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April 13, 2022

Mr. Dean E. Starook, Groundwater Remediation Specialist
Virginia Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Road
Glen Allen, Virginia 23060

Electronically submitted to: Starook, Dean dean.starook@deq.virginia.gov

**RE: Green Ridge Recycling and Disposal Facility, LLC
Supplement to Response TR-1 (October 1, 2021)
Notice of Intent and Part A Application - SWP 626
DAA Job Number: 18020117-090102**

Dear Mr. Starook:

On behalf of Green Ridge Recycling and Disposal Facility, LLC (Green Ridge), Draper Aden Associates (DAA) is pleased to submit this document to supplement the Notice of Intent (NOI) and Part A Application dated January 22, 2020 for the above referenced facility. Specifically, this document includes the responses to comments #11, #14, #15, and #16 of the DEQ's Technical Review letter dated April 8, 2021. DAA's responses and clarifications for the other technical review comments were provided to the DEQ in a submittal dated October 1, 2021. As indicated in the October 2021 response, additional field work and detailed analysis were required to respond to the outstanding comments.

Listed below are DEQ comments #11, #14, #15, and #16 (in italics), followed by our corresponding response.

DEQ Comment #11: *The proposed base grades depicted in Attachment XV of the Part A Permit Application show the base grades constructed 10 to 25 feet into the bedrock in some areas (e.g., South of B-5, and near DAA-27sb). However, it appears that none of the borings performed for the Part A Permit Application were installed more than 10 feet into bedrock at the site. In accordance with 9 VAC 20-81-460.E.1.e., at least one deep boring should be installed into bedrock where the deepest base grades are proposed. The bedrock should be cored continuously for the first 20 feet below the proposed base grade. This will provide necessary information in accordance with 9 VAC 20-81-120.D.1 regarding the rate and direction of groundwater flow in the bedrock, ability to monitor groundwater in bedrock, the need for blasting or adjustment of base grades, potential hydraulic inter-connection with other regional groundwater wells, etc.*

As described in the initial October 1, 2021 response letter, B-5 is not located in the disposal unit. The cross section previously provided extended beyond the limits of the current disposal unit. Thus, additional information in this area is not required.

Attachment 1 contains a drawing entitled PTA ATTACHMENT XII - FIGURE: BOR - Revision 1 - "Supplemental Boring Locations," dated 04/12/2022 as prepared by Draper Aden Associates, is a 1 inch = 500 feet scale plan view showing the Facility boundary, waste management boundary (WMB), disposal unit boundary (DUB) and additional boring/piezometer locations. *This figure replaces PTA ATTACHMENT XII - FIGURE: BOR, dated 12/9/2019 submitted with the initial Part A application.*

On November 30, 2021, DAA supervised the drilling and installation of a deep boring/piezometer DAA-101pz. As proposed in the October 1, 2021 technical review response letter and shown on **Attachment 1**, DAA-101pz was installed at the northern section of the disposal cell, adjacent to existing soil boring B-9. The north section of the disposal cell is where the deepest conceptual base grades were proposed. DAA-101pz was advanced by Blue Ridge Drilling using hollow stem augers. Upon auger refusal at approximately 15 feet below ground surface (bgs), Wireline NQ2 rock coring equipment was used to core bedrock continuously from 15 feet to 55 feet bgs. Rock core samples were logged in the field and assigned a rock quality designation (RQD) value. Upon completion of rock coring activities, DAA-101pz was completed as a 2-inch diameter piezometer.

Attachment 2 is the completion log for DAA-101pz showing surveyed elevation data and piezometer construction details. As proposed in the October 1, 2021 technical review response letter and shown on **Attachment 2**, the completion depth of DAA-101 is at an approximate elevation of 255.5 feet above mean sea level (msl), which is greater than 20 feet below the lowest base grade elevation proposed for the disposal cell of 276.63 feet msl. The RQD results ranged from 27% (highly weathered) in the upper 10-feet of coring run to 92% (competent) in the lowest 10-feet of coring run. The core samples indicated a biotite rich gneiss with intermittent quartz seams/intrusions, which is consistent with the regional geology literature for the Piedmont province in this area of Virginia.

Groundwater gauging data was collected from the piezometers at the facility in December 2021 and March 2022. As shown on **Attachment 2**, the groundwater elevation in DAA-101pz is 291 feet msl, which is just below the overburden/bedrock interface in this area of the disposal cell.

Because the concept design for this facility is to assume base grades will remain 5 feet above groundwater, the previously submitted May 2019 potentiometric surface map was updated by incorporating the December 2021 groundwater elevation data collected from DAA-101pz. To date, the highest groundwater elevations observed at the facility were collected in May 2019. **Attachment 3** contains a drawing entitled PTA ATTACHMENT XV - FIGURE GW-1, Revision 1 - "Updated May 2019 Potentiometric Map," dated 04/12/2022 as prepared by Draper Aden Associates, which shows the updated potentiometric surface contours at the northern portion of the facility. *This figure replaces PTA ATTACHMENT XV FIGURE: GW-1 dated 12/9/19 submitted with the initial Part A application.* Utilizing the updated potentiometric surface shown in **Attachment 3**, the base grade design elevations were raised to approximately 5 feet above the groundwater table at the northern portion of the disposal cell.

Attachment 4 contains a drawing entitled "Conceptual Base Grade - 5 feet Above Potentiometric Surface" - Figure LA-10 - Revision 1 dated 04/11/2022 as prepared by Draper Aden Associates, which illustrates the revised base grades and potentiometric surface. *This figure replaces FIG LA-10 submitted with our October 1, 2021 response.*

The updated base grades were evaluated against bedrock. **Attachment 5** contains a drawing entitled "Comparison of Conceptual Base Grade with Bedrock Elevations - Revision 1 - Figure LA-9", dated 04/12/2022 as prepared by Draper Aden Associates, which provides a comparison of the conceptual base grades with bedrock elevations. *This figure replaces FIG LA-9 submitted with our October 1, 2021 response.*

As shown on **Attachment 5**, the area where the base grades extend into bedrock has been reduced in size and isolated to the far northwest section of the disposal cell. The revised conceptual base grades were provided to Schnabel Engineering for their preliminary seismic stability analysis, which was conducted and later described in this letter report in response to DEQ comment 16.

Attachment 6 contains a drawing entitled PTA ATTACHMENT XV - FIGURE: CROSS-1 - Revision 1 - "Revised Cross Sections B, D, E, and F," dated 04/12/2022, prepared by Draper Aden Associates and includes updated cross-sections D-D' and F-F', which transect the northern section of the disposal cell. *This figure replaces FIG LA-11 submitted with our October 1, 2021 response.*

Cross-section F-F' has been updated to include the information from deep boring/piezometer DAA-101pz, including the most recent groundwater elevation. Additionally, cross-sections D-D' and F-F' have been updated to show the currently proposed base grades, which were raised to approximately 5 feet above the groundwater elevations in this area. DAA will continue to collect groundwater elevation data at the facility so that final design base grade elevations are a minimum of five feet above the seasonal high groundwater table, as determined by the measurements.

DEQ Comment #14: *The proposed landfill is located within the Central Virginia Seismic Zone. 9 VAC 20-81-120.C.3.b.(1) restricts siting of a landfill within a seismic impact zone unless the owner or operator demonstrates that all containment structures are designed to resist the maximum horizontal acceleration in lithified earth material for the site. Attachment XXIII indicates that the peak ground acceleration may be as much as 20% gravity for the landfill site. However, according to the USGS Unified Hazard Tool, the peak ground acceleration to be used for design purposes at this site location is 22.5% gravity, or 0.225g. Please note that the USGS updated the U.S. Seismic Hazard Long-Term Model in 2018. The applicant should use the updated data as appropriate in the Part A Permit Application.*

DAA and Green Ridge enlisted Schnabel Engineering for response to this comment. See **Attachment 7** for their response.

