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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Harold D. Ward, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Monday, July 10, 2023  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for ECKLEBERRY 2H  
47-103-03493-00-00

Slide repair, changed LOD

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: ECKLEBERRY 2H  
Farm Name: JAMES ALLEN SELL  
U.S. WELL NUMBER: 47-103-03493-00-00  
Horizontal 6A New Drill  
Date Modification Issued: 7/10/2023

07/14/2023

Promoting a healthy environment.



**LOCATION COORDINATES:**  
 ACCESS ROAD "A" ENTRANCE  
 LATITUDE: 39.554902 LONGITUDE: -80.730989 (NAD 83)  
 LONGITUDE: 39.554822 LONGITUDE: -80.731168 (NAD 27)  
 N 4378392.15 E 523111.11 (UTM ZONE 17 METERS)

ACCESS ROAD "B" ENTRANCE  
 LATITUDE: 39.557532 LONGITUDE: -80.734287 (NAD 83)  
 LONGITUDE: 39.557452 LONGITUDE: -80.734465 (NAD 27)  
 N 4378683.19 E 522826.91 (UTM ZONE 17 METERS)

CENTER OF TANK  
 LATITUDE: 39.556180 LONGITUDE: -80.730417 (NAD 83)  
 LONGITUDE: 39.556080 LONGITUDE: -80.730596 (NAD 27)  
 N 4378531.91 E 523159.83 (UTM ZONE 17 METERS)

CENTROID OF PAD  
 LATITUDE: 39.556680 LONGITUDE: -80.731075 (NAD 83)  
 LONGITUDE: 39.556780 LONGITUDE: -80.731254 (NAD 27)  
 N 4378611.65 E 523103.06 (UTM ZONE 17 METERS)

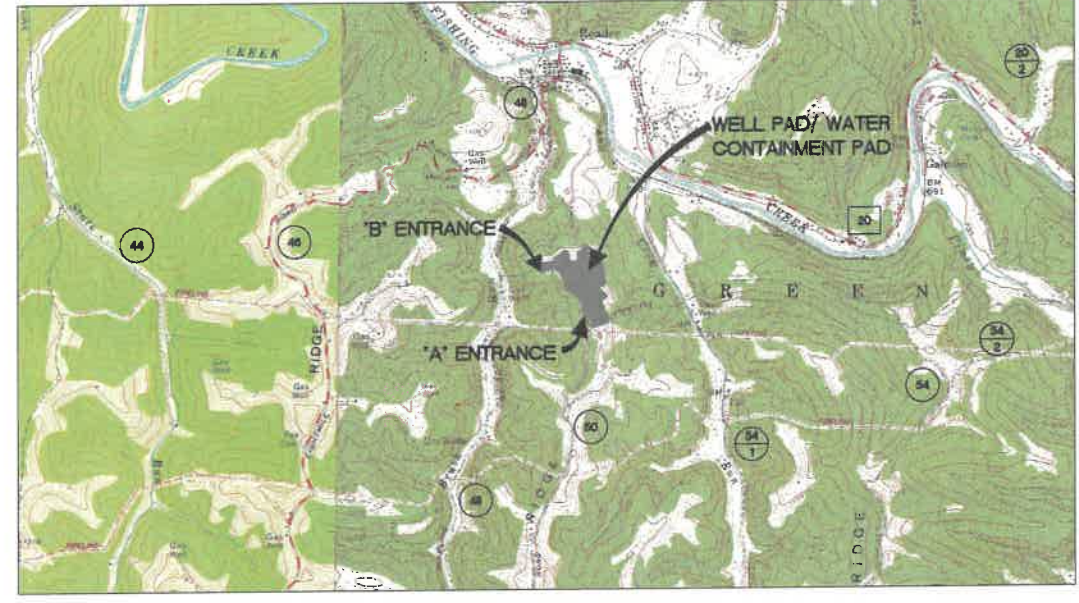
**APPROVED**  
**WVDEP OOG**  
 Modification  
 7/10/2023

# FURBEE WELL PAD & WATER CONTAINMENT PAD

## AS-BUILT EROSION & SEDIMENT CONTROL IMPROVEMENT PLANS

GREEN DISTRICT, WETZEL COUNTY, WV  
 LITTLE MUSRINGUM-MIDDLE ISLAND WATERSHED

PORTER FALLS & PINE GROVE USGS 7.5 QUAD MAP(S)



WEST VIRGINIA STATE PLANE COORDINATE SYSTEM  
 NORTH ZONE, NAD83  
 ELEVATION BASED ON NAVD88  
 ESTABLISHED BY SURVEY GRADE GPS & OPUS  
 POST-PROCESSING

**GENERAL DESCRIPTION:**

THE SLIDE REPAIR IS BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

**MISS UTILITY STATEMENT:**

ANTERO RESOURCES CORPORATION WILL NOTIFY MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

**ENTRANCE PERMIT:**

ANTERO RESOURCES CORPORATION HAS OBTAINED AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**FLOODPLAIN NOTES:**

THE SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #54103C0190C.

**GEOTECHNICAL NOTES:**

GEOTECHNICAL CONSULTATION WILL TAKE PLACE DURING SLIP REPAIR CONSTRUCTION AS NECESSARY.

**ENVIRONMENTAL NOTES:**

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN SEPTEMBER, 2019 BY ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC. TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY PURVIEW OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE SEPTEMBER 25, 2019 FIGURE 2 MAP WAS PREPARED BY ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC. AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP.

**PROJECT CONTACTS:**

ROBERT EDDY - UTILITY COORDINATOR  
 CELL: (304) 719-5199

DAVID PATSY - LAND AGENT  
 CELL: (304) 476-6090

**ENGINEER/SURVEYOR:**  
 NAVITUS ENGINEERING, INC.  
 CYRUS S. KUMP, PE - PROJECT MANAGER/ENGINEER  
 OFFICE: (888) 662-4185 CELL: (540) 886-8747

**OPERATOR:**  
 ANTERO RESOURCES CORPORATION  
 535 WHITE OAKS BLVD.  
 BRIDGEPORT, WV 26330  
 PHONE: (304) 842-4100  
 FAX: (304) 842-4102

ELI WAGONER - ENVIRONMENTAL ENGINEER & REGULATORY MANAGER  
 OFFICE: (304) 842-4068 CELL: (304) 476-9770

JON McEVERS - SVP OPERATIONS  
 OFFICE: (303) 357-8799

**ENVIRONMENTAL:**  
 ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.  
 VALERIE CLARKSTON - ECOLOGIST  
 OFFICE: (304) 760-5803 CELL: (513) 382-09257

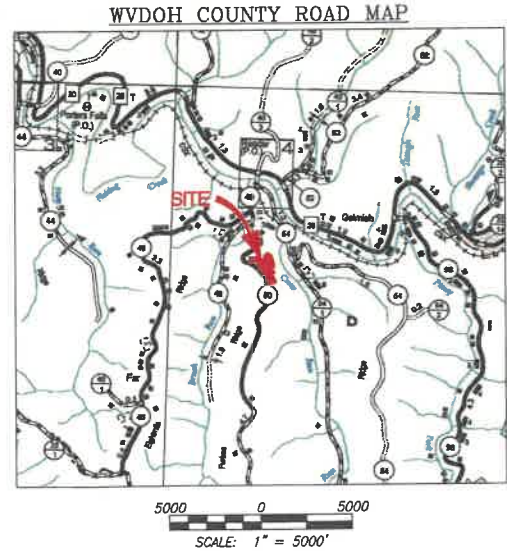
AARON KUNZLER - CONSTRUCTION MANAGER  
 CELL: (304) 842-4191

**GEOTECHNICAL:**  
 PENNSYLVANIA SOIL & ROCK, INC.  
 CHRISTOPHER W. SAMIOS - PROJECT ENGINEER  
 (412) 372-4000 CELL: (412) 589-0662

ROBERT WIRKS - DESIGN MANAGER  
 OFFICE: (304) 842-4100 CELL: (304) 627-7405

**NOTES:**

- ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETE AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RUNOFF EVENT IN EXCESS OF 0.5" AND ON A BIWEEKLY BASIS.
- THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS PAVEMENT OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
- ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.
- ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDDED.
- THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL GRADING OF THE DISTURBED AREA AS OF MAY 24, 2023. NAVITUS ENGINEERING IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATES.
- THE EXISTING CONTAINMENT BERM AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS
- THE EXISTING EGRESSES TO THE WELL PAD SHALL HAVE THE MOUNTABLE BERMS REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.



**AS-BUILT CERTIFICATIONS:**  
 THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS CRS 35-8.

MISS Utility of West Virginia  
 1-800-245-4848  
 West Virginia State Law  
 (Section XIV: Chapter 24-C)  
 Requires that you call two  
 business days before you dig in  
 the state of West Virginia.  
 IT'S THE LAW!!

**SHEET INDEX:**

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FURBEE LIMITS OF DISTURBANCE AREA (AC)			
Total Site	Permitted	Modification	Total
Access Road "A"	1.79	0.00	1.79
Access Road "B"	3.15	0.00	3.15
Well Pad & Water Containment Pad	13.86	0.00	13.86
Excess/Topsoil Material Stockpiles	11.29	3.10	14.39
<b>Total Affected Area</b>	<b>30.09</b>	<b>3.10</b>	<b>33.19</b>
Total Wooded Acres Disturbed	0.00	2.61	2.61

Impacts to Antero Resources Corp. TM 17-1			
Total Site	Permitted	Modification	Total
Access Road "A"	1.79	0.00	1.79
Access Road "B"	3.11	0.00	3.11
Well Pad & Water Containment Pad	3.64	0.00	3.64
Excess/Topsoil Material Stockpiles	0.57	0.66	1.23
<b>Total Affected Area</b>	<b>9.11</b>	<b>0.66</b>	<b>9.77</b>
Total Wooded Acres Disturbed	0.00	0.46	0.46

Impacts to Antero Resources Corp. TM 17-12			
Total Site	Permitted	Modification	Total
Access Road "B"	0.04	0.00	0.04
Well Pad & Water Containment Pad	10.22	0.00	10.22
Excess/Topsoil Material Stockpiles	10.72	2.12	12.84
<b>Total Affected Area</b>	<b>20.98</b>	<b>2.12</b>	<b>23.10</b>
Total Wooded Acres Disturbed	0.00	2.01	2.01

Impacts to Donald L. Mason TM 13-69.1			
Total Site	Permitted	Modification	Total
Excess/Topsoil Material Stockpiles	0.00	0.32	0.32
<b>Total Affected Area</b>	<b>0.00</b>	<b>0.32</b>	<b>0.32</b>
Total Wooded Acres Disturbed	0.00	0.14	0.14

FURBEE WETLAND IMPACT (SQUARE FEET)			
Wetland and Impact Cause	Fill (SF)	Total Impact (SF)	Total Impact (AC)
Wetland 05 (Slide)	983	983	0.023
Wetland 024 (Slide)	375	375	0.009

FURBEE EPHEMERAL STREAM IMPACT (LINEAR FEET)						
Stream and Impact Cause	Permanent Impacts			Temp. Impacts		Total Temp Impact (LF)
	Culvert / Fill (LF)	Inlets/Outlets Structures (LF)	Total Permanent Impact (LF)	Cofferdam/ E&S Controls (LF)	Distance To L.O.D. (LF)	
Stream 09 (Slide)	0	0	0	0	298	298
Stream 10 (Slide)	0	0	0	0	27	27
Stream 11 (Slide)	0	0	0	0	60	60

FURBEE DITCH IMPACT (LINEAR FEET)						
Stream and Impact Cause	Permanent Impacts			Temp. Impacts		Total Temp Impact (LF)
	Culvert / Fill (LF)	Inlets/Outlets Structures (LF)	Total Permanent Impact (LF)	Cofferdam/ E&S Controls (LF)	Distance To L.O.D. (LF)	
Ditch 01 (Slide)	0	0	0	0	72	72

Well Name	WV North NAD 27		UTM (METERS) ZONE 17		NAD 83 Lat & Long	
	NAD 27 Lat & Long	NAD 27 Lat & Long	UTM (METERS)	UTM (METERS)	NAD 83 Lat & Long	NAD 83 Lat & Long
Eckleberry UNIT 2H	N 387463.73 E 1652791.57	LAT 39-33-28 2103 LONG -80-43-53 2884	N 4378684.95 E 523064.18	N 4378684.95 E 523064.18	LAT 39-33-28 4990 LONG -80-43-52 6555	LAT 39-33-28 3564 LONG -80-43-52 6031
Eckleberry UNIT 1H	N 387448.25 E 1652795.48	LAT 39-33-28 0677 LONG -80-43-53 2490	N 4378680.56 E 523065.43	N 4378680.56 E 523065.43	LAT 39-33-28 2138 LONG -80-43-52 5508	LAT 39-33-28 2138 LONG -80-43-52 5508
Reader UNIT 2H	N 387434.77 E 1652799.39	LAT 39-33-25 9251 LONG -80-43-53 1935	N 4378656.17 E 523068.89	N 4378656.17 E 523068.89	LAT 39-33-26 0712 LONG -80-43-52 4982	LAT 39-33-26 0712 LONG -80-43-52 4982
Reader UNIT 1H	N 387420.28 E 1652803.30	LAT 39-33-25 7825 LONG -80-43-53 1411	N 4378651.78 E 523067.95	N 4378651.78 E 523067.95	LAT 39-33-26 0712 LONG -80-43-52 4458	LAT 39-33-26 0712 LONG -80-43-52 4458
Lenny UNIT 2H	N 387405.80 E 1652807.20	LAT 39-33-25 6400 LONG -80-43-53 0867	N 4378647.38 E 523069.22	N 4378647.38 E 523069.22	LAT 39-33-25 9286 LONG -80-43-52 4458	LAT 39-33-25 9286 LONG -80-43-52 4458
Lenny UNIT 1H	N 387391.32 E 1652811.11	LAT 39-33-25 4974 LONG -80-43-53 0353	N 4378642.99 E 523090.48	N 4378642.99 E 523090.48	LAT 39-33-25 7880 LONG -80-43-52 3934	LAT 39-33-24 1899 LONG -80-43-51 3037
Viewer UNIT 1H	N 387236.55 E 1652804.21	LAT 39-33-23 8812 LONG -80-43-51 9485	N 4378583.25 E 523116.83	N 4378583.25 E 523116.83	LAT 39-33-24 1899 LONG -80-43-51 3037	LAT 39-33-24 1899 LONG -80-43-51 3037
Viewer UNIT 2H	N 387214.84 E 1652903.46	LAT 39-33-23 7657 LONG -80-43-51 8285	N 4378580.70 E 523119.51	N 4378580.70 E 523119.51	LAT 39-33-24 0544 LONG -80-43-51 1836	LAT 39-33-23 9389 LONG -80-43-51 0636
Gauss UNIT 1H	N 387203.02 E 1652912.70	LAT 39-33-23 6502 LONG -80-43-51 7084	N 4378586.14 E 523122.39	N 4378586.14 E 523122.39	LAT 39-33-23 9389 LONG -80-43-51 0636	LAT 39-33-23 8234 LONG -80-43-50 9435
Gauss UNIT 2H	N 387191.21 E 1652921.94	LAT 39-33-23 5347 LONG -80-43-51 5883	N 4378582.59 E 523125.26	N 4378582.59 E 523125.26	LAT 39-33-23 8234 LONG -80-43-50 9435	LAT 39-33-23 7079 LONG -80-43-50 8235
Makar UNIT 1H	N 387179.39 E 1652931.18	LAT 39-33-23 4191 LONG -80-43-51 4683	N 4378579.04 E 523128.14	N 4378579.04 E 523128.14	LAT 39-33-23 7079 LONG -80-43-50 8235	LAT 39-33-23 5923 LONG -80-43-50 7034
Makar UNIT 2H	N 387167.56 E 1652940.42	LAT 39-33-23 3038 LONG -80-43-51 3482	N 4378575.49 E 523131.01	N 4378575.49 E 523131.01	LAT 39-33-23 5923 LONG -80-43-50 7034	LAT 39-33-24 5871 LONG -80-43-53 0114
Furbie UNIT 1H	N 387270.70 E 1652761.06	LAT 39-33-24 2985 LONG -80-43-53 6542	N 4378605.89 E 523075.84	N 4378605.89 E 523075.84	LAT 39-33-24 5871 LONG -80-43-53 0114	
Well Pad Elevation			1,212.0			

IMPACTS SHOWN BELOW WERE PERMITTED PREVIOUSLY UNDER THE FURBEE WELL PAD DESIGN

FURBEE WETLAND IMPACT (SQUARE FEET)			
Wetland and Impact Cause	Fill (SF)	Total Impact (SF)	Total Impact (AC)
Wetland 02 (Stockpile "A")	137	137	0.00
Wetland 03 (Well Pad & Water Containment Pad)	1,669	1,669	0.04

FURBEE EPHEMERAL STREAM IMPACT (LINEAR FEET)					
Stream and Impact Cause	Permanent Impacts		Temp. Impacts		Total Temp Impact (LF)
	Culvert / Fill (LF)	Inlets/Outlets Structures (LF)	Cofferdam/ E&S Controls (LF)	Distance To L.O.D. (LF)	
Stream 12 (Well Pad & Water Containment Pad)	33	0	15		48

**REPRODUCTION NOTE**

THESE PLANS WERE CREATED TO BE PLOTTED ON 22"x34" (ANSI D) PAPER. HALF SCALE DRAWINGS ARE ON 11"x17" (ANSI B) PAPER.

THESE PLANS WERE CREATED FOR COLOR PLOTTING AND ANY REPRODUCTIONS IN GRAY SCALE OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.

