



Low Volume Waste Settling Ponds Periodic Hazard Potential Classification

**Mount Storm Power Station
Mount Storm, West Virginia**

October 2021

A handwritten signature in black ink that reads "Jonathan Hotstream".

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Prepared For:

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A handwritten signature in blue ink that reads "Nakia W. Addison".

Nakia Addison, P.E.
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Revision History

Revision Number	Revision Date	Section Revised	Summary of Revisions
0	10/3/2016		Initial Issue
1	10/1/2021	1 through 5	Update for periodic assessment

1.0 Background

Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion) owns and operates the Mount Storm Power Station (Station). The Station manages coal combustion residuals (CCR) in three existing low volume waste settling ponds (LVWSP) (Pyrite Pond and Ponds A and B). The purpose of this report is to determine the hazard potential classification (Classification) for the three existing LVWSP as required by the United States Environmental Protection Agency's (USEPA) final coal combustion residuals (CCR) rule (Title 40 Code of Federal Regulations (40 CFR) Part 257) Subpart D - "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments". The LVWSP are considered existing CCR surface impoundments according to the CCR rule (40 CFR 257.53). The initial hazard potential classification was completed on October 3, 2016. The periodic hazard potential classification assessments are to be performed every 5 years pursuant to 40 CFR 257.73(f)(3).

1.1 Existing Conditions

The Station is located in Union District, Grant County, West Virginia (refer to Figure 1). There are currently three LVWSP at the Station (refer to Figure 2). The area including the LVWSP is approximately nine acres, with the surrounding terrain sloping down toward Mount Storm Lake to the east and south from the topographic high on the northwest side of the LVWSP. The normal water elevation for Mount Storm Lake is approximately 3245 feet NAVD88 with a maximum elevation of 3248.3 feet NAVD88. The water levels of Mount Storm Lake are controlled by the Mount Storm Lake Dam which is operated by Dominion. The Flood Insurance Rate Map for the Station (National Flood Insurance Program 2009) shows that the LVWSP are located in an area determined to be outside the 0.2% annual chance flood.

The LVWSP receive influent water from dewatering bin overflows and area sumps, along with water from plant drain systems, the oily water separator system, storm water, and other Station drains. The water flows to a pH neutralizing system before flowing to the LVWSP (Ponds A and B) for settling. From the LVWSP, water is discharged into Mount Storm Lake via a National Pollutant Discharge Elimination System (NPDES) permitted outfall. The Pond A and B configuration allows one pond to be dredged and cleaned while maintaining the other LVWSP in service to process wastewaters.

The Pyrite Pond receives primarily storm water inflows from sources upstream of Ponds A and B. The Pyrite Pond discharges to the pH neutralizing system prior to flowing into the primary LVWSP.

The wastewater flows through several outlet structures in a circuit through the LVWSP. The water flow is driven by gravity. Station personnel can control flow to and from a pond by operating gates on the outlet structures.

The LVWSP are located on the south side of the station and are constructed with earthen berms to contain the wastewater. The dividing berm between Ponds A and B was constructed of fill after the original excavation of the LVWSP. The geometry of each pond varies. Ponds A and B each have a maximum elevation of 3,260 ft. The minimum elevations for Ponds A and B are 3,249 ft and 3,247 ft, respectively.

The LVWSP have been operating and performing as designed since the 1960s. The constructed berms have not shown signs of weakening, poor performance, or differential settlement. The stability of the berms was evaluated with the design of the retrofit and reconstruction with resulting factors of safety exceeding design standards. This Classification considers potential berm failures to identify possible downstream impacts. A berm failure is highly unlikely based on the previous performance, the design evaluations, and construction quality assurance activities performed during the retrofit and reconstruction of the LVWSP.