DEQ Comment #15: *The proposed base grades depicted in Attachment XV of the Part A Permit Application are shown constructed into the bedrock in some areas, and atop as much as 35 feet of silts and sands in other areas of the site. Attachment XXIII indicates that the proposed landfill will incorporate a design seismic*

coefficient of 0.10g, or one-half the peak ground acceleration. However, it is not appropriate to set the seismic coefficient as one-half the peak bedrock acceleration at this stage, since the seismic coefficient is related to the peak acceleration at the ground surface, which may be amplified by the overlying soils and be different than the peak acceleration in bedrock.

DAA and Green Ridge enlisted Schnabel Engineering for response to this comment. See **Attachment 7** for their response. Note that Schnabel Engineering has modified their methodology from their initial report based on the following, as stated on Page 5 of **Attachment 7**:

Please Note: Up to 37% amplification was reported in our August 26, 2021 memorandum to DAA (Preliminary Response to VDEQ Comments No. 15 and 16 on Part A Permit Application). We used ASCE 7-16 to derive these amplification factors instead of 2018 NSHM. In the 2018 NSHM, site-amplification factors were a new addition and had not been adopted in any code at that time. However, the latest ASCE 7, i.e., ASCE 7-22 has just become available (released on December, 2021), which has revised the approach of determining amplification factors and adopted the amplification factors from the 2018 NSHM. Since ASCE 7 committee has performed a thorough review on this latest USGS model, we have opted to revise our approach accordingly and have used 2018 NSHM model to generate ground surface spectral accelerations for this project. The 2018 NSHM indicates no amplification of ground motion due to site-effect at this location.

DEQ Comment #16: *An assessment of the Liquefaction Potential should be performed based upon the geotechnical and hydrogeological data gathered from the site investigations (in particular in those areas with more extensive silts and sands, e.g., DAA-4sb and DAA-36pz). In addition, a preliminary seismic stability analysis should be performed for both conditions that may be present (i.e., landfill constructed into bedrock, and landfill constructed atop 35 feet or more of silts and sands), in order to demonstrate that the landfill can be designed to resist the maximum horizontal acceleration in bedrock, as required by 9 VAC 20-81-120.C.3.b.(2). Guidance for performing these assessments can be found in document EPA/600/R-95/051, RCRA Subtitle D (258) Seismic Design Guidance for Municipal Solid Waste Landfill Facilities.*

DAA and Green Ridge enlisted Schnabel Engineering for response to this comment. See **Attachment 7** for their response.

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We believe that the narrative above and attachments included address Comments #11, #14, #15, and #16 submitted by DEQ on April 8, 2021. Should you have any questions or require additional information, please contact Ms. Deborah Coakley at dcoakley@daa.com or Mr. Mike Lawless at mlawless@daa.com.

Sincerely,

DRAPER ADEN ASSOCIATES



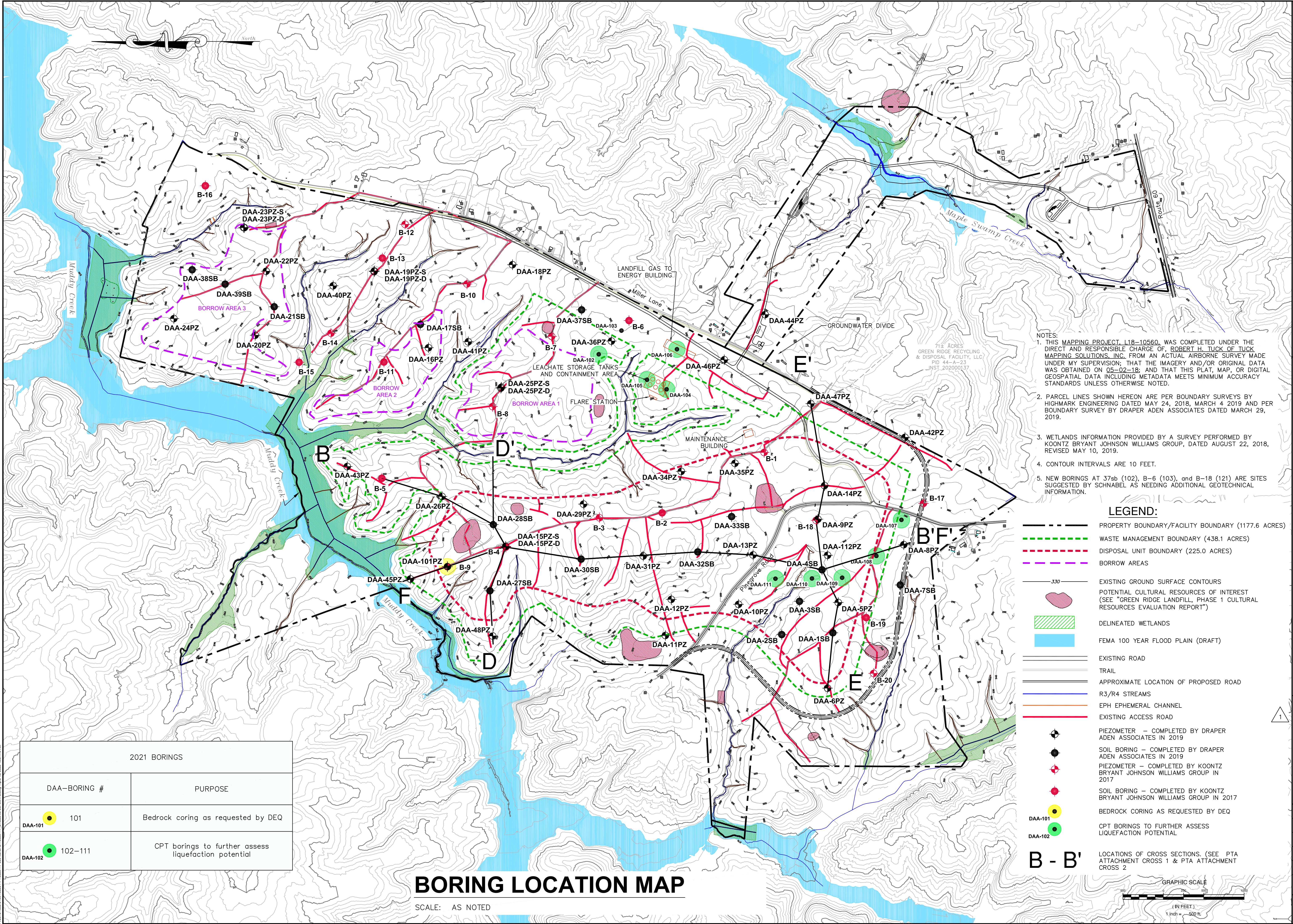
Michael D. Lawless, P.G, CPG
Vice President

Letter Attachments:

Attachment 1	Boring Plan
Attachment 2	Boring Log – DAA-101pz
Attachment 3	Updated Potentiometric Surface Map
Attachment 4	Updated Conceptual Base Grade with Potentiometric Surface
Attachment 5	Updated Comparison of Conceptual Base Grade with Bedrock Elevations; Table 1
Attachment 6	Revised Cross-Sections D-D' and F-F'
Attachment 7	Final Letter Report – Schnabel Engineering to Draper Aden Associates - 22 0407 (Separate attachment)

cc: Kathryn Perszyk, DEQ-CO
Shawn Weimer, DEQ-PRO
Jerry Cifor, Green Ridge Recycling and Disposal Facility, LLC
Will Shewmake, Woods Rogers
Lynn P. Klappich, Draper Aden Associates
Debbie Coakley, Draper Aden Associates
Wendy Karably, Draper Aden Associates

ATTACHMENT 1
BORING PLAN



2021 BORINGS		
DAA-BORING #		PURPOSE
DAA-101	101	Bedrock coring as requested by DEQ
DAA-102	102-111	CPT borings to further assess liquefaction potential

