Emergency Action Plan

Virginia Electric and Power Company
Bremo Power Station
North Ash Pond, West Ash Pond and East Pond Dams

Department of Conservation and Recreation (DCR)
Inventory #'s 065020, 060511, 065019

Submitted to:

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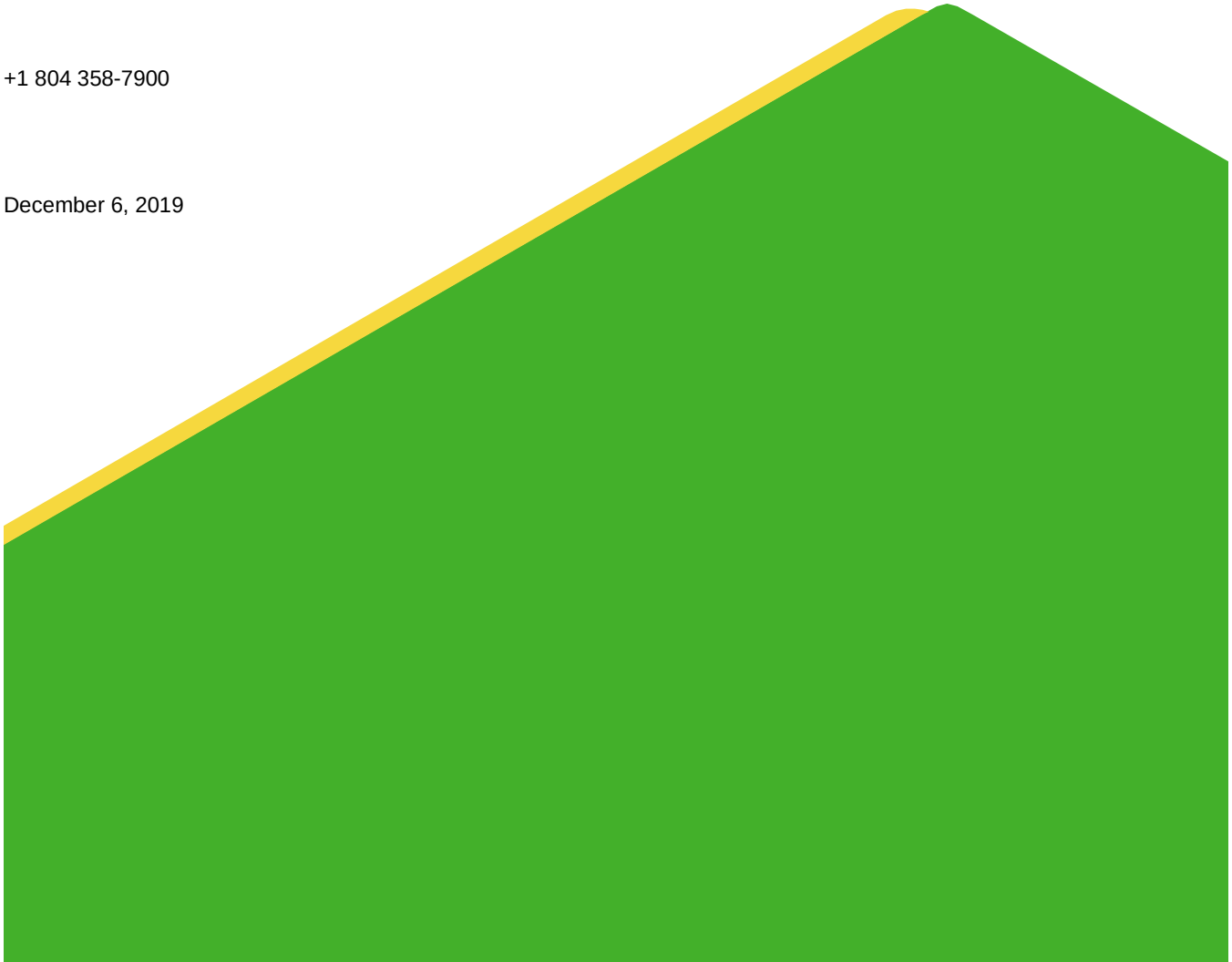
December 6, 2019



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APPENDICES

1.0 BASIC INFORMATION

Table 1: Bremo Power Station Unit Hazard Potential Classification

Unit	Inventory Number	Hazard Potential Classification	
		CCR Regulations	Virginia Dam Safety
North Ash Pond	065020	Significant	High
West Ash Pond	065011	Significant	Low
East Pond	065019	Significant	Low

Name of Owner: Virginia Electric and Power Company, Attn: Michael Winters, P.E.
Address: 5000 Dominion Boulevard Glen Allen, VA 23060
Telephone: (Business) 804-273-2376 (Mobile) 804-347-9451

Name of Dam Operator: William Reed – Station Director
Address: Bremo Power Station – 1038 Bremo Road, Bremo Bluff, VA 23022
Telephone:(Mobile) 804-638-0335

Name of EAP Coordinator: Rick Woolard, Sr. Environmental Compliance Coordinator or Assignee
Address: Bear Garden Generating Station – 2608 C.G. Woodson Road, New Canton, VA 23123
Telephone: (Mobile) 804-385-7133

Name of Dam Engineer: Michael Winters, P.E.
Address: 5000 Dominion Boulevard Glen Allen, VA 23060
Telephone: (Business) 804-273-2376 (Mobile) 804-347-9451

Name of Alternate Dam Operator: Rick Woolard, Sr. Environmental Compliance Coordinator
Address: Bear Garden Generating Station – 2608 C.G. Woodson Road, New Canton, VA 23123
Telephone: (Business) 434-581-6225 (Mobile) 804-385-7133

Local Emergency Contact: Fluvanna County Sheriff and Fire Department
Address: P.O. Box 113 160 Commons Blvd Palmyra, VA 22963
Telephone: (Business) 434-589-8211*24/7 or local emergency #911

Local Emergency Management Coordinator: Debbie Smith
Address: 132 Main Street P.O. Box 540 Palmyra, VA 22963
Telephone: (Business) 434-591-1910 ext. 1066 (Mobile) 434-270-6321

2.0 EMERGENCY ACTION PLAN OVERVIEW

Three emergency stages, ranked by severity, will be established for the North Ash Pond, West Ash Pond and East Pond Dams.

Emergency Stage Definitions

Stage 1: Non-Emergency – failure is unlikely, and storm development or operational malfunction is slow in advancing to a potential emergency. This stage indicates a situation is developing such that the dam is not in danger of failing, but if it continues failure may be possible.

Stage 2: Potential Failure – storm development or operational malfunction that could result in failure of the dam is quickly accelerating. This stage indicates that a situation is developing that could result in a dam failure. Declaration of Stage 2 represents a safety emergency and would be considered an activation of the EAP under the CCR rule.

Stage 3: Imminent Failure – storm development or operational malfunction has reached a point that the failure of the dam has started or is imminent. This stage indicates dam failure is expected or occurring and may result in flooding that will threaten life and/or property downstream of the dam. Declaration of Stage 3 represents a safety emergency and would be considered an activation of the EAP under the CCR rule.

Stage 2 conditions include Stage 1 conditions and responsibilities, and Stage 3 conditions include both Stage 1 and Stage 2 conditions and responsibilities.

Table 2 – Stage Assessment Process Summary Table

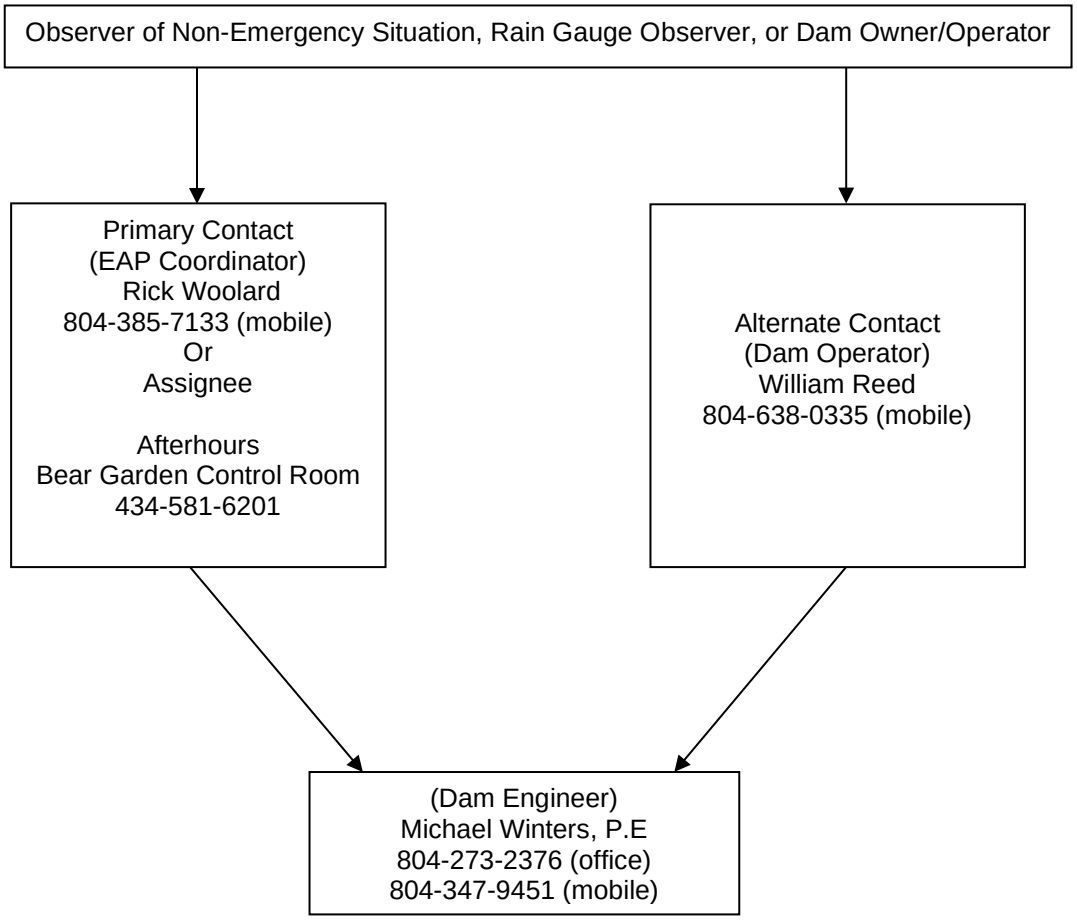
Step 1: Condition Detection	Event Detection: Assess the situation to determine the stage level using Section 6		
Step 2: Stage Level	**Stage 1**	**Stage 2**	**Stage 3**
	Non-Emergency Situation Slowly Developing Situation See Definition	Potential Emergency Situation Quickly Developing Situation See Definition	Urgent Emergency Situation Dam Failure is Imminent or In Progress See Definition
Step 3: Notification and Communication	Notification List See Section 3.1	Notification List See Section 3.2	Notification List See Section 3.3
Step 4: Expected Action	Inspect Dam, Spillway, Level Gauge, and Rain Gauge Every 8 hours Monitor and Listen to Weather Forecasts	Inspect Dam, Spillway, Level Gauge, and Rain Gauge Every 2 hours Notify Emergency Responders	Continuous Inspection of Dam, Spillway, Level Gauge, and Rain Gauge Continuous Contact with Emergency Responders
Step 5: Termination and Follow Up	Termination of Monitoring Conditions at the Dam and Proceed to Evaluate Damages and Plans for Repairs		

Normal methods of detecting potential emergency situations at the dam consist of surveillance monitoring and observing instrument readings. For conditions beyond the normal range of operations, contact the Fluvanna County Emergency Services Coordinator for assistance with evaluation of the conditions.