2.0 Hazard Potential Evaluation

2.1 Potential Impacts of Berm Failure

At worst case it is estimated that a maximum of 33.4 acre-ft of impounded material could be released in the event of a failure of the LVWSP berms at the same time, refer to Table 1, assuming that the ponds are filled to the top of berm elevation. Refer to Appendix A for as-built drawings and stage-storage tables for the three ponds. This would have a negligible effect on the water level of the 1,200 acre-foot lake. These volumes conservatively assume that the three LVWSP are full of water and solids, which is not the anticipated operational conditions. At the design high water levels, a maximum of 14.2 acre-feet of impounded material could be released in the event of a failure of the LVWSP at the same time.

The LVWSP has access areas for heavy equipment to remove solids and dewatering facilities to assist in maintenance. These features will result in less solids retained in the LVWSP at any one time and therefore reduce the potential volume of solids that are available for release in the event of a berm failure.

Discharge out of the LVWSP due to a berm failure would flow directly into Mount Storm Lake, refer to Figures 1 and 2. The figures contain arrows which reflect the likely flow paths of the water to and from the LVWSP. The directions are based on topographic surveys performed at the site in the immediate vicinity of the LVWSP and United States Geologic Survey topographic maps in areas beyond the extent of the site survey. Based on this evaluation, there are no habitable structures currently at risk in the event of a failure. It is also noted that the property at risk should a failure occur is owned by Dominion, the owner of the Station.

From an environmental impact standpoint, the water from a berm failure would enter Mount Storm Lake with little buffer area. Due to the volume of potential discharge in comparison to the volume of Mount Storm Lake, water quality impacts are not anticipated downstream of the Mount Storm Lake Dam. Dissolved constituents, if any, are not considered a significant impact due to the permitted outfall from the LVWSP. It is anticipated that solids released with a breach would remain adjacent to the Station shoreline based on the location of the bay south of the LVWSP.

In the unlikely event of a berm failure, the environmental impacts would be contained within Mount Storm Lake, which is owned by Dominion. Dominion would address releases from the LVWSP.

Based on this evaluation of the existing LVWSP:

- There is no apparent risk of loss of life associated with a potential failure of an LVWSP berm.
- There will not be interruption or impact to critical infrastructure due to a potential failure of an LVWSP berm.
- Environmental impacts will be limited to property owned and operated by Dominion and Mount Storm Lake which is owned and operated by Dominion.

Therefore, the existing LVWSP are classified as **LOW HAZARD**.

3.0 Conclusions

Based upon these evaluations, the LVWSP at the Station are classified as low hazard potential surface impoundments. The WV DEP will be notified once this document has been placed in the operating record and posted to the publicly accessible website.

A periodic hazard potential classification assessment must be conducted every 5 years from the completion date of this Classification. The next periodic assessment is required by October 2026.

The Classification shall be amended whenever the periodic review period is reached or if changes in site conditions occur that will change the current Classification.

4.0 Certification

I, the undersigned West Virginia Professional Engineer, hereby certify that I am familiar with the technical requirements of 40 CFR 257 Subpart D. I also certify that it is my professional opinion that, to the best of my knowledge, information, and belief, that the information in this demonstration is in accordance with current good and accepted engineering practice(s) and standard(s) and meets the requirements of paragraph (a) in 40 CFR 257.73.

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



Nakia Addison, P.E.

21526
State of West Virginia License Number

Nakia W. Addison
Signature of Professional Engineer

October 5, 2021
Date

5.0 References

National Flood Insurance Program. 2009. Flood Insurance Rate Map: Grant County West Virginia, and Incorporated Areas Panel 135 of 425. Map Number 54023C0135F. Effective Date September 2, 2009. Federal Emergency Management Agency. Washington, D.C.