BORING LOCATION MAP

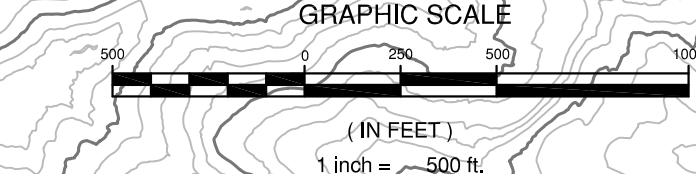
SCALE: AS NOTED

- NOTES:
1. THIS MAPPING PROJECT, L18-10560, WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF ROBERT H. TUCK OF TUCK MAPPING SOLUTIONS, INC. FROM AN ACTUAL AIRBORNE SURVEY MADE UNDER MY SUPERVISION; THAT THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED ON 05-02-18; AND THAT THIS PLAT, MAP, OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
 2. PARCEL LINES SHOWN HEREON ARE PER BOUNDARY SURVEYS BY HIGHMARK ENGINEERING DATED MAY 24, 2018, MARCH 4 2019 AND PER BOUNDARY SURVEY BY DRAPER ADEN ASSOCIATES DATED MARCH 29, 2019.
 3. WETLANDS INFORMATION PROVIDED BY A SURVEY PERFORMED BY KOONTZ BRYANT JOHNSON WILLIAMS GROUP, DATED AUGUST 22, 2018, REVISED MAY 10, 2019.
 4. CONTOUR INTERVALS ARE 10 FEET.
 5. NEW BORINGS AT 37sb (102), B-6 (103), and B-18 (121) ARE SITES SUGGESTED BY SCHNABEL AS NEEDING ADDITIONAL GEOTECHNICAL INFORMATION.

LEGEND:

- PROPERTY BOUNDARY/FACILITY BOUNDARY (1177.6 ACRES)
- WASTE MANAGEMENT BOUNDARY (438.1 ACRES)
- DISPOSAL UNIT BOUNDARY (225.0 ACRES)
- BORROW AREAS
- EXISTING GROUND SURFACE CONTOURS
- POTENTIAL CULTURAL RESOURCES OF INTEREST (SEE "GREEN RIDGE LANDFILL, PHASE 1 CULTURAL RESOURCES EVALUATION REPORT")
- DELINEATED WETLANDS
- FEMA 100 YEAR FLOOD PLAIN (DRAFT)
- EXISTING ROAD
- TRAIL
- APPROXIMATE LOCATION OF PROPOSED ROAD
- R3/R4 STREAMS
- EPH EPHEMERAL CHANNEL
- EXISTING ACCESS ROAD
- PIEZOMETER — COMPLETED BY DRAPER ADEN ASSOCIATES IN 2019
- SOIL BORING — COMPLETED BY DRAPER ADEN ASSOCIATES IN 2019
- PIEZOMETER — COMPLETED BY KOONTZ BRYANT JOHNSON WILLIAMS GROUP IN 2017
- SOIL BORING — COMPLETED BY KOONTZ BRYANT JOHNSON WILLIAMS GROUP IN 2017
- BEDROCK CORING AS REQUESTED BY DEQ
- CPT BORINGS TO FURTHER ASSESS LIQUEFACTION POTENTIAL

B - B'



UPDATED BORING PLAN SUPPLEMENTAL
BORING LOCATIONS

**GREEN RIDGE RECYCLING
AND DISPOSAL FACILITY**

CUMBERLAND COUNTY, VIRGINIA

REVISIONS	
TR-1 Supplement Response	April 12, 2022
DESIGNED BY:	DC
DRAWN BY:	DLD
CHECKED BY:	LPK
SCALE:	1" = 500'
DATE:	12/09/2019
PROJECT NUMBER:	18020117-030102
PTA ATTACHMENT XII	FIGURE: BOR

Draper Aden Associates

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ATTACHMENT 2

BORING LOG

Project:	Green Ridge Recycling	Boring/Well Area:	North Area of Cell	Drilling Rig Type:	Track Rig CME 45
Project #:	2101370	Logged By:	D. Coakley	Drilling Method:	4.25" Hollow Stem Auger
Location:	Cumberland County, VA	Northing:	3731134.94	Sampling Method:	Rock Core
Start Date:	11/30/21	Easting:	11590828.91	Well Material:	2" Schedule 40 PVC
Completion Date:	12/01/21	Ground Elevation:	310.55	Screen Size:	0.10 Slot
Contractor:	Blue Ridge Drilling	Total Depth:	55.0	Filter Pack:	#2 Sand
Driller:	James Jones	TOC Elevation:	312.55	Seal:	Bentonite Pellets/Hydrated

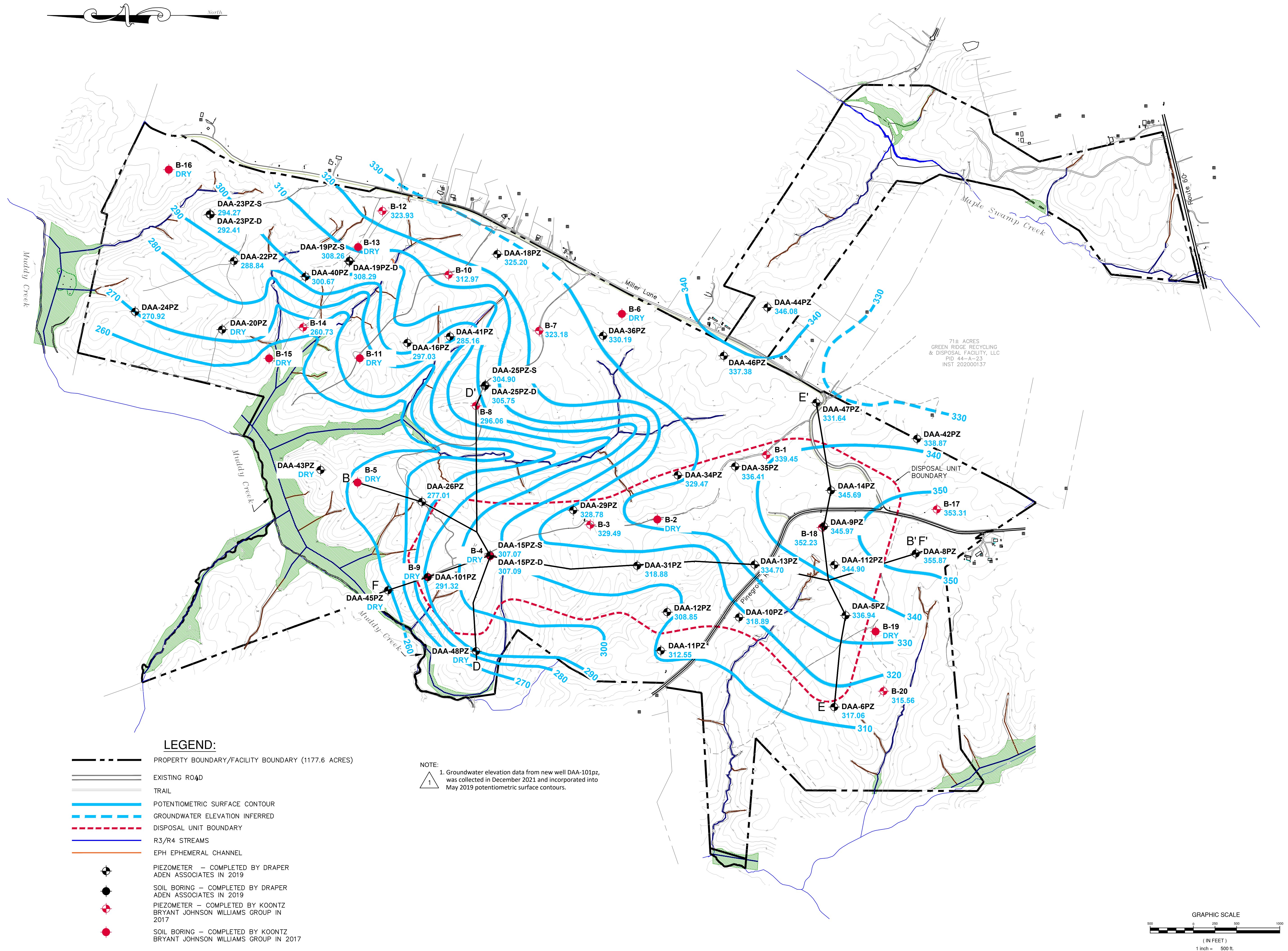
N Value	Blow Counts	Depth	Description (USCS)	Geol	Well Log	ELEV.	Remarks
	3 7 16 27 50/2"	5	Light to Dark Brown SILT and Sand, micaceous (SM)				Cuttings were logged in field; Blow counts from adjacent boring SB-9.
	30 50/5"		Dark Brown SILT, some Sand, trace clay (SM)			305.55	
	44 50/2"	10	Gray to light Brown fine SAND and Silt, micaceous, horizontal structure, SAPROLITE (SM)			300.55	
	50/1"						
		15	Auger Refusal at 15'			295.55	Water level elevation from data collected in December 2021
Core Run #1			Biotite Gneiss Rock Core Run 1: 15 to 20 feet Recovery: 57/60 inches = 95% RQD: 35/60 inches = 58%			290.55	
Core Run #2		20	Biotite Gneiss Rock Core Run 2: 20 to 25 feet Recovery: 41/60 inches = 68% RQD: 16/60 inches = 27%			285.55	
Core Run #3		25	Biotite Gneiss Rock Core Run 3: 25 to 30 feet Recovery: 58/60 inches = 97% RQD: 31/60 inches = 52%			280.55	
Core Run #4		30	Biotite Gneiss Rock Core Run 4: 30 to 35 feet Recovery: 60/60 inches = 100% RQD: 45/60 inches = 75%				