3.0 NOTIFICATION

3.1 Stage 1 Notification

The following flow chart is to be utilized upon determination of Stage 1 Conditions at the dam:



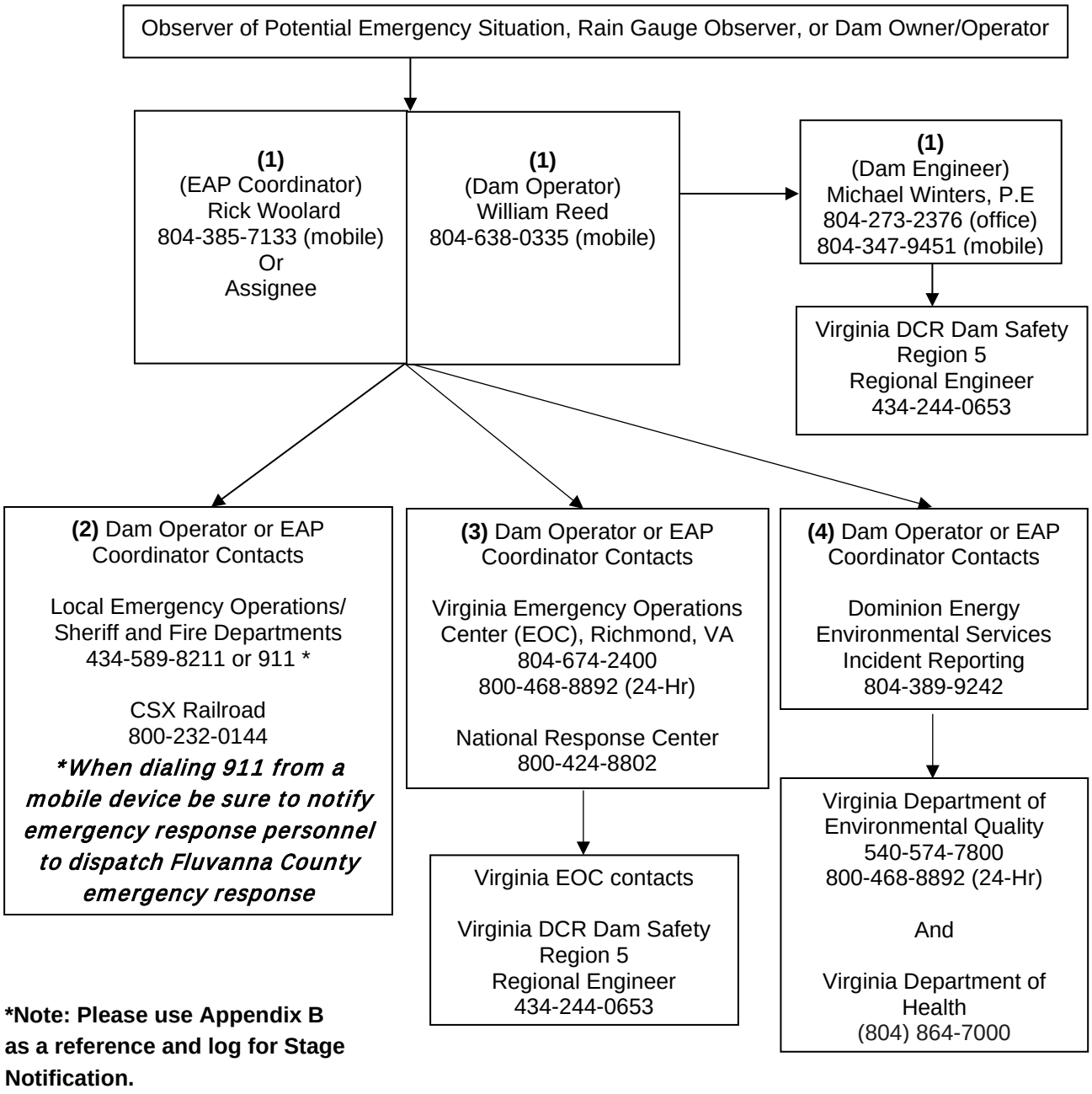
***Note: Please use Appendix B as a reference and log for Stage Notification.**

Message from the dam operator or EAP Coordinator to Dam Engineer:

I am at the Bremo Power Station evaluating the general conditions at the [insert dam name here] and coordinating with the observer of emergency situation as recommended in the Emergency Action Plan. We are currently at Stage 1. If conditions change, we may move to Stage 2 and perform more frequent evaluations. Otherwise, we will visit and make observations every 8 hours.

3.2 Stage 2 Notification

The following flow chart is to be utilized upon determination of Stage 2 Conditions at each dam:



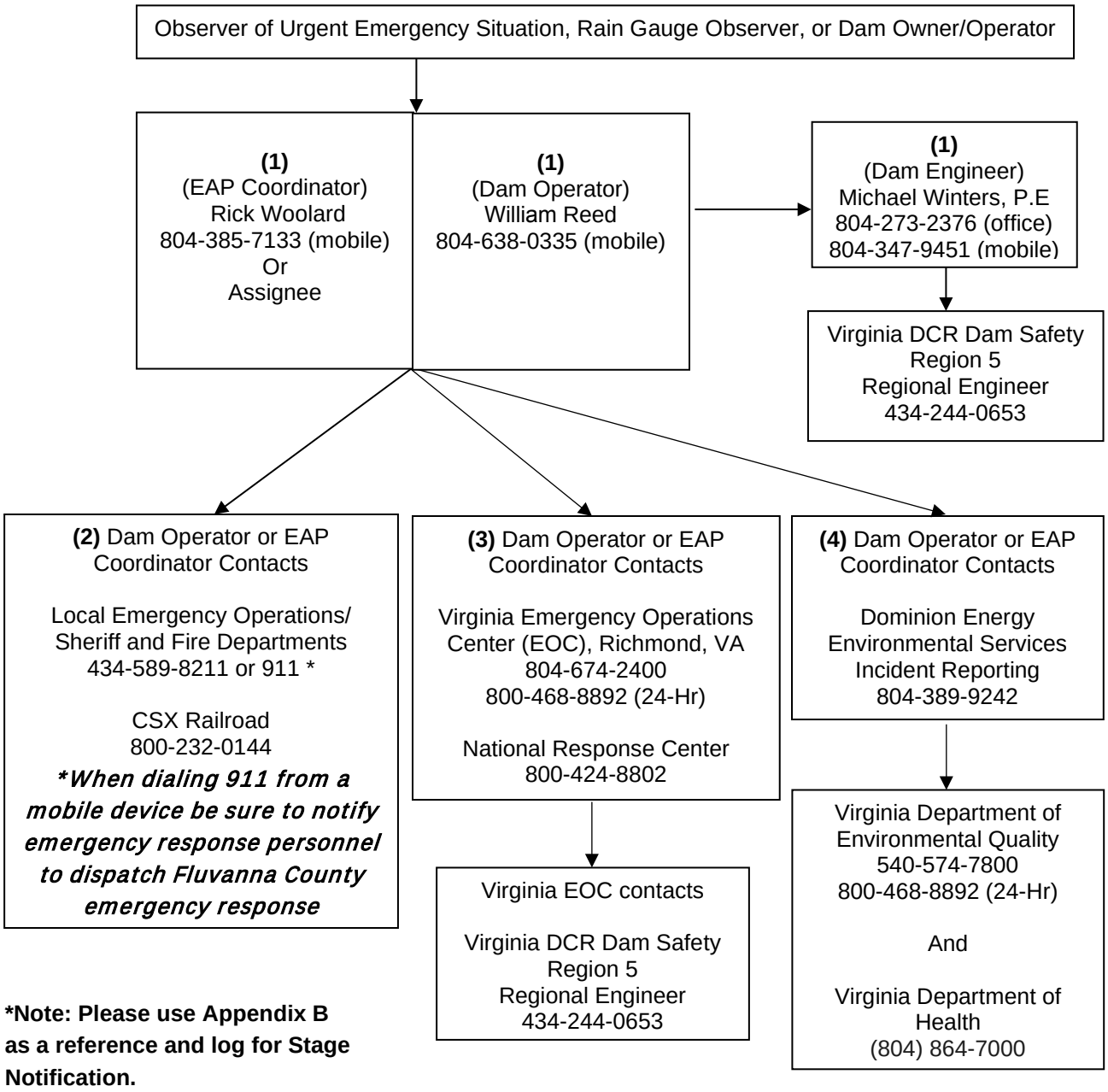
***Note: Please use Appendix B as a reference and log for Stage Notification.**

Message from the dam operator to the EAP Coordinator:

I am at [or I have been in contact with the observer at] the Bremo Power Station, and conditions at the [insert dam name here] have reached the threshold established in the Emergency Action Plan at which to move to the Stage 2 Emergency Level. Please prepare your personnel in case of an emergency and continue to initiate your standard operating procedures. Someone will be observing the dam every 2 hours.