**Table 1: Low Volume Waste Settling Pond Quantity Estimates
Mount Storm Power Station – Low Volume Waste Settling Ponds
Hazard Potential Classification**

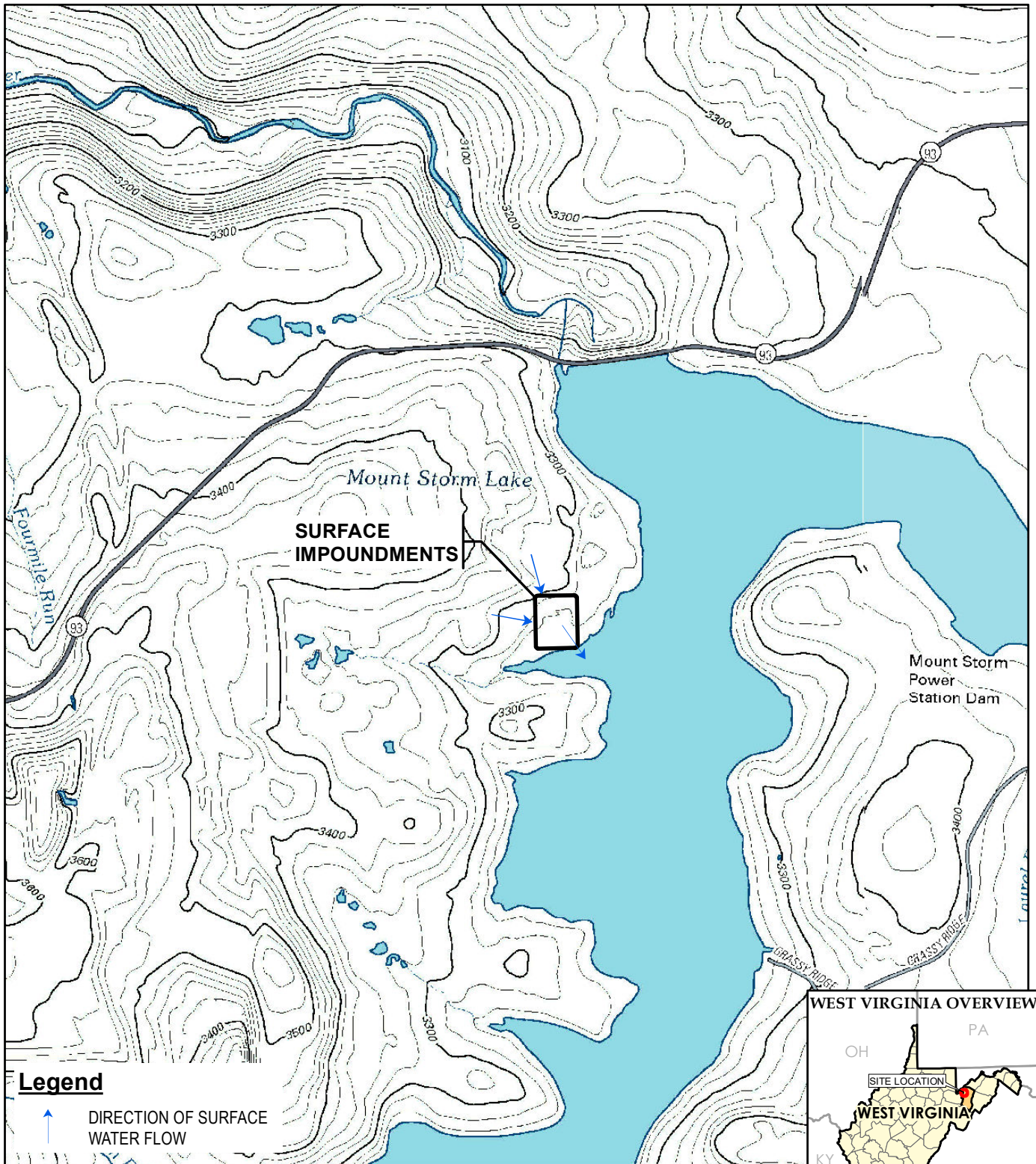
LWSP	Elevations (feet NAVD88)	Operational Capacity (acre-feet)	Volumes (acre-feet)
Pyrite	Top of Berm: 3270 Bottom of Breach: 3265	0.6	0.6 (1.8)
Pond A	Top of Berm: 3260 Bottom of Breach: 3250	8.6	6.8 (15.7)
Pond B	Top of Berm: 3260 Bottom of Breach: 3250	10.0	6.8 (15.9)