**NAVITUS**  
 ENERGY ENGINEERING  
 Telephone: (888) 662-4185 | www.NavitusEng.com

DATE	REVISION
05-24-2023 <td>REVISED PER SLIDE</td>	REVISED PER SLIDE

Antero  
 THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

COVER SHEET  
**FURBEE**  
 WELL PAD & WATER CONTAINMENT PAD  
 GREEN DISTRICT  
 WETZEL COUNTY, WEST VIRGINIA

CRUISE B. KRAMER  
 REGISTERED PROFESSIONAL ENGINEER  
 STATE OF WEST VIRGINIA  
 05/24/2023

DATE: 04/18/2022  
 SCALE: AS SHOWN  
 SHEET 1 OF 12

07/14/2023



# CONSTRUCTION AND E&S CONTROL NOTES

## CONSTRUCTION NOTES:

1. THE CONTRACTOR IS TO VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND WILL NOTIFY NAVITUS ENGINEERING AT (888) 682-4165 IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE APPROVED PLAN. ANY WORK PERFORMED BY THE CONTRACTOR AFTER THE FINDING OF SUCH DISCREPANCIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
2. METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS HEREIN SHALL CONFORM TO THE CURRENT COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS AND/OR CURRENT WV DEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL STANDARDS AND SPECIFICATIONS. SHOULD A CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, AND PLANS OCCUR, THE MOST STRINGENT REQUIREMENT WILL APPLY. THE APPROVAL OF THESE PLANS IN NO WAY RELIEVES THE DEVELOPER OR HIS AGENT OF THE RESPONSIBILITIES CONTAINED IN THE WV DEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
3. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. ALSO, A REPRESENTATIVE OF THE DEVELOPER MUST BE AVAILABLE AT ALL TIMES.
4. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS, AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN STREETS, ALLAY DUST, AND TO TAKE WHATEVER MEASURES ARE NECESSARY TO INSURE THAT THE STREETS ARE MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES. CONTRACTOR SHALL ADHERE TO TRAFFIC CONTROL MEASURES AS OUTLINED WITHIN THE APPROVED MM 108 PERMIT.
5. THE LOCATION OF EXISTING UTILITIES SHOWN IN THESE PLANS ARE FROM FIELD LOCATIONS AND/OR GIS DATA. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES AS NEEDED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY CONFLICTS ARISING FROM HIS EXISTING UTILITY VERIFICATION AND THE PROPOSED CONSTRUCTION.
6. THE CONTRACTOR SHALL PROVIDE NOTIFICATION TO THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION OF WATER AND/OR GAS PIPELINES. INFORMATION SHOULD ALSO BE OBTAINED FROM THE APPROPRIATE AUTHORITY CONCERNING PERMITS, CUT SHEETS, AND CONNECTIONS TO EXISTING LINES.
7. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGES TO THE EXISTING STREETS AND UTILITIES WHICH OCCURS AS A RESULT OF HIS CONSTRUCTION PROJECT WITHIN OR CONTIGUOUS WITH THE EXISTING RIGHT-OF-WAY.
8. WHEN GRADING IS PROPOSED WITHIN EASEMENTS OF UTILITIES, LETTERS OF PERMISSION FROM ALL INVOLVED COMPANIES MUST BE OBTAINED PRIOR TO GRADING AND/OR SITE DEVELOPMENT.
9. THE DEVELOPER WILL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITIES WHICH IS REQUIRED AS A RESULT OF HIS PROJECT. THE RELOCATION SHOULD BE DONE PRIOR TO CONSTRUCTION.
10. THESE PLANS IDENTIFY THE LOCATION OF ALL KNOWN GRAVESITES. GRAVESITES SHOWN ON THIS PLAN WILL BE PROTECTED IN ACCORDANCE WITH STATE LAW. IN THE EVENT GRAVESITES ARE DISCOVERED DURING CONSTRUCTION, THE OWNER AND ENGINEER MUST BE NOTIFIED IMMEDIATELY.
11. THE CONTRACTOR(S) SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATING OR BLASTING AT LEAST TWO (2) WORKING DAYS, BUT NOT MORE THAN TEN (10) WORKING DAYS, PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION.
12. CONTRACTOR TO CONTACT OPERATOR AND ENGINEER IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION.
13. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE EROSION AND SEDIMENT CONTROL INSPECTOR 2 DAYS PRIOR TO THE START OF CONSTRUCTION.
14. THE CONTRACTOR IS RESPONSIBLE FOR ALL FILL MATERIAL PLACEMENT REQUIRED DURING THE CONSTRUCTION OF THIS PROJECT. ALL MATERIAL TESTS SHALL BE CONDUCTED BY THE ON-SITE INSPECTOR. ALL TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER CERTIFYING THE CONSTRUCTED FACILITY. FAILURE TO CONDUCT THE DENSITY TESTS AND/OR NECESSARY REPAIRS TO DEFICIENT AREAS AS A RESULT OF THE DENSITY TESTING SHALL BE CAUSE FOR NON-ACCEPTANCE OF THE CONSTRUCTED FACILITY.
15. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE SITE IN ACCORDANCE WITH THE DESIGN PLANS AND CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK SHALL CONFORM WITH THE GRADES, BERMS, DEPTHS, DIMENSIONS, ETC. SHOWN HEREON.
16. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS, INCLUDING THE 1970 OSHA ACT, PRECAUTION FOR THE PROTECTION OF PERSONS, INCLUDING EMPLOYEES AND PROPERTY, SHALL ALWAYS BE EXERCISED BY THE CONTRACTOR. INITIATION, MAINTENANCE, AND SUPERVISION OF ALL SAFETY REQUIREMENTS, PRECAUTIONS, AND PROGRAMS IN CONNECTION WITH THE WORK, INCLUDING ALL REQUIREMENTS PER CFR 1910.146, SHALL ALSO BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. CONSTRUCTION ACTIVITIES SHALL BE RESTRICTED TO THE AREAS SHOWN ON THE PLANS WITHIN THE LIMITS OF DISTURBANCE, UNLESS OTHERWISE AUTHORIZED BY ANTERO RESOURCES CORPORATION. MODIFICATION PLAN MUST BE SUBMITTED TO THE WVDEP FOR ANY ACTIVITIES PERFORMED OUTSIDE OF THE LIMITS OF DISTURBANCE.
18. PRESERVATION OF BENCHMARKS, PROPERTY CORNERS, REFERENCE POINTS, STAKES AND OTHER SURVEY REFERENCE MONUMENTS OR MARKERS IS THE RESPONSIBILITY OF THE CONTRACTOR. IN CASES OF WILLFUL OR CARELESS DESTRUCTION THE CONTRACTOR SHALL BE REQUIRED TO REPLACE OR RESTORE SAID MONUMENT OR MARKER. RESETTling OF MARKERS SHALL BE PERFORMED BY A PROFESSIONAL SURVEYOR AS APPROVED BY ANTERO RESOURCES CORPORATION.
19. THE CONTRACTOR SHALL MAINTAIN ADEQUATE CLEARANCE FROM ALL ELECTRIC LINES, IF ANY, IN ACCORDANCE WITH NATIONAL ELECTRICAL SAFETY CODE.
20. THE CONTRACTOR SHALL MINIMIZE ALL CLEARING AND DISTURBANCE TO THE ENVIRONMENT TO THE MAXIMUM EXTENT POSSIBLE. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE.
21. ANY DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVITUS ENGINEERING, INC. ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONSTRUCTION OF THE SITE SHALL MEET ALL DESIGN PARAMETERS OF THE WVDEP APPROVED NAVITUS ENGINEERING, INC. DESIGN PLANS. NAVITUS ENGINEERING, INC. WILL NOT BE HELD LIABLE FOR THE CONTRACTOR USING THE DIGITAL FILES TO WAIVER FROM THE APPROVED DESIGN PLANS.
22. ANY CONSTRUCTION ISSUES OR QUESTIONS SHALL BE BROUGHT TO THE ENGINEER IMMEDIATELY. THE CONSTRUCTION INSPECTOR SHALL BE CONTACTED AND MUST RELAY THESE ISSUES OR QUESTIONS TO THE ENGINEER FOR RESOLUTION. TEMPORARY STABILIZATION SHALL BE APPLIED AS NECESSARY.
23. ALL EXISTING AND DESIGNED CULVERTS AND CULVERT SUMPS SHALL BE CLEANED AND CLEARED OF DEBRIS DURING THE COURSE OF CONSTRUCTION. ANY EXCESS EROSION DUE TO THE PLUGGING OF A CULVERT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

## EROSION AND SEDIMENT CONTROL NARRATIVE:

**PROJECT DESCRIPTION:** THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT A GAS WELL DRILLING PAD AND WATER CONTAINMENT PAD TO AID IN THE DEVELOPMENT OF INDIVIDUAL GAS WELLS. THE ACCESS ROAD ENTRANCE TO THE PROPOSED SITE IS LOCATED ON THE EAST SIDE OF CO. RT. 50, 0.85 MILES SOUTH OF THE INTERSECTION OF CO. RT. 48 & CO. RT. 50 IN GREEN DISTRICT, WETZEL COUNTY, WEST VIRGINIA. THE TOTAL APPROXIMATE LAND DISTURBANCE ASSOCIATED WITH THIS PROJECT IS 93.19 ACRES.

**EXISTING SITE CONDITIONS:** THE EXISTING SITE IS APPROXIMATELY 11.9% WOODED. THE TOPOGRAPHY RANGES FROM MODERATE TO STEEP TERRAIN (2% TO 70% SLOPES). PRESENT ON SITE ARE ACCESS ROADS, OVERHEAD UTILITIES, EXISTING WATERLINE, EXISTING STRUCTURES, AND STREAMS ARE LOCATED ONSITE. THE SITE IS LOCATED ON A RIDGE AND DRAINS TO LITTLE MUSKINGUM-MIDDLE ISLAND WATERSHED. NO EROSION WAS NOTICED ON SITE.

**ADJACENT PROPERTY:** THE SITE IS BORDERED BY FORESTED LANDS ON ALL SIDES.

**CRITICAL AREAS:** THE AREA(S) SHOWN ALONG THE FIELD DELINEATED STREAMS, WETLANDS, AND PONDS, AS SHOWN ON THE PLANS, ARE DESIGNATED AS CRITICAL AREA(S). IF PRESENT, ALL 3:1 SLOPES AND STEEPER, DITCHES, AND OTHER CONTROLS SHALL BE CONSIDERED CRITICAL EROSION AREAS. THESE AREAS SHALL BE MONITORED AND MAINTAINED DAILY DURING CONSTRUCTION AND AFTER EACH RAINFALL OF 0.5 INCHES OR GREATER. COMPOST FILTER SOCKS ARE TO BE USED TO PROTECT THESE FIELD DELINEATED AREA(S) FROM SEDIMENT LEAVING THE SITE. ADDITIONALLY, ORANGE SAFETY FENCE IS RECOMMENDED TO BE INSTALLED ABOVE/AROUND THESE AREA(S), TO SERVE AS A PHYSICAL BARRIER, ENSURING THE AREA(S) ARE NOT DISTURBED. THE LOCAL GOVERNING AUTHORITY WILL HAVE THE AUTHORITY TO RECOMMEND THE PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES IN THESE AREAS IF IT BECOMES EVIDENT DURING CONSTRUCTION THAT THE ONES IN PLACE ARE NOT FUNCTIONING SUFFICIENTLY.

**SOILS:** GEOTECHNICAL CONSULTATION WILL TAKE PLACE DURING SLIP REPAIR CONSTRUCTION AS NECESSARY.

**OFF SITE AREAS:** THERE ARE NO BORROW AREA(S) OR EXPORT STOCKPILE AREA(S) OUTSIDE OF THE PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT.

**EROSION AND SEDIMENT CONTROL MEASURES:** UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.

### STRUCTURAL PRACTICES:

1. INSTALL ORANGE SAFETY FENCE TO ENSURE NO DISTURBANCE TO THE DELINEATED AREA(S).
2. INSTALL TEMPORARY CONSTRUCTION ENTRANCE.
3. INSTALL COMPOST FILTER SOCKS AND/OR SILT FENCE AS SHOWN ON THE PLANS TO REMOVE SEDIMENT FROM RUNOFF. SELECTIVELY REMOVE TREES REQUIRED TO INSTALL COMPOST FILTER SOCKS IN WOODED AREAS. CLEARING AND GRUBBING SHALL BE KEPT AT A MINIMUM TO INSTALL E&S CONTROLS.
4. FILL SLOPE SURFACE SHALL BE LEFT IN A ROUGHENED CONDITION TO REDUCE EROSION. CONTRACTOR SHALL REDIRECT RUNOFF AWAY FROM THE FILL SLOPE BY INSTALLING EARTHEN DIVERSION BERMS AND DIVERTING THE RUNOFF TO SEDIMENT TRAPPING DEVICES.
5. INSTALL V-DITCHES, DITCH RELIEF CULVERTS, AND OUTLET PROTECTION (RIP-RAP APRONS) AS SHOWN ON THE PLANS.

DEVICES LISTED ABOVE ARE CONSIDERED MINIMUM EROSION AND SEDIMENT CONTROLS. ADDITIONAL CONTROL MEASURES MAY BE NECESSARY DUE TO CONTRACTOR PHASING OR OTHER UNFORESEEN CONDITIONS. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BMP'S TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION. ALL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE CURRENT WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL. ALL RUNOFF FROM DISTURBED AREAS SHALL PASS THROUGH A SEDIMENT FILTERING DEVICE LOCATED BELOW THE DISTURBED AREA. AT NO TIME WILL UNFILTERED SEDIMENT LADEN RUNOFF BE ALLOWED TO LEAVE THE SITE AND ENTER STATE WATERS.

**PERMANENT STABILIZATION:** ALL AREAS LEFT UNCOVERED BY EITHER BUILDINGS OR PAVEMENT SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING AND WITHIN SEVEN (7) DAYS. AT NO TIME SHALL LAND LAY DORMANT LONGER THAN TWENTY-ONE (21) DAYS.

**MAINTENANCE PROGRAM:** ALL BMP'S INCLUDING EROSION AND SEDIMENT CONTROLS SHALL BE INSPECTED AT A MINIMUM ONCE EVERY SEVEN-CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.26 INCHES PER 24-HOUR PERIOD, UNTIL THERE IS A UNIFORM, PERENNIAL 70 PERCENT VEGETATIVE COVERAGE ESTABLISHED, UNLESS SUCH INSPECTIONS ARE NOT PRACTICABLE WITHIN 24 HOURS, IN WHICH CASE THAT FACT SHALL BE NOTED IN THE INSPECTION REPORT. ANY REQUIRED REPAIRS OR MAINTENANCE SHALL BE MADE WITHIN 24 HOURS; IF REPAIR IS NOT PRACTICABLE WITHIN 24 HOURS, IT SHALL BE NOTED IN THE INSPECTION REPORT.

TRAPPED SEDIMENT IS TO BE REMOVED AS REQUIRED TO MAINTAIN 50% TRAP AND/OR SOCK EFFICIENCY AND DISPOSED OF AS ENGINEERED FILL ON THE STOCKPILES.

INLETS AND OUTLETS OF DITCH RELIEF CULVERTS SHALL BE CHECKED REGULARLY FOR SEDIMENT BUILD-UP. IF THE INLET AND/OR OUTLET IS CLOGGED BY 50% OR GREATER, IT SHALL BE REMOVED AND CLEANED OR REPLACED IMMEDIATELY.

SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED OR SWEEP INTO ANY ROADSIDE DITCH, CULVERT OR SURFACE WATER.

ANY DISTURBED AREAS ALONG THE ACCESS ROAD SHALL BE STABILIZED AS CONSTRUCTION PROCEEDS, PRIOR TO CONTINUING FURTHER ACCESS ROAD CONSTRUCTION, WITH EITHER ROCK STABILIZATION OR SEEDING AND MULCHING METHODS.

SUPER SILT FENCE CAN BE USED IN PLACE OF ANY COMPOST FILTER SOCK.

**NOTE:** THE WV DEP RETAINS THE RIGHT TO ADD AND/OR MODIFY THESE EROSION AND SEDIMENT CONTROL MEASURES DURING THE CONSTRUCTION PROCESS, WITHIN REASON, TO ENSURE ADEQUATE PROTECTION TO THE PUBLIC AND THE ENVIRONMENT.

### SEEDING (SOIL STABILIZATION):

1. CONTRACTOR SHALL APPLY SEED AND STABILIZATION IN ACCORDANCE WITH THE WV DEP EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE (BMP) MANUAL, BASED UPON SITE SPECIFIC SOIL CHARACTERISTICS.
2. WHEREVER SEEDING IS TO BE APPLIED TO STEEP SLOPES (≥ 3H:1V), SEED MIXTURES SHOULD BE SELECTED THAT ARE APPROPRIATE FOR STEEP SLOPES.

### DUST CONTROL:

1. TEMPORARY SEEDING SHALL BE APPLIED TO ALL DISTURBED AREAS SUBJECT TO LITTLE OR NO CONSTRUCTION TRAFFIC.
2. ALL HAUL ROADS AND OTHER HEAVY TRAFFIC ROUTES SHALL BE SPRINKLED WITH WATER UNTIL THE SURFACE IS WET AND REPEATED AS NEEDED TO CONTROL DUST.

## CONSTRUCTION SEQUENCE:

THE DEVELOPMENT OF THIS SITE SHALL BE CONSISTENT WITH THE FOLLOWING GENERAL SEQUENCE OF CONSTRUCTION. THE CONTRACTOR SHALL IMPLEMENT, MAINTAIN, AND OPERATE ALL PROPOSED EROSION AND SEDIMENT CONTROL MEASURES TO EFFECTIVELY MITIGATE THE HAZARD FROM ACCELERATED EROSION AND SEDIMENTATION TO ACCEPTABLE LEVELS. MINOR DEVIATIONS FROM THIS SEQUENCE SHALL BE EXECUTED BY THE PROJECT'S SUPERINTENDENT AS NEEDED TO ELIMINATE ANY POTENTIAL EROSION CONDITION THAT MAY ARISE FOR THE DURATION OF THE PROJECT. THE WV DEP SHALL BE NOTIFIED OF ANY AND ALL SUCH DEVIATIONS FROM THE APPROVED PLANS.

