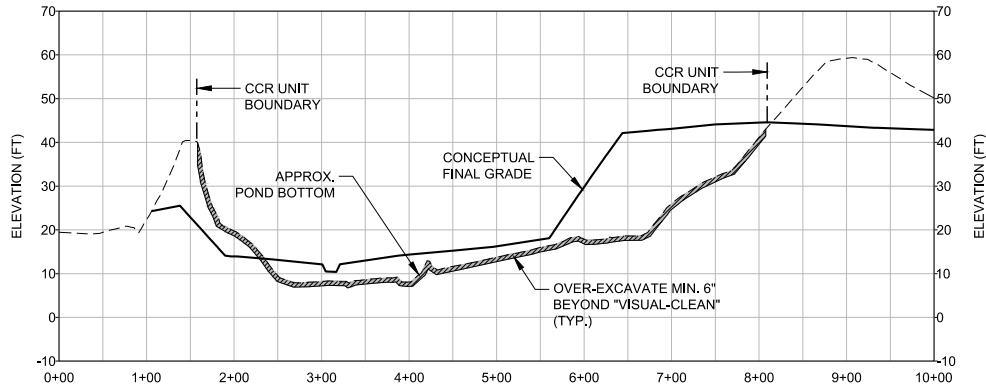
SECTION H - H'



SECTION I - I'



SECTION J - J'



SECTION K - K'



REV.	MMDDYY	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
1	09/14/18	RESPONSE TO DEQ TR COMMENTS	DPM	BPG	ATN	DPM
0	05/07/18	ISSUED FOR PERMIT	DPM	BPG	ATN	DPM



CLIENT
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PROJECT
CLOSURE BY REMOVAL PLAN
POND ABC AND POND E
SOLID WASTE PERMIT NO. 617

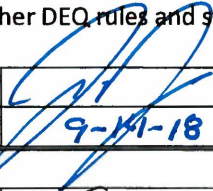
TITLE
POND E
CROSS-SECTIONS

PROJECT NO.
16-62150

REV. 1
DRAWING
CBR-9



Solid Waste Disposal Facility Cost Estimate Form

Facility Name:	Possum Point Power Station CCR Impoundments				Permit No. SWP	617	
Address:	19000 Possum Point Road						
City:	Dumfries	State:	VA	Zip:	22026		
FA Holder:	Dominion Energy Virginia						
Estimate Prepared By:	Golder Associates Inc.						
Indicate the plan versions for which this cost estimate was prepared, identifying the following information for each plan:							
Closure Plan			Post-Closure Care Plan				
Title:	Surface Impoundment Closure Plan			Title:	n/a		
Plan Date:	August 2018	Approved:		Plan Date:		Approved:	
Consultant:	Golder Associates Inc.			Consultant:			
Corrective Action Plan			Corrective Action Monitoring Plan				
Title:	n/a			Title:	n/a		
Plan Date:		Approved:		Plan Date:		Approved:	
Consultant:				Consultant:			
Cost Estimate Summary							
Total Closure Cost:	\$5,629,735						
Total Post-Closure Cost:	\$0						
Total Corrective Action Cost:	\$0						
TOTAL:	\$5,629,735						
References							
Please indicate references used to develop this cost estimate: Unit costs were developed from 2016 closure construction bid estimates for Dominion's CCR impoundment facilities, estimates of soil prices in the coastal Virginia area, and other landfill closure bid packages in the consultant's local area.							
Certification by Preparer:							
This is to certify that the cost estimates pertaining to the engineering features and monitoring requirements of this solid waste management facility have been prepared by me and are representative of the design specified in the facility's approved Closure, Post-Closure and Corrective Action Plans. The estimate is based on the cost of hiring a third party and does not incorporate any salvage value that may be realized by the sale of wastes, facility structures, or equipment, land or other facility assets at the time of partial or final closure. In my professional judgment, the cost estimates are a true, correct, and complete representation of the financial liabilities for closure, post-closure care, and corrective action of the facility and comply with the requirements of 9 VAC 20-70 and all other DEQ rules and statutes of the Commonwealth of Virginia.							
Name:	Ron DiFrancesco, P.E.			Signature:			
Title:	Principal and Practice Leader			Date:	9-11-18		
Acknowledgement by Owner/Operator :							
Name:	David Craymer			Signature:			
Title:	Vice President, Power Generation Systems Operations			Date:	09/07/18		

