



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, May 4, 2018
WELL WORK PLUGGING PERMIT
Vertical Plugging

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit approval for 2
47-017-00438-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. Please be advised that form WR-38, Affidavit of Plugging and Filling Well, is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

A blue ink signature of James A. Martin, written in a cursive style.

Operator's Well Number: 2
Farm Name: DAVIS, CHRISTOPHER
U.S. WELL NUMBER: 47-017-00438-00-00
Vertical Plugging
Date Issued: 5/4/2018

Promoting a healthy environment.

PERMIT CONDITIONS

West Virginia Code §22-6-11 allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
3. Well work activities shall not constitute a hazard to the safety of persons.

WW-4B
Rev. 2/01

- 1) Date April 12, 2018
- 2) Operator's
Well No. Christopher Davis 2
- 3) API Well No. 47-017 - 00438

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

- 4) Well Type: Oil ___/ Gas X/ Liquid injection ___/ Waste disposal ___/
(If "Gas, Production ___ or Underground storage ___) Deep ___/ ShallowX
- 5) Location: Elevation 898' Watershed Conaway Run Middle Island Creek
District West Union County Doddridge Quadrangle West Union 7.5'
- 6) Well Operator Antero Resources Corporation 7) Designated Agent CT Corporation System - Dianna Stamper
Address 1615 Wynkoop Street Address 5400 D Big Tyler Road
Denver, CO 80202 Charleston, WV 25313
- 8) Oil and Gas Inspector to be notified 9) Plugging Contractor
Name Daniel Flack Name N/A - Antero will plug well
Address 601 57th Street, SE Address _____
Charleston, WV 25304

10) Work Order: The work order for the manner of plugging this well is as follows:

*Please see attached Work Order.

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WV Department of
Environmental Protection

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work order approved by inspector Dan Flack by phone Date May 4, 2018
JMM

Christopher Davis #2
Doddridge County, WV
 API #47-017-00438



Antero Resources
 1615 Wynkoop St.
 Denver, CO 80202
Office: 303.357.7310
Fax: 303.357.7315

Objective: Plug and Abandon Wellbore.

Pipe Schedule:

1. 16" Wood Conductor @ 162'. Cement unknown.
2. 8-5/8" set @ 788'. Cement unknown
3. 4-1/2" set @ 1,947' with estimated TOC @ 1,667' (To Be Confirmed)
 - a. **TOC assuming 7 7/8" hole size**

Elevation: 891'

Oil and Gas Zones:

1. Big Lime: 1,742' - ,1860'; Perf'd from 1,854'-1,855'
2. Big Injun: 1,860' - 1,920'; Perf'd from 1,862-1,862' and 1,870'-1,920'

OK 5/1/2018
 gwm

Procedure:

1. Check and record all casing/annular pressures into Wellview.
2. Coordinate and schedule casing jacks.
3. Notify WVDEP prior to commencing work, for plug witnessing (Harrison County Inspector).
4. Move in and rig up flat tank and frac tank (No pits will be utilized).
5. Move in rig up service unit.
6. NU BOPE and test— check and report surface pressure including bradenhead pressure.
7. Kill well prior to pulling tubing.
8. RU wireline and lubricator.
9. Make gauge ring run to @ 1,947'
10. POOH. Note fluid depth tagged.
11. MIRU logging crew.
12. Load Hole with 6% gel.
13. Run CBL from 1,947' to surface.
14. Locate TOC around 4.5" casing.
15. Discuss results with completions engineers before proceeding.
16. TIH with 2 3/8" tubing to 1,947'.
17. MIRU cement services. Mix and pump 22 sacks for a 240' balanced plug from 1,700'-1,940'. (Class A cement + 2% CaCl₂, 20% excess included; yield =1.18 ft³/sk, WR=5.2 gal/sk)
 - a. Displace to balance plug
 - b. Slowly pull out of cement plug.
 - c. Reverse circulate tubing clear of cement
 - d. WOC and tag TOC @ 1,700'
18. POOH with tubing.
19. Lubricate and RIH W/ CIBP and set @ 1,700'.
20. POOH w/ wireline.
21. Pressure test CIBP to 500 psi
22. RIH wireline and run free point above TOC in 4.5" casing
 - a. Chemical cut at ~1,660' (exact depth to be determined via freepoint and CBL)
 - b. RU casing jacks and POOH – LD 4.5" casing.
23. TIH with 2 3/8" tubing to 1,699 (1' above CIBP)
24. MIRU cement services. Mix and pump 25 sacks for balanced plug from 1,599'-1,699'. (Class A cement + 2% CaCl₂, 20% excess included; yield =1.18 ft³/sk, WR=5.2 gal/sk)
 - a. Displace to balance plug
 - b. Slowly pull out of cement plug.
 - c. Reverse circulate tubing clear of cement
25. Pull up to 888'
26. Mix and pump 75 sacks for balanced plug from 688'-888' (Class A cement + 2% CaCl₂, 20% excess included; yield =1.18 ft³/sk, WR=5.2 gal/sk).
 - a. Displace to balance plug
 - b. Slowly pull out of cement plug.
 - c. Reverse circulate tubing clear of cement
 - d. WOC and tag TOC @ 688'
27. Pull up to 300'
28. Mix and pump 112 sacks from surface-300' (Class A cement + 2% CaCl₂, 20% excess included; yield =1.18 ft³/sk, WR=5.2 gal/sk)

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29. TOOH
30. Wait on cement 8hrs.
31. Weld on a P&A monument that extends thirty inches above the surface with well name and API number. (API No.: 47-017-00438).

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Wellbore Diagram

4/2/2018

Elev.: 891'

Spud: 9/1/1988

16" Wood Conductor Casing
Set @ 162'

300' plug to surface

8 5/8" Surface Casing
Set @ 788'

200' plug (75 sks)
100' below and above
8 5/8" casing

100' plug (25 sks: 1,600-1,700')
around 4.5" casing cut

TOC estimated @1667'
(Assuming 7 7/8" hole)

CIBP set at 1,700'

Plug from 1,700'-1,940'
240' using 22 sks

Big Lime (1,742'-1,860') Perfs:

1,854' - 1,855'

Big Injun (1,860'-1,920') Perforations:

1,861 - 1,862'; 1,870' - 1,920'

4-1/2" Production Casing
Set @ 1,947' w/ 54 sks

TD @ 1,947'

Antero Resources Corporation

Christopher Davis #2

API: 47-017-00438

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STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION 7

Quadrangle West Union

WELL RECORD

Oil or Gas Well Gas
(MIND)

Permit No. DOD-438

Company Ferrell L. Prior
 Address 720 Union Trust Bldg. Parkersburg, W. Va.
 Farm Christopher Davis Acres 82
 Location (waters) _____
 Well No. 2 Elev. 891
 District Grant County Doddridge
 The surface of tract is owned in fee by George Britton Heirs
 Address Wilbur, W. Va.
 Mineral rights are owned by Christopher Davis
 Address West Union, W. Va.
 Drilling commenced 8-5-60
 Drilling completed 8-31-60
 Date Shot _____ From _____ To _____
 With _____
 Open Flow /10ths Water in _____ Inch
 /10ths Merc. in _____ Inch
 Volume 30,000 Cu. Ft.
 Rock Pressure Not Taken lbs. _____ hra.
 Oil _____ bbls., 1st 24 hrs.
 WELL ACIDIZED _____
 WELL FRACTURED 600 bbls. water, 200 sacks of sand
 RESULT AFTER TREATMENT 940,000
 ROCK PRESSURE AFTER TREATMENT 500 lbs.
 Fresh Water None Feet _____ Salt Water None Feet _____

| Casing and Tubing | Used in Drilling | Left in Well | Packers |
|-------------------|------------------|--------------|-------------------|
| Size 16 16' | Wood Conductor | | Kind of Packer |
| 13 | 193' | 162' | Size of |
| 10 9 5/8 | 788' | | Depth set |
| 6 5/8 | | | Perf. top 1854 |
| 5 3/16 | 1947' | 1947' | Perf. bottom 1855 |
| 2 | | | Perf. top 1861 |
| Liners Used | | | Perf. bottom 1862 |
| | | | 1870 |
| | | | 1920 |