3.3 Stage 3 Notification

The following flow chart is to be utilized upon determination of Stage 3 Conditions at each dam:



***Note: Please use Appendix B as a reference and log for Stage Notification.**

Message from the dam operator to the EAP Coordinator:

I am at [or I have been in contact with the observer at] the Bremo Power Station, and conditions at the [insert dam name here] have reached the threshold established in the Emergency Action Plan to move to the Stage 3 Emergency level. Please proceed with the Standard Emergency Procedures. Someone will remain at the dam to monitor continuously until the dam breaks or the water level recedes to safe levels and the Emergency Services Coordinator directs us to terminate our responsibilities.

Note: Standard Emergency Procedures (SEPs) shall include notification of the evacuation team, contacting the National Weather Service (NWS) for rainfall projections, and contacting the State Department of Emergency Management.

4.0 STATEMENT OF PURPOSE

The North Ash Pond, West Ash Pond and East Pond are designed and operated pursuant to Virginia Department of Conservation and Recreation Dam Safety and US Environmental Protection Agency Disposal of Coal Combustion Residuals (CCRs) from Electric Utilities regulations and generally accepted engineering practices. The purpose of this Emergency Action Plan (EAP) is to provide critical information and a plan of action in the event of an emergency situation at the Bremo Power Station North Ash Pond, West Ash Pond and East Pond, owned and operated by Virginia Electric and Power Company dba Dominion Energy (Dominion). The plan addresses the following:

- Delineation of inundation areas downstream of the dams;
- Procedures for determining when to initiate various emergency response levels;
- Provisions for notification of emergency responders and owners of potentially affected downstream residences and structures;
- Emergency preparedness and exercises; and
- Documentation of evacuation routes.

This plan is intended to meet the requirements of 4VAC50-20-10 et seq. of the Virginia Department of Conservation and Recreation Impounding Structure regulations and 40 CFR 257.73(a)(3) of the Federal Disposal of CCRs from Electric Utilities Final Rule (CCR rule). Under the Virginia Dam Safety regulations, the West Ash Pond is classified as “low hazard” and the North Ash Pond and East Pond are classified as a “high hazard”. The North Ash Pond, West Ash Pond and East Pond are classified as a “significant” hazard due to the potential environmental impacts of a failure based on 40 CFR 257.73(a)(2) of the CCR Rule.

5.0 PROJECT DESCRIPTION

5.1 General Vicinity

The Bremo Power Station is located in Fluvanna County at 1038 Bremo Road, east of Route 15 (James Madison Highway) and north of the James River as shown on Figure 1. The station was converted from a coal-fired power plant to a natural gas-fired power plant in 2014. CCR from past operations was stored in the three on-site CCR surface impoundments (North Ash Pond, West Ash Pond, and East Pond). No newly generated CCR has been placed in these impoundments since the 2014 conversion to a gas-fired plant.

The three (3) CCR surface impoundments are being closed under the CCR rule provisions in 40 CFR 257.102 and relevant sections of the Virginia Solid Waste Management Regulations and Dam Safety Regulations.

5.2 General Description

5.2.1 North Ash Pond Dam

The Bremo Station North Ash Pond is located approximately one mile east of Bremo Bluff, Virginia, in Fluvanna County and is located approximately 1,000 feet north of the James River. The ash pond impounds CCR from past operations at the Bremo Power Station, under DCR Inventory Number 065020. The embankment was constructed as part of the Ash Disposal Pond Phase II construction and was completed in 1983. The dam consists of earthen fill with a clay cutoff key. As of September 2019, the North Ash Pond has been covered with a geosynthetic rain cover. Table 2 provides details of the dam:

Table 3 - North Ash Pond Berm Details

Year Constructed	1983
Dam Height	134 feet
Crest Length and Width	1,350 feet X 30 feet
Top of Dam Elevation	334
Normal Pool Elevation	314
Principal Spillway Elevation	Pumped Discharge (Pad EL 328)
Emergency Spillway Crest Elevation	330.5
Principal Spillway Capacity	Self-priming Centrifugal Pump @ 1,500 gpm (3.34 cfs)
Emergency Spillway Capacity	4,600 CFS
Normal Reservoir Capacity	3.3 Ac-ft
Maximum Reservoir Capacity	217 Ac-ft
Current Spillway Design Flood Capacity (SDF)	100% Probable Maximum Flood (PMF)

5.2.2 West Ash Pond Dam

The Bremo Station West Ash Pond is located approximately one mile east of Bremo Bluff, Virginia, in Fluvanna County and is located approximately 300 feet north of the James River. The 17-acre ash pond is reconfigured as influent storage for site source waters in accordance with DCR Inventory Number 065011 and the sites VPDES permit. The dam consists of an earthen embankment. Table 3 provides details of the dam:

Table 4 - West Ash Pond Berm Details

Year Constructed	1978
Dam Height	18 feet
Crest Length and Width	3,520 feet X 15 feet
Top of Dam Elevation	234
Normal Pool Elevation	215
Principal Spillway Elevation	Pumped Discharge (Pad EL 228)
Auxiliary Spillway Elevation	230
Emergency Spillway Crest Elevation	N/A
Principal Spillway Capacity	Self-priming Centrifugal Pump @ 1,500 gpm (3.34 cfs)
Auxiliary Spillway Capacity	55 cubic feet per second (CFS)
Emergency Spillway Capacity	N/A
Normal Reservoir Capacity	106 Ac-ft

Maximum Reservoir Capacity	336 Ac-ft
Current SDF Capacity	1000 - year event *per CCR 257.73.(d)(i)(v)(13)(2)

5.2.3 East Pond Dam

The Bremo Station East Pond is located approximately one mile east of Bremo Bluff, Virginia, in Fluvanna County and is located approximately 350 feet north of the James River. The approximately 26.5-acre pond impounds stormwater, under DCR Inventory Number 065019 and the sites VPDES permit. The earthen embankment fill dam was completed around 1955. Table 4 provides details of the dam:

Table 5 - East Pond Berm Details

Year Constructed	~1955
Dam Height	29 feet
Crest Length and Width	2,700 feet X 15 feet
Top of Dam Elevation	232
15 ft Safety and High-Water Bench	215
Normal Pool Elevation	210.5
Principal Spillway Elevation	210.5
Emergency Spillway Crest Elevation	230
Principal Spillway Capacity	47 cubic feet per second (CFS)
Emergency Spillway Capacity	989 cubic feet per second (CFS)
Normal Reservoir Capacity	134.5 Ac-ft
Maximum Reservoir Capacity	520.2 Ac-ft
Current SDF Capacity	1000 - year event *per CCR 257.73.(d)(i)(v)(13)(2)

6.0 EMERGENCY DETECTION, EVALUATION, AND CLASSIFICATION

The dam owner and/or operator is responsible for operation and maintenance of this dam. The dam operator and the field observer are responsible for monitoring conditions at the dam, spillway, and staff gauge and notifying the Fluvanna County Emergency Services Coordinators when emergency stage conditions are activated.

The dam owner/operator will initiate this EAP based on the water level of the James River at Bremo Bluff, rainfall depth in a 24-hour period, or if conditions at the dam indicate that water levels in the impoundment will rise to the point where there is flow through the principal or emergency spillways. Embankment erosion, appurtenant structure malfunction, or any of the other conditions described in this section may also dictate initiation of the emergency action. While it is the dam owner's responsibility to initiate this process, the Local Emergency Management Coordinator may contact the dam owner to inform the team that an event is imminent and team members would initiate their duties as outlined in this EAP.

Depth of flow through the principal and emergency spillways is the best indication of flood conditions and should be used as an indicator of the potential impacts downstream. In the absence of actual flow depth data through the spillways, measured rainfall depths in inches monitored in the contributing watershed may be used to determine the emergency level. Visual observations should be made by a team member so that accurate and up to date information can be provided to the EAP Coordinator.

6.1 Reservoir Pool Level

Reservoir pool level, associated with the flow depth in the emergency spillway, is the prime indicator of flooding conditions at the North Ash Pond, West Ash Pond, and East Pond dams.

Table 6: Reservoir Pool Level Summary

Pond	Stage Level	Pool Level Elevation (feet)	Comments
North Ash Pond	Stage 1	325.5	This is five (5) feet below the level of the emergency spillway and would provide for increased monitoring as pool levels begin approaching the emergency spillway elevation, and pumped discharge (pad EL 328).
	Stage 2	330.5	This is the crest elevation of the emergency spillway and the spillway flow depth would therefore be zero (0) feet, but the spillway would be on the verge of discharging.
	Stage 3	332	This would occur when the pool level would be two (2) feet below the dam crest and would indicate that overtopping of the dam embankment could soon occur.
West Ash Pond	Stage 1	226	This is two (2) feet below the level of the principal spillway pumps, (pad EL 228) and would provide for increased monitoring as pool levels begin approaching the auxiliary spillway elevation (230).
	Stage 2	230	This is the crest elevation of the auxiliary spillway and the spillway flow depth would therefore be zero (0) feet, but the spillway would be on the verge of discharging.
	Stage 3	232	This would occur when the pool level would be two (2) feet below the dam crest and would indicate that overtopping of the dam embankment could soon occur.
East Pond	Stage 1	215.5	This is five (5) feet above the level of the principal spillway and would provide for increased monitoring as pool levels reach the safety/high water bench (215) and begin approaching the emergency spillway elevation.
	Stage 2	230	This is the crest elevation of the emergency spillway and the spillway flow depth would therefore be zero (0) feet, but the spillway would be on the verge of discharging.
	Stage 3	231	This would occur when the pool level would be one (1) foot below the dam crest and would indicate that overtopping of the dam embankment could soon occur.

6.2 Rainfall Depths

Rainfall depths for various storm durations are another indicator of potential flooding condition, in addition to the water level of the James River, Bremo. The individual ponds have varying rainfall triggers due to their individual drainage areas and storage capacities. Rainfall depth will be measured using an on-site rain gauge or projected using the National Weather Service (NWS) or other reputable weather source.

Table 7: Rainfall Depth Summary

Pond	Condition Level	Limit
North Ash Pond	Stage 1	5 inches in 24 hours
	Stage 2	8 inches in 24 hours
	Stage 3	14 inches in 24 hours
West Ash Pond	Stage 1	6 inches in 24 hours (25-yr, 24-hr event) James River water level: Stage 34 = El 224.61
	Stage 2	8 inches in 24 hours (100-yr, 24-hr event) James River water level: Stage 39 = El 229.61
	Stage 3	11 inches in 24 hours (500-yr, 24-hr event) James River water level: Stage 41 = El 231.61
East Pond	Stage 1	6 inches in 24 hours (25-yr, 24-hr event) James River water level: Stage 34 = El 224.61
	Stage 2	8 inches in 24 hours (100-yr, 24-hr event) James River water level: Stage 39 = El 229.61
	Stage 3	11 inches in 24 hours (500-yr, 24-hr event) James River water level: Stage 41 = El 231.61

Note: James River, Bremo flood gauge located onsite. In case of a gauge outage reference James River, Scottsville, https://water.weather.gov/ahps2/hydrograph.php?wfo=rnk&gage=svev2. Also see Appendix C for Scottsville to Bremo flood gauge equivalency chart.