Possum Point Power Station - Permit #617
Pond ABC CCR Impoundment Closure by Removal Cost Estimate

Item No.	Description	Unit of Measure	Quantity	Unit Price	Total	Notes/Assumptions
1	Demobilization	LS	1	\$ 500,000	\$ 500,000	
2	General Conditions	MO	6	\$ 50,000	\$ 300,000	
3	Construction Engineering / Surveying / Permitting	MO	6	\$ 20,000	\$ 120,000	Existing E&S Plan amendment
4	Maintain and inspect erosion / stormwater controls during	MO	6	\$ 4,000	\$ 24,000	
5	Stormwater pumping to Pond D	MO	6	\$ 27,300	\$ 163,800	
6	Silt Fence non-reinforced	LF	2,400	\$ 4.10	\$ 9,840	
7	Silt Fence removal and disposal	LF	2,400	\$ 1.00	\$ 2,400	
8	CCR Excavation	CY	50,000	\$ 9.55	\$ 477,500	
9	6-inch over-excavation (17 acres)	CY	15,100	\$ 9.50	\$ 143,450	Excavate, load, haul and place in NAP
10	Soil backfill for slope stabilization	CY	2,500	\$ 15.50	\$ 38,750	Excavate, load, place and compact.
11	Site stabilization	Ac	17	\$ 3,500.00	\$ 59,500	
12	Site security - Gate	Ea	1	\$ 1,500	\$ 1,500	
13	Closure sign	Ea	1	\$ 125	\$ 125	
14	Contingency	%	1,840,865	10%	\$ 184,087	
15	3rd party certification survey	Ac	17	\$ 4,500	\$ 76,500	
16	Construction QA/QC oversight	LS	1	\$ 93,500	\$ 93,500	
17	Closure certification report	LS	1	\$ 8,000	\$ 8,000	
18	Groundwater Monitoring	LS	1	\$ 32,292	\$ 32,292	Minimum remaining sampling events to demonstrate closure
	Total				\$ 2,235,244	

Notes: 1. Estimate based on starting with current condition as of September 14, 2018 to achieve clean closure condition

Possum Point Power Station - Permit #617
Pond E CCR Impoundment Closure by Removal Cost Estimate

Item No.	Description	Unit of Measure	Quantity	Unit Price	Total	Notes/Assumptions
1	Demobilization	LS	1	\$ 500,000	\$ 500,000	
2	General Conditions	MO	6	\$ 50,000	\$ 300,000	
3	Construction Engineering / Surveying / Permitting	MO	6	\$ 20,000	\$ 120,000	Existing E&S Plan amendment
4	Maintain and inspect erosion / stormwater controls during	MO	6	\$ 5,000	\$ 30,000	
5	Stormwater pumping to Pond D	MO	6	\$ 27,300	\$ 163,800	
6	Silt Fence non-reinforced	LF	3,300	\$ 4.10	\$ 13,530	
7	Silt Fence removal and disposal	LF	3,300	\$ 1.00	\$ 3,300	
8	CCR Excavation	CY	100,000	\$ 9.55	\$ 955,000	
9	6-inch over-excavation (17 acres)	CY	35,500	\$ 9.50	\$ 337,250	Excavate, load, haul and place in NAP
10	Soil backfill for slope stabilization	CY	5,500	\$ 15.50	\$ 85,250	Excavate, load, place and compact.
11	Site stabilization	Ac	40	\$ 3,500.00	\$ 140,000	
12	Site security - Gate	Ea	1	\$ 1,500	\$ 1,500	
13	Closure sign	Ea	1	\$ 125	\$ 125	
14	Contingency	%	2,649,755	10%	\$ 264,976	
15	3rd party certification survey	Ac	40	\$ 4,500	\$ 180,000	
16	Construction QA/QC oversight	LS	1	\$ 220,000	\$ 220,000	
17	Closure certification report	LS	1	\$ 8,000	\$ 8,000	
18	Groundwater Monitoring	LS	1	\$ 71,760	\$ 71,760	Minimum remaining sampling events to demonstrate closure
	Total				\$ 3,394,491	

Notes: 1. Estimate based on starting with current condition as of September 14, 2018 to achieve clean closure condition

Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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South America	+ 56 2 2616 2000

solutions@golder.com
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Fax: (804) 358-2900



Engineering Earth's Development, Preserving Earth's Integrity

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