CASING CEMENTED 4 1/2 SIZE 1947 No. Ft. 8-25-60 Date
5 1/2 sks. cement - 4 sks. Aquagel - Lawson Cementing
H. E. Co.
 COAL WAS ENCOUNTERED AT None FEET _____ INCHES
 _____ FEET _____ INCHES FEET _____ INCHES
 _____ FEET _____ INCHES FEET _____ INCHES

| Formation | Color | Hard or Soft | Top | Bottom | Oil, Gas or Water | Depth | Remarks |
|--------------|-------|--------------|-----|--------|-------------------|-------|---------|
| Sand | | | 0 | 18 | | | |
| Sand | | | 18 | 35 | | | |
| Shale | | | 35 | 55 | | | |
| Red Rock | | | 55 | 113 | | | |
| Shale | | | 113 | 140 | | | |
| Shale | | | 140 | 170 | | | |
| Red Rock | | | 170 | 175 | | | |
| Red Rock | | | 175 | 193 | | | |
| Sand | | | 193 | 230 | | | |
| Shale | | | 230 | 235 | | | |
| Shale | | | 235 | 280 | | | |
| Sand | | | 280 | 325 | | | |
| Lime | | | 325 | 355 | | | |
| Red Rock | | | 355 | 365 | | | |
| Red Rock | | | 365 | 380 | | | |
| Shale & Lime | | | 380 | 400 | | | |
| Sand | | | 400 | 405 | | | |
| Sand | | | 405 | 454 | | | |
| Sand | | | 454 | 460 | | | |
| Red Rock | | | 460 | 468 | | | |
| Shale | | | 468 | 510 | | | |
| Shale | | | 510 | 515 | | | |
| Lime | | | 515 | 535 | | | |
| Lime | | | 535 | 540 | | | |
| Shale | | | 540 | 545 | | | |
| Shale | | | 545 | 555 | | | |
| Lime | | | 555 | 565 | | | |
| Shale | | | 565 | 575 | | | |
| Lime | | | 575 | 590 | | | |
| Lime | | | 590 | 610 | | | |

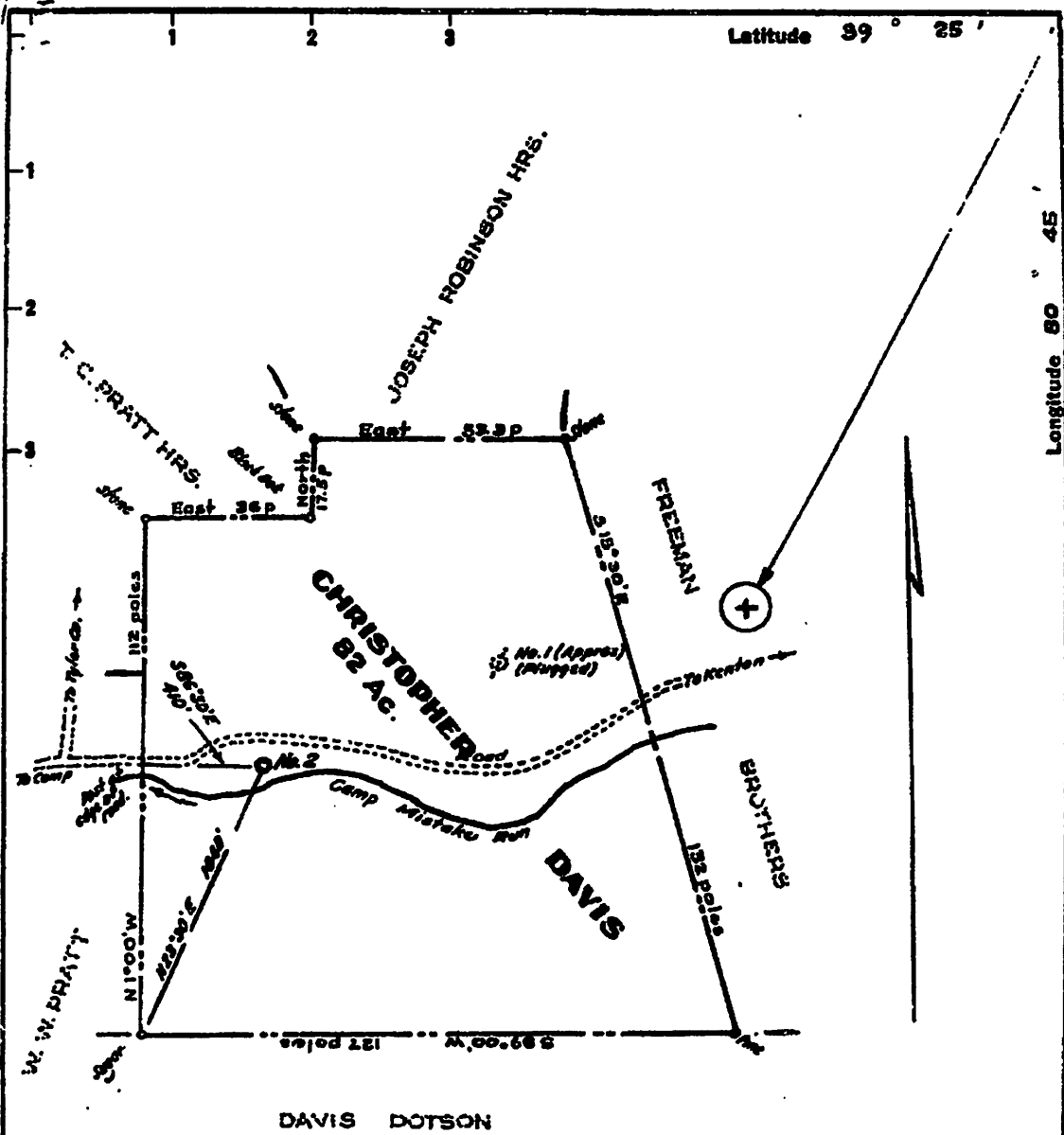
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| Formation | Color | Hard or Soft | Top | Bottom | Oil, Gas or Water | Depth Found | Remarks |
|----------------|-------|--------------|------|--------|-------------------|-------------|---------|
| Shale & Shells | | | 610 | 620 | | | |
| Shale | | | 620 | 655 | | | |
| Sand | | | 655 | 675 | | | |
| Red Rock | | | 675 | 697 | | | |
| Red Rock | | | 697 | 735 | | | |
| Red Rock | | | 735 | 768 | | | |
| Shale | | | 768 | 788 | | | |
| Shale & Slate | | | 788 | 805 | | | |
| Slate & Shells | | | 805 | 825 | | | |
| Slate & Shells | | | 825 | 857 | | | |
| Red Rock | | | 857 | 870 | | | |
| Lime | | | 870 | 890 | | | |
| Shale & Shells | | | 890 | 900 | | | |
| Shale & Lime | | | 900 | 930 | | | |
| Shale & Lime | | | 930 | 955 | | | |
| Shale & Lime | | | 955 | 995 | | | |
| Shale & Shells | | | 995 | 1010 | | | |
| Sand | | | 1010 | 1030 | | | |
| Sand | | | 1030 | 1050 | | | |
| Slate & Shells | | | 1050 | 1065 | | | |
| Sand & Lime | | | 1065 | 1090 | | | |
| Sand & Lime | | | 1090 | 1100 | | | |
| Lime & Shale | | | 1100 | 1150 | | | |
| Shale & Shells | | | 1150 | 1198 | | | |
| Slate & Shells | | | 1198 | 1225 | | | |
| Slate & Shells | | | 1225 | 1253 | | | |
| Lime | | | 1253 | 1265 | | | |
| Shale | | | 1265 | 1280 | | | |
| Shale | | | 1280 | 1302 | | | |
| Sand | | | 1302 | 1305 | | | |
| Sand | | | 1305 | 1335 | | | |
| Sand | | | 1335 | 1373 | | | |
| Sand | | | 1373 | 1382 | | | |
| Sand | | | 1382 | 1395 | | | |
| Shale | | | 1395 | 1405 | | | |
| Sand | | | 1405 | 1415 | | | |
| Sand | | | 1415 | 1425 | | | |
| Shale | | | 1425 | 1450 | | | |
| Lime | | | 1450 | 1530 | | | |
| Shale | | | 1530 | 1537 | | | |
| Lime | | | 1537 | 1590 | | | |
| Sand | | | 1590 | 1610 | | | |
| Lime | | | 1610 | 1630 | | | |
| Lime & Shale | | | 1630 | 1653 | | | |
| Lime | | | 1653 | 1678 | | | |
| Red Rock | | | 1678 | 1690 | | | |
| Red Rock | | | 1690 | 1710 | | | |
| Shale & Lime | | | 1710 | 1725 | | | |
| Shale & Shells | | | 1725 | 1742 | | | |
| Lime | | | 1742 | 1755 | | | |
| Lime | | | 1755 | 1772 | | | |
| Lime | | | 1772 | 1795 | | | |
| Lime | | | 1795 | 1825 | | | |
| Lime | | | 1825 | 1860 | Gas | 1855 | |
| Sand | | | 1860 | 1882 | | | |
| Sand | | | 1882 | 1888 | | | |
| Sand | | | 1888 | 1900 | | | |
| Sand | | | 1900 | 1920 | Gas | 1915 | |
| Sand & Shales | | | 1920 | 1930 | | | |
| T D | | | 1947 | | | | |