6.3 Observation Frequency

Dam, spillway, and staff gauge observations shall occur at frequencies determined by the Emergency Stage condition:

- Stage 1 conditions – observations shall occur at eight-hour intervals (Every eight (8) hours)
- Stage 2 conditions – observations shall occur at two-hour intervals (Every two (2) hours)
- Stage 3 conditions – continuous observation

An observer can be any person who has the ability to monitor and report observations of the dam at the time of a stage triggering event. Observers should use caution and be aware of the potential for flooded roads along the route to the dam. Monitoring and surveillance of conditions at the dam will continue under emergency conditions as long as safety is not in question.

Note: In the event that conditions are considered unsafe (i.e. wind speed greater than 40 mph, lightning, tornado etc.) conditions will be documented and dam observations will be postponed until conditions improve.

6.4 Public Roads Downstream

6.4.1 North Ash Pond Dam

The area downstream of the North Ash Pond Dam consists of the East Pond and a CSX railroad line. The railroad line is approximately 850 feet downstream from the toe of the dam. There are no occupied structures or public roads downstream of the dam or in the anticipated inundation zone resulting from an embankment failure.

6.4.2 West Ash Pond Dam

The area downstream of the West Ash Pond Dam consists of a CSX railroad line. The railroad line is approximately 125 feet downstream from the toe of the dam. Bremo Road (State Route 656), located approximately 50-feet to the north of the West Ash Pond, is partially within the inundation zone. Per VDOT, Bremo Road has an average annual daily trip count of 300. There are no occupied structures downstream of the dam or in the anticipated inundation zone resulting from an embankment failure.

6.4.3 East Pond Dam

The area downstream of the East Pond Dam consists of a CSX railroad line. The railroad line is approximately 150 feet downstream from the toe of the dam. There are no occupied structures or public roads downstream of the dam or in the anticipated inundation zone resulting from an embankment failure.

6.5 Additional Emergency Conditions

The following table describes additional events that could occur independent of a precipitation event or reservoir pool levels. If any of these conditions are observed, Dominion's Power Generation Engineering group, applicable Dominion department, or qualified consultant, should be contacted for further discussion, observation, and/or technical direction.

Table 8 - Emergency Conditions

Event	Situation
Emergency Spillway and Channel	Visual movement of the spillway channel with no flow
	Spillway is flowing and erosion/head cutting is observed
Sinkholes	Observation of new sinkhole on embankment
	Rapidly enlarging sinkhole
Embankment Cracking	New cracks in embankment greater than ¼ inch wide without seepage
	Cracks in embankment with seepage
	Cracks in embankment with rapidly increasing seepage
Embankment Movement	Visual movement of the embankment slope
	Sudden or rapidly progressing slides of the slopes
Vortex in Pond	Whirlpool with discharge downstream
Earthquake	Measurable earthquake with a magnitude of 3.5 within 50 miles of the dam
	Earthquake resulting in visible damage to the dam
	Earthquake resulting in potential uncontrolled release of water from the dam
Security Threat, Sabotage, and Vandalism	Verified bomb threat that, if carried out, could result in damage to the dam
	Detonated bomb that has resulted in damages to the dam or its appurtenances
	Damage to the dam or appurtenances with no impacts to the functioning of the dam
	Damage to the dam or appurtenances that has resulted in seepage flow
	Damage to the dam or appurtenances that has resulted in potential uncontrolled water release

In the event of an measurable earthquake with a magnitude of 3.5 within 50 miles of the dam, overtopping of the dam, evacuation of inundation areas, or other serious problems resulting in a triggering of stage conditions, the dam must be inspected by a professional engineer knowledgeable with the dam site. This inspection may be postponed due to unsafe conditions or lack of accessibility to the site.

6.6 De-escalation of Stage Conditions

Stage conditions can be stepped down when the following events occur:

Stage 3 to Stage 2

- The water level of the James River is below 41ft = EL 231.61 for the West Ash Pond and East Pond.
- After heavy rains have ended, the water level in the impoundments is below El 332, El 232, and El 231ft for the North Ash Pond, West Ash Pond and East Pond, respectively, and the water level is receding.

Stage 2 to Stage 1

- The water level of the James River is below 39ft = EL 229.61 for the West Ash Pond and East Pond.
- After heavy rains have ended, the water level in the impoundments is below El 330.5, El 230, and El 230ft for the North Ash Pond, West Ash Pond and East Pond, respectively, and the water level is receding.

Stage 1 to Termination

- Other emergency conditions have been evaluated by Dominion personnel and determine to not present a hazard to the dam going forward.
- The water level of the James River is below 34ft = El 224.61 for West Ash Pond and East Pond.
- After heavy rains have ended, the water level in the impoundments is below El 325.5, El 226, and El 215.5ft for the North Ash Pond, West Ash Pond and East Pond, respectively, and the water level is receding.

Termination of stage conditions occurs when all entities notified of the emergency condition have been communicated with and informed of current non-emergency conditions.

7.0 RESPONSIBILITY UNDER THE EAP

This section is intended to clearly outline the responsibilities of parties involved in all EAP procedures, including notification, surveillance, classification, evacuation, and termination.

7.1 Dam Owner/Operator Responsibilities

1) The dam owner/operator IS RESPONSIBLE for notifying the local Emergency Management Coordinator of any problem or potential problem at the dam site.

2) The dam owner/operator/EAP Coordinator WILL DETERMINE when Stage 1 conditions are met at the dam and WILL INITIATE dam surveillance accordingly.

3) The dam owner/operator/EAP Coordinator WILL DETERMINE when Stage 2 conditions are met at the dam.

4) The dam owner/operator/EAP Coordinator WILL DETERMINE when Stage 3 conditions are met at the dam.

5) The dam owner/operator WILL BE RESPONSIBLE for operating pumps as needed for the dam to function effectively.

6) The dam owner/operator WILL BE RESPONSIBLE for coordinating with local emergency response personnel to restrict traffic access to Bremo Road under Stage 2 and Stage 3 conditions to ensure public safety.

7) The dam owner/operator WILL BE RESPONSIBLE for notifying local emergency response personnel of changes in emergency conditions include stage escalation and de-escalation and termination of the EAP under non-emergency conditions.

7.2 Responsibility for Notification

1) The observer of the emergency situation WILL NOTIFY the dam owner/operator/EAP Coordinator before beginning dam surveillance under Stage 1 conditions.

2) The dam owner/operator/EAP Coordinator WILL NOTIFY the 24-hour dispatch center and the local Emergency Management Coordinator when Stage 2 conditions are met, in order to alert them to perform actions required for Stage 2 conditions and to review actions that may be required for the safety and protection of people and property and to mobilize their evacuation team. The dam owner/operator WILL NOTIFY the Regional Dam

Safety Engineer and Dominion Power Generation Engineering that Stage 2 conditions have been implemented.

3) The dam owner/operator/EAP Coordinator WILL NOTIFY the 24-hour dispatch center and the local Emergency Management Coordinator to initiate warning/evacuation of residents when Stage 3 conditions or imminent dam failure are probable. The dam owner/operator WILL NOTIFY the Regional Dam Safety Engineer and Dominion Power Generation Engineering that Stage 3 conditions have been implemented.

4) The dam owner/operator/EAP Coordinator WILL NOTIFY local emergency response personnel of changes in emergency conditions include stage escalation and de-escalation and termination of the EAP under non-emergency conditions.

Once stage conditions have been activated, the dam owner/operator/EAP Coordinator will continue to provide the EAP Coordinator with information concerning water level rise, erosion in the emergency spillway, and/or dam overtopping, as provided by the dam/spillway/staff gauge observer. It is particularly important for the EAP Coordinator to know when a breach is occurring to evacuate their rescue personnel. The staff gauge observer will remain at the dam until released from duty by the EAP Coordinator or Assignee.

7.3 Responsibility for Evacuation

There will be no evacuation associated with the implementation of this EAP. There are no occupied structures or publicly travelled roads within the inundation zone associated with evacuation.

7.4 Responsibility for Stage Termination

Stage conditions can be rescinded when the following events occur:

1) Stage conditions have de-escalated to non-emergency conditions, reference Section 6.6, the EAP Coordinator may terminate or rescind the activation of the EAP.

2) All entities notified of the emergency condition have been communicated with and informed of current non-emergency conditions.

3) Regional flooding may occur prior to an incident at this dam and could continue for long periods of time. The staff gauge observer needs to have plans for staying or returning to the dam as conditions worsen. The termination responsibility should be handled by the EAP Coordinator or Assignee.

7.5 Responsibility for Stage Follow-Up

1) Post-EAP activation event, discussions should be used to determine strengths and weaknesses in the EAP in order to improve the document for future events.

2) Per 257.73(a)(3)(v) and 257.105(f)(8) of the CCR Rule, the EAP Coordinator or designee should prepare documents recording the activation of the EAP event reference Appendix B. Only Stage 2 and Stage 3 are considered CCR rule activations, see Section 2.0.

7.6 EAP Coordinator Responsibility

The EAP coordinator or Assignee will be responsible for EAP-related activities, including (but not limited to) preparing revisions to the EAP, establishing training seminars, and coordinating annual face-to-face EAP exercises between representatives of the owner/operator, local emergency responders and additional federal and state agencies. This person will be the EAP contact if any involved parties have questions about the plan.

7.7 Methods for Notification and Warning

The Fluvanna County Emergency Services has the authority and responsibility for Mass Notification, Alert and Warning, and Population Protective Actions for all offsite facilities.

During an emergency condition, the EAP Coordinator will communicate timely information about conditions at the dam to the Fluvanna County Emergency Management Coordinator, who will initiate their own emergency notifications and action.

8.0 PREPAREDNESS

This section is intended to clearly outline the responsibilities of parties involved in all EAP procedures, including notification, surveillance, classification, evacuation, and termination.

8.1 Surveillance

The dams are unattended and monitored under normal operating conditions for the duration of closure activities.