1. STAKE THE LIMITS OF CONSTRUCTION AND MARK/FLAG ALL IDENTIFIED WETLANDS, STREAMS, UTILITIES, AND OTHER AREAS OF CONCERN FOR CONSTRUCTION ACTIVITIES. INSTALL SIGNS TO DESIGNATE THE AREAS AND ORANGE SAFETY FENCE TO IDENTIFY IMPORTANT PROJECT ATTRIBUTES SUCH AS APPROVED ACCESS ROADS, NO REFUELING ZONES, WETLANDS/STREAM BOUNDS, ETC.
2. A PRE-CONSTRUCTION CONFERENCE WITH THE CONTRACTOR AND THE APPROPRIATE EROSION AND SEDIMENT CONTROL INSPECTOR 48 HOURS PRIOR TO BEGINNING WORK TO REVIEW THE CONSTRUCTION DRAWINGS AND PROVIDE ANY REQUESTED GUIDANCE.
3. CONSTRUCT THE ROCK CONSTRUCTION ENTRANCE OR UPGRADE & MAINTAIN EXISTING ROCK CONSTRUCTION ENTRANCE. ALL VEHICLES ENTERING AND EXITING THE SITE SHALL DO SO VIA THE ROCK CONSTRUCTION ENTRANCE.
4. CONSTRUCT ALL BMP'S AS SOON AS CLEARING AND GRUBBING OPERATIONS ALLOW. ONCE INSTALLED, THE AREA ENCOMPASSING THE BMP'S OUTSIDE OF THE GRADING LIMITS SHALL BE SEEDED AND MULCHED IMMEDIATELY.
5. IF APPLICABLE, CONVEY UPSLOPE DRAINAGE AROUND THE SLIDE REPAIR AREA(S) BY CONSTRUCTING ALL DIVERSION BERM(S) AND/OR COMPOST FILTER SOCK DIVERSION(S) AS SHOWN ON THE PLANS.
6. CLEAR AND GRUB THE SITE. ALL WOODY MATERIAL, BRUSH, TREES, STUMPS, LARGE ROOTS, BOULDERS, AND DEBRIS SHALL BE CLEARED FROM THE SITE AREA AND KEPT TO THE MINIMUM NECESSARY FOR PROPER CONSTRUCTION, INCLUDING THE INSTALLATION OF NECESSARY SEDIMENT CONTROLS. TREES, BRUSH, AND STUMPS SHALL BE CUT AND/OR GRUBBED AND BURNED (AS PER WV FOREST FIRE LAWS), REMOVED FROM SITE, OR DISPOSED OF BY OTHER METHODS APPROVED BY WV DEP.
7. IF APPLICABLE, INSTALL ALL WETLAND OR STREAM CROSSINGS AS SHOWN ON THE PLANS.
8. AS NECESSARY, STRIP THE TOPSOIL FROM THE SLIDE REPAIR AREA(S). TOPSOIL STRIPPING SHALL BE KEPT TO A MINIMUM NECESSARY TO CONSTRUCT THE SLIDE REPAIR. PRIOR TO PLACING ANY FILL, THE EXPOSED SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED TO PRODUCE A STABLE AND UNYIELDING SITE. ALL STRIPPED TOPSOIL SHALL BE STOCKPILED IN AREAS SHOWN IN THE PLANS, OR RE-SPREAD AT AN APPROXIMATE DEPTH OF 2-4 INCHES ON ALL PROPOSED 2:1 OR FLATTER SLOPES, AND IMMEDIATELY STABILIZED. ADDITIONAL BMP MEASURES SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES, IF NECESSARY.
9. CONSTRUCT THE SLIDE REPAIR AREA(S). ALL FILL AREAS, INCLUDING EXCESS MATERIAL STOCKPILES, SHALL BE "KEYED IN" AND COMPACTED IN HORIZONTAL LIFTS WITH A MAXIMUM LOOSE LIFT THICKNESS OF 12" AND MAXIMUM PARTICLE SIZE AS OUTLINED IN THE GEOTECHNICAL REPORT. ALL FILL SHALL BE COMPACTED BY A VIBRATING SHEEPSFOOT ROLLER TO 95% PER THE STANDARD PROCTOR TEST (ASTM-D698). MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM-D698) RESULTS. IT IS ALSO RECOMMENDED THAT EACH LIFT BE PROOF ROLLED WITH A LOADED HAUL TRUCK WHERE APPLICABLE. IF NECESSARY, DITCH RELIEF CULVERTS SHALL BE INSTALLED AT A GRADE OF 1-8% TO MINIMIZE OUTLET VELOCITIES TO THE EXTENT POSSIBLE. INSTALL OUTLET PROTECTION ONCE DITCH RELIEF CULVERTS ARE INSTALLED, AS SHOWN ON PLANS. IMMEDIATELY STABILIZE THE OUTER AREAS AND SIDE SLOPES AS SPECIFIED WITH PERMANENT SEEDING OF THE SLIDE REPAIR AREAS(S). EXCESS MATERIAL SHALL BE STOCKPILED (IF NECESSARY) IN AREAS SHOWN IN THE PLANS AND IMMEDIATELY STABILIZED. TOPSOIL SHALL BE STRIPPED FROM ALL STOCKPILE AREAS PRIOR TO CONSTRUCTION OF STOCKPILES. AFTER STOCKPILES ARE CONSTRUCTED, TOPSOIL IS TO BE REAPPLIED AT A DEPTH OF 2"-4". SLOPES SHALL BE TRACKED BY RUNNING TRACKED MACHINERY UP AND DOWN THE SLOPE, LEAVING TREAD MARKS PARALLEL TO THE CONTOUR. ALL DITCH LINES SHALL BE CLEARED PRIOR TO INSTALLATION OF LINED PROTECTION. APPLY SEED AND MULCH TO ALL DISTURBED AREAS. THIS SHALL INCLUDE ALL AREAS THAT WILL NOT BE SUBJECT TO REGULAR TRAFFIC ACTIVITY (TO BE STABILIZED WITH STONE), OR ANY DISTURBED AREA THAT WILL NOT BE RE-DISTURBED BEFORE SITE RECLAMATION BEGINS. IT IS RECOMMENDED THAT THE CONTRACTOR PRIORITIZE COMPLETING ANY IMPROVEMENTS TO THE SITE ENTRANCE AND LEASE ROAD PRIOR TO THE SLIDE REPAIR.
10. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN SEVEN DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 14 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 14 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THIS PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATION COVER WITH A DENSITY OF 70% WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.
11. ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETE AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AT A MINIMUM ONCE EVERY SEVEN-CALENDAR DAYS AND AFTER ANY STORM EVENT GREATER THAN 0.25 INCHES PER 24-HOUR PERIOD.
12. EROSION AND SEDIMENT CONTROLS CAN BE REMOVED AFTER THERE IS A UNIFORM, PERENNIAL 70 PERCENT VEGETATIVE COVERAGE ESTABLISHED.
13. ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDED.

## CONSTRUCTION STANDARDS:

THE DESIGN, CONSTRUCTION, AND REMOVAL OF FILL FOR OIL AND GAS SITES MUST BE ACCOMPLISHED IN SUCH A MANNER AS TO PROTECT THE HEALTH AND SAFETY OF THE PEOPLE, THE NATURAL RESOURCES, AND ENVIRONMENT OF THE STATE. THE SITE SHALL BE DESIGNED, CONSTRUCTED, AND MAINTAINED TO BE STRUCTURALLY SOUND AND REASONABLY PROTECTED FROM UNAUTHORIZED ACTS OF THIRD PARTIES.

1. ALL FILL AREAS SHOULD BE CLEARED OF TREES, STUMPS, AND ANY VEGETATION AND STRIPPED OF TOPSOIL/ORGANIC SOILS PRIOR TO THE START OF FILL PLACEMENT.
2. ANY GROUNDWATER ENCOUNTERED DURING CONSTRUCTION SHALL BE DRAINED TO THE OUTSIDE/DOWNSTREAM TOE OF THE SLOPE. CONSTRUCTED DRAIN SECTION SHALL BE AN EXCAVATED 2' x 2' TRENCH AND BACK FILLED WITH #57 STONE. COMPACTED BY HAND TAMPER. GEOTEXTILE FABRIC SHALL BE USED TO LINE TRENCH.
3. SATISFACTORY MATERIALS FOR USE AS FILL FOR PAD AREAS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS GW, GP, GM, GC, SW, SP, SM, SC, ML, AND CL GROUPS.
4. GENERALLY, UNSATISFACTORY MATERIALS INCLUDE MATERIALS CLASSIFIED IN ASTM D-2487 AS PT, CH, MH, OH, AND ANY SOIL TOO WET TO FACILITATE COMPACTION. CH AND MH SOILS MAY BE USED SUBJECT TO APPROVAL OF THE ENGINEER.
5. ALL FILL AREAS SHALL BE "KEYED IN" AND COMPACTED IN HORIZONTAL LIFTS WITH A MAXIMUM LOOSE LIFT THICKNESS OF 12" AND MAXIMUM PARTICLE SIZE AS OUTLINED IN THE GEOTECHNICAL REPORT. ALL FILL SHALL BE COMPACTED BY A VIBRATING SHEEPSFOOT ROLLER TO 95% PER THE STANDARD PROCTOR TEST (ASTM-D698). MOISTURE CONTENT WILL BE CONTROLLED IN ACCORDANCE WITH THE STANDARD PROCTOR TEST (ASTM-D698) RESULTS.
6. ROCK LIFTS ARE NOT PROPOSED FOR THE CONSTRUCTION OF THIS SITE. HOWEVER, LARGER ROCK PARTICLES OR BOULDERS THAT ARE ENCOUNTERED DURING CONSTRUCTION NEED TO BE BROKEN DOWN TO A MANAGEABLE SIZE (MAXIMUM 3'x3'x1' THICK) TO BE PLACED AS FILL. DURING PLACEMENT OF FILL CONTAINING LARGE SIZE ROCK PARTICLES, IT IS CRITICAL THAT NO VOID SPACES BE LEFT BETWEEN THE ROCKS. SMALLER ROCK FRAGMENTS AND SOIL MUST BE WORKED INTO ANY OPENINGS BETWEEN THE BOULDERS AFTER THEY ARE PUT IN PLACE. ADDITIONAL GUIDANCE REGARDING ENCOUNTERED ROCK CAN BE FOUND IN THE GEOTECHNICAL REPORT.
7. THE PLACEMENT OF ALL FILL MATERIAL SHALL BE FREE OF WOOD, STUMPS AND ROOTS, LARGE ROCKS AND BOULDERS, AND ANY OTHER NONCOMPACTABLE SOIL MATERIAL. NO FILL SHALL CONTAIN OR BE PLACED ON FROZEN MATERIAL. THE FILL SHALL BE COMPACTED TO A MINIMUM OF VISIBLE NON-MOVEMENT, HOWEVER, THE COMPACTION EFFORT SHALL NOT EXCEED THE OPTIMUM MOISTURE LIMITS.
8. ALL EXPOSED AREAS, NOT COVERED BY COMPACTED GRAVEL OR RIP-RAP SHALL BE LIMED, FERTILIZED, SEEDED AND MULCHED. PERMANENT VEGETATIVE GROUND COVER IN COMPLIANCE WITH THE WV DEP EROSION AND SEDIMENT CONTROL FIELD MANUAL MUST BE ESTABLISHED UPON THE COMPLETION OF CONSTRUCTION. SLOPES SHALL BE MAINTAINED WITH A GRASSY VEGETATIVE COVER AND FREE OF BRUSH AND/OR TREES.
9. IF STANDING WATER IS PRESENT ON SITE, CONTRACTOR TO CORRECT DRAINAGE ISSUE BY DIRECTING WATER TO PROPER E&S CONTROLS OR OUTLET WITH POSITIVE DRAINAGE. IF NECESSARY, CONTACT ENGINEER FOR GUIDANCE IN CORRECTING DRAINAGE ISSUES.
10. ALL DRAINAGE DITCHES, DIVERSIONS, AND CULVERTS SHALL HAVE POSITIVE DRAINAGE AND OUTFALL INTO THE PROPER OUTLET PROTECTION OR LEVEL SPREADING DEVICE. SUPER SILT FENCE, OR APPROVED ALTERNATIVE, SHALL BE INSTALLED WITHIN 5 FEET OF THE OUTLET PROTECTION OR LEVEL SPREADING DEVICE TO PREVENT EROSION DOWNSTREAM. IF EROSION IS PRESENT DOWNSTREAM OF AN EROSION CONTROL DEVICE, CONTRACTOR TO INSTALL ADDITIONAL EROSION CONTROLS AND STABILIZATION TO PREVENT FURTHER EROSION.
11. ALL DRAINAGE DITCHES AND DIVERSIONS THAT ARE ROCK LINED SHALL BE INSTALLED PER THE DETAILS ON THIS PLAN INCLUDING THE NECESSARY INSTALLATION OF ANY GEOTEXTILE FABRIC UNDERNEATH THE ROCK LINING.
12. IF THE EROSION CONTROL DEVICES SHOW EVIDENCE OF BEING INADEQUATE DUE TO CONSTRUCTION MEANS AND METHODS, THE CONTRACTOR IS TO INSTALL ADDITIONAL DRAINAGE DEVICES OR EROSION CONTROLS TO PREVENT FURTHER EROSION FROM OCCURRING.
13. CONTRACTOR IS TO EXTEND ALL KEYWAY AND BONDING BENCH OUTLET DRAINS A MINIMUM OF ONE FOOT PAST THE FINISHED GRADE OF THE SLOPE AND INSTALL THE PROPER OUTLET PROTECTION PER THE DETAIL ON THESE PLANS. ALL OUTLET DRAINS ARE TO BE CLEARLY VISIBLE AND MARKED WITH YELLOW T-POSTS.
14. ALL SLOPES SHALL BE TRACKED IN PER THE DETAILS ON THESE PLANS. CONTRACTOR SHALL REPEAT THIS METHOD ANY TIME AN AREA HAS BEEN DISTURBED PRIOR TO THAT AREA BEING STABILIZED.
15. ALL MAINTENANCE OF EROSION AND SEDIMENT CONTROLS MUST BE PERFORMED IMMEDIATELY ONCE THE CONTRACTOR IS NOTIFIED OF THE DISCREPANCY. CONTRACTOR TO PERFORM MAINTENANCE OR IMMEDIATELY NOTIFY THE SUB-CONTRACTOR PERFORMING THE E&S TASKS. ANY EROSION CONTROL MAINTENANCE THAT IS DEEMED TO BE AN EMERGENCY SHALL BE PERFORMED IMMEDIATELY UPON THE CLIENT, ENGINEER, OR STATE'S REQUEST.
16. ALL LANDOWNER ACCESS ROADS AND EXISTING WELL ROADS THAT ARE BEING MAINTAINED SHALL BE KEPT OPEN DURING THE ENTIRE COURSE OF CONSTRUCTION TO PROVIDE CONTINUOUS ACCESS. IF CLOSURE IS NECESSARY, THE CONTRACTOR SHALL PROVIDE AN EQUIVALENT DETOUR ROUTE TO THE SATISFACTION OF THE LANDOWNER OR WELL OWNER.
17. ANY WATER INFILTRATING AROUND THE WELL PAD DEWATERING SYSTEM SHALL BE CORRECTED IMMEDIATELY TO PREVENT THE FAILURE OF THE SOILS AND DESIGN ASPECTS OF THE DEWATERING SYSTEM. ANY EXCESS EROSION OR SLOPE FAILURES DUE TO THE WATER INFILTRATION IN THE SUMP AREA SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL DITCH RELIEF AND STREAM CROSSING CULVERTS SHALL MEET ALL MANUFACTURER SPECIFICATIONS INCLUDING THE MINIMUM AND MAXIMUM COVER. IF MANUFACTURER SPECIFICATIONS CANNOT BE MET, CONTRACTOR SHALL CONSULT THE ENGINEER OR MANUFACTURER FOR ALTERNATIVES.

## SITE CLEANUP & RECYCLE PROGRAM:

1. GARBAGE, FUELS OR ANY SUBSTANCE HARMFUL TO HUMAN, AQUATIC OR FISH LIFE, WILL BE PREVENTED FROM ENTERING SPRINGS, STREAMS, PONDS, LAKES, WETLANDS OR ANY WATER COURSE OR WATER BODY.
2. OILS, FUELS, LUBRICANTS AND COOLANTS WILL BE PLACED IN SUITABLE CONTAINERS AND DISPOSED PROPERLY.
3. ALL TRASH AND GARBAGE WILL BE COLLECTED AND DISPOSED PROPERLY.
4. ALL SEDIMENT REMOVED FROM SEDIMENT CAPTURING DEVICES SHALL BE PLACED ON THE TOPSOIL STOCKPILE, THEN SEEDED AND MULCHED, AS NECESSARY. ALTERNATIVELY, THE REMOVED SEDIMENT CAN BE TRANSPORTED TO A SITE WITH AN APPROVED PERMIT.
5. ALL POLLUTION AND EMERGENCY SPILLS SHALL BE IMMEDIATELY REPORTED TO ANTERO RESOURCES CORPORATION AND THE WVDEP OFFICE OF OIL AND GAS. (EMERGENCY #1-800-642-3074)



07/14/2023

NAVITUS ENERGY ENGINEERING  
Telephone: (888) 682-4165 | www.NavitusEng.com

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FURBEE  
LEGEND  
WELL PAD & WATER CONTAINMENT PAD  
GREEN DISTRICT  
WETZEL COUNTY, WEST VIRGINIA