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Date _____
APPROVED _____
By _____ Title _____



New Location
 Drill Deeper
 Abandonment

No coal
 Surface is owned by the Geo. Britton Hrs.,
 Mrs. Lummie Britton, Wilbur, W.Va.

Company FERRILL L. BRIDG
 Address 100 Union Trust Bldg., Parkersburg, W.Va.
 Farm Christopher Davis
 Tract _____ Acres 82 Lease No. _____
 Well (Farm) No. Two Serial No. _____
 Elevation (Spirit Level) 891
 Quadrangle West Union EC
 County Doddridge District West Union
 Engineer W. H. [Signature]
 Engineer's Registration No. 1227
 File No. _____ Drawing No. _____
 Date July 1960 Scale 1" = 20 poles

STATE OF WEST VIRGINIA
 DEPARTMENT OF MINES
 OIL AND GAS DIVISION
 CHARLESTON

WELL LOCATION MAP
 FILE NO. DOD-488

+ Denotes location of well on United States Topographic Maps, scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown.
 - Denotes one inch spaces on border line of original tracing.

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WV Department of Environmental Protection

17-00438 P

WW-4A
Revised 6-07

1) Date: April 12, 2018
2) Operator's Well Number
Christopher Davis 2

3) API Well No.: 47 - 017 - 00438

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION TO PLUG AND ABANDON A WELL

| | |
|---|---|
| 4) Surface Owner(s) to be served: | 5) (a) Coal Operator |
| (a) Name <u>Charles C Hittel III</u> | Name <u>NO DECLARATIONS ON RECORD WITH COUNTY</u> |
| Address <u>116 Michael Ave</u> | Address _____ |
| <u>Linthicum, MD 21090</u> | _____ |
| (b) Name _____ | (b) Coal Owner(s) with Declaration |
| Address _____ | Name <u>NO DECLARATIONS ON RECORD WITH COUNTY</u> |
| _____ | Address _____ |
| (c) Name <u>*All other surface owners with existing access road</u> | Name _____ |
| Address <u>disturbance are off-lease and not required to be notified.</u> | Address _____ |
| _____ | _____ |
| 6) Inspector <u>Daniel Flack</u> | (c) Coal Lessee with Declaration |
| Address <u>601 57th Street SE</u> | Name <u>NO DECLARATIONS ON RECORD WITH COUNTY</u> |
| <u>Charleston, WV 25304</u> | Address _____ |
| Telephone <u>304-389-7583</u> | _____ |

TO THE PERSONS NAMED ABOVE: You should have received this Form and the following documents:

- (1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
- (2) The plat (surveyor's map) showing the well location on Form WW-6.

The reason you received these documents is that you have rights regarding the application which are summarized in the instructions on the reverses side. However, you are not required to take any action at all.

Take notice that under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Department of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of this Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Chief.

| | |
|---------------------------------|---|
| RECEIVED | Well Operator <u>Antero Resources Corporation</u> |
| Office of Oil and Gas | By: <u>Kevin Kilstrom</u> |
| MAY 04 2018 | Its: <u>Sr Vice President of Production</u> |
| WV Department of | Address <u>1615 Wynkoop Street</u> |
| Environmental Protection | <u>Denver, CO 80202</u> |
| | Telephone <u>303-357-7310</u> |

Subscribed and sworn before me this 4th day of May

My Commission Expires 03/13/2022

Oil and Gas Privacy Notice

| |
|--------------------------------------|
| Notary Public |
| MEGAN GRIFFITH |
| NOTARY PUBLIC |
| STATE OF COLORADO |
| NOTARY ID 20184011666 |
| MY COMMISSION EXPIRES MARCH 13, 2022 |

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

SURFACE OWNER WAIVER

Operator's Well
Number

Christopher Davis 2

INSTRUCTIONS TO SURFACE OWNERS NAMED ON PAGE WW4-A

The well operator named on page WW-4A is applying for a permit from the State to plug and abandon a well. (Note: If the surface tract is owned by more than three persons, then these materials were served on you because your name appeared on the Sheriff's tax ticket on the land or because you actually occupy the surface tract. In either case, you may be the only owner who will actually receive these materials.) See Chapter 22 of the West Virginia Code. Well work permits are valid for 24 months. If you do not own any interest in the surface tract, please forward these materials to the true owner immediately if you know who it is. Also, please notify the well operator and the Office of Oil and Gas.

**NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.
WHERE TO FILE COMMENTS AND OBTAIN ADDITIONAL INFORMATION:**

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

Time Limits and methods for filing comments. The law requires these materials to be served on or before the date the operator files his Application. You have **FIVE (5) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Comments must be in writing. Your comments must include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

The Chief has the power to deny or condition a well work permit based on comments on the following grounds:

- 1) The proposed well work will constitute a hazard to the safety of persons.
- 2) The soil erosion and sediment control plan is not adequate or effective;
- 3) Damage would occur to publicly owned lands or resources;
- 4) The proposed well work fails to protect fresh water sources or supplies;
- 5) The applicant has committed a substantial violation of a previous permit or a substantial violation of one or more of the rules promulgated under Chapter 22, and has failed to abate or seek review of the violation...".

If you want a copy of the permit as it is issued or a copy of the order denying the permit, you should request a copy from the Chief.

VOLUNTARY STATEMENT OF NO OBJECTION

I hereby state that I have read the instructions to surface owners and that I have received copies of a Notice and Application For A Permit To Plug And Abandon on Forms WW-4A and WW-4B, and a survey plat.

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

FOR EXECUTION BY A NATURAL PERSON
ETC.

FOR EXECUTION BY A CORPORATION,

Chris Davis

Date 4-17-18

Name

Signature

By

objections addressed

Its

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Office of Oil and Gas

APR 24 2018 Date

Signature

WV Department of Date
Environmental Protection

WW-9
(5/16)

API Number 47 - 017 - 0438
Operator's Well No. Christopher Davis 2

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Antero Resources Corporation OP Code 494507062
Watershed (HUC 10) Conaway Run Middle Creek Quadrangle West Union 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: _____

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application (if selected provide a completed form WW-9-GPP)
- Underground Injection (UIC Permit Number *UIC Permit # will be provided on Form WR-34)
- Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34)
- Off Site Disposal (Supply form WW-9 for disposal location) (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain Northwestern Landfill Permit #SWF-1025/WV0109410)

Will closed loop system be used? If so, describe: Yes, fluids stored in tanks, cuttings removed off site and taken to landfill.

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc.

-If oil based, what type? Synthetic, petroleum, etc.

Additives to be used in drilling medium? _____

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc.