Project:	Green Ridge Recycling	Boring/Well Area:	North Area of Cell	Drilling Rig Type:	Track Rig CME 45
Project #:	2101370	Logged By:	D. Coakley	Drilling Method:	4.25" Hollow Stem Auger
Location:	Cumberland County, VA	Northing:	3731134.94	Sampling Method:	Rock Core
Start Date:	11/30/21	Easting:	11590828.91	Well Material:	2" Schedule 40 PVC
Completion Date:	12/01/21	Ground Elevation:	310.55	Screen Size:	0.10 Slot
Contractor:	Blue Ridge Drilling	Total Depth:	55.0	Filter Pack:	#2 Sand
Driller:	James Jones	TOC Elevation:	312.55	Seal:	Bentonite Pellets/Hydrated

N Value	Blow Counts	Depth	Description (USCS)	Geol	Well Log	ELEV.	Remarks
Core Run #5			Biotite Gneiss Rock Core Run 5: 35 to 40 feet Recovery: 60/60 inches = 100% RQD: 54.5/60 inches = 91%				
Core Run #6		40	Biotite Gneiss Rock Core Run 6: 40 to 45 feet Recovery: 58/60 inches = 97% RQD: 54.5/60 inches = 91%			270.55	
Core Run #7		45	Biotite Gneiss Rock Core Run 7: 45 to 50 feet Recovery: 59/60 inches = 98% RQD: 42/60 inches = 70%			265.55	
Core Run #8		50	Biotite Gneiss Rock Core Run 8: 50 to 55 feet Recovery: 58/60 inches = 97% RQD: 55/60 inches = 92%			260.55	
		55				255.55	
		60				250.55	
		65				245.55	

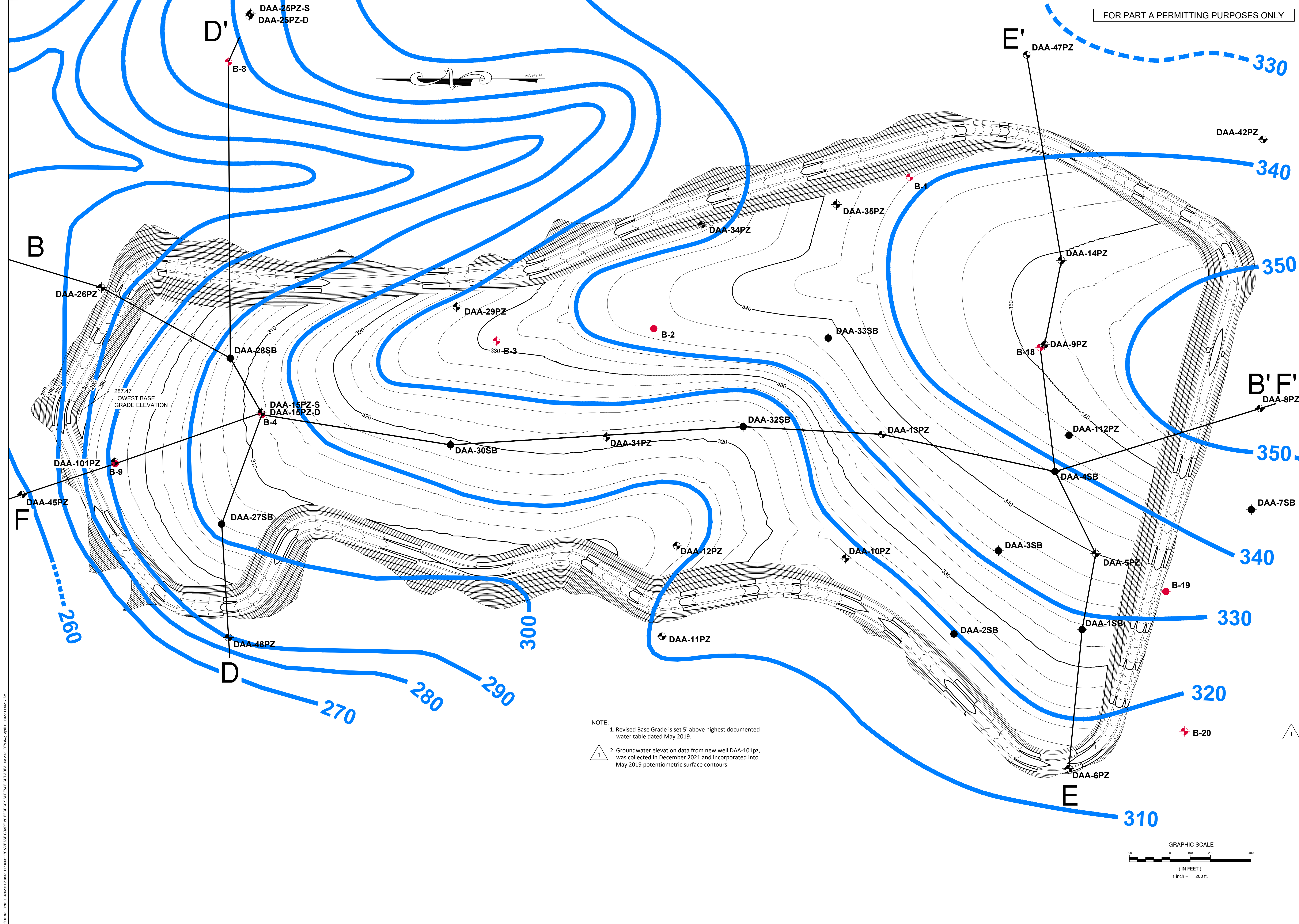
ATTACHMENT 3
UPDATED POTENTIOMETRIC MAP

P:\01018\02020117\02020117-090102\DWG\02020117-090102-GW-1.dwg April 12, 2022 11:40:47 AM



ATTACHMENT 4

FIGURE - CONCEPTUAL BASE GRADE AND POTENTIOMETRIC SURFACE



FOR PART A PERMITTING PURPOSES ONLY

Draper Aden Associates

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UPDATED CONCEPTUAL BASE GRADE 5 FEET
ABOVE UPDATED POTENTIOMETRIC SURFACE
GREEN RIDGE RECYCLING & DISPOSAL FACILITY
CUMBERLAND COUNTY, VIRGINIA