DATE: 04/18/2022  
SCALE: N/A  
SHEET 2 OF 12



# LEGEND

LEGEND	
EX. INDEX CONTOUR & CONTOUR LABEL	PR. INDEX CONTOUR (10' INTERVAL) & CONTOUR LABEL
EX. INTERMEDIATE CONTOUR	PR. INTERMEDIATE CONTOUR (2' INTERVAL)
EX. PROPERTY LINE	PR. INTERMEDIATE CONTOUR (1' INTERVAL)
EX. TOP OF BERM	PR. INDEX ROAD CONTOUR (10' INTERVAL) & CONTOUR LABEL
EX. ROAD EDGE OF GRAVEL/DIRT	PR. INTERMEDIATE ROAD CONTOUR (2' INTERVAL)
EX. ROAD EDGE OF PAVEMENT	PR. PADS/STOCKPILE TOPO LIMITS
EX. ROAD CENTERLINE	PERMITTED LIMITS OF DISTURBANCE
EX. GUARDRAIL	MODIFICATION LIMITS OF DISTURBANCE
EX. BRIDGE	PR. ROAD/IMPOUNDMENT EDGE OF GRAVEL
EX. DITCHLINE/DRAINAGE FEATURE	PR. ROAD EDGE OF PAVEMENT
EX. RIP-RAP	PR. ROAD CENTERLINE
EX. CULVERT	PR. GUARDRAIL
EX. TREELINE	PR. ROCK CONSTRUCTION ENTRANCE
EX. BUILDING	PR. AIR BRIDGE
EX. MISCELLANEOUS FEATURE	PR. CULVERT
EX. 100 YR FEMA FLOODPLAIN	PR. DITCH
EX. DELINEATED STREAM	PR. RIP-RAP TRAPEZOIDAL DITCH
EX. DELINEATED WETLAND/POND	PR. OUTLET PROTECTION
100' WETLAND/STREAM BUFFER	PR. ROCK LEVEL SPREADER
STREAM/WETLAND DELINEATION STUDY AREA	PR. COMPOST FILTER SOCK
EX. FENCELINE	PR. SMART FENCE HD
EX. GATE	PR. WELL HEAD
EX. PERIMETER SAFETY FENCE	PR. PAD DEWATERING SYSTEM
EX. ACCESS GATE WITH EMERGENCY LIFELINE	PR. TOP OF PAD CONTAINMENT BERM
EX. WELL HEAD ON DESIGNED PAD	PR. 220' X 320' PAD FOOTPRINT
EX. GAS WELL	PR. SPOT SHOT
EX. PIPELINE	PR. PERIMETER SAFETY FENCE
EX. PIPELINE R/W	PR. ACCESS GATE WITH EMERGENCY LIFELINE
EX. PIPELINE METER	PR. PIPELINE
EX. PIPELINE VALVE	PR. PIPELINE R/W
EX. PIT	PR. OVERHEAD UTILITY
EX. OVERHEAD UTILITY	PR. POWER POLE/GUY WIRE
EX. POWER POLE/GUY WIRE	PR. OVERHEAD UTILITY R/W
EX. UNDERGROUND ELECTRIC	PR. WATERLINE
EX. UNDERGROUND TELEPHONE	BORING LOCATION
EX. UNDERGROUND FIBER OPTIC	X-SECTION/PROFILE GRID INDEX
EX. UTILITY R/W	X-SECTION/PROFILE GRID INTERMEDIATE
EX. WATERLINE	X-SECTION/PROFILE PROPOSED GRADE
EX. WATER WELL/EX. SPRING	X-SECTION/PROFILE EXISTING GRADE
EX. COMPOST SOCK	X-SECTION/PROFILE WATER SURFACE
EX. SMART FENCE HD	X-SECTION/PROFILE CULVERT
EX. SILT FENCE	MATCHLINE
APPROX. LOCATION OF SLIDE AREA	EX. METER
APPROX. LOCATION OF BORROW/ SPOIL AREA	EX. TANK
PR. TOE BENCH	EX. COMBUSTOR
EX. APPROX. SURFACE & SUB-SURFACE ELECTRIC LINE AREA	EX. GPU
EX. APPROX. SURFACE & SUB-SURFACE DUMP LINE AREA	EX. SEPARATOR
EX. APPROX. SURFACE & SUB-SURFACE WELL LINE AREA	EX. VRT
EX. APPROX. SURFACE & SUB-SURFACE SALES LINE AREA	EX. KNOCK-OUT VESSEL
	EX. STAIRS/CATWALK
	EX. DEWATERING SYSTEM
	EX. PIG LAUNCHER
	EX. SECONDARY CONTAINMENT
	EX. ABOVE-GND VAPOR LINE
	EX. ESD
	EX. MAILBOX
	EX. CONTROL PT.
	EX. MUSTER AREA

**APPROVED WVDEP OOG**  
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7/10/2023

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THIS DOCUMENT WAS PREPARED FOR:  
ANTERO RESOURCES CORPORATION

LEGEND  
**FURBEE**  
WELL PAD & WATER CONTAINMENT PAD  
GREEN DISTRICT  
WETZEL COUNTY, WEST VIRGINIA



DATE: 04/18/2022  
SCALE: N/A  
SHEET 3 OF 12

07/14/2023

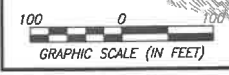
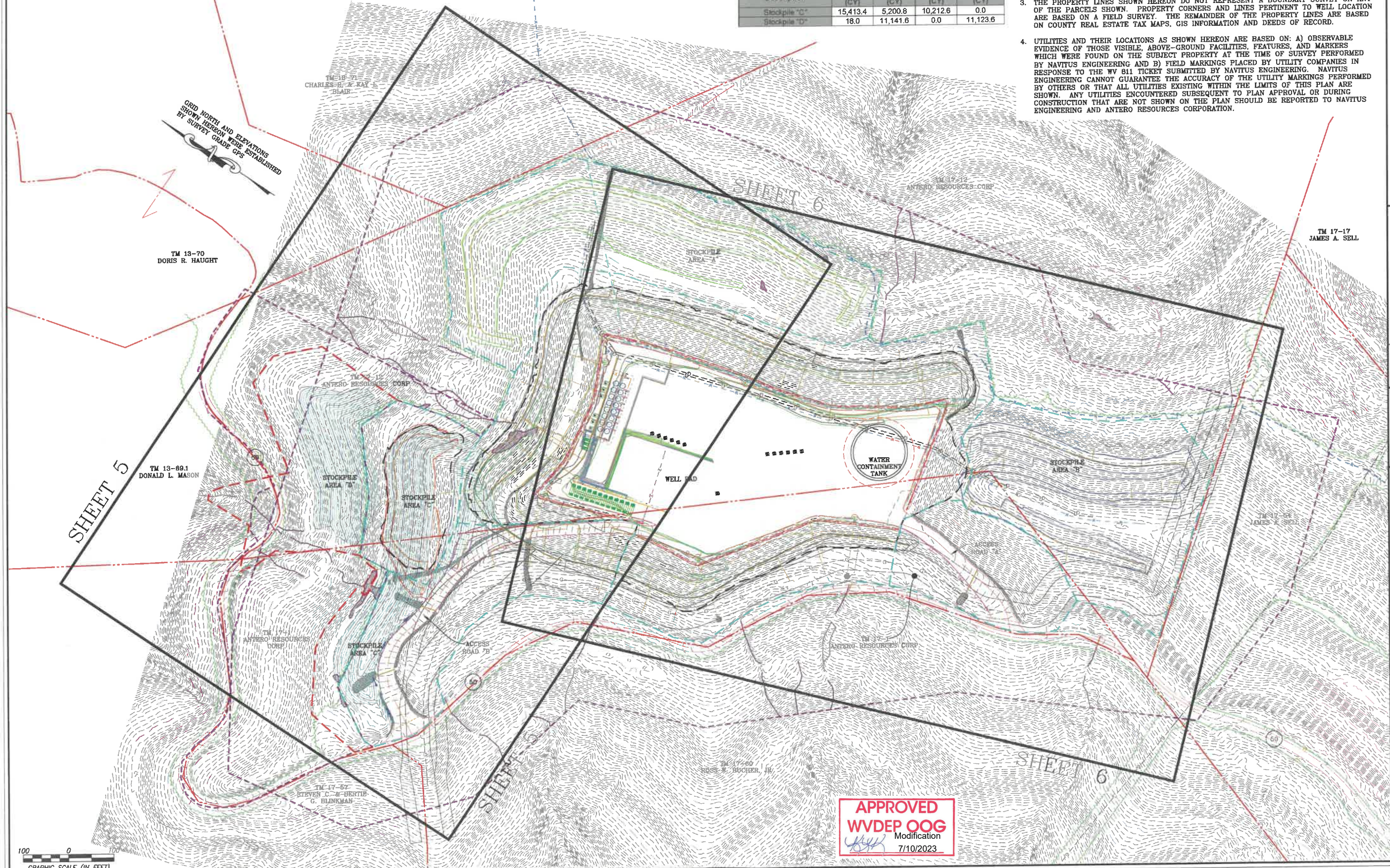


# OVERALL PLAN SHEET INDEX

FURBEE WELL PAD & WATER CONTAINMENT PAD				
Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)
Stockpile "C"	15,413.4	5,200.8	10,212.6	0.0
Stockpile "D"	18.0	11,141.6	0.0	11,123.6

### GENERAL NOTES:

1. THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON APRIL 17, 2019 AERIAL PHOTOGRAPHY COMPILED APRIL 20, 2019 BY THE THRASHER GROUP.
2. AS-BUILT INFORMATION SHOWN HEREON IS BASED ON FIELD SURVEY PERFORMED BY NAVITUS ENGINEERING, INC. ON MAY 24, 2023.
3. THE PROPERTY LINES SHOWN HEREON DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN. PROPERTY CORNERS AND LINES PERTINENT TO WELL LOCATION ARE BASED ON A FIELD SURVEY. THE REMAINDER OF THE PROPERTY LINES ARE BASED ON COUNTY REAL ESTATE TAX MAPS, GIS INFORMATION AND DEEDS OF RECORD.
4. UTILITIES AND THEIR LOCATIONS AS SHOWN HEREON ARE BASED ON: A) OBSERVABLE EVIDENCE OF THOSE VISIBLE, ABOVE-GROUND FACILITIES, FEATURES, AND MARKERS WHICH WERE FOUND ON THE SUBJECT PROPERTY AT THE TIME OF SURVEY PERFORMED BY NAVITUS ENGINEERING AND B) FIELD MARKINGS PLACED BY UTILITY COMPANIES IN RESPONSE TO THE TV 811 TICKET SUBMITTED BY NAVITUS ENGINEERING. NAVITUS ENGINEERING CANNOT GUARANTEE THE ACCURACY OF THE UTILITY MARKINGS PERFORMED BY OTHERS OR THAT ALL UTILITIES EXISTING WITHIN THE LIMITS OF THIS PLAN ARE SHOWN. ANY UTILITIES ENCOUNTERED SUBSEQUENT TO PLAN APPROVAL OR DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE PLAN SHOULD BE REPORTED TO NAVITUS ENGINEERING AND ANTERO RESOURCES CORPORATION.



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OVERALL PLAN SHEET INDEX  
**FURBEE**  
 WELL PAD & WATER CONTAINMENT PAD  
 GREEN DISTRICT  
 WETZEL COUNTY, WEST VIRGINIA



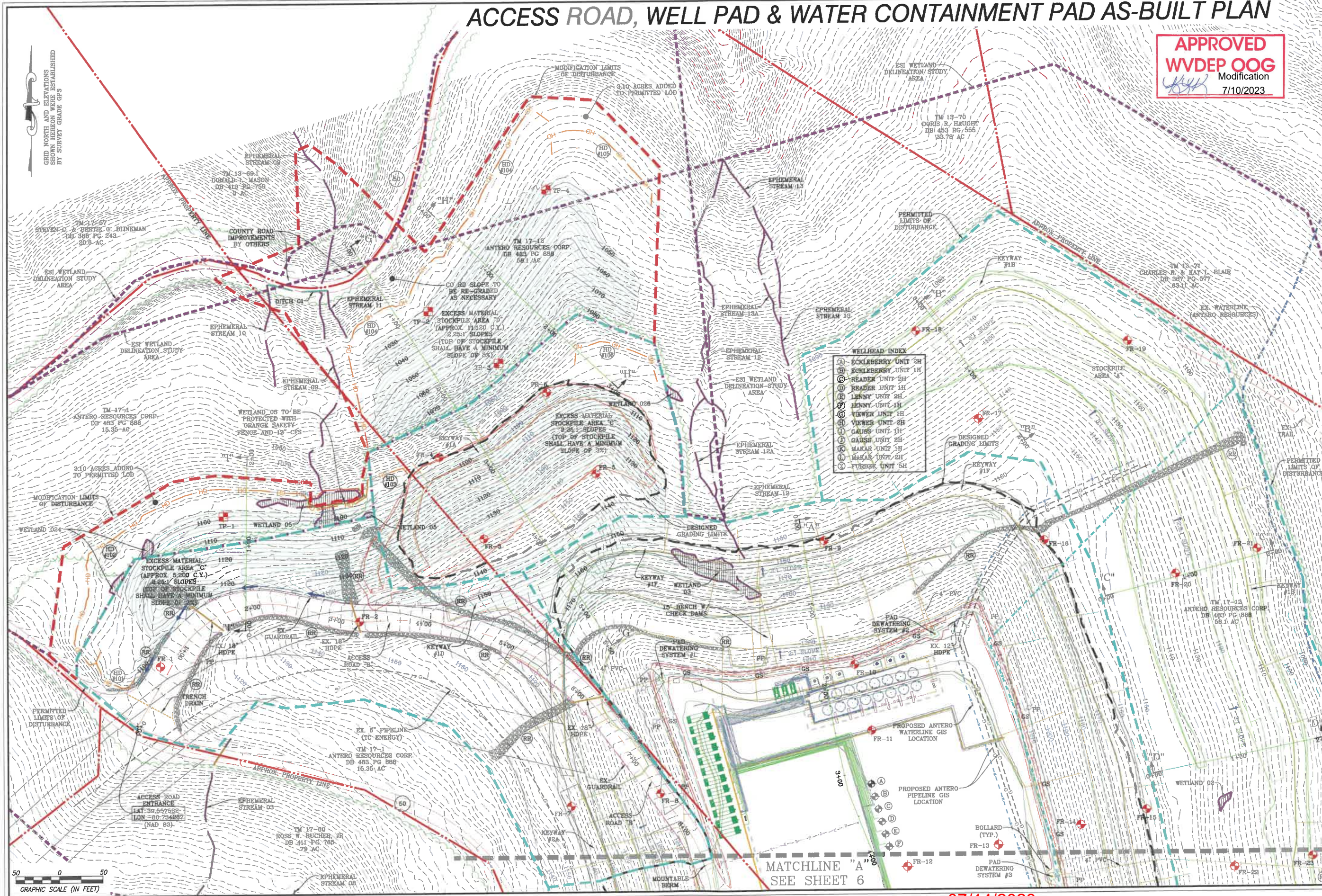
DATE: 04/18/2022  
 SCALE: 1" = 100'  
 SHEET 4 OF 12



# ACCESS ROAD, WELL PAD & WATER CONTAINMENT PAD AS-BUILT PLAN

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- WELLHEAD INDEX**
- (A) ECKLEBERRY UNIT 2H
  - (B) ECKLEBERRY UNIT 1H
  - (C) READER UNIT 2H
  - (D) READER UNIT 1H
  - (E) LENNY UNIT 2H
  - (F) LENNY UNIT 1H
  - (G) VIEWER UNIT 1H
  - (H) VIEWER UNIT 2H
  - (I) GAUSS UNIT 1H
  - (J) GAUSS UNIT 2H
  - (K) MAKAR UNIT 1H
  - (L) MAKAR UNIT 2H
  - (M) FURBEE UNIT 5H

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ACCESS ROAD, WELL PAD & WATER CONTAINMENT PAD AS-BUILT PLAN  
**FURBEE**  
 WELL PAD & WATER CONTAINMENT PAD  
 GREEN DISTRICT  
 WETZEL COUNTY, WEST VIRGINIA



DATE: 04/18/2022  
 SCALE: 1" = 50'  
 SHEET 5 OF 12

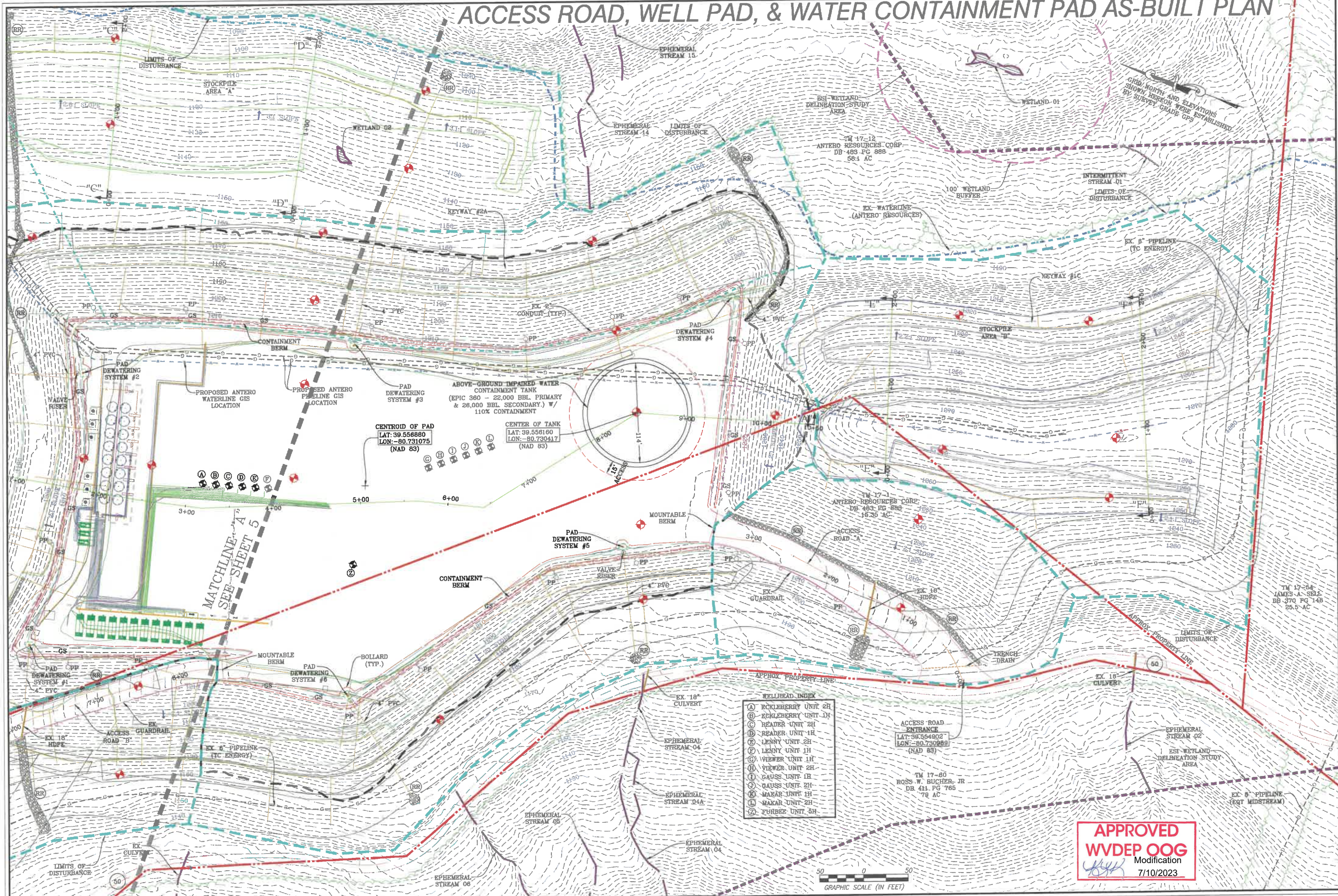


MATCHLINE "A"  
 SEE SHEET 6

07/14/2023



# ACCESS ROAD, WELL PAD, & WATER CONTAINMENT PAD AS-BUILT PLAN

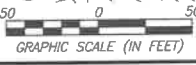


CENTROID OF PAD  
LAT: 39.558880  
LON: -80.731075  
(NAD 83)