Bremo Power Station management and staff should monitor the status of weather fronts through the NWS. The NWS maintains a hurricane center that reports on hurricanes, tropical storms & tropical depressions as they travel and affect coastal and inland areas. The web site address is: http://www.nhc.noaa.gov/.

The station is not staffed 24/7, however, there are two staff members dedicated to Bremo Power Station Monday through Friday during normal business hours. After hours, the staff from Bear Garden Generating Station are on call to support emergencies. An operator should be dispatched from the on-shift crew to observe the staff gauge during an emergency situation. The staff gauge observer should never put themselves in harm's way. In the event a hurricane or tropical depression occurs with high winds, the staff gauge observer shall use extreme caution while monitoring conditions. If the observer is unable to access a safe monitoring location to observe conditions at the ponds the Scottsville river gauge is used as a remote monitoring point to predict the river stage at the station.

Preplanned access routes should be utilized, given that small streams crossing under state and local roads may flood, preventing safe access. The gauge observers and Dam Safety Region staff should never attempt to cross a road that has flood water crossing it at a depth greater than one foot unless the vehicle is specially designed for that purpose.

Alternative routes should be chosen for access by foot in the event that a car is unsafe for use. Other alternative means of transportation may be considered.

8.2 Routine Inspections

The North Ash Pond, West Ash Pond and East Pond Dams are inspected every 7 days in accordance with applicable CCR regulations. It is inspected monthly in accordance with the Virginia Dam Owner's Handbook. If any findings trigger an action level, the EAP will be put into place immediately. Any findings in question will be discussed with a Dominion Power Generation Engineer and a resolution determined by the next seven-day inspection. Any maintenance needs will be relayed to the ground's contractor or landfill contractor within one calendar week.

8.3 Alternative Systems of Communication

Communications during a major rainfall event may be problematic. Telephone land lines may be used as the first means of communication. Cellular telephones can be used to supplement the land lines. Unfortunately, telephone lines, like electrical lines, are subject to damage by falling trees, so radio communication during these events is normally required.

8.4 Emergency Supplies

Stockpiling of Materials and Equipment: The location of necessary supplies and materials, such as barricades, sand, sandbags, etc. are either stored onsite or readily available through Dominion's emergency response contractors.

Emergency access to supplies and equipment should be planned before any emergency is called. Appendix C lists sources and locations of supplies and equipment that may be required during an emergency along with addresses and telephone numbers of the sources/suppliers.

9.0 INUNDATION ZONE PROPERTY OWNERS AND RESIDENTS

Inundation Maps are presented in Appendix D. CSX Transportation (800-232-0144) is the only property owner located within the dams' anticipated inundation zone resulting from an embankment failure for the Bremo Power Station North Ash Pond, West Ash Pond, and East Pond Dams.

10.0 CERTIFICATION BY DAM OWNER/OPERATOR

I certify that procedures for implementation of this Emergency Action Plan (EAP) have been coordinated with and a copy given to each local Emergency Services Coordinator serving the areas potentially impacted by the dams. Also, that a copy of this EAP has been filed with the Virginia Department of Emergency Management in Richmond and a copy of the Dam Break Inundation Map has been provided to the local government office with plat and plan approval authority or zoning responsibilities as designated by the locality for each locality in which the dam break inundation zone resides; that this plan shall be adhered to during the life of the project; and that the information contained herein is current and correct to the best of my knowledge.

(Signature of Dam Owner/Operator)

This 10TH day of December, 2019

William Reed, Station Director
(Printed Name)

11.0 CERTIFICATION BY PREPARER

By means of this certification the undersigned Licensed Professional Engineer attests that he/she is familiar with the requirements *of* 40 CFR 257.73(a)(3) and the Department of Conservation and Recreation (DCR) regulations. This certification also demonstrates that the EAP is prepared in accordance with good engineering practices, including consideration of applicable industry standards, and with the requirements of *40 CFR §257.73*; that procedures for required inspections and testing have been established; and the EAP is adequate for the Bremo Power Station North Ash Pond, West Ash Pond, and East Pond.

This certification in no way relieves the owner or operator of a facility/Site of his duty to prepare and fully implement the Plan in accordance to the requirements of *40 CFR §257.73.*

(Signature of Preparer)

This 6 day of December, 2019

Printed Name: Andrew North, P.E.

Title: Senior Project Engineer

Address: 2108 W. Laburnum Ave, Suite 200

Richmond, VA 23227

Telephone: 804-521-1783

COMMONWEALTH OF VIRGINIA
ANDREW T. NORTH
Lic. No. 053724
12/6/19
PROFESSIONAL ENGINEER

APPENDIX A

Analysis of Impounding Structure Failure Floods

APPENDIX A
Analyses of Impounding Structure Failure Floods

The structure failure flood for Bremo Power Station North Ash Pond Dam is the Probable Maximum Flood event. A complete hydraulic and hydrologic analysis is presented in the North Ash Pond Dam Alteration Permit Application, prepared by Golder Associates, Inc., dated March 2017.

The structure failure flood for Bremo Power Station West Ash Pond Dam is the 1,000 year flood event. A complete hydraulic and hydrologic analysis is presented in the West Ash Pond Dam Alteration Permit Application, prepared by Golder Associates, Inc., dated August 19, 2019.

The structure failure flood for Bremo Power Station East Pond Dam is the Probable Maximum Flood event. A complete hydraulic and hydrologic analysis is presented in the East Pond Dam Alteration Permit Application, prepared by Golder Associates, Inc., dated December 14, 2018.

APPENDIX B

Plans for Training, Exercising, Updating, and Posting the Emergency Action Plan, Revision Sheet, and Supplemental Documents

APPENDIX B
Plans for Training, Exercising, Updating, and Posting the Emergency Action Plan

1. Training

Emergency action planning, generally, will be held once a year for responsible staff personnel.

2. Exercises

a. Table Top Exercises - Table top exercises will be held, at a minimum, once every six (6) years. This exercise will occur in the year that certification is required.

b. Drills - A drills will be conducted each year by the owner except when a table top exercise is required.

c. Annual drills will be conducted to verify lines of communication, phone numbers, personnel roles, and responsibilities. All parties on the Stage II/III notification flowchart are invited and encouraged to attend; however attendance from station personnel is mandatory. Record the invitation of the drill to emergency response representatives and the drill attendance and details in the Training Record.

3. Updating

This EAP will be checked yearly during the drill exercise to determine if names, addresses, and telephone numbers of the people shown in Section 7 are accurate. The document will be updated at any time when a major change is determined to have occurred and noted in the plan's revision log.

If an annual review of the EAP indicates that no amendments are necessary, a note shall be placed in the revision log noting that no changes were made during the annual review.

4. Posting

This document will be on file with:

- Dominion Energy (Dam Owner)
- Fluvanna County Emergency Operations Center
- VA Department of Conservation and Recreation (DCR), Division of Dam Safety
- VA Department of Emergency Management

EAP Training Record
Bremo Power Station Ash Ponds
Inventory #'s 065020, 065011, 065019

Training Date	Training Type	Results
11-21-17	Table Top Presentation	Updated EAP, distributed EAP to agencies
9-25-18	Table Top Presentation	Addition of Inactive Ponds per CCR Regulations Update DCR Inventory Numbers
11-14-19	Table Top Presentation	Updated EAP

EAP Revision Record
Bremo Power Station Ash Ponds
Inventory #'s 065020, 065011, 065019

Revision No.	Date Entered	Changed By	Description of Change
Original	April 2017		
1	November 2017	Golder Associates, Inc.	Updated ECC and various other updates
2	September 2018	Golder Associates, Inc.	Addition of Inactive Ponds per CCR Regulations Update DCR Inventory Numbers
3	December 2019	Golder Associates, Inc.	Annual Update
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Bremo Power Station - North Ash Pond, West Ash Pond and East Pond Emergency Action Plan
Notification Log

Contact Name/Agency	Phone Number	Person Notified	Time Notified
Refer to Notification Process on pages 4-6 in the Emergency Action Plan			
Stage 1 Notifications			
(EAP Coordinator) Rick Woolard/Dominion	804-385-7133 (mobile)		
(Dam Operator) William Reed/Dominion	804-638-0335 (mobile)		
(Dam Engineer) Michael Winters/Dominion	804-273-2376 (office) 804-347-9451 (mobile)		
Bear Garden Control Room (Afterhours)	434-581-6201		
Stage 2 Notifications			
(EAP Coordinator) Rick Woolard/Dominion	804-385-7133 (mobile)		
(Dam Operator) William Reed/Dominion	804-638-0335 (mobile)		
(Dam Engineer) Michael Winters/Dominion	804-273-2376 (office) 804-347-9451 (mobile)		
Bear Garden Control Room (Afterhours)	434-581-6201		
Local Emergency Operations/Fluvanna County/Sheriff and Fire Department	434-589-8211 or 911		
CSX Railroad	800-232-0144		
Virginia Department of Emergency Operations Center	804-674-2400 800-468-8892 (24hr)		
National Response Center	800-424-8802		
Virginia DCR Dam Safety Region 5	434-244-0653		
Environmental Incident Reporting/Dominion	804-389-9242		
Virginia Department of Enviromental Quality	540-574-7800 800-468-8892 (24hr)		
Stage 3 Notifications			
(EAP Coordinator) Rick Woolard/Dominion	804-385-7133 (mobile)		
(Dam Operator) William Reed/Dominion	804-638-0335 (mobile)		
(Dam Engineer) Michael Winters/Dominion	804-273-2376 (office) 804-347-9451 (mobile)		
Bear Garden Control Room (Afterhours)	434-581-6201		
Local Emergency Operations/Fluvanna County/Sheriff and Fire Department	434-589-8211 or 911		
CSX Railroad	800-232-0144		
Virginia Department of Emergency Operations Center	804-674-2400 800-468-8892 (24hr)		
National Response Center	800-424-8802		
Virginia DCR Dam Safety Region 5	434-244-0653		
Environmental Incident Reporting/Dominion	804-389-9242		
Virginia Department of Enviromental Quality	540-574-7800 800-468-8892 (24hr)		

Action Log

Impoundment Name:	**Inspected By:**
Date of Inspection:	**EAP Coordinator:**

WEATHER CONDITIONS:

_____

_____

Check one (one inspection form per stage)	Time of EAP Implementation	Time of Termination
Stage 1 Condition: (Observation Required every 8 hours)		
Stage 2 Condition: (Observation Required every 2 hours)		
Stage 3 Condition: (Continuous observation required)		