REVISIONS

TR-1 Response:
10/01/2021

TR-1 Supplement Response:
04/12/2022

DESIGNED BY:
LPK

DRAWN BY:
DLD

CHECKED BY:
LPK

SCALE:
1" = 200'

DATE:
SEPTEMBER 24, 2021

PROJECT NUMBER:
18020117-090102

FIGURE: LA-10

ATTACHMENT 5

FIGURE - CONCEPTUAL BASE GRADE AND BEDROCK

TABLE 1

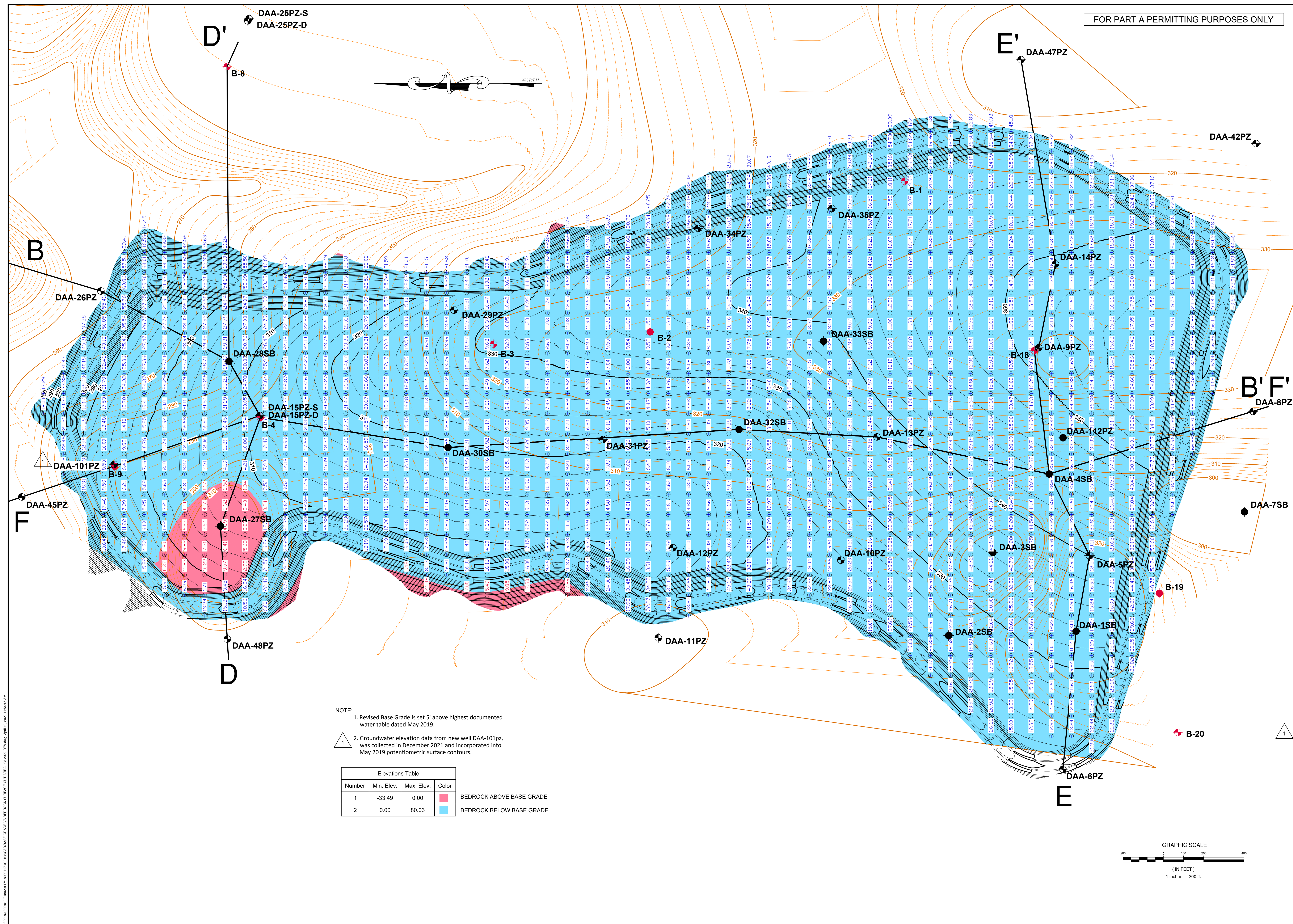


TABLE 1 (Revised April 12, 2022 - light green cells)

Boring Log Completion Details
Groundwater and Bedrock Elevation Data
Green Ridge Recycling and Disposal Facility
Cumberland, Virginia