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) _____

-Landfill or offsite name/permit number? _____

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on April 1, 2016, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

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Office of Oil and Gas

Company Official Signature Gretchen Kohler

Company Official (Typed Name) Gretchen Kohler

Company Official Title Senior Environmental & Regulatory Manager

MAY 04 2018

WV Department of
Environmental Protection

Subscribed and sworn before me this 1st day of MAY, 20 18

My commission expires 03/13/22

Notary Public
MEGAN GRIFFITH
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20184011666
MY COMMISSION EXPIRES MARCH 13, 2022

Proposed Revegetation Treatment: Acres Disturbed 0.89 Prevegetation pH _____

Lime 2-3 Tons/acre or to correct to pH 6.5

Fertilizer type _____

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Seed Mixtures

Temporary

Permanent

| Seed Type | lbs/acre |
|------------------|----------|
| Annual Ryegrass | 40 |
| Field Bromegrass | 40 |

| Seed Type | lbs/acre |
|-------------|----------|
| Crownvetch | 10-15 |
| Tall Fescue | 30 |

Please reference Table IV-3 on page 5 of the Christopher Davis 2 Well Plugging Plan

Please reference Table IV-4A on page 5 of the Christopher Davis 2 Well Plugging Plan

***or type of grass seed requested by surface owner**

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, provide water volume, include dimensions (L, W, D) of the pit, and dimensions (L, W), and area in acres, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: _____

Comments: _____

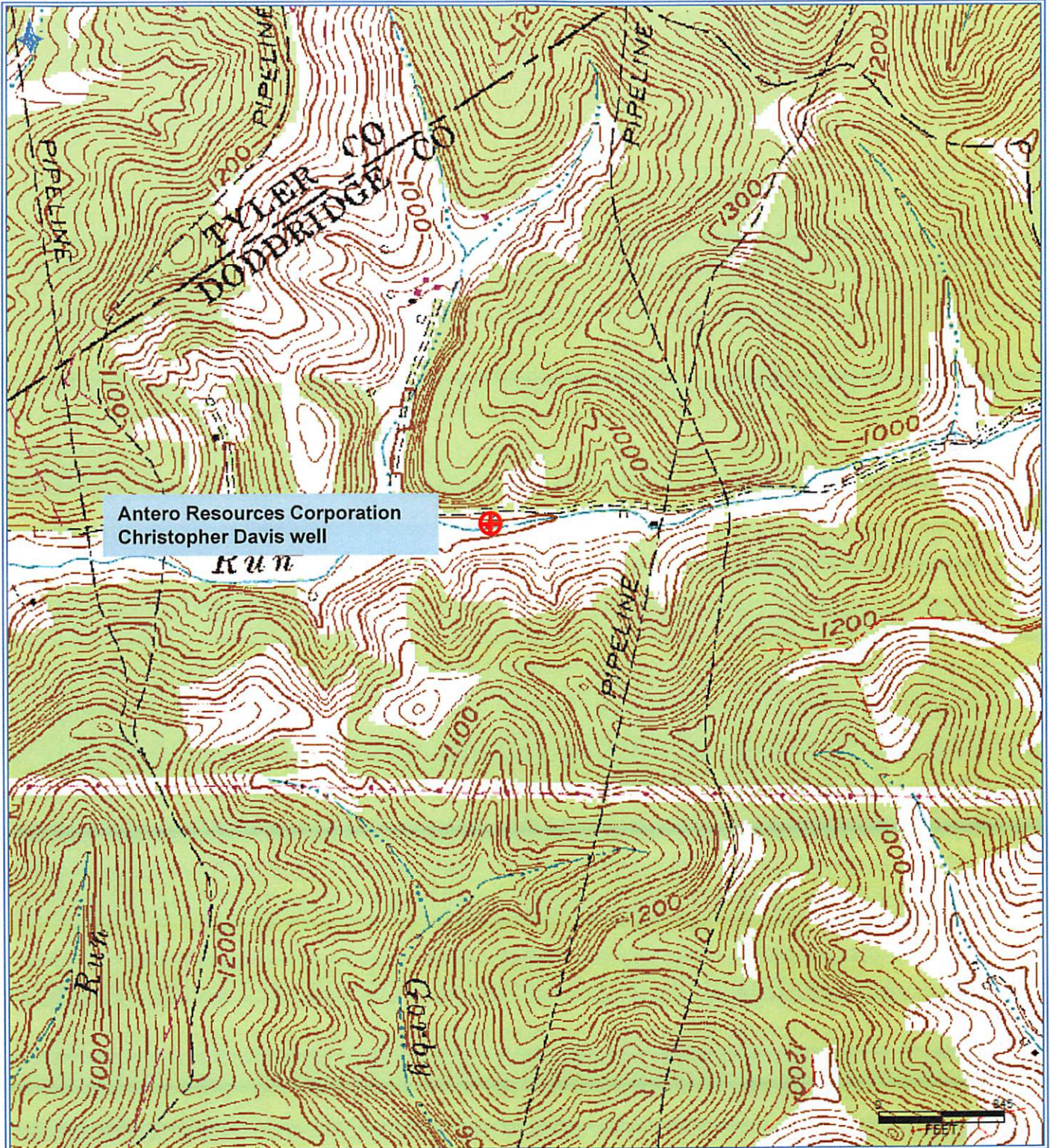
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Office of Oil and Gas

MAY 04 2004

WV Department of Environmental Protection

Title: _____ Date: _____

Field Reviewed? () Yes () No



Antero Resources Corporation
 Christopher Davis well

Antero Resources Corporation
 Appalachian Basin
 Christopher Davis well
 Doddridge County

Quadrangle: West Union
 Watershed: Middle Island Creek
 District: West Union
 Date: 4-12-2018

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 Environmental Protection

WW-7
8-30-06



West Virginia Department of Environmental Protection
Office of Oil and Gas

WELL LOCATION FORM: GPS

API: 47-017-00438 WELL NO.: 2

FARM NAME: Christopher Davis

RESPONSIBLE PARTY NAME: Antero Resources Corporation

COUNTY: Doddridge DISTRICT: West Union

QUADRANGLE: West Union

SURFACE OWNER: Charles C Hittel III

ROYALTY OWNER: S&R Gas Ventures, Ltd.

UTM GPS NORTHING: 4356258.98 m

UTM GPS EASTING: 518054.92 m GPS ELEVATION: 898'

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit or assigned API number on the above well. The Office of Oil and Gas will not accept GPS coordinates that do not meet the following requirements:

1. Datum: NAD 1983, Zone: 17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) – meters.
2. Accuracy to Datum – 3.05 meters
3. Data Collection Method:

Survey grade GPS : Post Processed Differential _____
Real-Time Differential

Mapping Grade GPS : Post Processed Differential _____
Real-Time Differential

4. **Letter size copy of the topography map showing the well location.**

I the undersigned, hereby certify this data is correct to the best of my knowledge and belief and shows all the information required by law and the regulations issued and prescribed by the Office of Oil and Gas.

Mary Sita
Signature

Permitting Supervisor
Title

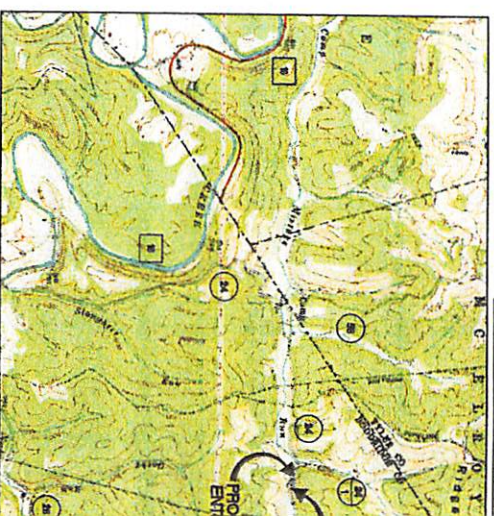
5/1/18
Date

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WV Department of
Environmental Protection

API#47-017
CHRISTOPHER
WELL PLUGGIN'
 WEST UNION DISTRICT, DODDRIDGE
 CONAWAY RUN-MIDDLE ISLAND
 USGS 7.5 WEST UNION



WEST VIRGINIA COUNTY MAP



(NOT TO SCALE)

LOCATION COORDINATES:

ACCESS ROAD ENTRANCE
 LATITUDE: 39.555748 LONGITUDE: -80.790946 (NAD 83)
 N 4362673.74 E 51798921 (UTM ZONE 17 METERS)
 CENTER OF PAD
 LATITUDE: 39.555585 LONGITUDE: -80.790967 (NAD 83)
 N 4362626.30 E 518035.41 (UTM ZONE 17 METERS)

GENERAL DESCRIPTION:

THE EXISTING ACCESS ROAD AND WELL PAD ARE BEING UPGRADED TO AID IN THE PLUGGING OF EXISTING INDIVIDUAL GAS WELLS.