Footnotes:

- (1) Assumed bottom of breach elevation based on surrounding topography. The lowest breach elevation is based on a breach of the Pond B berm at the southeast corner, with all ponds being hydraulically connected.
- (2) Operational capacity represent the volume of liquid or solids within the pond at the maximum operating water elevation based on the proposed hydraulic profile for the ponds.
- (3) Volumes are based on the maximum operational capacity to the assumed breach elevation. The values in parentheses represent the maximum volume of water or solids above the assumed breach elevation assuming ponds are filled to top of berm elevation.

Created By: K. Thelen, 8/03/2021

Checked By: J. Hotstream, 9/16/2021



-BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES, 2011.
 -THERE ARE NO 100 YEAR FLOODPLAIN AREAS LOCATED WITHIN THE EXTENTS OF THIS MAP.



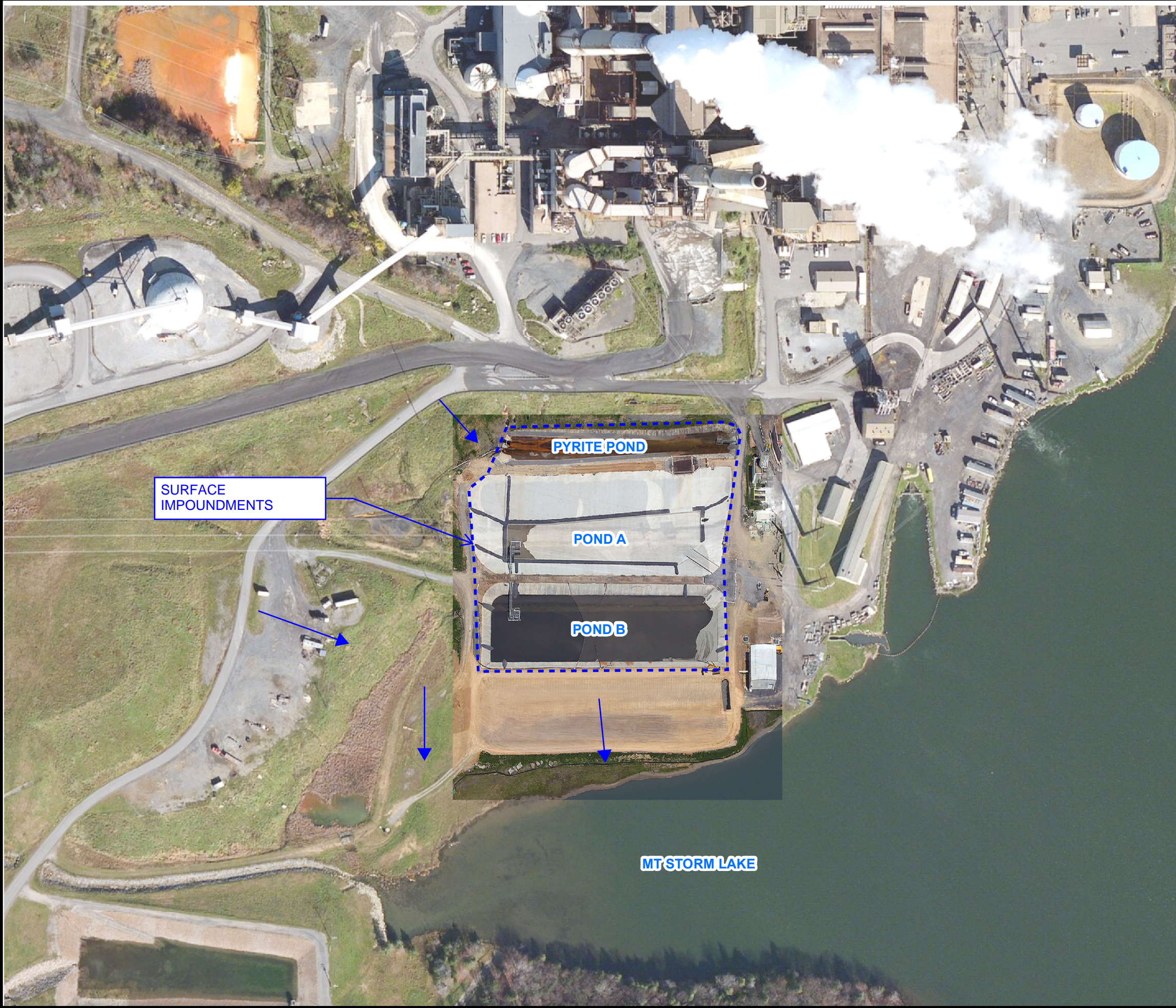
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DOMINION RESOURCES SERVICES, INC.
MOUNT STORM POWER STATION
MOUNT STORM, GRANT COUNTY, WEST VIRGINIA