Time	Inspector Name	Observations/Condition of Dam/Description of Concern/Failure *Note adverse conditions/inability to observe

Action Log

Time	Inspector Name	Observations/Condition of Dam/Description of Concern/Failure *Note adverse conditions/inability to observe

General Comments/Event De-Brief Notes:

_____

_____

_____

_____

_____

APPENDIX C

Additional Resources, Bremo/Scottsville Gauge

APPENDIX C
Additional Resources

Directory of Additional Personnel with Dam Safety Expertise

In addition to personnel shown elsewhere in this plan, the following list identifies other individuals with expertise in dam safety, design, and construction that may be consulted about taking specific actions at the dam when there is an emergency situation:

Name	Telephone	Responsibility
DCR, Division of Dam Safety	434-244-0653	Dam Safety Regional Engineer
Golder Associates, Inc. Andrew North, P.E.	804-521-1783 (office) 804-314-5488 (cell)	Consulting Design Engineer

Supplies and Resources

Equipment Available	Location	Phone Number
Sand/Sand Bags	Luck Stone Buckingham – Virginia Slate Company	804-749-3233 434-581-1131
Rock/Gravel	Luck Stone Buckingham – Virginia Slate Company	804-749-3233 434-581-1131
Pumps/Generators/Lights	Sunbelt Rentals RSC Equipment Rentals Pearson Equipment Co.	804-364-6319 800-222-7777 434-391-1112
Heavy Equipment	Forty-Two Contracting, Inc. Pete Snead	804-377-2270 (o) 804-638-0430 (m)

Personnel Resources/Labor

Company	Contact	Phone Number
Dominion Energy	Rick Woolard	434-581-6225
Laborers	Forty-Two Contracting, Inc. Pete Snead	804-377-2270 (o) 804-638-0430 (m)

Scottsville Flood Gauge	Conversion	Bremo Flood Gauge (Approximate)		Bremo Gauge Notes:
Reported Stage (ft)	Scottsville to Bremo	Calculated Stage (ft)	Elevation (NAVD88)	
0-10	+ 4	4-14	194.61 to 204.61	
11	+ 4	15	205.61	**Stage 15: Flood stage -- action**
12	+ 4	16	206.61	Stage 16: Bank full stage (left bank)
13	+ 4	17	207.61	
14	+ 4	18	208.61	**Stage 19: Flood stage -- minor flooding begins**
15	+ 4	19	209.61	Stage 21: Left bank at the gage begins to flood.
16	+ 6	22	212.61	Stage 22.8: Main street flooded to centerline of road.
17	+ 6	23	213.61	
18	+ 6	24	214.61	**Stage 23: Flood stage -- moderate flooding begins.**
19	+ 6	25	215.61	Stage 24: Water reaches low ground between homes on Main Street and C&O Railroad Depot.
20	+ 6	26	216.61	
21	+ 6	27	217.61	Stage 25: Overflow begins along the right bank.
22	+ 7	29	219.61	
23	+ 7	30	220.61	Stage 26.4: Water reaches some homes in the low-lying parts of Bremo Bluff and merchants in downtown.
24	+ 7	31	221.61	
25	+ 7	32	222.61	Stage 28.2: Hotel Bremo is flooded.
26	+ 8	34	224.61	
27	+ 9	36	226.61	Stage 30.2: Water reaches the road along the left bank and main line of C&O Railroad at the power plant.
28	+ 9	37	227.61	
29	+ 9	38	228.61	Stage 30.5: Water enters Hiters store, downtown Bremo Bluff.
30	+ 9	39	229.61	
31	+ 9	40	230.61	Stage 32: Water tops rail of mainline track in front of C&O RR Depot.
32	+ 9	41	231.61	
33	+ 11	44	234.61	**Stage 34: Major flooding begins.**
34	+ 11	45	235.61	**Stage 38: 100 yr flood elevation (229).**
35	+ 11	46	236.61	
36	+ 11	47	237.61	Stage 39: Water enters main floor of power plant.
37	+ 11	48	238.61	
38	+ 12	50	240.61	Stage 40: Near record flood begins.
39	+ 12	51	241.61	
40	+ 12	52	242.61	Stage 44: Flood of record.
41	+ 13	54	244.61	
42	+ 13	55	245.61	
43	+ 13	56	246.61	
44	+ 14	58	248.61	
45	+ 14	59	249.61	

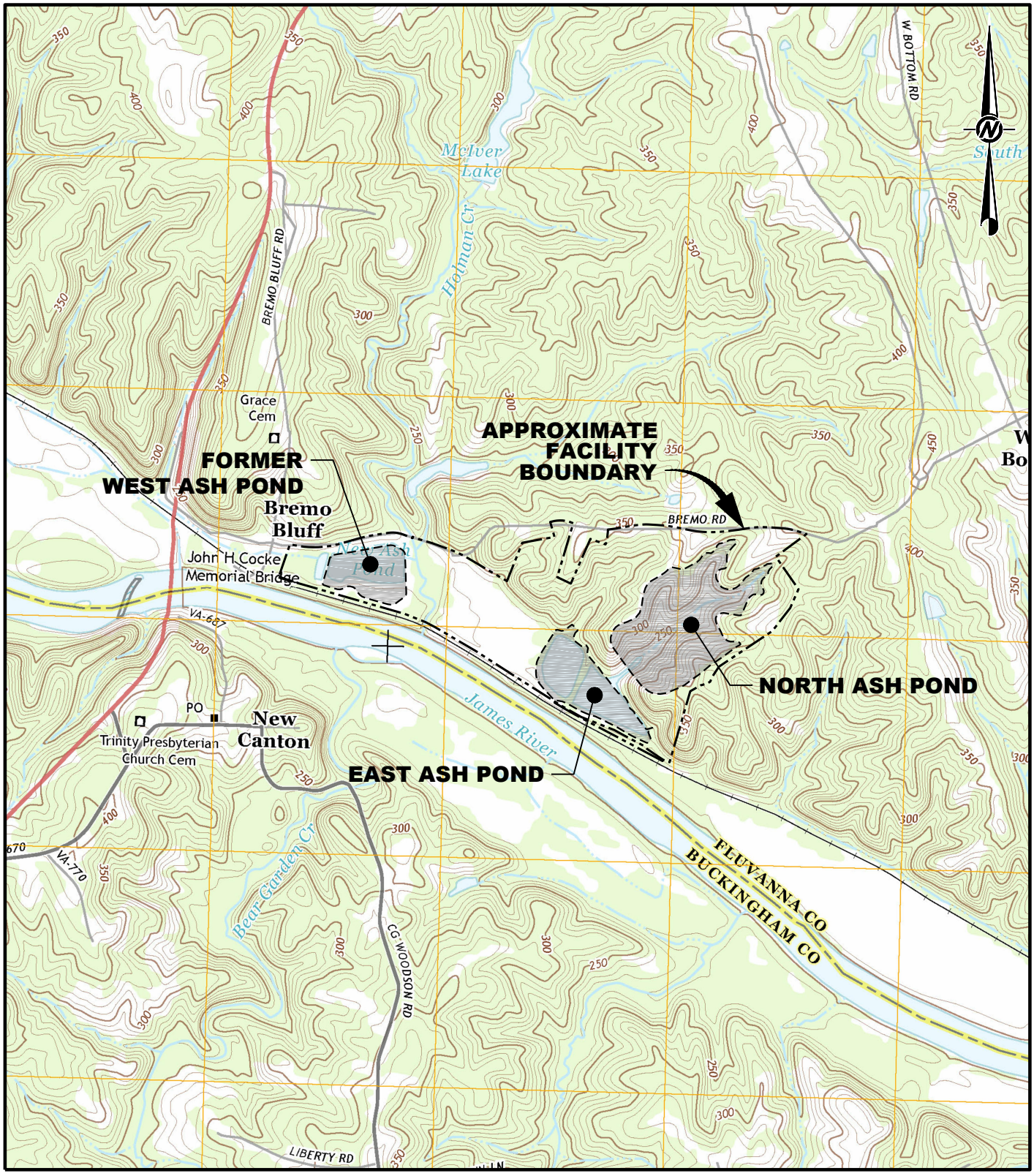
Values in this table are an approximation and should not be used to replace actual readings.

Legend:

- Action Flood Stage
- Minor Flood Stage
- Moderate Flood Stage
- Major Flood Stage

APPENDIX D

Figures



REFERENCE

BASE MAP CONSISTS OF 7.5-MINUTE USGS TOPOGRAPHIC QUADRANGLE NAMED ARVONIA, VIRGINIA, DATED 2013.