CENTER OF TANK  
LAT: 39.558160  
LON: -80.730417  
(NAD 83)

- WELLHEAD INDEX**
- (A) RCKLEBERRY UNIT 2H
  - (B) RCKLEBERRY UNIT 1H
  - (C) READER UNIT 2H
  - (D) READER UNIT 1H
  - (E) LENNY UNIT 2H
  - (F) LENNY UNIT 1H
  - (G) VIEWER UNIT 1H
  - (H) VIEWER UNIT 2H
  - (I) GAUSS UNIT 1H
  - (J) GAUSS UNIT 2H
  - (K) MAKAR UNIT 1H
  - (L) MAKAR UNIT 2H
  - (M) FURBEE UNIT 2H
  - (N) FURBEE UNIT 1H
  - (O) FURBEE UNIT 1H
  - (P) FURBEE UNIT 2H
  - (Q) FURBEE UNIT 1H
  - (R) FURBEE UNIT 2H
  - (S) FURBEE UNIT 1H
  - (T) FURBEE UNIT 2H
  - (U) FURBEE UNIT 1H
  - (V) FURBEE UNIT 2H
  - (W) FURBEE UNIT 1H
  - (X) FURBEE UNIT 2H
  - (Y) FURBEE UNIT 1H
  - (Z) FURBEE UNIT 2H

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ACCESS ROAD, WELL PAD & WATER CONTAINMENT PAD AS-BUILT PLAN  
**FURBEE**  
WELL PAD & WATER CONTAINMENT PAD  
GREEN DISTRICT  
WETZEL COUNTY, WEST VIRGINIA

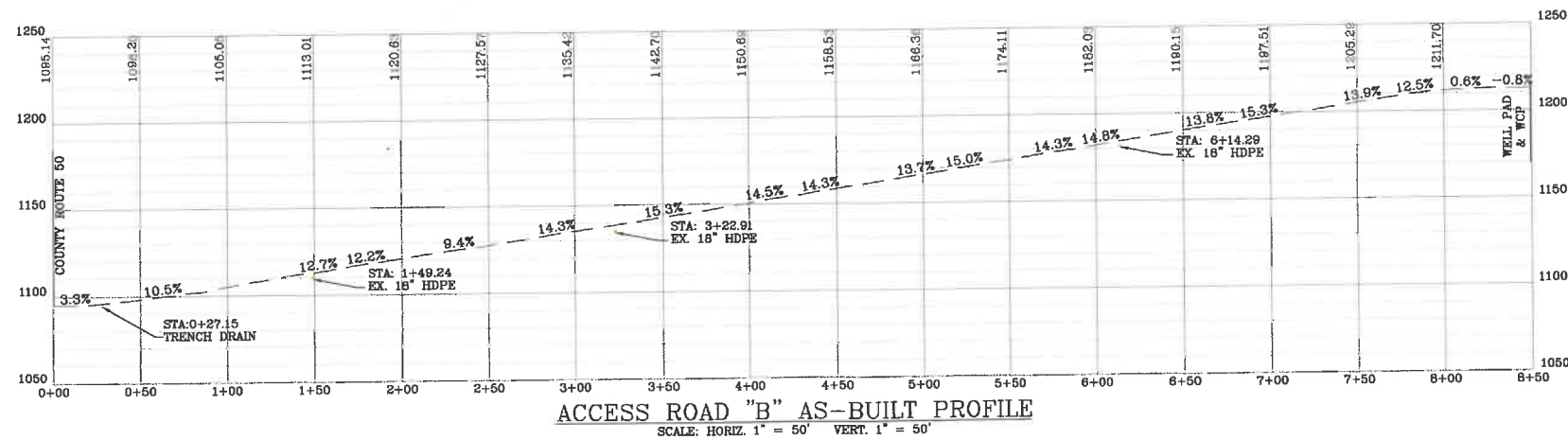
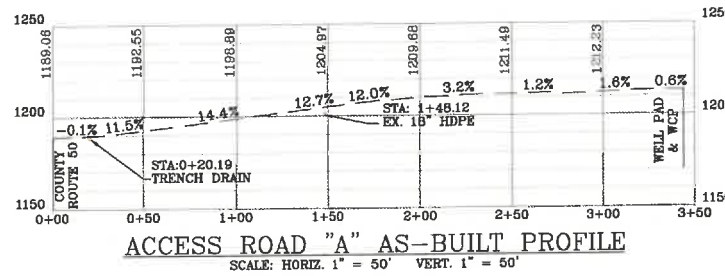


DATE: 04/18/2022  
SCALE: 1" = 50'  
SHEET 6 OF 12

07/14/2023



# ACCESS ROAD AS-BUILT PROFILES



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ACCESS ROAD AS-BUILT PROFILES  
**FURBEE**  
WELL PAD & WATER CONTAINMENT PAD  
GREEN DISTRICT  
WETZEL COUNTY, WEST VIRGINIA



DATE: 04/18/2022  
SCALE: AS SHOWN  
SHEET 7 OF 12

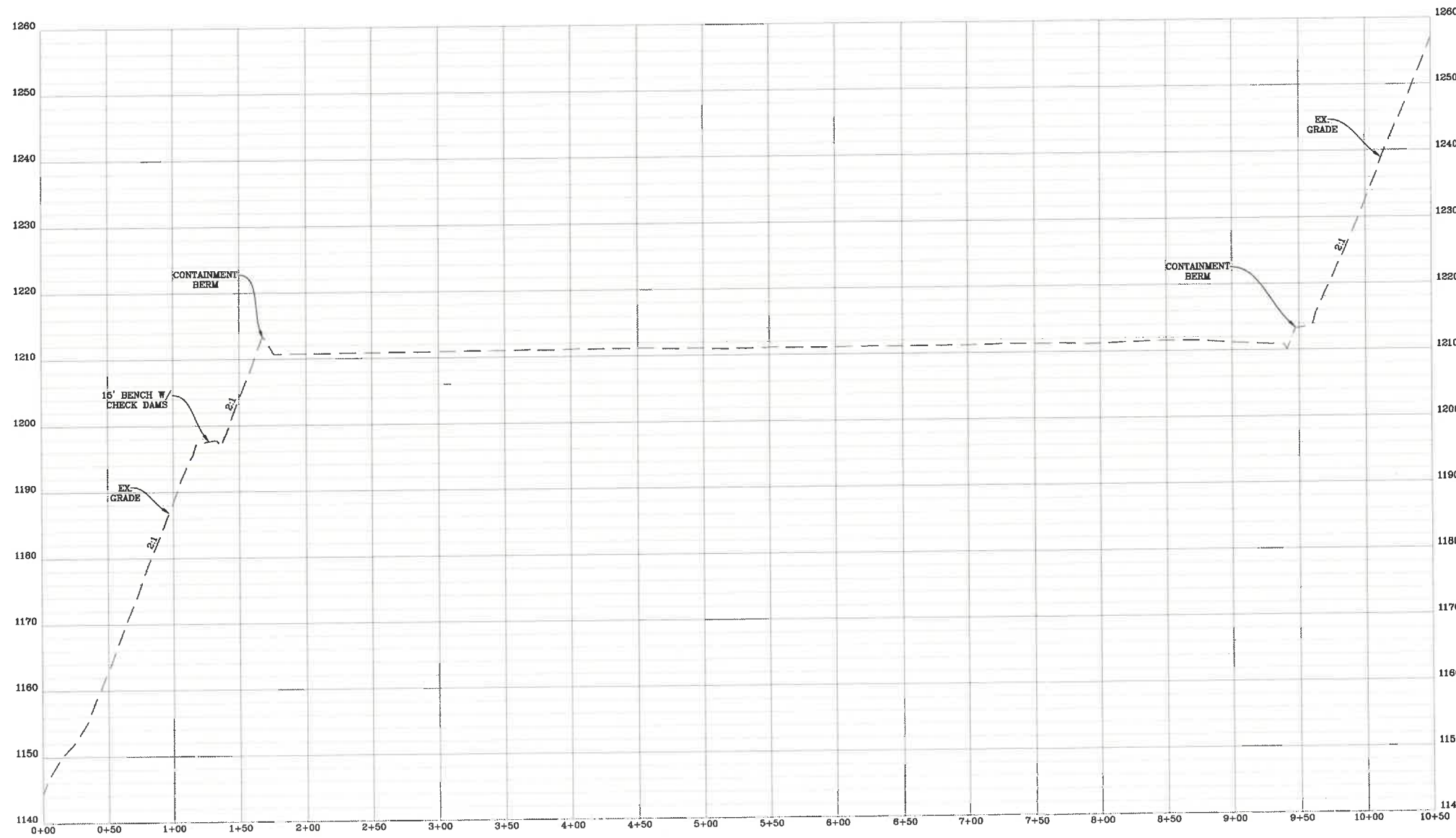
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7/10/2023

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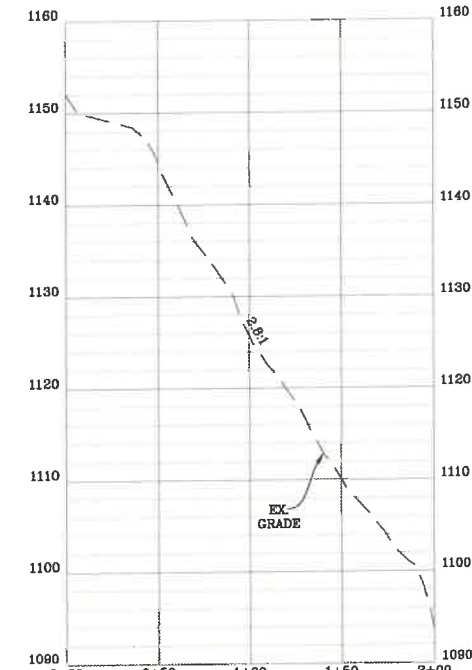


# WELL PAD, WATER CONTAINMENT PAD & STOCKPILE AS-BUILT SECTIONS

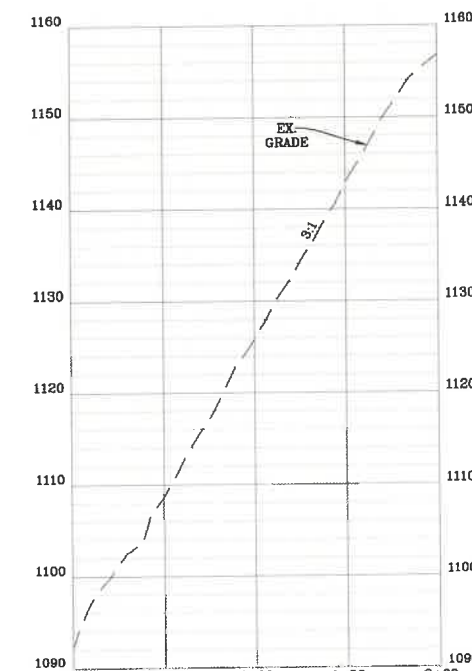
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WELL PAD & WATER CONTAINMENT PAD AS-BUILT CROSS-SECTION "A-A"  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



STOCKPILE AREA "A" AS-BUILT  
 CROSS-SECTION "C-C"  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



STOCKPILE AREA "A" AS-BUILT  
 CROSS-SECTION "B-B"  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

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WELL PAD, WATER CONTAINMENT PAD & STOCKPILE AS-BUILT SECTIONS  
**FURBEE**  
 WELL PAD & WATER CONTAINMENT PAD  
 GREEN DISTRICT  
 WETZEL COUNTY, WEST VIRGINIA



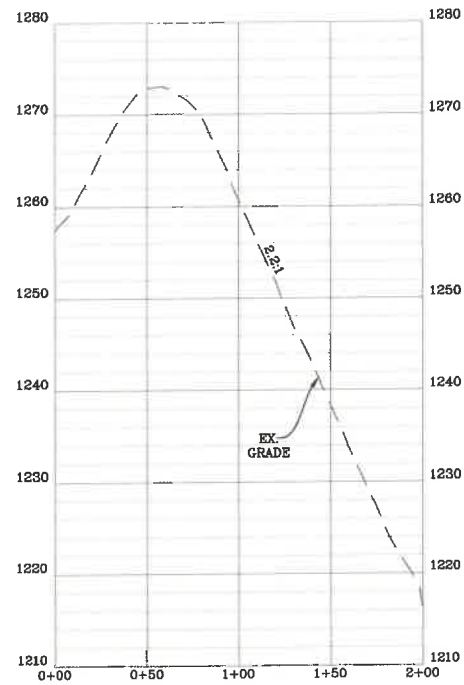
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 SHEET 8 OF 12

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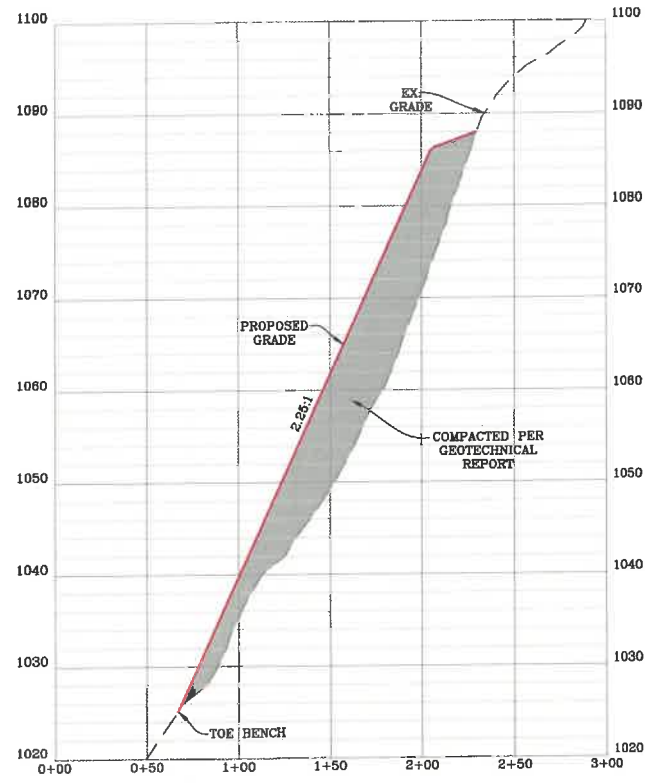


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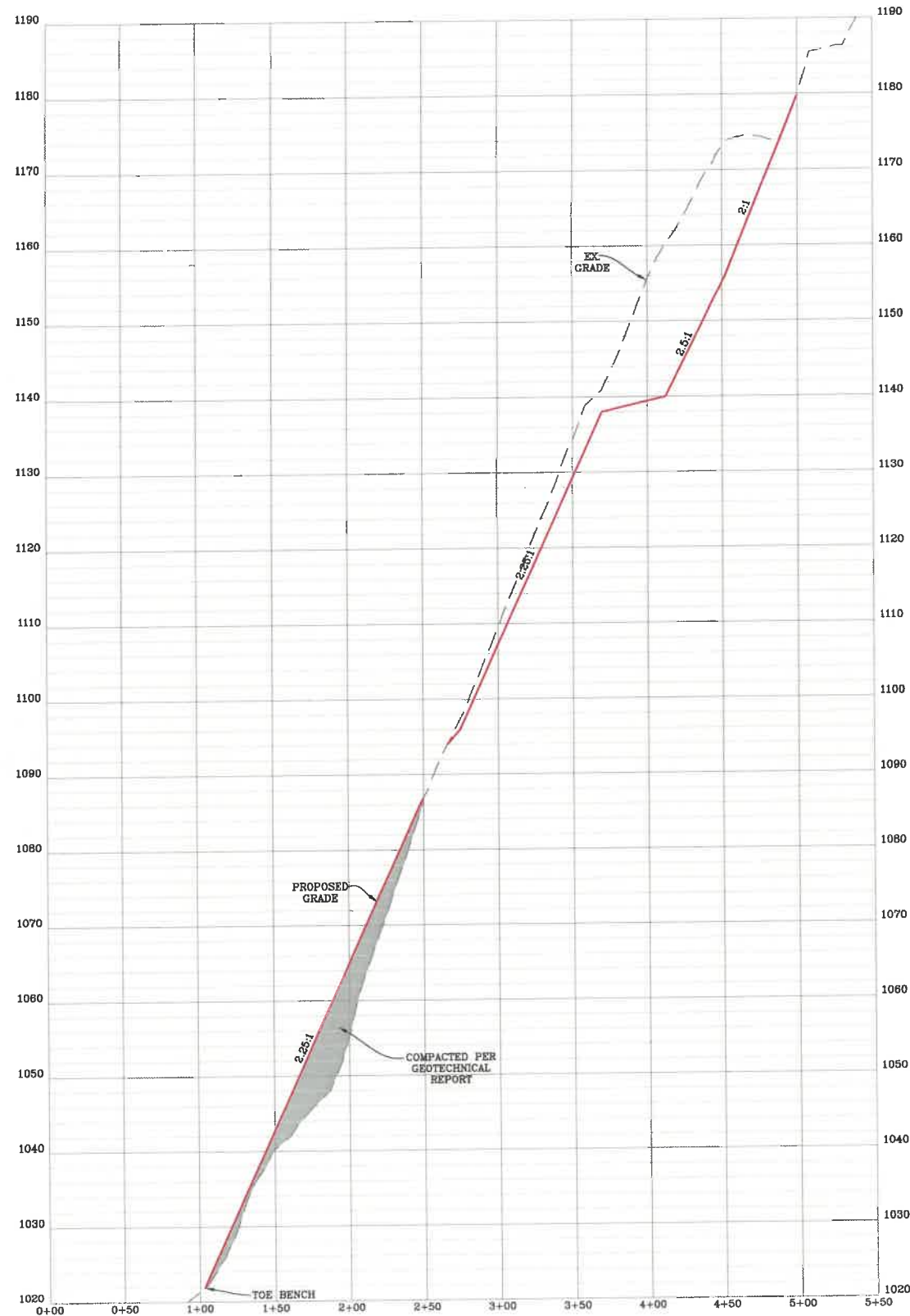
# STOCKPILE AREA AS-BUILT SECTIONS