INITIAL HAZARD POTENTIAL CLASSIFICATION
SITE LOCATION MAP

DRAWN BY:	J. Hotstream
APPROVED BY:	N. Addison
PROJECT NO:	230765
FILE NO.	230765-004slm.mxd
DATE:	September 2021

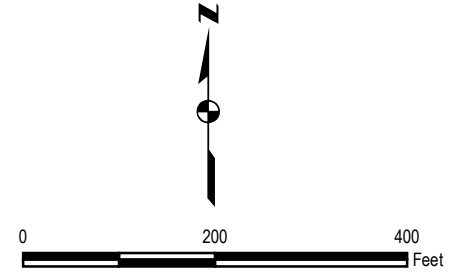
FIGURE 1



NOTES:

- 1) AERIAL PHOTOGRAPH SOURCE: ESRI WORLD IMAGERY DATED APRIL 15, 2016.
- 2) INSET AERIAL PHOTOGRAPH FROM BACKUS AERIAL PHOTOGRAPHY DATED MAY 22, 2019.

➔ DIRECTION OF SURFACE WATER FLOW



PROJECT: DOMINION ENERGY SERVICES, INC. MOUNT STORM POWER STATION, WEST VIRGINIA			
SHEET TITLE: SITE OVERVIEW MAP			
DRAWN BY: RAM	SCALE: 1:2,400	PROJ. NO. 230765.0.0.1	
CHECKED BY: LMC		FILE NO. Fig1-2_AshPondLoc.mxd	
APPROVED BY: GET	DATE PRINTED:	FIGURE 2	
DATE: APRIL 2020			