Boring ID	Completion Date	Auger Refusal Depth (ft bgs)	Rock Core Depth (ft bgs)	Current Status	Depth to Groundwater (feet above mean sea level)			Well/Boring Elevations				Groundwater Elevations			Proposed Base Grade Elevation	Bedrock Elevation
					04/11/19	05/31/19	10/29/19	Top of Casing	Top of Screen	Bottom of Screen	Ground Surface	04/11/19	05/31/19	10/29/19		
B-1	11/30/17	51	-	1" Piezometer	37.06	36.14	36.65	375.59	339.63	323.63	374.63	338.53	339.45	338.94	343.88	323.63
B-2	11/30/17	32	32 to 42	Sealed Boring	-	-	-	-	-	-	358.28	-	-	-	336.72	326.28
B-3	12/01/17	25.5	25.5 to 35.5	1" Piezometer	19.90	19.40	20.06	348.89	312.33	322.33	347.83	328.99	329.49	328.83	330.84	322.33
B-4	12/01/17	25.5	-	Sealed Boring	-	-	-	-	-	-	329.63	-	-	-	311.74	304.13
B-5	12/04/17	10	-	Sealed Boring	-	-	-	-	-	-	315.00	-	-	-	na	305.00
B-6	12/12/17	40	40 to 50	Sealed Boring	-	-	-	-	-	-	355.46	-	-	-	na	315.46
B-7	12/05/17	55	-	1" Piezometer	31.78	30.53	31.84	353.71	312.33	297.33	352.33	321.93	323.18	321.87	na	297.33
B-8	12/04/17	36	-	1" Piezometer	36.15	35.15	35.20	331.21	304.26	294.26	330.26	295.06	296.06	296.01	na	294.26
B-9	12/01/17	21	-	Sealed Boring	-	-	-	-	-	-	310.55	-	-	-	296.59	289.55
B-10	12/05/17	47	-	1" Piezometer	29.72	29.19	30.10	342.16	309.19	294.19	341.19	312.44	312.97	312.06	na	294.19
B-11	12/05/17	40	-	Sealed Boring	-	-	-	-	-	-	320.32	-	-	-	na	280.32
B-12	12/06/17	40	-	1" Piezometer	10.82	13.08	19.55	337.01	315.89	295.89	335.89	326.19	323.93	317.46	na	295.89
B-13	12/07/17	25	-	Sealed Boring	-	-	-	-	-	-	332.58	-	-	-	na	307.58
B-14	12/07/17	42.5	-	1" Piezometer	30.34	31.16	33.87	291.89	258.00	248.00	290.50	261.55	260.73	258.02	na	248.00
B-15	12/08/17	11	-	Sealed Boring	-	-	-	-	-	-	265.88	-	-	-	na	254.88
B-16	12/08/17	30	-	Sealed Boring	-	-	-	-	-	-	320.00	-	-	-	na	290.00
B-17	11/12/17	47	-	1" Piezometer	31.38	30.15	30.99	383.46	354.37	334.37	381.37	352.08	353.31	352.47	na	334.37
B-18	12/14/17	30	30 to 40	1" Piezometer	13.81	13.94	16.60	366.17	350.42	325.42	365.42	352.36	352.23	349.57	350.80	335.42
B-19	12/13/17	46.5	-	Sealed Boring	-	-	-	-	-	-	363.66	-	-	-	na	317.16
B-20	12/15/17	38	38 to 48	1" Piezometer	34.65	34.05	34.90	349.61	316.15	301.15	349.15	314.96	315.56	314.71	na	311.15
DAA-1sb	02/21/19	21.5	21.5 to 31.5	Sealed Boring	-	-	-	-	-	-	348.25	-	-	-	333.52	326.75
DAA-2sb	02/25/19	51.5	-	Sealed Boring	-	-	-	-	-	-	355.61	-	-	-	324.80	304.11
DAA-3sb	02/25/19	> 62	-	Sealed Boring	-	-	-	-	-	-	348.39	-	-	-	336.21	< 286.39
DAA-4sb	02/26/19	39	-	Sealed Boring	-	-	-	-	-	-	347.44	-	-	-	344.21	308.44
DAA-5pz	02/26/19	35.5	-	2" Piezometer	20.32	19.56	21.25	356.50	325.99	320.99	356.49	336.18	336.94	335.25	339.97	320.99
DAA-6pz	02/26/19	23.5	-	2" Piezometer	18.25	18.13	21.20	335.19	314.42	309.42	332.92	316.94	317.06	313.99	327.60	309.42
DAA-7sb	02/27/19	63.5	-	Sealed Boring	-	-	-	-	-	-	352.90	-	-	-	na	289.40
DAA-8pz	02/27/19	36	-	2" Piezometer	8.47	9.59	13.55	365.46	338.19	328.19	364.19	356.99	355.87	351.91	na	328.19
DAA-9pz	02/28/19	25	-	2" Piezometer	19.89	19.71	21.70	365.68	350.25	340.25	365.25	345.79	345.97	343.98	351.02	340.25
DAA-10pz	02/28/19	31	-	2" Piezometer	22.95	22.66	24.60	341.55	313.45	308.45	339.45	318.60	318.89	316.95	323.74	308.45
DAA-11pz	02/28/19	23	-	2" Piezometer	dry	23.75	dry	336.30	317.07	312.07	335.07	Dry	312.55	Dry	na	312.07
DAA-12pz	03/04/19	25.5	-	2" Piezometer	22.34	22.35	26.00	331.20	309.57	304.57	330.07	308.86	308.85	305.20	313.28	304.57
DAA-13pz	03/04/19	34	-	2" Piezometer	24.82	24.66	27.05	359.36	328.96	323.96	357.96	334.54	334.70	332.31	337.19	323.96
DAA-14pz	03/05/19	42	-	2" Piezometer	36.79	35.75	35.30	381.44	343.13	338.13	380.13	344.65	345.69	346.14	350.44	338.13
DAA-15pz-s	03/05/19	34	-	2" Piezometer	24.53	24.08	25.20	331.15	300.98	295.98	329.98	306.62	307.07	305.95	311.69	295.98
DAA-15pz-d	03/05/19	29	29 to 39	2" Piezometer	24.72	24.25	25.30	331.34	300.71	290.71	329.71	306.62	307.09	306.04	na	300.71
DAA-16pz	03/06/19	26	-	2" Piezometer	21.68	27.57	dry	324.60	302.02	297.02	323.02	302.92	297.03	Dry	na	297.02
DAA-17sb	03/06/19	22.5	-	Sealed Boring	-	-	-	-	-	-	332.69	-	-	-	na	310.19
DAA-18pz	03/07/19	27	-	2" Piezometer	17.68	18.26	21.83	343.46	320.12	315.12	342.12	325.78	325.20	321.63	na	315.12
DAA-19pz-s	03/07/19	21.5	-	2" Piezometer	17.00	17.68	20.40	325.94	308.84	303.84	325.34	308.94	308.26	305.54	na	303.84
DAA-19pz-d	03/11/19	23	23 to 33	2" Piezometer	18.17	18.80	22.20	327.09	306.18	296.18	325.18	308.92	308.29	304.89	na	302.18
DAA-20pz	03/11/19	34	-	2" Piezometer	dry	dry	dry	313.62	283.39	278.39	312.39	Dry	Dry	Dry	na	278.39
DAA-21sb	03/12/19	47	-	Sealed Boring	-	-	-	-	-	-	315.47	-	-	-	na	268.47

TABLE 1 (Revised April 12, 2022 - light green cells)

Boring Log Completion Details
Groundwater and Bedrock Elevation Data
Green Ridge Recycling and Disposal Facility
Cumberland, Virginia