2000 0 2000
SCALE FEET

CLIENT
DOMINION ENERGY

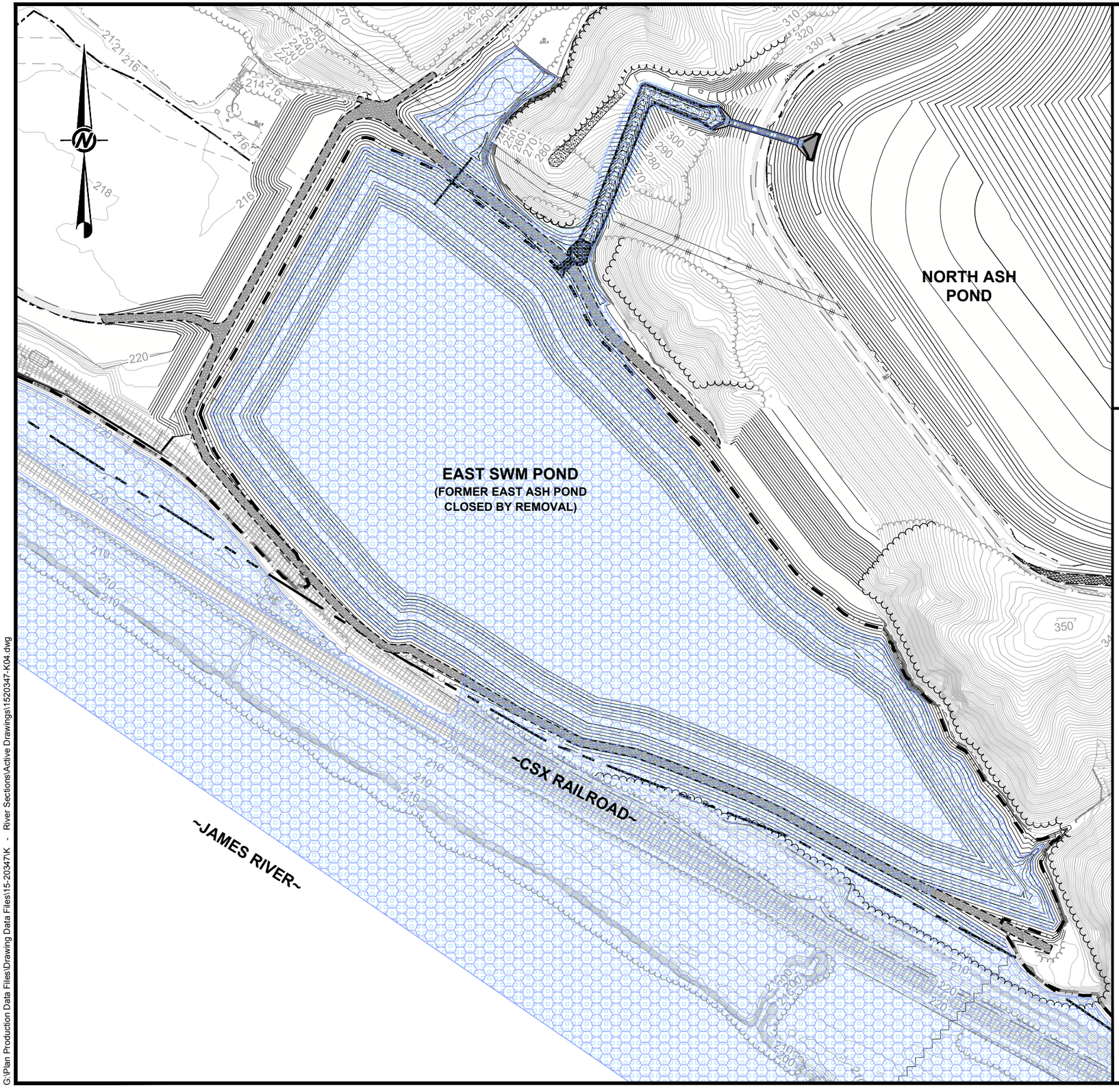
PROJECT
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER

YYYY-MM-DD	2018-06-15
DESIGNED	ALR
PREPARED	SIB
REVIEWED	ALR
APPROVED	MGW

TITLE
SITE LOCATION MAP

PROJECT NO. 17-8975418
REV. 0
FIGURE 1



LEGEND

- PMF BREACH - AREA SUBJECT TO FLOOD FLOW AND VELOCITY
- PMF NON-BREACH - AREA SUBJECT TO FLOOD FLOW AND VELOCITY
- EXISTING TOPOGRAPHIC CONTOUR (10' INTERVAL)
- EXISTING TOPOGRAPHIC CONTOUR (2' INTERVAL)
- PROPERTY LINE
- PROPOSED TOPOGRAPHIC CONTOUR (10' INTERVAL)
- PROPOSED TOPOGRAPHIC CONTOUR (2' INTERVAL)
- 100 - YR FLOOD PLAIN (ZONE A E)

NOTES

1. MAPPING OF FLOODED AREAS AND FLOOD WAVE TRAVEL TIMES ARE APPROXIMATE. TIMING AND EXTENT OF ACTUAL INUNDATION MAY DIFFER FROM INFORMATION PRESENTED ON THIS MAP.
2. EXISTING CONDITIONS COMPILED FROM:
   a. AERIAL TOPOGRAPHIC SURVEY PREPARED BY McKENZIE SNYDER, INC., DATE OF AERIAL PHOTO: 1/16/15 [CONTROL PREPARED BY H&B SURVEYING & MAPPING (H&B)]
   b. BOUNDARY SURVEY PREPARED BY H&B SURVEYING AND MAPPING, LLC DATED 04/27/15.
   c. HISTORICAL DATA FOR THE DEVELOPMENT OF THE WEST ASH POND, EAST ASH POND AND NORTH ASH POND.
3. PROPOSED GRADING FOR NORTH AND EAST ASH PONDS PER "CCR SURFACE IMPOUNDMENT CLOSURE PLAN" BY GOLDER ASSOCIATES INC. DATED DECEMBER 2016.
4. 100 - YEAR FLOOD PLAIN ELEVATION (ZONE A E) PER PANEL #51065C0260C.

200 0 200
SCALE FEET

Golder Associates
Richmond, Virginia

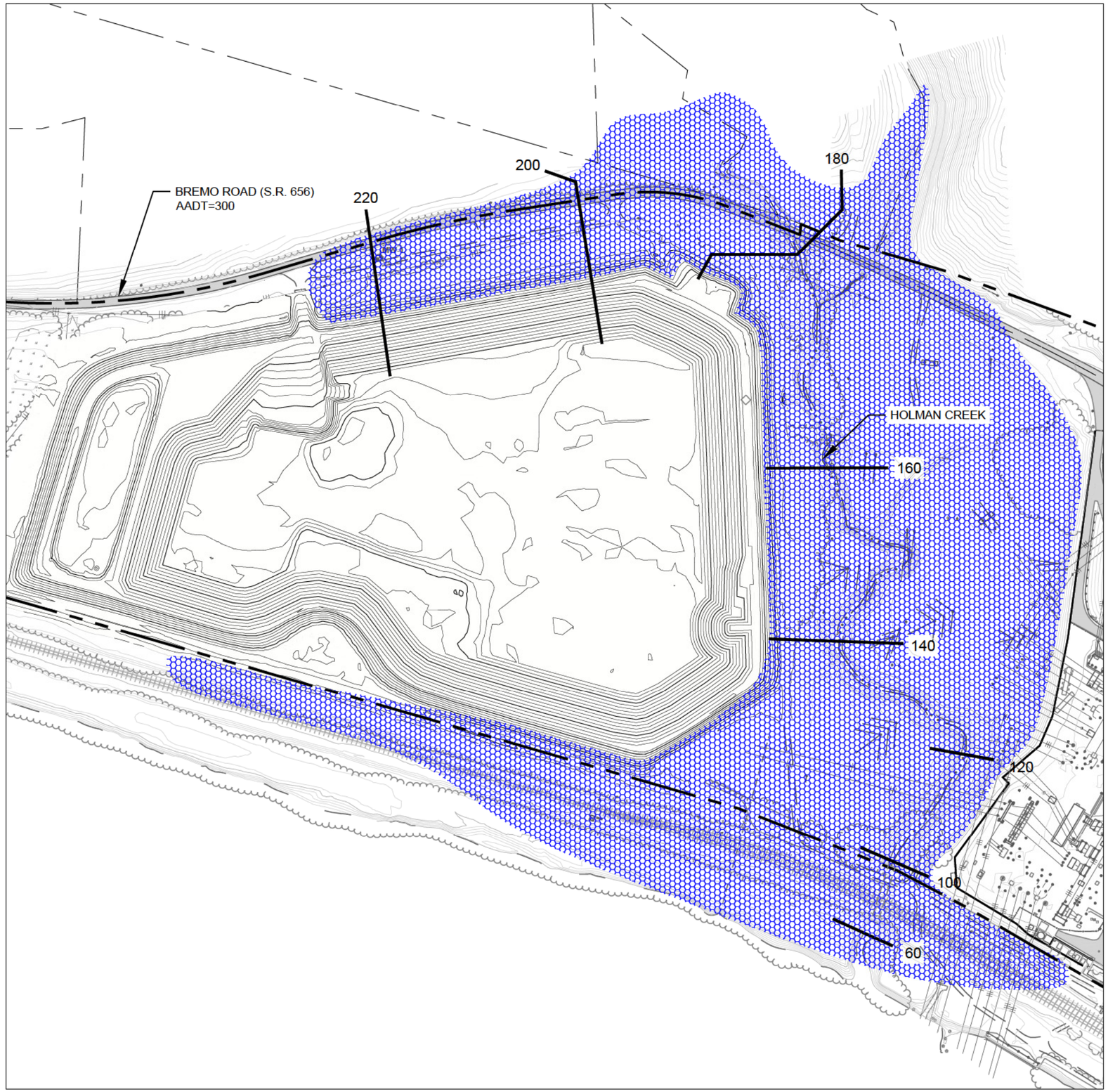
PROJECT
DOMINION
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

TITLE
NORTH ASH POND
DCR INVENTORY #06520
BOTH PMF SCENARIOS

PROJECT No.		15-20347
FILE No.		1520347-K04
REV. 0	SCALE	AS SHOWN
DESIGN	DPM	12/17/2015
CADD	SIB	03/02/2017
CHECK	JEK	11/06/2017
REVIEW	DPM	11/06/2017

FIGURE 2

G:\Plan Production Data Files\Drawing Data Files\15-20347\K - River Sections\Active Drawings\1520347-K04.dwg



LEGEND

- AREA SUBJECT TO FLOOD FLOW AND VELOCITY
- EXISTING TOPOGRAPHIC CONTOUR (10' INTERVAL)
- EXISTING TOPOGRAPHIC CONTOUR (2' INTERVAL)
- PROPERTY LINE
- PROPOSED TOPOGRAPHIC CONTOUR (10' INTERVAL)
- PROPOSED TOPOGRAPHIC CONTOUR (2' INTERVAL)

200 0 200 FEET
SCALE

NOTES

1. MAPPING OF FLOODED AREAS AND FLOOD WAVE TRAVEL TIMES ARE APPROXIMATE. TIMING AND EXTENT OF ACTUAL INUNDATION MAY DIFFER FROM INFORMATION PRESENTED ON THIS MAP.
2. EXISTING CONDITIONS COMPILED FROM:
   a. AERIAL TOPOGRAPHIC SURVEY PREPARED BY McKENZIE SNYDER, INC., DATE OF AERIAL PHOTO: 1/16/15 [CONTROL PREPARED BY H&B SURVEYING & MAPPING (H&B)]
   b. BOUNDARY SURVEY PREPARED BY H&B SURVEYING AND MAPPING, LLC DATED 04/27/15.
   c. BATHYMETRIC SURVEYS PREPARED BY H&B, SURVEYS PERFORMED IN FEBRUARY 2015.
   d. HISTORICAL DATA FOR THE DEVELOPMENT OF THE WEST ASH POND, EAST ASH POND AND NORTH ASH POND.
   e. EXISTING TOPOGRAPHY WITHIN THE LIMITS OF THE WEST ASH POND AND NORTH ASH POND ARE BASED ON A CONCEPTUAL POST DREDGING SURFACE.