**STOCKPILE AREA "B" AS-BUILT**  
**CROSS-SECTION "E-E"**  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



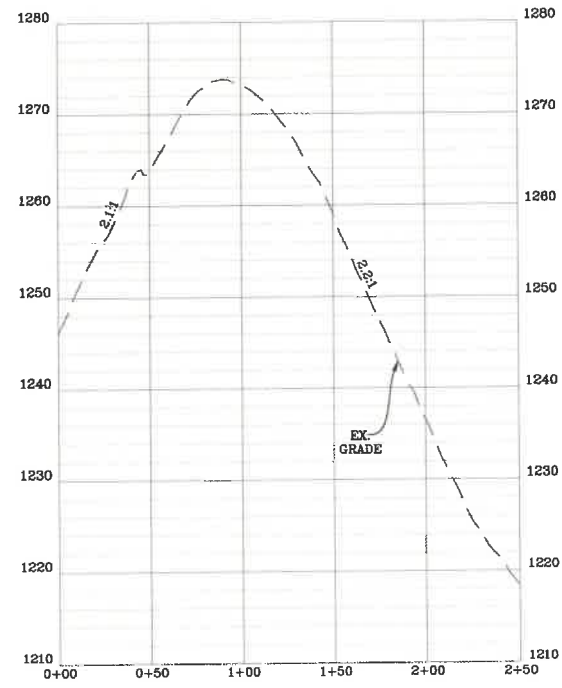
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**CROSS-SECTION "H-H"**  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



**STOCKPILE AREA "C" AS-BUILT CROSS-SECTION "G-G"**  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



**STOCKPILE AREA "A" AS-BUILT**  
**CROSS-SECTION "D-D"**  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



**STOCKPILE AREA "B" AS-BUILT**  
**CROSS-SECTION "F-F"**  
 SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

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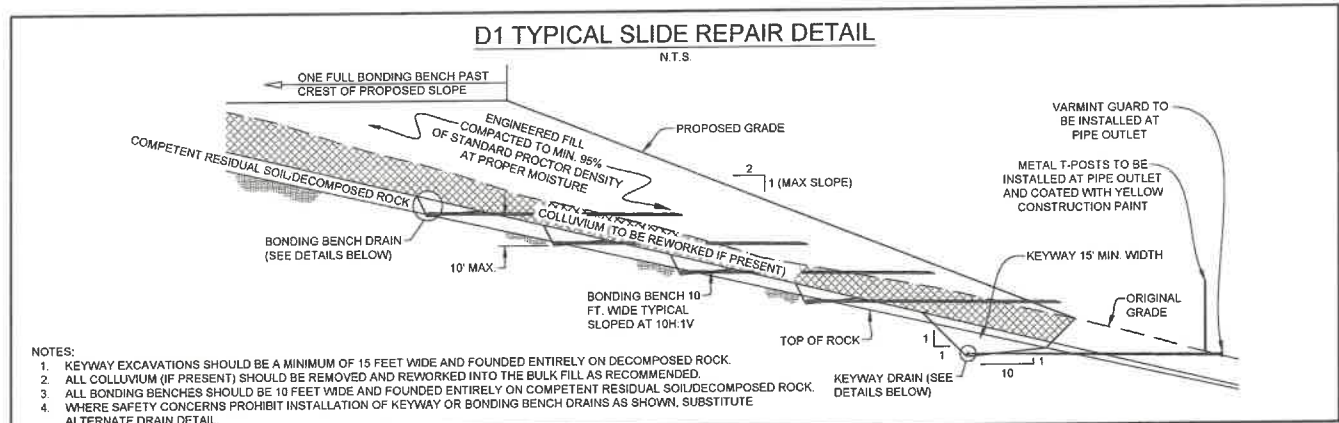
STOCKPILE AREA AS-BUILT SECTIONS  
**FURBEE**  
 WELL PAD & WATER CONTAINMENT PAD  
 GREEN DISTRICT  
 WETZEL COUNTY, WEST VIRGINIA



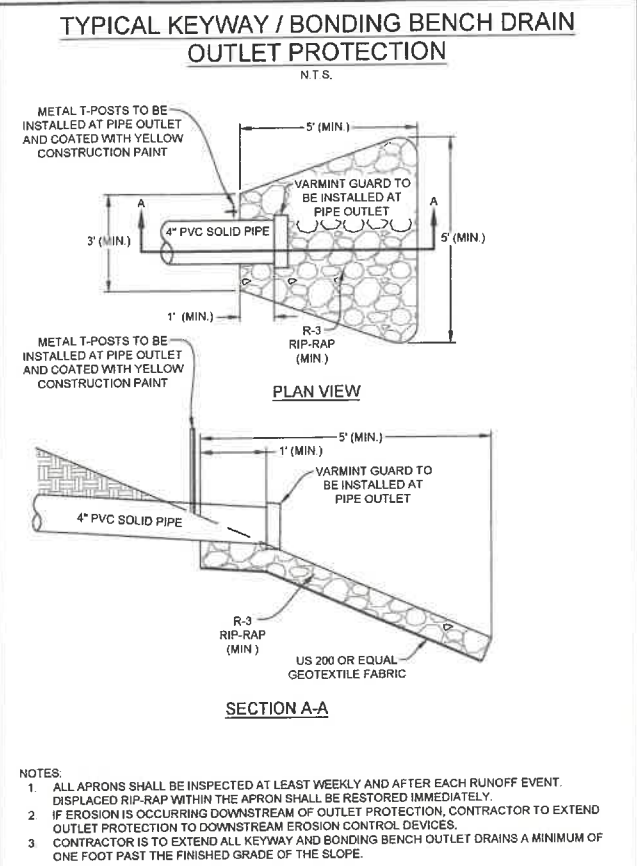
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 SHEET 9 OF 12

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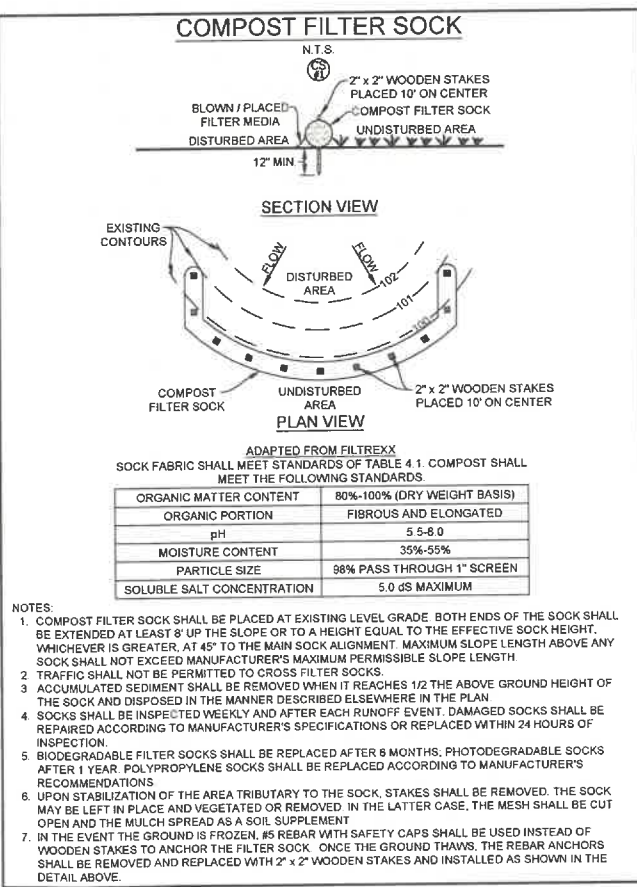
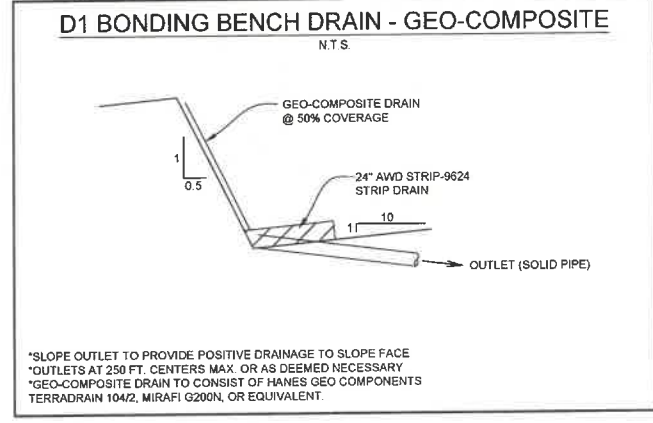
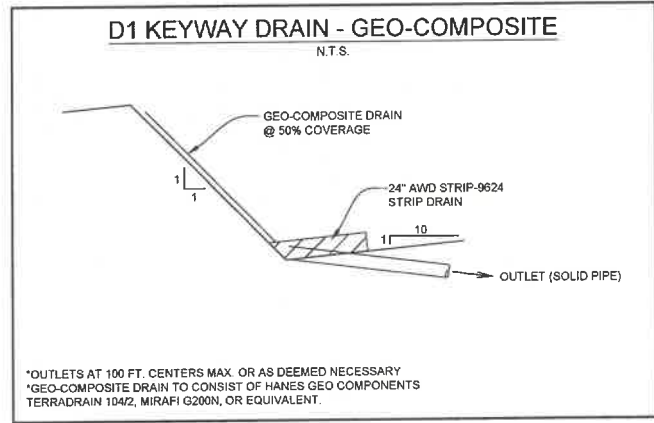
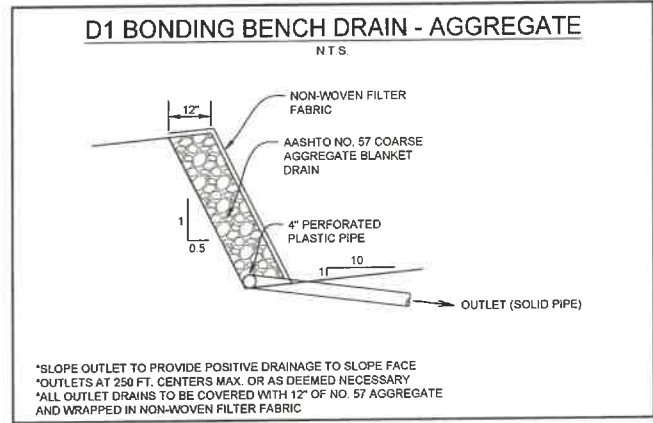
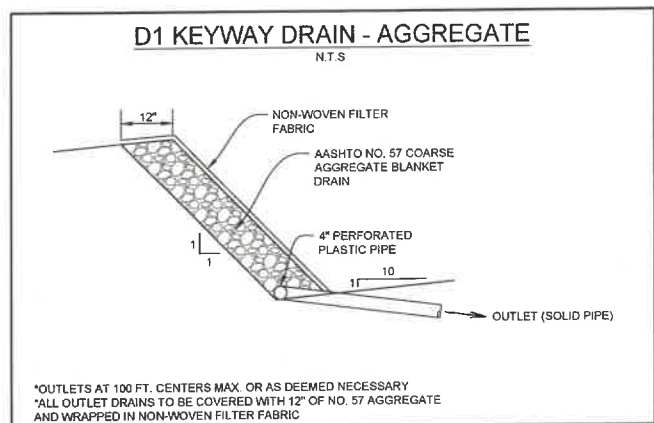




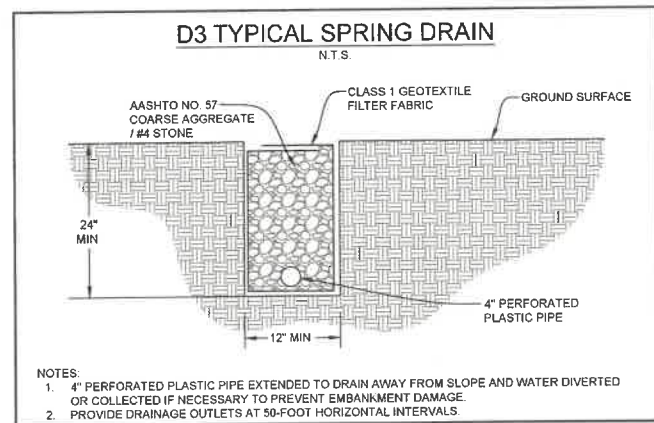
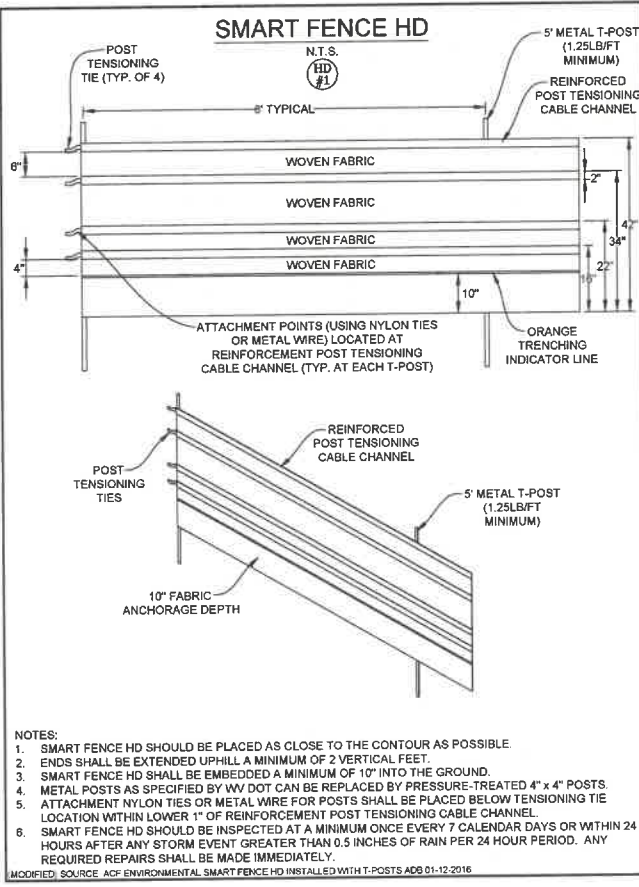
- NOTES:
- KEYWAY EXCAVATIONS SHOULD BE A MINIMUM OF 15 FEET WIDE AND FOUNDED ENTIRELY ON DECOMPOSED ROCK.
  - ALL COLLUVIUM (IF PRESENT) SHOULD BE REMOVED AND REWORKED INTO THE BULK FILL AS RECOMMENDED.
  - ALL BONDING BENCHES SHOULD BE 10 FEET WIDE AND FOUNDED ENTIRELY ON COMPETENT RESIDUAL SOIL/DECOMPOSED ROCK.
  - WHERE SAFETY CONCERNS PROHIBIT INSTALLATION OF KEYWAY OR BONDING BENCH DRAINS AS SHOWN, SUBSTITUTE ALTERNATE DRAIN DETAIL.



- ### GENERAL SITE EARTHWORK RECOMMENDATIONS
- ALL FILL AREAS SHOULD BE CLEARED OF TREES, STUMPS, AND VEGETATION AND STRIPPED OF TOPSOIL/ORGANIC SOILS PRIOR TO THE START OF FILL PLACEMENT.
  - THE DISTRIBUTION AND GRADATION OF FILL MATERIALS SHALL BE SUCH THAT THE FILL WILL BE FREE OF LENSES, POCKETS, OR LAYERS OF MATERIALS DIFFERING SUBSTANTIALLY IN GRADATION FROM THE SURROUNDING MATERIALS WITHIN THE DESIGNATED FILL AREAS.
  - FILL SHALL BE PLACED AND SPREAD IN SUCCESSIVE AND APPROXIMATE HORIZONTAL LAYERS OF UNIFORM THICKNESS BASED ON THE NOMINAL PARTICLE SIZE OF MATERIAL AND THE SIZE AND TYPE OF THE AVAILABLE COMPACTION EQUIPMENT. IN GENERAL, SOIL SHOULD BE PLACED IN NOMINAL 12 INCH MAXIMUM LOOSE LIFTS. LARGER ROCK INCORPORATED INTO THE FILL SHOULD TYPICALLY BE LIMITED TO 12 INCHES THICK X 3 FEET X 3 FEET, WITH ALL VOID SPACE FLOKED WITH SMALLER PARTICLE SIZE MATERIAL.
  - ADEQUATE COMPACTION EFFORT IS APPLIED BY UTILIZING THE PROPER COMPACTION EQUIPMENT FOR THE COMPOSITION OF THE FILL MATERIALS BEING PLACED. SEGMENTED, SHEEPSFOOT, AND/OR PADFOOT ROLLERS SHOULD BE USED WHEN PLACING PREDOMINATELY CLAYEY COHESIVE FILL MATERIALS. THESE TYPES OF ROLLERS ARE ALSO EFFECTIVE ON CLAYEY SHALES, CLAYSTONE, AND SOFTER SANDSTONE TO BREAK DOWN THE ROCK PARTICLES. SMOOTH DRUM VIBRATORY ROLLERS SHOULD BE UTILIZED ON PREDOMINATELY GRANULAR FILL MATERIALS AND TO SEAL CLAYEY SOILS TO HELP PREVENT SURFACE WATER INFILTRATION AND/OR TO PROMOTE DRAINAGE.
  - ALL FILL MATERIALS SHALL BE COMPACTIONED BY A SUFFICIENT NUMBER OF COMPLETE TRIPS (I.E. PASSES) OF THE APPROPRIATE COMPACTION EQUIPMENT TO ATTAIN A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM TEST DESIGNATION D698 (STANDARD PROCTOR). MAINTAIN THE MOISTURE CONTENT OF THE FILL MATERIALS AS NECESSARY TO ATTAIN THE DESIRED COMPACTION DENSITY.
  - UNDISTURBED AND/OR FILL MATERIALS PLACED WITHIN THE UPPER 12 INCHES OF FINAL GRADE SHOULD BE COMPACTIONED TO ATTAIN A MINIMUM OF 100% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM TEST DESIGNATION D698 (STANDARD PROCTOR) AT AN IN-PLACE MOISTURE WITHIN 3% OF THE MATERIAL'S OPTIMUM MOISTURE CONTENT. THE ENTIRE SUBGRADE SURFACE SHOULD BE THOROUGHLY SEALED USING A VIBRATORY SMOOTH DRUM ROLLER.
  - TO VERIFY THE SPECIFIED DEGREE OF COMPACTION AND TO DETERMINE THE IN-PLACE MOISTURE CONTENT AS STATED ABOVE, IN-PLACE FIELD DENSITY TESTS SHOULD BE PERFORMED IN ACCORDANCE TO THE PROCEDURES OF ASTM D2922 (NUCLEAR DENSOMETER).
  - IN ADDITION TO IN-PLACE FIELD DENSITY TESTING, ACCEPTANCE SHOULD ALSO BE PREDICATED ON A VISUAL PERFORMANCE CRITERIA. OBVIOUS SURFACE RUTTING AND/OR DEFLECTION THAT ARE JUDGED TO BE DETRIMENTAL TO THE OVERALL STABILITY OF THE FILL AREA SHOULD BE REMOVED, MOISTURE CONDITIONED AND RECOMPACTIONED, OR OTHERWISE ADDRESSED PRIOR TO ACCEPTING THE LIFT.
  - WHERE PREDOMINATELY "ROCKY" FILL MATERIALS ARE PLACED OR WHERE REPRESENTATIVE NUCLEAR DENSOMETER TESTS CANNOT BE OBTAINED, A VISUAL NON-DEFLECTION CRITERIA SHOULD BE DEVELOPED IN CONJUNCTION WITH AN ADEQUATE NUMBER OF ROLLER PASSES FOR ACCEPTANCE.
- NOTE:
- THE GEOTECHNICAL NOTES AND DETAILS SHOWN ON THIS SHEET ARE FOR THE GENERAL EARTHWORK AND SUBSURFACE DRAINAGE ASSOCIATED WITH THE CONSTRUCTION OF THIS SITE. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL INVESTIGATION REPORT FOR ADDITIONAL GUIDANCE AND RECOMMENDATIONS.