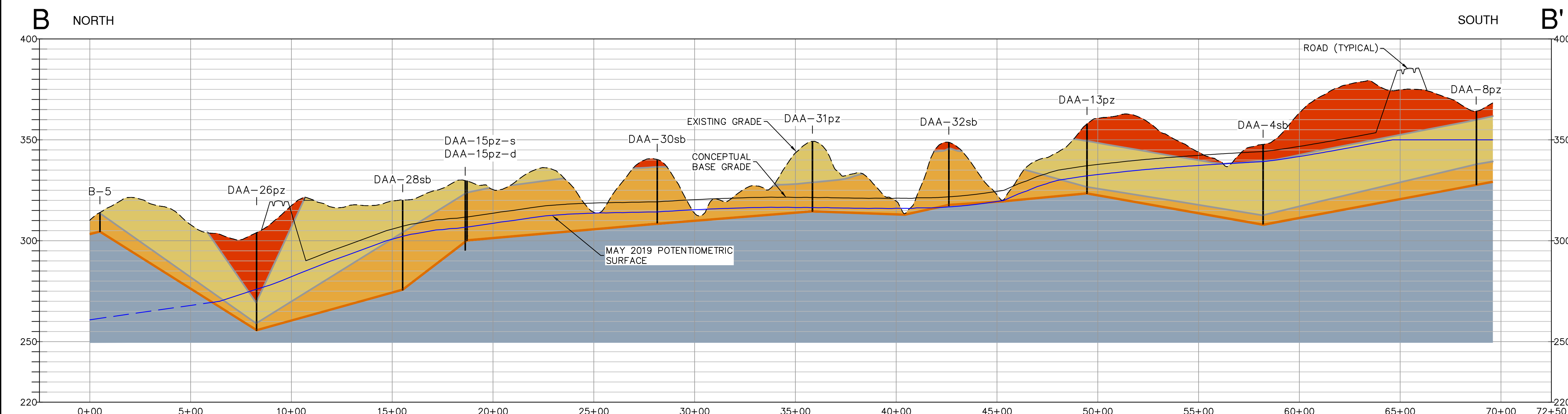
Boring ID	Completion Date	Auger Refusal Depth (ft bgs)	Rock Core Depth (ft bgs)	Current Status	Depth to Groundwater (feet above mean sea level)			Well/Boring Elevations				Groundwater Elevations			Proposed Base Grade Elevation	Bedrock Elevation
					04/11/19	05/31/19	10/29/19	Top of Casing	Top of Screen	Bottom of Screen	Ground Surface	04/11/19	05/31/19	10/29/19		
DAA-22pz	03/12/19	> 55	-	2" Piezometer	37.55	35.86	35.48	324.70	278.33	268.33	323.33	287.15	288.84	289.22	na	< 268.33
DAA-23pz-s	03/13/19	33	-	2" Piezometer	28.59	26.34	29.20	320.61	290.63	285.63	318.63	292.02	294.27	291.41	na	285.63
DAA-23pz-d	03/13/19	37	37 to 47	2" Piezometer	27.98	26.26	23.82	318.67	280.94	270.94	317.94	290.69	292.41	294.85	na	280.94
DAA-24pz	03/13/19	23	-	2" Piezometer	22.33	20.27	20.40	291.19	271.87	266.87	289.87	268.86	270.92	270.79	na	266.87
DAA-25pz-s	03/14/19	37	-	2" Piezometer	23.55	23.55	26.00	328.45	294.38	289.38	326.38	304.90	304.90	302.45	na	289.38
DAA-25pz-d	03/14/19	37	37 to 47	2" Piezometer	21.88	21.95	25.05	327.70	289.58	279.58	326.58	305.82	305.75	302.65	na	289.58
DAA-26pz	03/27/19	48	-	2" Piezometer	28.76	28.07	28.86	305.08	261.20	256.20	304.20	276.32	277.01	276.22	na	256.20
DAA-27sb	03/27/19	21.5	-	Sealed Boring	-	-	-	-	-	-	331.70	-	-	-	305.90	310.20
DAA-28sb	03/28/19	44	-	Sealed Boring	-	-	-	-	-	-	320.28	-	-	-	307.20	276.28
DAA-29pz	03/28/19	34.5	-	2" Piezometer	20.91	20.63	25.60	349.41	318.34	313.34	347.84	328.50	328.78	323.81	326.39	313.34
DAA-30sb	03/28/19	31	-	Sealed Boring	-	-	-	-	-	-	339.93	-	-	-	319.28	308.93
DAA-31pz	03/29/19	33.5	-	2" Piezometer	31.64	31.04	32.20	349.92	320.07	315.07	348.57	318.28	318.88	317.72	321.24	315.07
DAA-32sb	03/29/19	31	-	Sealed Boring	-	-	-	-	-	-	349.82	-	-	-	321.78	318.82
DAA-33sb	04/02/19	17	-	Sealed Boring	-	-	-	-	-	-	348.20	-	-	-	338.98	331.20
DAA-34pz	04/02/19	39.5	-	2" Piezometer	27.65	25.91	26.75	355.38	320.20	315.20	354.70	327.73	329.47	328.63	338.48	315.20
DAA-35pz	04/03/19	38	-	2" Piezometer	31.58	30.95	32.00	367.36	332.58	327.58	365.58	335.78	336.41	335.36	340.89	327.58
DAA-36pz	04/03/19	45	-	2" Piezometer	10.25	10.64	14.04	340.83	300.15	295.15	340.15	330.58	330.19	326.79	na	295.15
DAA-37sb	04/04/19	47.5	-	Sealed Boring	-	-	-	-	-	-	357.48	-	-	-	na	309.98
DAA-38sb	04/04/19	19.5	-	Sealed Boring	-	-	-	-	-	-	307.43	-	-	-	na	287.93
DAA-39sb	04/04/19	25.5	-	Sealed Boring	-	-	-	-	-	-	315.21	-	-	-	na	289.71
DAA-40pz	04/05/19	29	-	2" Piezometer	25.94	26.83	dry	327.50	301.93	296.93	325.93	301.56	300.67	Dry	na	296.93
DAA-41pz	04/08/19	22.5	-	2" Piezometer	22.45	22.83	23.60	307.99	289.02	284.02	306.52	285.54	285.16	284.39	na	284.02
DAA-42pz	05/20/19	48	-	1" Piezometer		27.70	30.25	366.57	320.99	315.99	363.99		338.87	336.32	na	315.99
DAA-43pz	05/20/19	15	-	1" Piezometer		dry	dry	309.32	299.00	294.00	309.00		dry	dry	na	294.00
DAA-44pz	05/20/19	45	-	1" Piezometer		36.90	38.70	382.98	339.96	334.96	379.96		346.08	344.28	na	334.96
DAA-45pz	05/20/19	8	-	1" Piezometer		dry	dry	271.24	266.06	261.06	269.06		Dry	Dry	na	261.06
DAA-46pz	05/20/19	35	-	1" Piezometer		26.78	28.80	364.16	330.77	325.77	360.77		337.38	335.36	na	325.77
DAA-47pz	05/21/19	54	-	1" Piezometer		29.27	31.52	360.91	310.19	305.19	359.19		331.64	329.39	na	305.19
DAA-48pz	05/21/19	18	-	1" Piezometer		dry	dry	317.84	302.50	297.50	315.50		Dry	Dry	na	297.50
DAA-101pz	12/01/21	15	15 to 55	2" Piezometer				313.00	265.55	255.55	310.55				296.59	295.55
DAA-112pz	11/29/21	18		2" Piezometer				353.49	343.20	333.20	351.20				347.75	333.20