FLOODPLAIN NOTES:

THE PROPOSED SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #64017C010C.

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:

THE PROPOSED CONSTRUCTION WILL OBTAIN AN ENGAGEMENT PERMIT (FORM DA-4100) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES, IF REQUIRED.

GEOTECHNICAL NOTES:

NO SOIL STUDIES OR SUBSURFACE INVESTIGATIONS WERE PERFORMED AND ANALYZED FOR THE DESIGN OF THIS SITE.

ENVIRONMENTAL NOTES:

FIELD SURVEYS WERE PERFORMED IN FEBRUARY 2018 BY GAI CONSULTANTS TO IDENTIFY SENSITIVE AREAS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGION. A REVIEW OF THE SITE FOR WATERS AND WETLANDS THAT ARE MOST LIKELY WITHIN THE REGION OF THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND/OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVED) THE MARCH 1, 2018 STREAM AND WETLAND DELINEATION INDEX MAP WAS PREPARED BY GAI CONSULTANTS 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 WVED.

PROJECT CONTACTS:

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

ENGINEER/SUPERVISOR:
 NAVIGUS ENGINEERING, INC.
 CHRIS S. KUDR, PE - PROJECT
 MANAGER/ENGINEER
 OFFICE: (989) 682-4185 CELL: (540) 688-6747

ENVIRONMENTAL GAI CONSULTANTS, INC.
 JASON A. COOK - SENIOR ENVIRONMENTAL SPECIALIST
 OFFICE: (304) 928-8100 CELL: (903) 709-3306

ELI WAGNER - ENVIRONMENTAL ENGINEER
 OFFICE: (304) 842-4068 CELL: (304) 476-9770

JON McEVERS - OPERATIONS SUPERINTENDENT
 OFFICE: (303) 551-9799 CELL: (303) 808-2423

AARON KUNZLER - CONSTRUCTION SUPERVISOR
 CELL: (406) 227-8344

ROBERT B. WIRMS - FIELD ENGINEER
 OFFICE: (304) 842-4100 CELL: (304) 627-7405

CHARLES E. COLPITON, III - SURVEYING COORDINATOR
 CELL: (304) 719-6446

TIM BAUNS - LAND AGENT
 OFFICE: (304) 842-4290 CELL: (406) 641-9336

REPRODUCTION NOTE

THESE PLANS WERE CREATED TO BE PLOTTED ON 27304" (ANSI D) PAPER. HALF SCALE DRAWINGS ARE ON 11310" (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.

MISS Utility of West V
 1-800-245-4846
 West Virginia State
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 the state of West Vir
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00438
DAVIS 2
3 PLAN

AD MAP
UNTY, WEST VIRGINIA
EEK WATERSHED

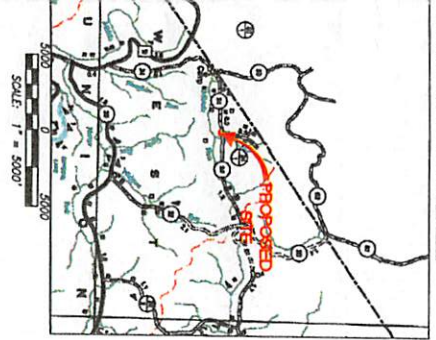


WEST VIRGINIA STATE PLANE COORDINATE SYSTEM
NORTH ZONE, NAD83
ELEVATION BASED ON NAVD86
ESTABLISHED BY SURVEY GRADE GPS & OPUS
POST-PROCESSING

- SHEET INDEX:
- 1 - COVER SHEET
 - 2 - CONSTRUCTION AND EAS CONTROL NOTES
 - 3 - LEGEND
 - 4 - ACCESS ROAD & WELL PAD PLAN
 - 5 - CONSTRUCTION DETAILS

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Environmental Protection




WVDOH COUNTY ROAD MAP



| Proprietary | WV NORTH | WV NORTH | UTM (EASTING) | WGS 1984 UTM ZONE |
|------------------|-------------|-------------|---------------|-------------------|
| North Coordinate | N 31815.79 | N 31420.89 | N 425000.00 | 18Q UTM ZONE |
| East Coordinate | E 103202.00 | E 103203.00 | E 31000.00 | 18Q UTM ZONE |
| UTM Projection | UTM | | | |

| APPROXIMATE TOTAL ACRES OF DISTURBED AREA | |
|---|------|
| Total Area of Disturbance | 0.89 |
| Total Wooded Acres Disturbed | 0.22 |

Initial
- (C)
WFO
ing in
la.

|  <p>DATE: 03/02/2018 SCALE: AS SHOWN SHEET 1 OF 5</p> | <p>COVER SHEET</p> <p>API#47-017-00438</p> <p>CHRISTOPHER DAVIS 2</p> <p>WEST UNION DISTRICT DODDRIDGE COUNTY, WEST VIRGINIA</p> |  <p>THIS DOCUMENT IS THE PROPERTY OF ANTERO RESOURCES CORPORATION</p> | <table border="1"> <thead> <tr> <th>DATE</th> <th>REVISION</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> | DATE | REVISION | | | | | | | | | | |  <p>Telephone: (888) 662-4185 www.NavitusEng.com</p> |
|--|--|--|--|------|----------|--|--|--|--|--|--|--|--|--|--|---|
| DATE | REVISION | | | | | | | | | | | | | | | |
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CONSTRUCTION AND ERS

CONSTRUCTION NOTES:

