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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)

Wednesday, January 11, 2023  
WELL WORK PERMIT  
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION  
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit approval for OLYMPUS 5V  
47-085-10445-00-00

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.

Please be advised that form WR-35, Well Operators Report of Well Work 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

Operator's Well Number: OLYMPUS 5V  
Farm Name: NELSON MARK HAYHURST  
U.S. WELL NUMBER: 47-085-10445-00-00  
Horizontal 6A New Drill  
Date Issued:

Promoting a healthy environment.

01/13/2023

# PERMIT CONDITIONS

470851044

West Virginia Code § 22-6A-8(d) 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. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.
11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

4708510445

WW-6B  
(04/15)

API NO. 47-085 -  
OPERATOR WELL NO. Olympus Unit 5V  
Well Pad Name: Olympus Pad

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

1) Well Operator: Antero Resources Corporation 494507062 085 - Ritchie Clay Ellenboro 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Olympus Unit 5V Well Pad Name: Olympus Pad

3) Farm Name/Surface Owner: Nelson Mark Hayhurst Public Road Access: Lamberton Road

4) Elevation, current ground: 1047' Elevation, proposed post-construction: 1025'

5) Well Type (a) Gas  Oil  Underground Storage

Other

(b) If Gas Shallow  Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Marcellus Shale: 6700' TVD, Anticipated Thickness- 55 feet, Associated Pressure- 2850#

8) Proposed Total Vertical Depth: 6700' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 6700' MD

11) Proposed Horizontal Leg Length: 0' \*Open to modification at a later date\*

12) Approximate Fresh Water Strata Depths: 173', 230'

13) Method to Determine Fresh Water Depths: 47085011840000, 47085066360000 Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: 430'

15) Approximate Coal Seam Depths: None Anticipated

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes  No

(a) If Yes, provide Mine Info: Name: \_\_\_\_\_  
Depth: \_\_\_\_\_  
Seam: \_\_\_\_\_  
Owner: \_\_\_\_\_

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4708510445

WW-6B  
(04/15)

API NO. 47- 085

OPERATOR WELL NO. Olympus Unit 5V

Well Pad Name: Olympus Pad

18)

**CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	300	300	CTS, 313 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	6700	6700	761 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Class H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

**PACKERS**

Kind:	N/A			
Sizes:	N/A			RECEIVED Office of Oil and Gas
Depths Set:	N/A			DEC 19 2022

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 12/14/22



WW-6B  
(10/14)

API NO. 47-085 -  
OPERATOR WELL NO. Olympus Unit 5V  
Well Pad Name: Olympus Pad

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.11 acres

22) Area to be disturbed for well pad only, less access road (acres): 10.00 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers  
Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.  
Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.  
Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

24) Describe all cement additives associated with each cement type:

Conductor: no additives, Class A cement.  
Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake  
Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat  
Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51  
Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

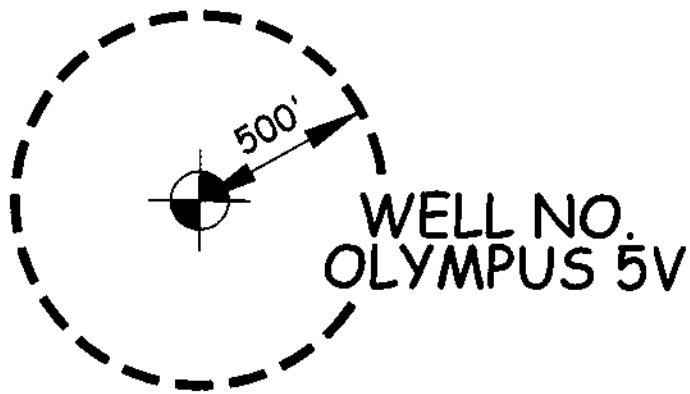
25) Proposed borehole conditioning procedures:

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\*Note: Attach additional sheets as needed.