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RESOURCES

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**ANTERO RESOURCES CORPORATION**

**FURBEE**  
WELL PAD & WATER CONTAINMENT PAD  
GREEN DISTRICT  
WETZEL COUNTY, WEST VIRGINIA



DATE: 04/18/2022  
SCALE: N/A  
SHEET 10 OF 12

07/14/2023





TEMPORARY SEEDING:

- a. GENERAL CONDITIONS WHERE PRACTICE APPLIES  
 WHERE EXPOSED SOIL SURFACES ARE NOT TO BE FINE-GRADED OR WORKED FOR PERIODS LONGER THAN 21 DAYS. TEMPORARY VEGETATIVE COVER WITH SEDIMENT CONTROLS MUST BE ESTABLISHED WHERE RUNOFF WILL GO DIRECTLY INTO A STREAM. IMMEDIATELY UPON CONSTRUCTION OF THE SITE (SITE INCLUDES ROAD AND LOCATION), VEGETATION MUST BE ESTABLISHED ON ROAD BANK AND LOCATION SLOPES. A PERMANENT VEGETATIVE COVER SHALL BE APPLIED TO AREAS THAT WILL BE LEFT UN-WORKED FOR A PERIOD OF MORE THAN SIX MONTHS
- b. SEED MIXTURES AND PLANTING DATES  
 REFER TO TABLES IV-2 THROUGH IV-4 FOR RECOMMENDED DATES TO ESTABLISH VEGETATIVE COVER AND THE APPROVED LISTS OF TEMPORARY AND PERMANENT PLANT SPECIES AND PLANTING RATES. TABLE IV-3 GIVES RECOMMENDED TYPES OF TEMPORARY VEGETATION, RATES OF APPLICATION, AND OPTIMUM SEEDING DATES. IN SITUATIONS WHERE ANOTHER COVER IS DESIRED, CONTACT THE LOCAL SOIL CONSERVATION DISTRICT FOR SEEDING RECOMMENDATIONS.
- c. SEED APPLICATION  
 APPLY SEED BY BROADCASTING, DRILLING, OR BY HYDROSEED ACCORDING TO THE RATES INDICATED IN TABLE IV-3. PERFORM ALL PLANTING OPERATIONS AT RIGHT ANGLES TO THE SLOPE. NECESSARY SITE PREPARATION AND ROUGHENING OF THE SOIL SURFACE SHOULD BE DONE JUST PRIOR TO SEEDING. SEEDBED PREPARATION MAY NOT BE REQUIRED ON NEWLY DISTURBED AREAS

PERMANENT SEEDING:

- a. GENERAL PERMANENT VEGETATIVE COVER WILL BE ESTABLISHED WHERE NO FURTHER SOIL DISTURBANCE IS ANTICIPATED OR NEEDED. SOIL FERTILITY AND PH LEVEL SHOULD BE TESTED AND ADJUSTED ACCORDING TO SEED SPECIES PLANTED. PLANTING OF PERMANENT VEGETATIVE COVERS MUST BE PERFORMED ON ALL DISTURBED AREAS AFTER COMPLETION OF THE DRILLING PROCESS. ANY SITE THAT CONTAINS SIGNIFICANT AMOUNTS OF TOPSOIL SHALL HAVE THE TOPSOIL REMOVED AND STOCKPILED WHEN FEASIBLE. TOPSOIL SHOULD NOT BE ADDED TO SLOPES STEEPER THAN 2:1 UNLESS A GOOD BONDING TO THE SUB-LAYER CAN BE ACHIEVED. AFTER PROPER GRADING AND SEEDBED PREPARATION, THE VEGETATION WILL REESTABLISH GROUND COVER FOR THE CONTROL OF SURFACE WATER RUNOFF EROSION. ALL REQUIRED SEEDBED PREPARATION AND LOOSENING OF SOIL BY DISKING OR DOZER TRACKING SHOULD BE PERFORMED JUST PRIOR TO SEEDING. IF SEEDBED PREPARATION IS NOT FEASIBLE, 50% MORE SEED SHALL BE ADDED TO THE RECOMMENDED RATES SHOWN IN TABLES IV-3 AND IV-4. WHEN HYDROSEEDING, SEEDBED PREPARATION MAY NOT BE NECESSARY IF ADEQUATE SITE PREPARATION WAS PERFORMED. INCORPORATE THE APPROPRIATE AMOUNT OF LIME AND/OR FERTILIZER IN THE SLURRY MIX WHEN HYDROSEEDING. WHEN HYDROSEEDING, FIRST MIX THE LIME, FERTILIZER, AND HYDRO-MULCH IN THE RECOMMENDED AMOUNT OF WATER. MIX THE SEED AND INOCULANTS TOGETHER WITHIN ONE HOUR PRIOR TO PLANTING, AND ADD TO THE SLURRY JUST BEFORE SEEDING. APPLY THE SLURRY UNIFORMLY OVER THE PREPARED SITE. ASSURE THAT AGITATION IS CONTINUOUS THROUGHOUT THE SEEDING OPERATION AND THE MIX IS APPLIED WITHIN ONE HOUR OF INITIAL MIXING.
- b. LIME AND FERTILIZER  
 1. LIME SHALL BE APPLIED TO ALL PERMANENT SEEDINGS. THE PH OF THE SOIL IS TO BE DETERMINED AND LIME APPLIED ACCORDINGLY. ONCE THE PH IS KNOWN, SELECT THE AMOUNT OF LIME TO BE APPLIED FROM TABLE IV-5.  
 2. FERTILIZER SHALL BE APPLIED IN ALL PERMANENT SEEDINGS. APPLY THE EQUIVALENT FOR 500 LBS. MINIMUM 10-20-20 FERTILIZER PER ACRE OR USE THE AMOUNT OF FERTILIZER AND LIME RECOMMENDED BY A CERTIFIED SOIL TEST.  
 3. APPLICATION: FOR BEST RESULTS AND MAXIMUM BENEFITS, THE LIME AND FERTILIZER ARE TO BE APPLIED AT THE TIME OF SEEDBED PREPARATION
- c. PERMANENT SEED MIXTURES  
 PLANNERS SHOULD TAKE INTO CONSIDERATION THE SPECIES MAKEUP OF THE EXISTING PASTURE AND THE LANDOWNER'S FUTURE PASTURE MANAGEMENT PLANS WHEN RECOMMENDING SEED MIXTURES. SELECTION: FROM TABLES IV-4A AND IV-4B, PERMANENT SEEDING MIXTURES SUITABLE FOR ESTABLISHMENT IN WEST VIRGINIA.  
 NOTES:  
 1. ALL LEGUMES MUST BE PLANTED WITH THE PROPER INOCULANTS PRIOR TO SEEDING  
 2. LATHCO FLATPEA IS POTENTIALLY POISONOUS TO SOME LIVESTOCK.  
 3. ONLY ENDOPHYTE FREE VARIETIES OF TALL FESCUE SHOULD BE USED. TALL FESCUE AND CROWNVELCH ARE ALSO VERY INVASIVE SPECIES, NON-NATIVE TO WV.  
 4. FOR UNPREPARED SEEDBEDS OR SEEDING OUTSIDE THE OPTIMUM TIMEFRAMES, ADD 50% MORE SEED TO THE SPECIFIED RATE. MIXTURES IN TABLE IV-4B ARE MORE WILDLIFE AND FARM FRIENDLY; THOSE LISTED IN BOLD ARE SUITABLE FOR USE IN SHADED WOODLAND SETTINGS. MIXTURES IN ITALIC ARE SUITABLE FOR USE IN FILTER STRIPS
- d. SEEDING FOR WILDLIFE HABITAT  
 CONSIDER THE USE OF THE NATIVE PLANTS OR LOCALLY ADAPTED PLANTS WHEN SELECTING COVER TYPES AND SPECIES FOR WILDLIFE HABITAT. WILDLIFE FRIENDLY SPECIES OR MIXES THAT HAVE MULTIPLE VALUES SHOULD BE CONSIDERED. SEE WILDLIFE FRIENDLY SPECIES/MIXTURES IN TABLE IV-4B. CONSIDER SELECTING NO OR LOW MAINTENANCE LONG-LIVED PLANTS ADAPTABLE TO SITES WHICH MAY BE DIFFICULT TO MAINTAIN WITH EQUIPMENT.

MULCHING

- a. GENERAL ORGANIC MULCHES  
 THE APPLICATION OF STRAW, HAY, OR OTHER SUITABLE MATERIALS TO THE SOIL SURFACE TO PREVENT EROSION. STRAW MADE FROM WHEAT OR OATS IS THE PREFERRED MULCH. THE USE OF HAY IS PERMISSIBLE, BUT NOT ENCOURAGED DUE TO THE RISK OF SPREADING INVASIVE SPECIES. MULCH MUST BE APPLIED TO ALL TEMPORARY AND PERMANENT SEEDING ON ALL DISTURBED AREAS, DEPENDING ON SITE CONDITIONS, IN CRITICAL AREAS SUCH AS WATERWAYS OR STEEP SLOPES, ADDITIONAL OR SUBSTITUTE SOIL PROTECTIVE MEASURES MAY BE USED IF DEEMED NECESSARY. EXAMPLES INCLUDE JUTE MESH AND SOIL STABILIZATION BLANKETS OR EROSION CONTROL MATTING.  
 AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED SHOULD BE MULCHED IMMEDIATELY FOLLOWING SEEDING. MULCHES CONSERVE DESIRABLE SOIL PROPERTIES, REDUCE SOIL MOISTURE LOSS, PREVENT CRUSTING AND SEALING OF THE SOIL SURFACE, AND PROVIDE A SUITABLE MICROCLIMATE FOR SEED GERMINATION.  
 AREAS THAT CANNOT BE SEEDED BECAUSE OF THE SEASON SHOULD BE MULCHED TO PROVIDE SOME PROTECTION TO THE SOIL SURFACE. AN ORGANIC MULCH, STRAW, OR HAY SHOULD BE USED AND THE AREA THEN SEEDED AS SOON AS WEATHER OR SEASONAL CONDITIONS PERMIT. DO NOT USE FIBER MULCH (CELLULOSE-HYDROSEED) ALONE FOR THIS PRACTICE; AT NORMAL APPLICATION RATES IT WILL NOT GIVE THE SOIL PROTECTION OF OTHER TYPES OF MULCH.  
 WOOD CELLULOSE FIBER MULCH IS USED IN HYDROSEEDING OPERATIONS AND APPLIED AS PART OF THE SLURRY. IT CREATES THE BEST SEED-SOIL CONTACT WHEN APPLIED OVER THE TOP OF (AS A SEPARATE OPERATION) NEWLY SEEDED AREAS. FIBER MULCH DOES NOT ALONE PROVIDE SUFFICIENT PROTECTION ON HIGHLY ERODIBLE SOILS, OR DURING LESS THAN FAVORABLE GROWING CONDITIONS. FIBER MULCH SHOULD NOT BE USED ALONE DURING THE DRY SUMMER MONTHS OR WHEN USED FOR LATE FALL MULCH COVER. USE STRAW MULCH DURING THESE PERIODS AND FIBER MULCH MAY BE USED TO TACK (ANCHOR) THE STRAW MULCH. FIBER MULCH IS WELL SUITED FOR STEEP SLOPES, CRITICAL AREAS, AND AREAS SUSCEPTIBLE TO WIND.
- b. CHEMICAL MULCHES, SOIL BINDERS, AND TACKIFIERS  
 A WIDE RANGE OF SYNTHETIC SPRAY ON MATERIALS ARE MARKETED TO STABILIZE AND PROTECT THE SOIL SURFACE. THESE ARE MIXED WITH WATER AND SPRAYED OVER THE MULCH AND TO THE SOIL. THEY MAY BE USED ALONE IN SOME CASES AS TEMPORARY STABILIZERS, OR IN CONJUNCTION WITH FIBER MULCH, STRAW, OR HAY.  
 WHEN USED ALONE, MOST CHEMICAL MULCHES DO NOT HAVE THE CAPABILITY TO INSULATE THE SOIL OR RETAIN SOIL MOISTURE THAT ORGANIC MULCHES HAVE.
- c. SPECIFICATIONS  
 FROM TABLE IV-6 SELECT THE TYPE OF MULCH AND RATE OF APPLICATION THAT WILL BEST SUIT THE CONDITIONS AT THE SITE.
- d. ANCHORING  
 DEPENDING ON THE FIELD SITUATION, MULCH MAY NOT STAY IN PLACE BECAUSE OF WIND ACTION OR RAPID WATER RUNOFF. IN SUCH CASES, MULCH IS TO BE ANCHORED MECHANICALLY OR WITH MULCH NETTING  
 1. MECHANICAL ANCHORING  
 APPLY MULCH AND PULL MULCH ANCHORING TOOL OVER THE MULCH. WHEN A DISK IS USED, SET THE DISK STRAIGHT AND PULL ACROSS SLOPE. MULCH MATERIAL SHOULD BE TUCKED INTO THE SOIL ABOUT 3".  
 2. MULCH NETTING  
 FOLLOW MANUFACTURER'S RECOMMENDATION WHEN POSITIONING AND STAPLING THE MULCH NETTING IN THE SOIL.

ANTERO'S PREFERRED SEED MIXTURE

HALL'S #1 PASTURE MIXTURE			
Species/Contains	Pure Seed	Germs	Origin
Bestfor Intermediate Ryegrass	29.95%	90%	OR
Climax Timothy	24.96%	90%	CAN
Annual Ryegrass *	24.92%	90%	OR
Medium Red Clover *	9.99%	90%	OR
Potomac Orchardgrass	9.46%	90%	OR
Other Crop Seeds:	0.01%		* Variety Not Stated
Inert Matter:	0.69%		
Wired Seeds:	0.02%		AMS: 5143

Table IV-1 Recommended Seeding Dates		
Planting Dates	Recommended Seeding Dates	Suitability
March 1 - April 15 and August 1 - October 1	Best Seeding Periods	
April 15 - August 1	HIGH RISK - moisture stress likely	
October 1 - December 1	HIGH RISK - freeze damage to young seedlings	
December 1 - March 1	Good seeding period, Dormant seeding	

Table IV-2 Acceptable Fertilization Recommendation			
Species	N (lbs/ac)	P2O5 (lbs/ac)	Example Rec. (per acre)
Cool Season Grass	40	80	400 lbs. 10-20-20
CS Grass & Legume	30	60	300 lbs. 10-20-20
Temporary Cover	40	40	200 lbs. 19-19-19

Table IV-3 Temporary Cover				
Species	Seeding Rate (lbs/acre)	Optimum Seeding Date	Drainage	pH Range
Annual Ryegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Poorly	5.5 - 7.5
Field Bromegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Mod. Well	6.0 - 7.0
Spring Oats	96	3/1 - 6/15	Well - Poorly	5.5 - 7.0
Sundgrass	40	5/15 - 8/15	Well - Poorly	5.5 - 7.5
Winter Rye	168	8/15 - 10/15	Well - Poorly	5.5 - 7.5
Winter Wheat	180	8/15 - 11/15	Well - Mod. Well	5.5 - 7.0
Japanese Millet	30	6/15 - 8/15	Well	4.5 - 7.0
Redtop	5	3/1 - 6/15	Well	4.0 - 7.5
Annual Ryegrass	26	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Spring Oats	64	3/1 - 6/15	Well - Poorly	5.5 - 7.5

NOTE: These rates should be increased by 50% if planted April 15 - August 1 and October 1 - March 1.

Table IV-4A Permanent Seeding Mixture			
Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage preference	pH Range
Crownvetch / Tall Fescue	10 - 15	Well - Mod. Well	5.0 - 7.5
Crownvetch / Perennial Ryegrass	10 - 15	Well - Mod. Well	5.0 - 7.5
Flatpea or Perennial Pea / Tall Fescue	20	Well - Mod. Well	4.0 - 8.0
Ladino Clover / Serecia Lespedeza / Tall Fescue	30	Well - Mod. Well	4.5 - 7.5
Tall Fescue / Ladino Clover / Redtop	40	Well - Mod. Well	5.0 - 7.5
Crownvetch / Tall Fescue / Redtop	10	Well - Mod. Well	5.0 - 7.5
Tall Fescue / Birdsfoot Trefoil / Redtop	40	Well - Mod. Well	5.0 - 7.5
Serecia Lespedeza / Tall Fescue / Redtop	25	Well - Mod. Well	4.5 - 7.5
Tall Fescue / Redtop / Tall Fescue / Creeping Red / Tall Fescue	30	Well - Mod. Well	4.5 - 7.5
Perennial Ryegrass / Tall Fescue / Lathco Flatpea *	10	Well - Poorly	4.5 - 7.5
	15	Well - Poorly	5.8 - 8.0
	20		

\* Lathco Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.

Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

Table IV-4B Wildlife and Farm Friendly Seed Mixtures			
Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage preference	pH Range
KY Bluegrass / Redtop	20	Well - Mod. Well	5.5 - 7.5
Ladino Clover or Birdsfoot Trefoil	2 / 10		
Timothy / Alfalfa	5	Well - Mod. Well	6.5 - 8.0
Timothy / Birdsfoot Trefoil	5	Well - Poorly	5.5 - 7.5
Orchardgrass / Ladino Clover / Redtop	10	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Ladino Clover	2	Well - Mod. Well	5.5 - 7.5
Orchardgrass / Perennial Ryegrass	10	Well - Mod. Well	5.5 - 7.5
Creeping Red Fescue / Perennial Ryegrass	30	Well - Mod. Well	5.5 - 7.5
Orchardgrass or KY Bluegrass	20	Well - Mod. Well	6.0 - 7.5
Birdsfoot Trefoil / Redtop / Orchardgrass	10	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea * / Perennial Ryegrass	30	Well - Mod. Well	5.5 - 7.5
Lathco Flatpea * / Orchardgrass	30	Well - Mod. Well	5.5 - 7.5

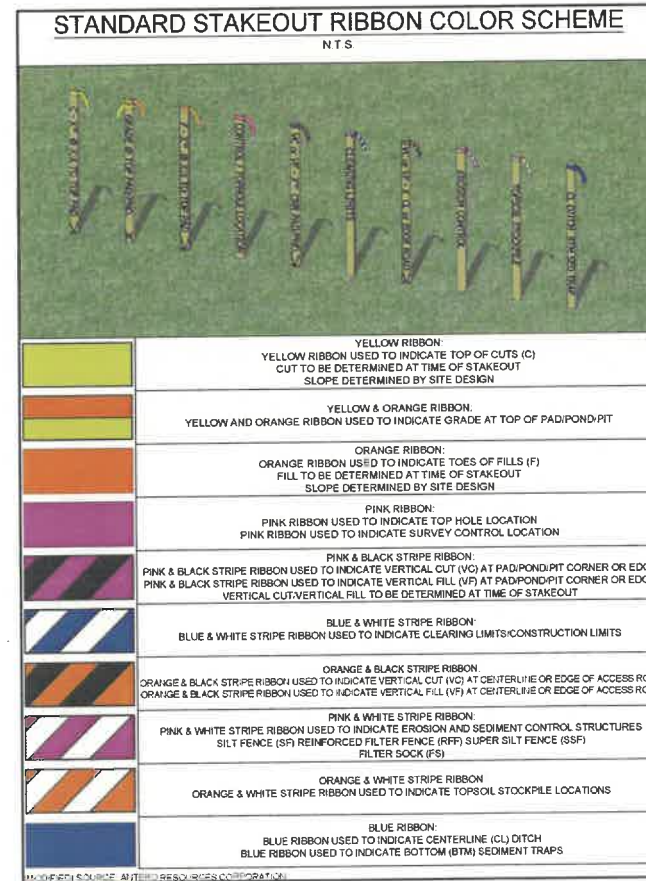
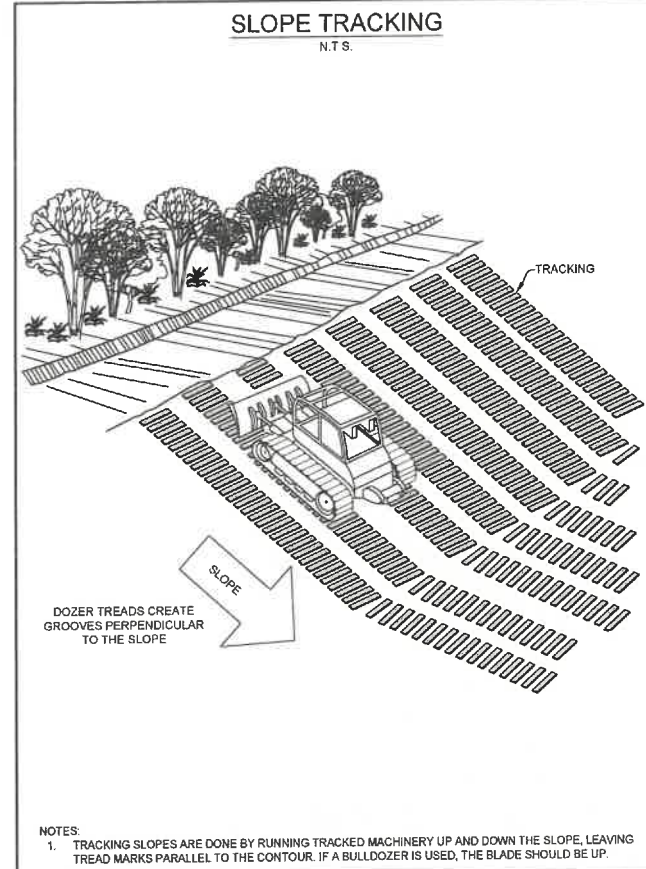
\* Lathco Flatpea is potentially poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding. For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.

Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.

Table IV-5 Lime and Fertilizer Application Table			
pH of Soil	Lime in Tons per Acre	Fertilizer, lbs. per Acre (10-20-20 or Equivalent)	
Above 6.0	2	500	
5.0 to 6.0	3	500	
Below 5.0	4	500	

The pH can be determined with a portable pH testing kit or by sending the soil samples to a soil testing laboratory. When 4 tons of lime per acre are applied it must be incorporated into the soil by disking, backblading or tracking up and down the slope.

Table IV-6 Mulch Materials Rates and Uses			
Material	Maximum Rate per acre	Coverage	Remarks
Hay or Straw	2 to 3 Tons	Cover 75% to 90% of Surface	Subject to wind blowing or washing unless tied down
Wood Fiber	1000 to 1500 lbs	Cover all Areas	For hydroseeding
Pulp Fiber			
Wood - Cellulose			
Recirculated Paper			



DATE	REVISION
05-24-2023	REVISED PER SLIDE



LEGEND

**FURBEE**  
 WELL PAD & WATER CONTAINMENT PAD  
 GREEN DISTRICT  
 WETZEL COUNTY, WEST VIRGINIA









on McEvers 6/6/23

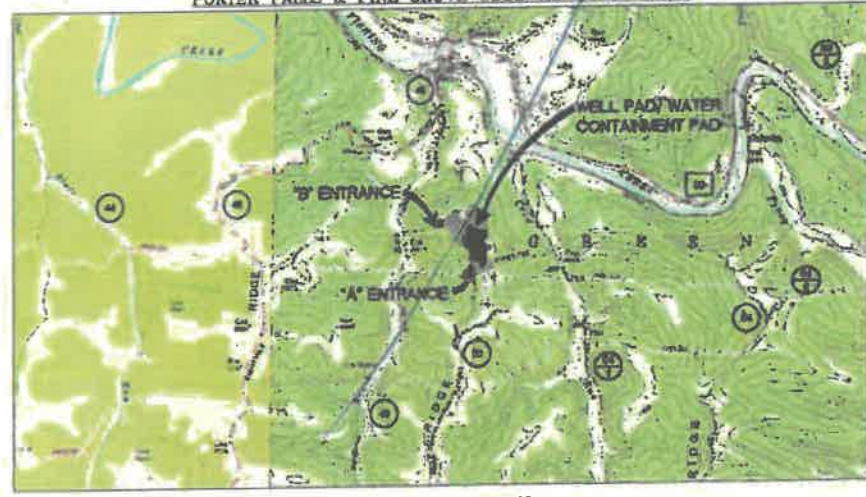
**LOCATION COORDINATES:**  
**ACCESS ROAD "A" ENTRANCE**  
 LATITUDE: 38.564902 LONGITUDE: -80.730969 (NAD 83)  
 LONGITUDE: 38.554622 LONGITUDE: -80.731168 (NAD 83)  
 N 4378992.15 E 523111.11 (UTM ZONE 17 METERS)  
**ACCESS ROAD "B" ENTRANCE**  
 LATITUDE: 38.575732 LONGITUDE: -80.734287 (NAD 83)  
 LONGITUDE: 38.567453 LONGITUDE: -80.734485 (NAD 83)  
 N 4378983.19 E 522268.01 (UTM ZONE 17 METERS)  
**CENTER OF TANK**  
 LATITUDE: 38.566180 LONGITUDE: -80.730417 (NAD 83)  
 LONGITUDE: 38.566090 LONGITUDE: -80.730596 (NAD 83)  
 N 4378631.91 E 523169.83 (UTM ZONE 17 METERS)  
**CENTROID OF PAD**  
 LATITUDE: 38.566280 LONGITUDE: -80.731075 (NAD 83)  
 LONGITUDE: 38.566780 LONGITUDE: -80.731254 (NAD 83)  
 N 4378611.63 E 523103.06 (UTM ZONE 17 METERS)

# FURBEE WELL PAD & WATER CONTAINMENT PAD

## AS-BUILT EROSION & SEDIMENT CONTROL IMPROVEMENT PLANS

GREEN DISTRICT, WETZEL COUNTY, WV  
 LITTLE MUSRINGUM-MIDDLE ISLAND WATERSHED

PORTER FALLS & PINE GROVE USGS 7.5 QUAD MAP(S)



WEST VIRGINIA STATE PLANE COORDINATE SYSTEM  
 ELEVATION BASED ON NAVD83  
 ESTABLISHED BY SURVEY GRADE CP6 & CP5  
 POST-PROCESSING

**GENERAL DESCRIPTION:**  
 THE SLIDE REPAIR IS BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

**MISS UTILITY STATEMENT:**  
 ANTERO RESOURCES CORPORATION WILL NOTIFY MISS UTILITY OF WEST VIRGINIA FOR THE LOCATING OF UTILITIES PRIOR TO THIS PROJECT DESIGN. IN ADDITION, MISS UTILITY WILL BE CONTACTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION FOR THIS PROJECT.

**ENTRANCE PERMIT:**  
 ANTERO RESOURCES CORPORATION HAS OBTAINED AN ENCROACHMENT PERMIT (FORM MM-108) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**FLOODPLAIN NOTES:**  
 THE SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #54108C0100C.

**GEOTECHNICAL NOTES:**  
 GEOTECHNICAL CONSULTATION WILL TAKE PLACE DURING SLIP REPAIR CONSTRUCTION AS NECESSARY.

**ENVIRONMENTAL NOTES:**  
 STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN SEPTEMBER, 2019 BY ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC. TO REVIEW THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGULATORY JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP). THE SEPTEMBER 23, 2019 FIGURE 2 MAP WAS PREPARED BY ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC. AND SUMMARIZES THE RESULTS OF THE FIELD DELINEATION. THE MAP DOES NOT, IN ANY WAY, REPRESENT A JURISDICTIONAL DETERMINATION OF THE LANDWARD LIMITS OF WATERS AND WETLANDS WHICH MAY BE REGULATED BY THE USACE OR THE WVDEP.

**PROJECT CONTACTS:**

**OPERATOR:**  
 ANTERO RESOURCES CORPORATION  
 535 WHITE OAKS BLVD.  
 BRIDGEPORT, WV 26330  
 PHONE: (304) 642-4100  
 FAX: (304) 642-4198

**ELI WAGNER - ENVIRONMENTAL ENGINEER & REGULATORY MANAGER**  
 OFFICE: (304) 642-4086 CELL: (304) 476-8770

**JOH McEVERS - SVT OPERATIONS**  
 OFFICE: (304) 357-8769

**AARON KUNZLER - CONSTRUCTION MANAGER**  
 CELL: (304) 642-4191

**ROBERT WELLS - DESIGN MANAGER**  
 OFFICE: (304) 642-4100 CELL: (304) 627-7406

**ROBERT EDDY - UTILITY COORDINATOR**  
 CELL: (304) 718-5190

**DAVID PATSY - LAND AGENT**  
 CELL: (304) 476-8080

**ENGINEER/SURVEYOR:**  
 NAVITUS ENGINEERING, INC.  
 CYRUS S. KUMP, PE - PROJECT MANAGER/ENGINEER  
 OFFICE: (606) 682-4185 CELL: (640) 686-6747

**ENVIRONMENTAL:**  
 ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.  
 VALERIE CLARKSTON - ECOLOGIST  
 OFFICE: (304) 790-5803 CELL: (518) 362-09267 (412) 372-4000 CELL: (412) 569-0662

**GEOTECHNICAL:**  
 PENNSYLVANIA SOIL & ROCK, INC.  
 CHRISTOPHER W. SANDS - PROJECT ENGINEER  
 (412) 372-4000 CELL: (412) 569-0662

- NOTES:**
- ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETELY AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RUNOFF EVENT IN EXCESS OF 0.5" AND ON A WEEKLY BASIS.
  - THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HAND COVER SUCH AS PAVEMENT OR BUILDINGS. IT SHOULD BE NOTED THAT THE TOX REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
  - ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.
  - ANY AREAS DESTROYED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY RESEED.
  - THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL GRADING OF THE DISTURBED AREA AS OF MAY 24, 2023. NAVITUS ENGINEERING IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATES.
  - THE EXISTING CONTAMINANT BERM AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.
  - THE EXISTING EGRESS TO THE WELL PAD SHALL HAVE THE MOUNTABLE BERMS REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.

**REPRODUCTION NOTE**  
 THESE PLANS WERE CREATED TO BE PLOTTED ON 22"x34" (ANSI D) PAPER. HALF SCALE DRAWINGS ARE ON 11"x17" (ANSI B) PAPER.  
 THESE PLANS WERE CREATED FOR COLOR PLOTTING AND ANY REPRODUCTIONS IN GRAY SCALES OR COLOR MAY RESULT IN A LOSS OF INFORMATION AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.



**AS-BUILT CERTIFICATIONS:**  
 THE DRAWINGS, CONSTRUCTION NOTES, AND REFERENCE DIAGRAMS ATTACHED HERETO HAVE BEEN PREPARED IN ACCORDANCE WITH THE WEST VIRGINIA CODE OF STATE RULES, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS CRS 38-8.

MISS Utility of West Virginia  
 1-800-245-4848  
 West Virginia State Law  
 (Section XIV: Chapter 24-C)  
 Requires that you call two  
 business days before you dig in  
 the state of West Virginia.  
 IT'S THE LAW!!

**SHEET INDEX:**

- COVER SHEET
- NOTES
- LEGEND
- OVERALL PLAN SHEET INDEX
- ACCESS ROAD, WELL PAD, & WATER CONTAINMENT PAD AS-BUILT PLAN
- ACCESS ROAD AS-BUILT PROFILES
- WELL PAD, WATER CONTAINMENT PAD & STOCKPILE AS-BUILT SECTIONS
- STOCKPILE AREA AS-BUILT SECTIONS
- CONSTRUCTION DETAILS

**FURBEE WETLAND IMPACT (SQUARE FEET)**

Wetland and Impact Cause	FW (SF)	Total Impact (SF)	Total Impact (AC)
Wetland 02 (Shrub/A*)	855	855	0.023
Wetland 03 (Sedge)	275	275	0.009

**FURBEE PERMANENT STREAM IMPACT (LINEAR FEET)**

Stream and Impact Cause	Permanently Impacted		Temp. Impacts		Total Temp. Impact (L.F.)
	Culvert / FW (L.F.)	Inlets/Outlets Structures (L.F.)	Cofferdam/SES Controls (L.F.)	Distance To L.O.D. (L.F.)	
Stream 08 (Sedge)	0	0	0	208	208
Stream 10 (Sedge)	0	0	0	27	27
Stream 11 (Sedge)	0	0	0	60	60
Crack 01 (Sedge)	0	0	0	72	72

**FURBEE PERMANENT STREAM IMPACT (SQUARE FEET)**

Stream and Impact Cause	Culvert / FW (L.F.)	Inlets/Outlets Structures (L.F.)	Total Permanent Impact (L.F.)	Cofferdam/SES Controls (L.F.)	Distance To L.O.D. (L.F.)	Total Temp. Impact (L.F.)
Crack 01 (Sedge)	0	0	0	0	72	72

**IMPACTS SHOWN BELOW WERE PERMITTED PREVIOUSLY UNDER THE FURBEE WELL PAD DESIGN**

**FURBEE WETLAND IMPACT (SQUARE FEET)**

Wetland and Impact Cause	FW (SF)	Total Impact (SF)	Total Impact (AC)
Wetland 02 (Shrub/A*)	137	137	0.00
Wetland 03 (Well Pad & Water Containment Pad)	1,869	1,869	0.04

**FURBEE PERMANENT STREAM IMPACT (LINEAR FEET)**

Stream and Impact Cause	Permanently Impacted		Temp. Impacts		Total Temp. Impact (L.F.)
	Culvert / FW (L.F.)	Inlets/Outlets Structures (L.F.)	Cofferdam/SES Controls (L.F.)	Distance To L.O.D. (L.F.)	
Stream 12 (Well Pad & Water Containment Pad)	55	0	0	15	48

**NAVITUS ENERGY ENGINEERING**  
 Telephone: (800) 652-4185 www.NavitusEng.com

REVISION

NO.	DATE	DESCRIPTION
1	04-18-2022	REVISED PER SLIDE

THIS DOCUMENT WAS PREPARED FOR ANTERO RESOURCES CORPORATION

**FURBEE WELL PAD & WATER CONTAINMENT PAD**  
 GREEN DISTRICT  
 WETZEL COUNTY, WEST VIRGINIA



DATE: 04/18/2022  
 SCALE: AS SHOWN  
 SHEET 1 OF 12

RECEIVED  
 Office of Oil and Gas  
 JUN 13 2023  
 Wv Department of Environmental Protection

Stephen Mccoy Digitally signed by Stephen Mccoy Date: 2023.05.11 11:25:11 -0400

07/14/2023