Not Applicable: Boring/Piezometer outside of the Limits of Disposal Area

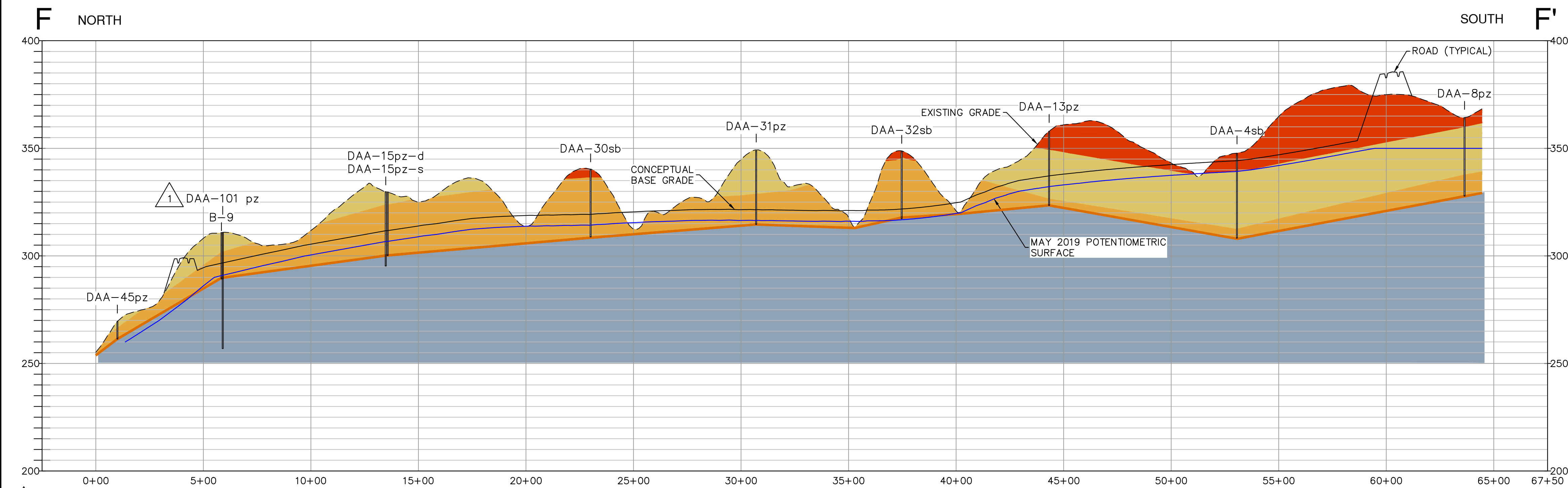
* Data provided by Koontz Bryant

ATTACHMENT 6

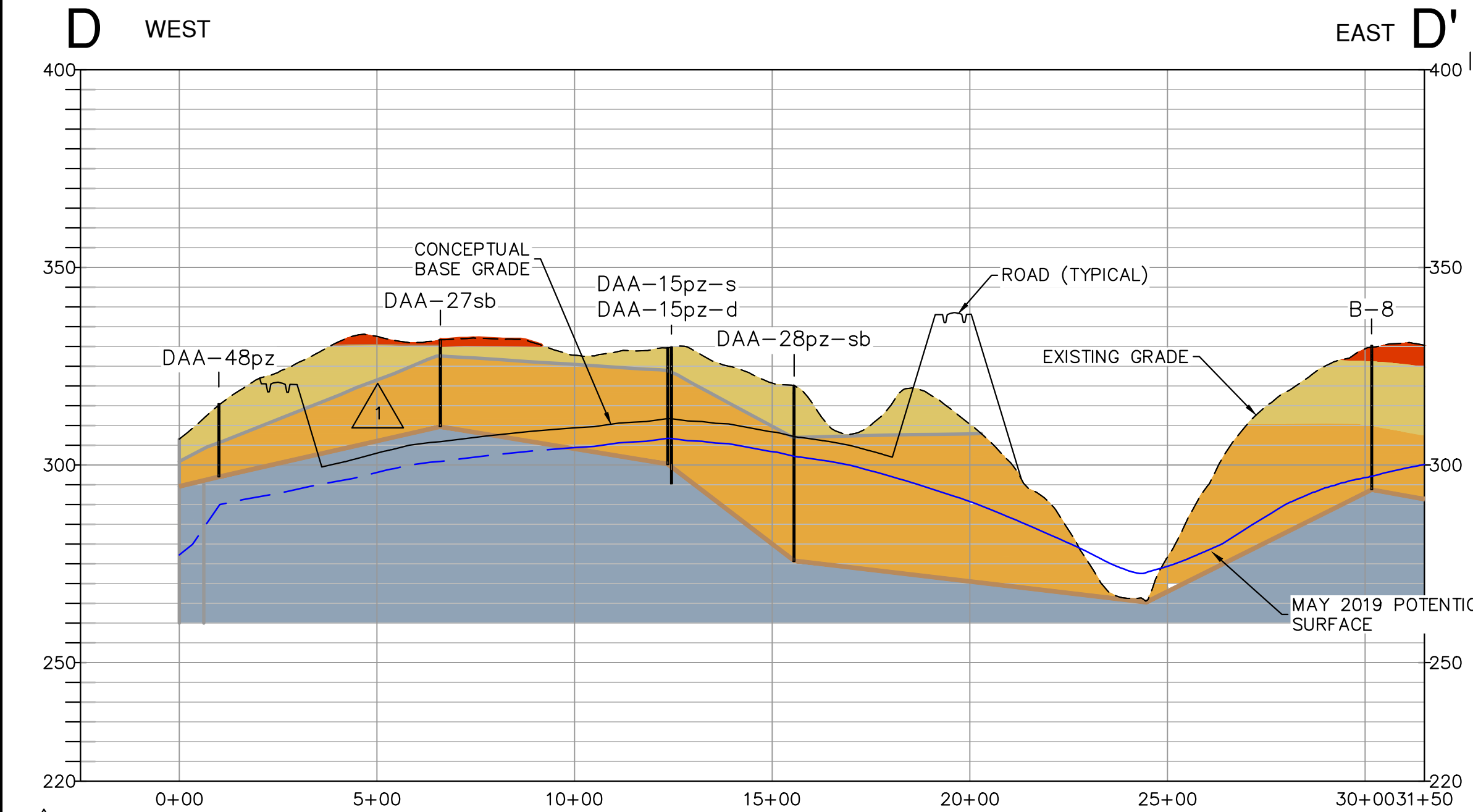
FIGURE - REVISED CROSS SECTIONS



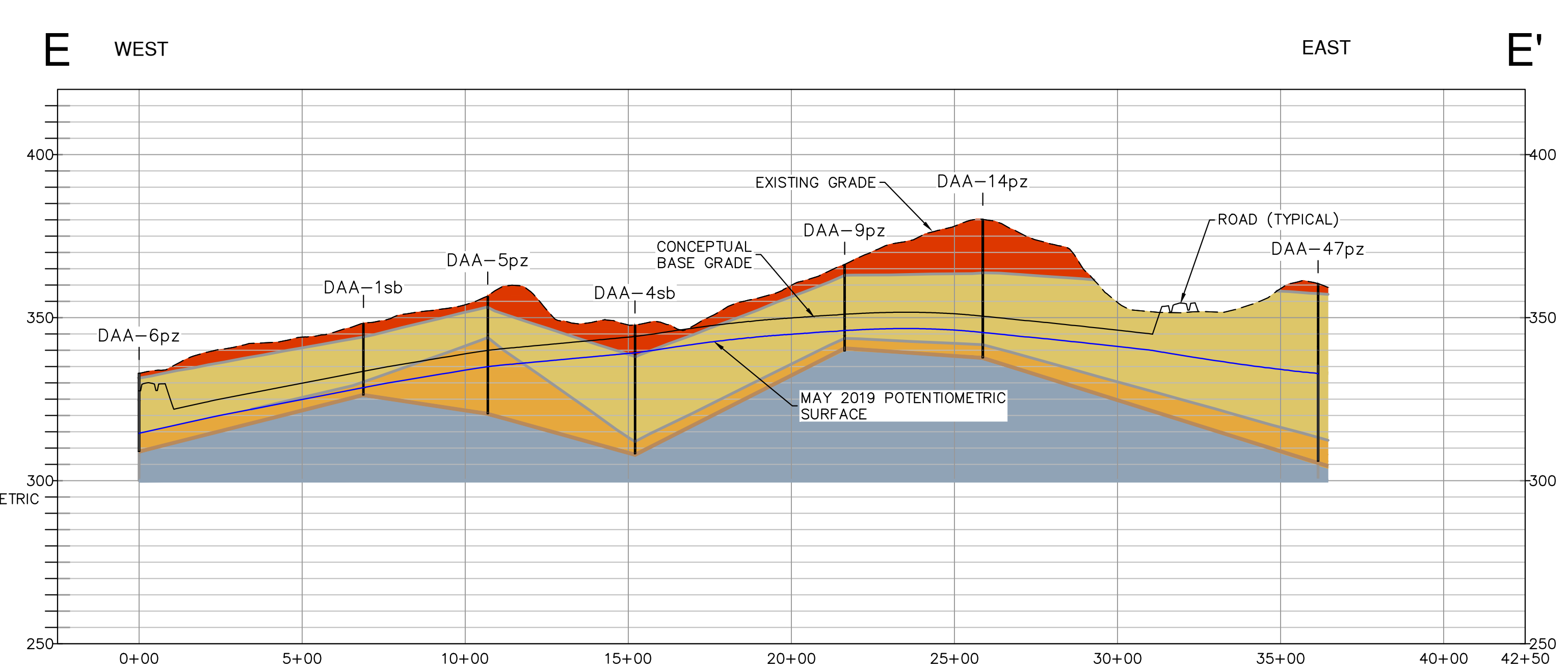
SECTION B-B' - Scale: H: 1"=300', V: 10:1



SECTION F-F' - Scale: H: 1"=300', V: 10:1



SECTION D-D' - Scale: H: 1"=300', V: 10:1



SECTION E-E' - Scale: H: 1"=300', V: 10:1

LEGEND:

- MH/ML-SILTS & CLAYS
- SM-SILTS & SANDS
- SAPROLITE (PARTIALLY WEATHERED ROCK)
- AUGER REFUSAL/BEDROCK
- EXISTING GRADE
- POTENTIOMETRIC SURFACE MAY 2019
- GROUNDWATER ELEVATION INFERRED

NOTES:

- Cross Sections A and C have been removed from documentation since not related to Disposal Unit Boundary.
- Groundwater elevation data from new well DAA-101pz, was collected in December 2021 and incorporated into May 2019 potentiometric surface contours.

KEY MAP

SCALE: NOT TO SCALE

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• Northern Virginia
• Virginia Beach, VA



UPDATED CROSS SECTIONS B, D, E, AND F

GREEN RIDGE RECYCLING AND DISPOSAL FACILITY

CUMBERLAND COUNTY, VIRGINIA

REVISIONS	
TR-1 Response:	October 01, 2021
TR-1 Supplement Response:	April 12, 2022
DESIGNED BY:	DC
DRAWN BY:	DLD/DJF
CHECKED BY:	KEB
SCALE:	AS NOTED
DATE:	SEPTEMBER 24, 2021
PROJECT NUMBER:	18020117-030102
PTA ATTACHMENT XV FIGURE: CROSS-1 FIG LA-11	

ATTACHMENT 7
SCHNABEL REPORT
(SEPARATE DOCUMENT)