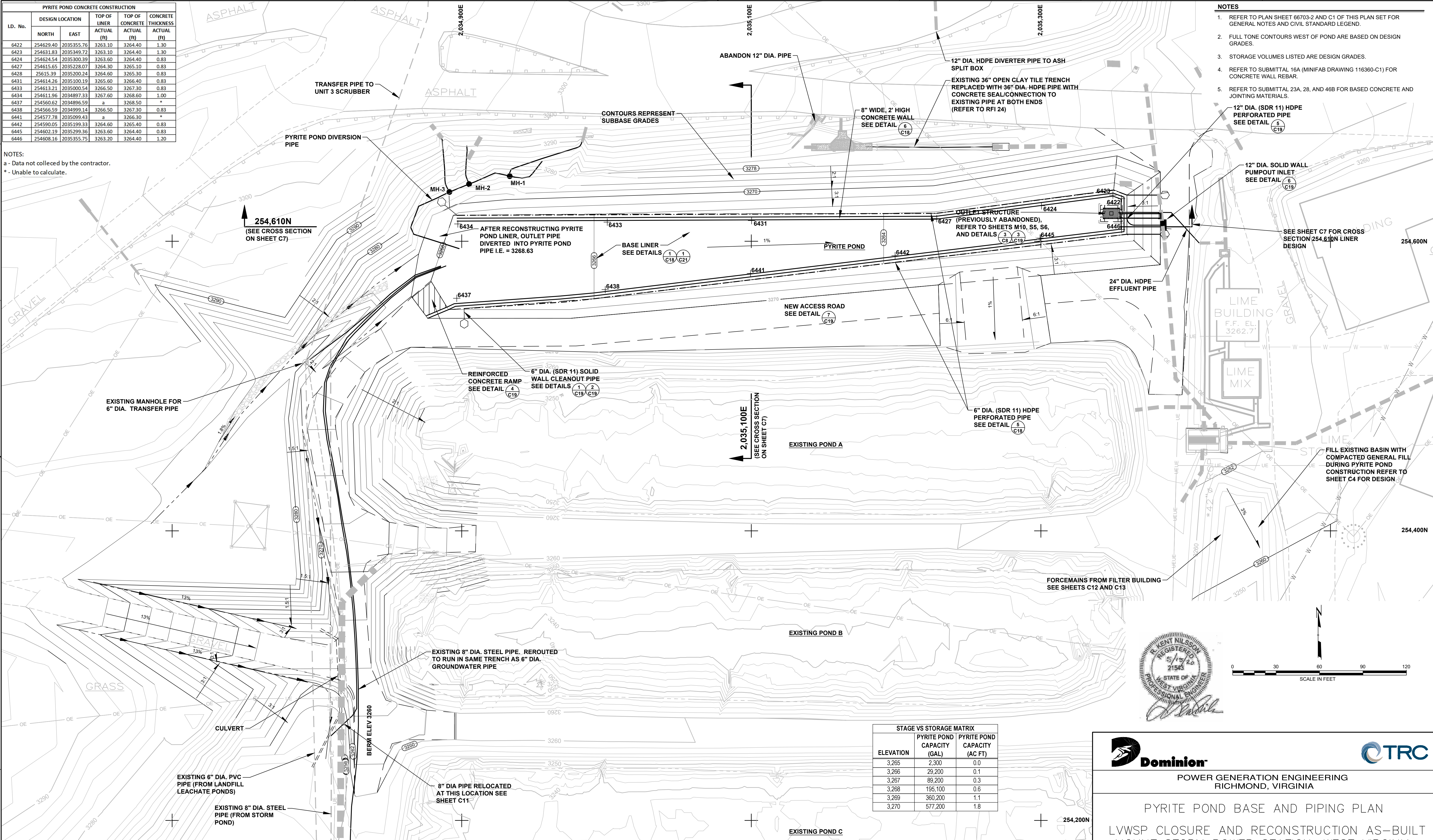
50 International Drive, Suite 150
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Appendix A: Select Engineering Drawings

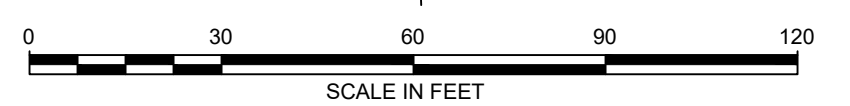
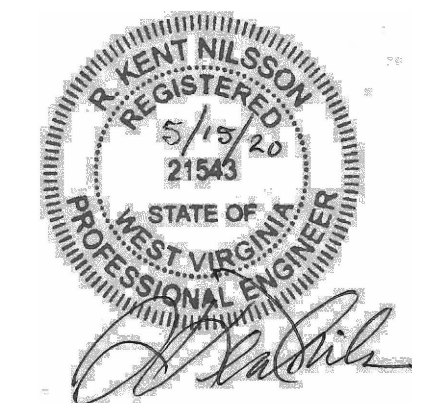
PYRITE POND CONCRETE CONSTRUCTION					
I.D. No.	DESIGN LOCATION		TOP OF LINER	TOP OF CONCRETE	CONCRETE THICKNESS
	NORTH	EAST	ACTUAL (ft)	ACTUAL (ft)	
6422	254629.40	2035355.76	3263.10	3264.40	1.30
6423	254631.83	2035349.72	3263.10	3264.40	1.30
6424	254624.54	2035300.39	3263.60	3264.40	0.83
6427	254615.65	2035228.07	3264.30	3265.10	0.83
6428	254615.39	2035200.24	3264.60	3265.30	0.83
6431	254614.26	2035100.19	3265.60	3266.40	0.83
6433	254613.21	2035000.54	3266.50	3267.30	0.83
6434	254611.96	2034897.33	3267.60	3268.60	1.00
6437	254560.62	2034896.59	a	3268.50	*
6438	254566.59	2034999.14	3266.50	3267.30	0.83
6441	254577.78	2035099.43	a	3266.30	*
6442	254590.05	2035199.33	3264.60	3265.40	0.83
6445	254602.19	2035299.36	3263.60	3264.40	0.83
6446	254608.16	2035355.75	3263.20	3264.40	1.20