1. THE CONTRACTOR IS TO VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION AND TAKE NECESSARY MEASURES TO CORRECT FIELD CONDITIONS AND THE APPROVED PLAN. ANY WORK PERFORMED BY THE CONTRACTOR AFTER THE FILING OF SUCH DISCREPANCIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
2. METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS HEREON SHALL CONFORM TO THE CURRENT COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS AND/OR CURRENT VPI DESIGN AND SECTOR STANDARD EAST COUNTY SPECIFICATIONS FOR ROADWAY CONSTRUCTION, AND SHALL BE SUBJECT TO CONSULT BETWEEN THE DESIGN, SPECIFICATIONS, AND PLANS GROUP, THE DISTRICT ENGINEER, SUPERVISOR WILL APPLY THE APPROVAL OF THESE PLANS IN NO WAY RELIEVE THE DESIGN AND SECTOR CONTROL DIST 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 AND FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS, AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO KEEP STREETS AND SIDEWALKS CLEAN AND MAINTAINED IN A CLEAN AND DUST FREE CONDITION AT ALL TIMES.
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 VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO ANY EXCAVATION AND THE PROPOSED CONSTRUCTION.
6. THE CONTRACTOR SHALL PROVIDE NOTIFICATION TO THE APPROPRIATE UTILITY COMPANY PRIOR TO CONSTRUCTION OF WATER AND/OR GAS PIPELINES. NOTIFICATION SHOULD ALSO BE OBTAINED FROM THE APPROPRIATE AUTHORITY CONCERNING POTENTIAL CUT SECTIONS AND CONNECTIONS TO EXISTING LINES.
7. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGES TO THE EXISTING STREET AND UTILITIES WHICH OCCURS AS A RESULT OF HIS CONSTRUCTION PROJECT WHICH OR OTHERWISE WITH THE DESIGN RIGHT-OF-WAY.
8. WHEN GRADING IS PROPOSED WITHIN BOUNDARIES OF UTILITIES, LETTERS OF PERMISSION FROM ALL INVOLVED COMPANIES MUST BE OBTAINED PRIOR TO GRADING ANY/ON THE BOUNDARIES.
9. THE DEVELOPER WILL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITIES WHICH ARE NOT SHOWN ON THESE PLANS. THE RELATIONSHIP SHOULD BE DONE PRIOR TO CONSTRUCTION.
10. THESE PLANS INDICATE THE LOCATION OF ALL BERRY CEMENTERS, CHALKERS AND THE ENERGY GALVANIZERS ARE INDICATED DURING CONSTRUCTION. THE OTHERS AND BOUNDARIES MUST BE NOTICED IMMEDIATELY.
11. THE CONTRACTOR(S) SHALL NOTIFY OPERATIONS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATING OR BURNING AT LEAST TWO WEEKS PRIOR TO EXCAVATION OR DEMOLITION. (C) THROUGH DATA, FROM TO CONTRACTOR(S) OF EXCAVATION OR DEMOLITION.
12. CONTRACTOR TO CONTACT OPERATOR AND ENGINEER IF GROUNDBREAKER IS ENCOUNTERED DURING CONSTRUCTION.
13. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE CONTRACTOR, SECTOR CONTROL INSPECTOR & BAYD FROM TO THE START OF CONSTRUCTION.
14. THE CONTRACTOR IS RESPONSIBLE FOR ALL THE UTILITY BOUNDARIES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES SHOWN ON THESE PLANS.
15. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION THE SITE IN ACCORDANCE WITH THE DESIGN PLANS AND CONSTRUCTION DOCUMENTS AND THE SCOPE OF WORK SHALL CONFORM WITH THE GRADER, BERRY, DEPURA, HINDSONSON, ETC. SHOWN HEREON.
16. STYPER SALT PENCE CAN BE USED IN PLACE OF ANY CONTACT FLARES SALT.
17. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS, INCLUDING THE 1970 OSHA ACT REGULATIONS FOR THE PROTECTION OF PERSONS, INCLUDING EMPLOYEES AND CONTRACTORS, AND SUPERVISORS OF ALL SAFETY REGULATIONS, REGULATIONS, AND PROGRAMS IN CONNECTION WITH THE WORK, INCLUDING ALL REQUIREMENTS FOR OSHA, SHALL ALSO BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. CONSTRUCTION ACTIVITIES SHALL BE RESTRICTED TO THE AREAS SHOWN ON THE PLANS WITHIN THE LIMITS OF DISTURBANCE, UNLESS OTHERWISE AUTHORIZED BY THE DISTRICT ENGINEER. ALL ACTIVITIES PERFORMED OUTSIDE OF THE LIMITS OF DISTURBANCE MAY BE FOR ANY ACTIVITIES PERFORMED OUTSIDE OF THE LIMITS OF DISTURBANCE.
19. PREPARATION OF BOUNDARIES, PROPERTY CORNERS, BOUNDARY MARKS, CHALKERS AND LOCAL SAFETY REGULATIONS, INCLUDING THE 1970 OSHA ACT REGULATIONS FOR THE PROTECTION OF PERSONS, INCLUDING EMPLOYEES AND CONTRACTORS, AND SUPERVISORS OF ALL SAFETY REGULATIONS, REGULATIONS, AND PROGRAMS IN CONNECTION WITH THE WORK, INCLUDING ALL REQUIREMENTS FOR OSHA, SHALL ALSO BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
20. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS FROM ALL ELECTRICAL LINES, UTILITY LINES, AND BOUNDARIES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS FROM ALL ELECTRICAL LINES, UTILITY LINES, AND BOUNDARIES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS FROM ALL ELECTRICAL LINES, UTILITY LINES, AND BOUNDARIES SHOWN ON THESE PLANS.
21. THE CONTRACTOR SHALL MAINTAIN ALL CHALKERS AND DISTURBANCES TO THE PROPERTY. ANY CHALKING SHALL BE DONE IN ACCORDANCE WITH THE DESIGN PLANS AND THE SCOPE OF WORK. ANY CHALKING SHALL BE DONE IN ACCORDANCE WITH THE DESIGN PLANS AND THE SCOPE OF WORK.
22. ANY DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVIGIS ENGINEERING, INC. ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVIGIS ENGINEERING, INC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVIGIS ENGINEERING, INC.
23. ANY CONSTRUCTION ISSUES OR QUESTIONS SHALL BE SUBJECT TO THE ENGINEER DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVIGIS ENGINEERING, INC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVIGIS ENGINEERING, INC.
24. ALL EXISTING AND DESIGNED CURBWAYS AND CURBWAYS SHALL BE CLEANED AND MAINTAINED AS NECESSARY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVIGIS ENGINEERING, INC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVIGIS ENGINEERING, INC.

EROSION AND SEDIMENT CONTROL NARRATIVE:

- PROJECT DESCRIPTION: THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT A GAS TRAIL PAVEMENT PAD AND IMPROVEMENTS TO THE EXISTING GAS TRAIL PAVEMENT PAD. THE PROJECT IS LOCATED ON THE SOUTH SIDE OF COUNTY ROUTE 24, 0.10 MILES EAST OF THE INTERSECTION OF COUNTY ROUTE 24 & COUNTY ROUTE 34/1 IN DOUGHERTY COUNTY, WEST VIRGINIA. THE TOTAL APPLICABLE LAND DISTURBANCE ASSOCIATED WITH THIS PROJECT IS 0.88 ACRES.
- EXISTING SITE CONDITIONS: THE EXISTING SITE IS APPROXIMATELY 84% WOODED. THE PROPOSED BAYD PAD WOULD BE LOCATED ON THE SOUTH SIDE OF COUNTY ROUTE 24 TO THE NORTH AND VACANT WOODED AREAS WOULD BE THE WEST, EAST AND SOUTH.
- GENERAL AREAS: THE AREAS SHOWN ALONG THE FIELD DISTURBED STREAKS, TERRACES, AND POINTS, AS SHOWN ON THESE PLANS, SHALL BE CONSIDERED CRITICAL EROSION AREAS. THESE AREAS SHALL BE PROTECTED BY CONSTRUCTION AND MAINTAINED DURING CONSTRUCTION AND AFTER EACH INTERVAL OF 24 HOURS OR GREATER. CONCEPT FILTER SOCKS ARE TO BE USED TO PROTECT THESE FIELD DISTURBED AREAS FROM EROSION AND MAINTAINED DURING CONSTRUCTION AND AFTER EACH INTERVAL OF 24 HOURS OR GREATER. ABOVE/LANDSIDE THESE AREAS, TO SERVE AS A PHYSICAL BARRIER, ENSURING THE AREAS ARE NOT DISTURBED. THE LOCAL GOVERNMENT AUTHORITY WILL HAVE THE AUTHORITY TO RECONSTRUCT THE PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES IN THESE AREAS IF NECESSARY.
- DESIGN AND CONSTRUCTION: THE DESIGN AND CONSTRUCTION SHALL BE SUBJECT TO THE PLACEMENT OF ADDITIONAL EROSION CONTROL MEASURES IN THESE AREAS IF NECESSARY.
1. INITIAL CONCEPT FILTER SOCKS AS SHOWN ON THE PLANS TO REMOVE SEDIMENT FROM RUNOFF.
2. INITIAL CONCEPT FILTER SOCKS AS SHOWN ON THE PLANS TO REMOVE SEDIMENT FROM RUNOFF.
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23. INITIAL CONCEPT FILTER SOCKS AS SHOWN ON THE PLANS TO REMOVE SEDIMENT FROM RUNOFF.
24. INITIAL CONCEPT FILTER SOCKS AS SHOWN ON THE PLANS TO REMOVE SEDIMENT FROM RUNOFF.