COMMONWEALTH OF VIRGINIA
DANIEL P. McGRATH
Lic. No. 040703
8/19/19
PROFESSIONAL ENGINEER

YYYY-MM-DD	2019-08-20
DESIGNED	DPM
PREPARED	SIB
REVIEWED	
APPROVED	

CLIENT
DOMINION ENERGY

CONSULTANT
GOLDER

PROJECT
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

TITLE
BREMO WEST ASH POND - INTERIM INFLUENT STORAGE
PMF WITH BREACH
INVENTORY #065011

PROJECT NO.
15-20347

REV.
0

FIGURE
1

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

1 in 0

Path: G:\Plan Production Data Files\Drawing Data Files\15-20347\K - River Sections\Active Drawings\15203047-K-WEST_2019.dwg

NORTH ASH POND PRINCIPAL SPILLWAY (10x10 BOX CULVERT)

NORTH ASH POND

SWM BASIN (STUMP POND)

STORMWATER MANAGEMENT POND

ACCESS ROAD (TYP.)

EAST TREATMENT POND UNDERDRAIN RISERS

EAST TREATMENT POND

EL. 213.4

EAST TREATMENT POND LIMITS OF LINER AND 15' BENCH

EAST TREATMENT POND RISER

EAST TREATMENT POND EMERGENCY SPILLWAY

FLOODWALL (EL 238±)

LIMITS OF FEMA 100-YR FLOOD ELEVATION

CSX RAILROAD

EL. 211.5

LIMITS OF FEMA 100-YR FLOOD ELEVATION

227.9

228

~ JAMES RIVER ~

200 0 200

SCALE FEET

COMMONWEALTH OF VIRGINIA
DANIEL P. McGRATH
Lic. No. 040703
12/14/18
PROFESSIONAL ENGINEER

YYYY-MM-DD 2018-11-19
DESIGNED DPM
PREPARED ATN
REVIEWED
APPROVED

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER

PROJECT
CCR SURFACE IMPOUNDMENT CLOSURE PLAN
DAM MODIFICATION PLANS
EAST TREATMENT POND

TITLE
SPILLWAY DESIGN FLOOD (SDF)
100-YR EVENT WITHOUT BREACH

INVENTORY NO.
065019

PROJECT NO.
15-20347

REV.
0

FIGURE
1

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

Path: G:\Plan Production Data Files\Drawing Data Files\15-20347ZA - Dam Modification Plans\Active Drawings\15203472A_IN001.dwg

NORTH ASH POND PRINCIPAL SPILLWAY (10x10 BOX CULVERT)

NORTH ASH POND

SWM BASIN (STUMP POND)

STORMWATER MANAGEMENT POND

ACCESS ROAD (TYP.)

EAST TREATMENT POND UNDERDRAIN RISERS

EAST TREATMENT POND

EL. 210.5

EAST TREATMENT POND LIMITS OF LINER AND 15' BENCH

EAST TREATMENT POND RISER

EAST TREATMENT POND EMERGENCY SPILLWAY

FLOODWALL (EL 238±)

LIMITS OF FEMA 100-YR FLOOD ELEVATION

CSX RAILROAD

EL. 208

227.9

228

~ JAMES RIVER ~

LIMITS OF FEMA 100-YR FLOOD ELEVATION

200 0 200

SCALE FEET

COMMONWEALTH OF VIRGINIA
DANIEL P. McGRATH
Lic. No. 040703
12/14/18
PROFESSIONAL ENGINEER

YYYY-MM-DD 2018-11-19
DESIGNED DPM
PREPARED ATN
REVIEWED
APPROVED

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER

PROJECT
CCR SURFACE IMPOUNDMENT CLOSURE PLAN
DAM MODIFICATION PLANS
EAST TREATMENT POND

TITLE
SUNNY DAY BREACH

PROJECT NO.
15-20347

INVENTORY NO.
065019

REV.
0

FIGURE
2

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

Path: G:\Plan Production Data Files\Drawing Data Files\15-20347IZA - Dam Modification Plans\Active Drawings\15203472A_IND01.dwg

NORTH ASH POND PRINCIPAL SPILLWAY (10x10 BOX CULVERT)

NORTH ASH POND

SWM BASIN (STUMP POND)

STORMWATER MANAGEMENT POND

ACCESS ROAD (TYP.)

EAST TREATMENT POND UNDERDRAIN RISERS

EAST TREATMENT POND

EL. 212.5

EAST TREATMENT POND LIMITS OF LINER AND 15' BENCH

EAST TREATMENT POND RISER

EAST TREATMENT POND EMERGENCY SPILLWAY

LIMITS OF FEMA 100-YR FLOOD ELEVATION

EL. 212.5

227.9

228

FLOODWALL (EL 238±)

LIMITS OF FEMA 100-YR FLOOD ELEVATION

CSX RAILROAD

~ JAMES RIVER ~

200 0 200

SCALE FEET

COMMONWEALTH OF VIRGINIA
Daniel McGrath
DANIEL P. McGRATH
Lic. No. 040703
12/14/18
PROFESSIONAL ENGINEER

YYYY-MM-DD 2018-11-19
DESIGNED DPM
PREPARED ATN
REVIEWED
APPROVED

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER

PROJECT
CCR SURFACE IMPOUNDMENT CLOSURE PLAN
DAM MODIFICATION PLANS
EAST TREATMENT POND

TITLE
SPILLWAY DESIGN FLOOD (SDF)
100-YR EVENT WITH BREACH

INVENTORY NO.
065019

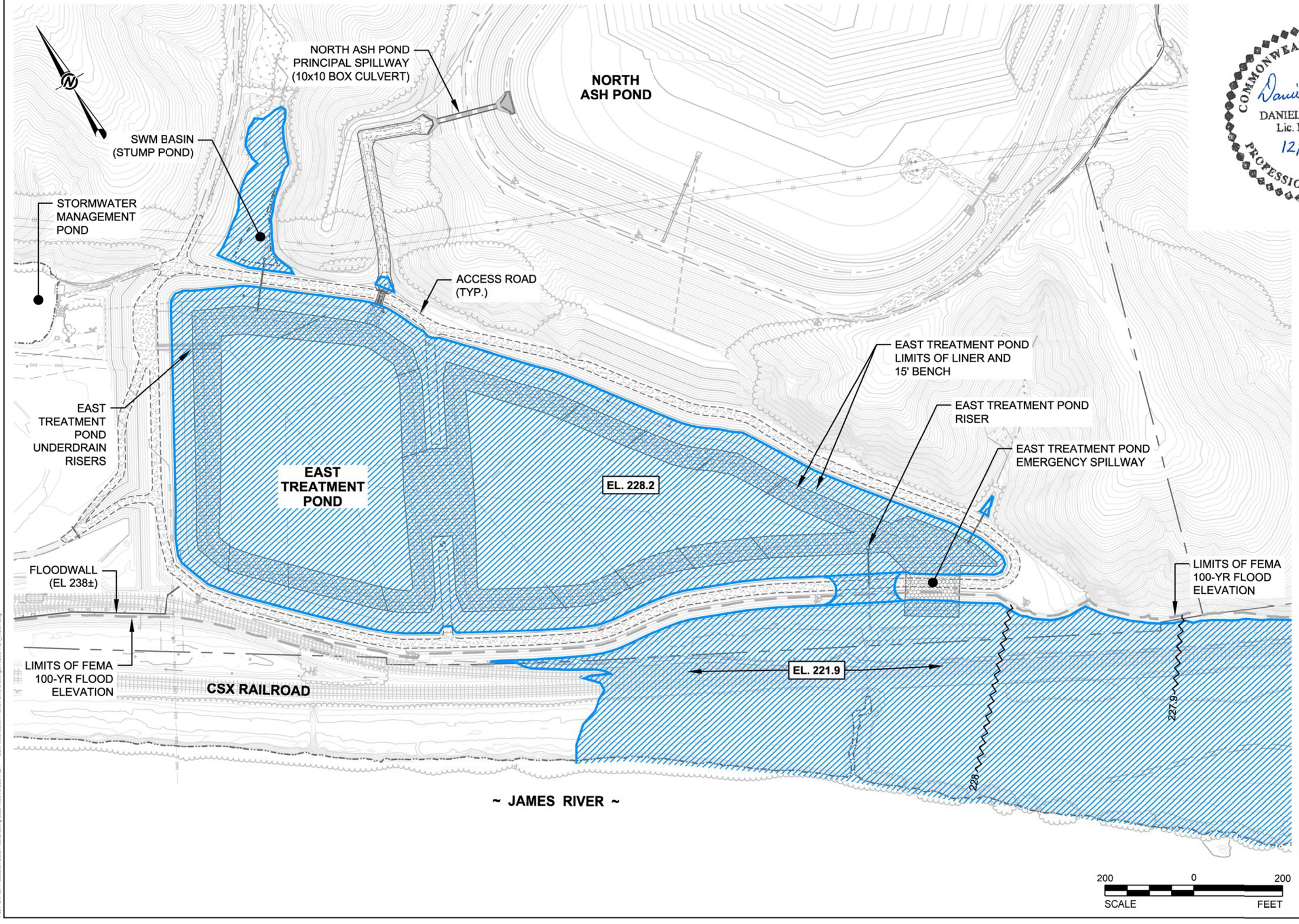
PROJECT NO.
15-20347

REV.
0

FIGURE
3

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

Path: G:\Plan Production Data Files\Drawing Data Files\15-20347ZA - - Dam Modification Plans\Active Drawings\15203477ZA_IN001.dwg



COMMONWEALTH OF VIRGINIA
DANIEL P. McGRATH
Lic. No. 040703
12/14/18
PROFESSIONAL ENGINEER

CLIENT
DOMINION ENERGY
BREMO POWER STATION
FLUVANNA COUNTY, VIRGINIA

CONSULTANT
GOLDER

YYYY-MM-DD	2018-11-19
DESIGNED	DPM
PREPARED	ATN
REVIEWED	
APPROVED	

PROJECT
CCR SURFACE IMPOUNDMENT CLOSURE PLAN
DAM MODIFICATION PLANS
EAST TREATMENT POND

TITLE
12-HR PMF EVENT WITH BREACH

PROJECT NO.
15-20347

INVENTORY NO.
065019

REV.
0

FIGURE
4

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

Path: G:\Plan Production Data Files\Drawing Data Files\15-20347\ZA - - Dam Modification Plans\Active Drawings\15203477ZA_IN001.dwg

golder.com