NOTES:
 a - Data not collected by the contractor.
 * - Unable to calculate.

- NOTES**
- REFER TO PLAN SHEET 66703-2 AND C1 OF THIS PLAN SET FOR GENERAL NOTES AND CIVIL STANDARD LEGEND.
 - FULL TONE CONTOURS WEST OF POND ARE BASED ON DESIGN GRADES.
 - STORAGE VOLUMES LISTED ARE DESIGN GRADES.
 - REFER TO SUBMITTAL 16A (MINIFAB DRAWING 116360-C1) FOR CONCRETE WALL REBAR.
 - REFER TO SUBMITTALS 23A, 28, AND 46B FOR BASED CONCRETE AND JOINTING MATERIALS.



ELEVATION	PYRITE POND CAPACITY (GAL)	PYRITE POND CAPACITY (AC FT)
3,265	2,300	0.0
3,266	29,200	0.1
3,267	89,200	0.3
3,268	195,100	0.6
3,269	360,200	1.1
3,270	577,200	1.8



Dominion POWER GENERATION ENGINEERING RICHMOND, VIRGINIA

CTRC

PYRITE POND BASE AND PIPING PLAN
 LWSP CLOSURE AND RECONSTRUCTION AS-BUILT
 MOUNT STORM POWER STATION, WEST VIRGINIA

3 AS-BUILT UPDATES															2 AS-BUILT															1 RE-ISSUED FOR BID															0 ISSUED FOR BID														
REV	DATE	DSGN	DRWN	CHKD	DSGN SUPV	PROJ ENGR	CIVIL ENGR	ELEC ENGR	MECH ENGR	ARCH	E.M. ENGR	I&C ENGR	REV	DATE	DSGN	DRWN	CHKD	DSGN SUPV	PROJ ENGR	CIVIL ENGR	ELEC ENGR	MECH ENGR	ARCH	E.M. ENGR	I&C ENGR	REV	DATE	DSGN	DRWN	CHKD	DSGN SUPV	PROJ ENGR	CIVIL ENGR	ELEC ENGR	MECH ENGR	ARCH	E.M. ENGR	I&C ENGR	REV	DATE	DSGN	DRWN	CHKD	DSGN SUPV	PROJ ENGR	CIVIL ENGR	ELEC ENGR	MECH ENGR	ARCH	E.M. ENGR	I&C ENGR								
05/15/2020	DM	TAF	JNH	NA	RKN	CS	DS						10/29/2019	DM	TAF	JNH	NA	RKN	CS	DS						6/16/2016	DM	LLS	JNH	NA	RKN	CBS	SM						4/29/2016	DM	LLS	JNH	NA	RKN	CBS	CB													
DISPL ENGR															DISPL ENGR															DISPL ENGR															DISPL ENGR														
RKN															RKN															RKN															RKN														
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UNLESS OTHERWISE NOTED															UNLESS OTHERWISE NOTED															UNLESS OTHERWISE NOTED															UNLESS OTHERWISE NOTED														
SH															SH															SH															SH														
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