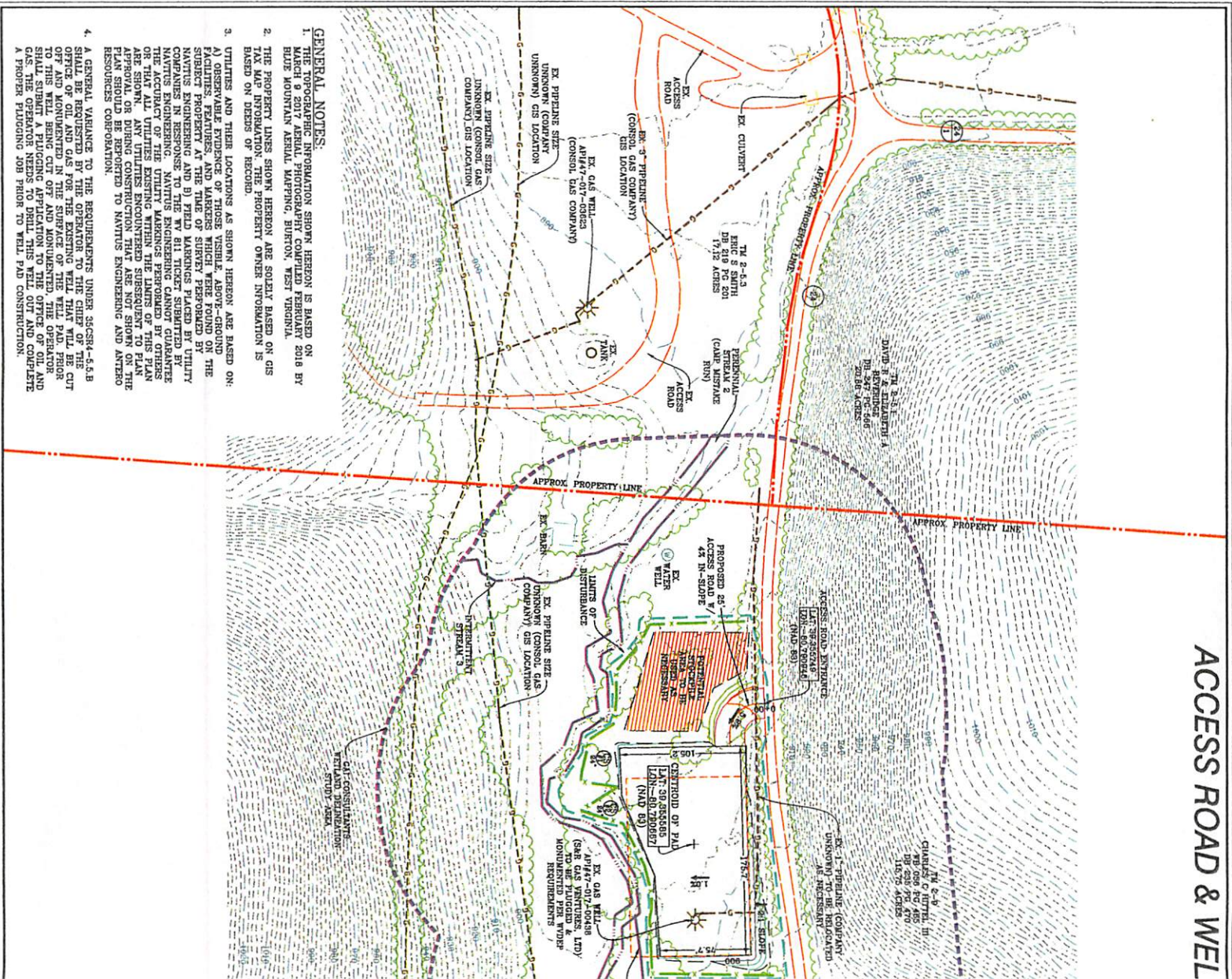
NOTE: THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVIGIS ENGINEERING, INC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL DIGITAL FILES PROVIDED TO THE CONTRACTOR BY NAVIGIS ENGINEERING, INC.

LEGEND

| EX. INDEX CONTOUR & CONTOUR LABEL | PR. INDEX CONTOUR |
|---|---------------------------|
| EX. INTERMEDIATE CONTOUR | PR. INTERMEDIATE |
| EX. PROPERTY LINE | PR. INTERMEDIATE |
| EX. EDGE OF GRAVEL/DIRT | PR. INDEX ROAD |
| EX. EDGE OF PAVEMENT | PR. INTERMEDIATE |
| EX. ROAD CENTERLINE | PR. PADS/STOCK |
| EX. EDGE OF CONCRETS | PR. LIMITS OF DISTURBANCE |
| EX. GUARDRAIL | PR. ROAD/INPOUR |
| EX. BRIDGE | PR. GUARDRAIL |
| EX. DITCHLINE/DRAINAGE FEATURE | PR. GUARDRAIL |
| EX. RIP-RAP | PR. ROCK CONST. |
| EX. CULVERT | PR. AIR BRIDGE |
| EX. FENCELINE | PR. CULVERT |
| EX. BUILDING | PR. DITCH |
| EX. UNCELLANEOUS FEATURE | PR. RIP-RAP FILL |
| EX. 100-YR FEMA FLOODPLAIN | PR. OUTLET PROOT |
| EX. DEGRADED STREAM | PR. DIVERSION |
| EX. DEGRADED WETLAND/POUD | PR. ROCK FILTER |
| 100' WETLAND/STREAM BUFFER | PR. COMPOST FILTER |
| STREAM/WETLAND DEMARCATION STUDY AREA | PR. SUPER SILT |
| EX. FENCELINE/PERMETER SAFETY FENCE | PR. STRAW MATTE |
| EX. GATE | PR. WELL HEAD |
| EX. ACCESS GATE WITH EMERGENCY LIFELINE | PR. PAD DEVIATION |
| EX. WELL HEAD ON DESIGNED PAD | PR. TOP OF PAD |
| EX. GAS WELL | PR. 250' X 350' |
| EX. PIPELINE R/W | PR. SPOT SHOT |
| EX. PIPELINE R/W | PR. PERMETER S. |
| EX. PIPELINE METER | PR. ACCESS GATE |
| EX. PIPELINE VALVE | PR. PIPELINE |
| EX. PIT | PR. PIPELINE R/W |
| EX. POWER POLE/GUY WIRE | PR. OVERHEAD UT |
| EX. OVERHEAD UTILITY | PR. POWER POLE/ |
| EX. UNDERGROUND ELECTRIC | PR. OVERHEAD UT |
| EX. UNDERGROUND TELEPHONE | PR. TELEPHONE L |
| EX. UNDERGROUND FIBER OPTIC | PR. WATERLINE |
| EX. UTILITY R/W | PR. RIGHT-OF-WAY |
| EX. WATERLINE | PR. PERMANENT D |
| EX. SANITARY LINE | PR. TEMPORARY C |
| EX. WATER WELL/EX. SPRING | BORING LOCATION |
| EX. COMPOST SOCK | X-SECTION/PROFIT |
| EX. SUPER SILT FENCE | X-SECTION/PROFIT |
| EX. SILT FENCE | X-SECTION/PROFIT |
| EX. STRAW MATTE | X-SECTION/PROFIT |
| EX. RIGHT-OF-WAY | X-SECTION/PROFIT |
| MATCHLINE | X-SECTION/PROFIT |

LEGEND

ACCESS ROAD & WELL



GENERAL NOTES:

1. THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON MARCH 9 2017 AERIAL PHOTOGRAPHY COMPILED FEBRUARY 2018 BY BLUE MOUNTAIN AERIAL MAPPING, BURTON, WEST VIRGINIA.
2. THE PROPERTY LINES SHOWN HEREON ARE SOLELY BASED ON GIS BASED ON DEEDS OF RECORD.
3. UTILITIES AND THEIR LOCATIONS AS SHOWN HEREON ARE BASED ON:
 - A) VISUAL INSPECTION OF THOSE VISIBLE ABOVE-GROUND FACILITIES, FEATURES, AND MARKERS WHICH WERE FOUND ON THE SUBJECT PROPERTY AT THE TIME OF SURVEY PERFORMED BY NAVIUS ENGINEERING AND B) FIELD MARKERS PLACED BY UTILITY COMPANIES IN RESPONSE TO THE IN-RIT TICKET SUBMITTED BY NAVIUS ENGINEERING AND C) FIELD MARKERS PLACED BY NAVIUS ENGINEERING IN RESPONSE TO THE IN-RIT TICKET SUBMITTED BY NAVIUS ENGINEERING. NAVIUS ENGINEERING DOES NOT GUARANTEE THE ACCURACY OF THE UTILITY MARKERS PERFORMED BY OTHERS OR THAT ALL UTILITIES EXISTING WITHIN THE LIMITS OF THIS PLAN ARE SHOWN. ANY UTILITIES ENCOUNTERED SUBSEQUENT TO PLAN APPROVAL, OR DISCOVERED DURING CONSTRUCTION, SHALL BE THE RESPONSIBILITY OF THE OPERATOR. NAVIUS ENGINEERING AND ANTERO RESOURCES CORPORATION.
4. A GENERAL VARIANCE TO THE REQUIREMENTS UNDER 36CSR-4.4.8 SHALL BE GRANTED TO THE OPERATOR BY THE WEST VIRGINIA STATE OFFICE OF OIL AND GAS FOR THE EXISTING WELL THAT WILL BE CUT OFF AND MONUMENTED IN THE SURFACE OF THE WELL PAD. PRIOR TO THE WELL BEING CUT OFF AND MONUMENTED, THE OPERATOR SHALL SUBMIT A PROPOSED MONUMENTATION PLAN TO THE OIL AND GAS FIELD OFFICE FOR REVIEW AND APPROVAL. THE OIL AND GAS FIELD OFFICE SHALL SUBMIT A PROPER FLAGGING JOB PRIOR TO WELL PAD CONSTRUCTION.

PAD PLAN



GRID NORTH AND ELEVATIONS
SHOWN HEREON WERE ESTABLISHED
BY SURVEY GRADE PPS



Telephone: (888) 662-4185 | www.NavltusEng.com

| DATE | REVISION |
|------|----------|
| | |
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| | |

Antero
THIS DOCUMENT
WAS PREPARED FOR
ANTERO RESOURCES
CORPORATION

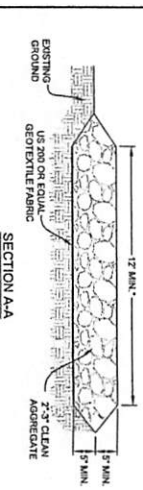
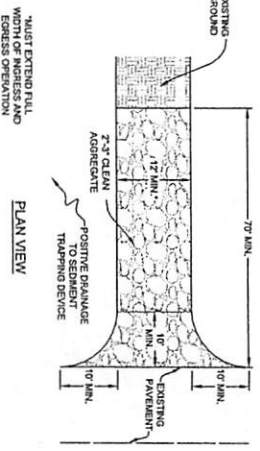
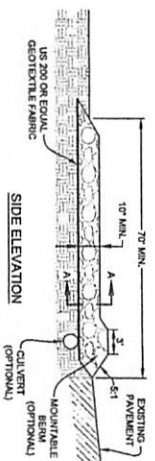
ACCESS ROAD & WELL PAD PLAN
API#47-017-00438
CHRISTOPHER DAVIS 2
WEST UNION DISTRICT
DODDRIDGE COUNTY, WEST VIRGINIA

DATE: 03/02/2018
SCALE: 1" = 50'
SHEET: 4 OF 5

17-00438 P

ROCK CONSTRUCTION ENTRANCE

N.T.S.



NOTED SOURCE: ADAPTED FROM THE ROADWAY AND STRUCTURES FOR SOIL EROSION AND SEDIMENT CONTROL, AND A. BRUCE

REVEGETATION

WEST VIRGINIA ROSSIGNOL AND
WEST VIRGINIA DIVISION OF ENVIRONMENTAL PROTECTION
CHARLESTON, W.VA.
SECTION IV

TEMPORARY SEEDING

1. GENERAL CONDITIONS WHERE PROTECTIVE APRICES WHERE EXPOSED SOIL SURFACES ARE NOT TO BE FINE GRADED OR WORKED FOR PERIODS LONGER THAN 21 DAYS. TEMPORARY SEEDING SHALL BE APPLIED TO ALL EXPOSED SOIL SURFACES. SEEDING SHALL BE APPLIED TO ALL EXPOSED SOIL SURFACES WILL GO DIRECTLY INTO A STRIP, IMMEDIATELY UPON CONSTRUCTION OF THE SITE (SITE INCLUDES ROAD AND LOCATION). VEGETATIVE COVER SHALL BE APPLIED TO AREAS THAT WILL BE LEFT UNWORKED FOR A PERIOD OF MORE THAN SIX MONTHS.
2. SEED MIXTURES AND PLANTING DATES REFER TO TABLE M-2 THROUGH M-4 FOR RECOMMENDED DATES TO ESTABLISH VEGETATIVE COVER AND THE APPROVED USE SEEDS RECOMMENDATIONS.
3. SEED APPLICATION AND SOIL PREPARATION SHALL BE DONE AS INDICATED IN TABLE M-2 THROUGH M-4.
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PERMANENT SEEDING

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MULCHING

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ANTEROS PREFERRED SEED MIXTURE

MIXTURE BY PLANTIVE PERIODS

| Plantive Period | Seed Mixture | Grass | Legume |
|------------------------|--------------|-------|--------|
| March 1 - April 15 | Anteros | 90% | 10% |
| April 15 - August 1 | Anteros | 90% | 10% |
| August 1 - October 1 | Anteros | 90% | 10% |
| October 1 - December 1 | Anteros | 90% | 10% |
| December 1 - March 1 | Anteros | 90% | 10% |

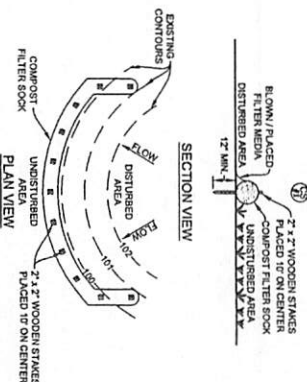
Recommended Seeding Dates

| Plantive Period | Seeding Date |
|------------------------|--|
| March 1 - April 15 | High risk - noxious stress likely |
| April 15 - August 1 | High risk - freeze damage to young seedlings |
| August 1 - October 1 | Good seeding period (Dominant Seeding) |
| October 1 - December 1 | Good seeding period (Dominant Seeding) |
| December 1 - March 1 | Good seeding period (Dominant Seeding) |

NOTE: THE

COMPOST FILTER SOCK

N.T.S.



| Property | Value |
|----------------------------|-----------------------------|
| ORGANIC MATTER CONTENT | 60% - 100% DRY WEIGHT BASIS |
| PH | 5.5-6.0 |
| MOISTURE CONTENT | 35%-65% |
| PARTICLE SIZE | 8% PASS THROUGH 1" SCREEN |
| SOLUBLE SALT CONCENTRATION | ≤ 0.25 M/MOL/L |

1. COMPOST FILTER SOCK SHALL BE MADE BY STAPLING TOGETHER 4" COMPOST SOCK FABRIC SHALL MEET SPECIFICATIONS OF TABLE 4.1. COMPOST SHALL BE PLACED IN THE SOCK AND COVERED WITH A 2" LAYER OF TOP SOIL. THE SOCK SHALL BE PLACED IN THE DISTURBED AREA AND COVERED WITH A 2" LAYER OF TOP SOIL. THE SOCK SHALL NOT EXCEED MANUFACTURER'S MAXIMUM PERMISSIBLE SOAK LENGTH.
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5. AFTER 1 YEAR POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
6. RECOMMENDATIONS OF THE AREA MAINTENANCE SHALL BE FOLLOWED. THE SOCK SHALL BE REPLACED WHEN THE AREA MAINTENANCE SHALL BE FOLLOWED.
7. IN THE EVENT THE GROUND IS FROZEN, THE SOCK SHALL BE REPLACED WHEN THE AREA MAINTENANCE SHALL BE FOLLOWED.