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OLYMPUS PAD  
ANTERO RESOURCES  
CORPORATION



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WILLOW LAND SURVEYING, PLLC  
P.O. BOX 17, PENNSBORO, WV 26415  
(304) 659-1717

JOB #: 22-005WA

SCALE : 1-INCH = 500-FEET

0' 500' 1000' 1500'

DATE: 11/07/22

DRAWN BY: D.L.P.

FILE: OLYMPUSAOR.DWG



01/13/2023

4708510445

WW-9  
(4/16)

API Number 47 - 085 -  
Operator's Well No. Olympus Unit 5V

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) North Fork Hughes River Quadrangle Ellenboro 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: No pit will be used at this site (Drilling and Flowback Fluids will be stored in tanks. Cuttings will be treated and hauled off site.)

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- 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  
Wetzel Co Landfill Permit #SWF-1021)

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

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Sluff Foam, Production - Water Based Mud

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

Additives to be used in drilling medium? Please See Attachment

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Drill cuttings stored in tanks, removed offsite and taken to landfill.

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

-Landfill or offsite name/permit number? Meadowfill Landfill (Permit #SWF-1032-98), Northwestern Landfill (Permit # SWF-1025/WV0109410)  
Wetzel Co Landfill (Permit #SWF-1021)

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 August 1, 2005, 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.

Company Official Signature Gretchen Kohler  
Company Official (Typed Name) Gretchen Kohler  
Company Official Title Director of Environmental & Regulatory Compliance

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WV Department of  
Environmental Protection

Subscribed and sworn before me this 7<sup>th</sup> day of Dec, 2022

My commission expires 27 Apr 2024

Notary Public **DIANE BLAIR**  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 19994011871  
MY COMMISSION EXPIRES 27-Apr-2024

[Signature] 12/14/22

01/13/2023

Form WW-9

Operator's Well No. Olympus Unit 5V

**Antero Resources Corporation**

Proposed Revegetation Treatment: Acres Disturbed 18.11 acres Prevegetation pH \_\_\_\_\_

Lime 2-4 Tons/acre or to correct to pH 6.5

Fertilizer type Hay or straw or Wood Fiber (will be used where needed)

Fertilizer amount 500 lbs/acre

Mulch 2-3 Tons/acre

Access Road "A" (4.08 acres) + Well Pad (10.00 acres) + Excess/Topsoil Material Stockpiles (4.03 acres) = 18.11 Acres

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Crownvetch	10-15
Field Bromegrass	40	Tall Fescue	30
<small>See attached Table IV-3 for additional seed type (Olympus Pad Design)</small>		<small>See attached Table IV-4A for additional seed type (Olympus Pad Design)</small>	
*or type of grass seed requested by surface owner		*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, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature] 12/14/22

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

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Title: OOG Inspector Date: 12/14/2022

Field Reviewed?  Yes  No



**Form WW-9 Additives Attachment****SURFACE INTERVAL**

1. Fresh Water
2. Soap –Foamer AC
3. Air

**INTERMEDIATE INTERVAL*****STIFF FOAM RECIPE:***

- 1) 1 ppb Soda Ash / Sodium Carbonate-Alkalinity Control Agent
- 2) 1 ppb Conqor 404 ( 11.76 ppg) / Corrosion Inhibitor
- 3) 4 ppb KLA-Gard ( 9.17 ppg) / Amine Acid Complex-Shale Stabilizer
- 4) 1ppb Mil Pac R / Sodium Carboxymethylcellulose-Filtration Control Agent
- 5) 12 ppb KCL / Potassium Chloride-inorganic Salt
- 6) Fresh Water 80 bbls
- 7) Air

**PRODUCTION INTERVAL**

1. Alpha 1655  
Salt Inhibitor
2. Mil-Carb  
Calcium Carbonate
3. Cottonseed Hulls  
Cellulose-Cottonseed Pellets – LCM
4. Mil-Seal  
Vegetable, Cotton & Cellulose-Based Fiber Blend – LCM
5. Clay-Trol  
Amine Acid Complex – Shale Stabilizer
6. Xan-Plex  
Viscosifier For Water Based Muds
7. Mil-Pac (All Grades)  
Sodium Carboxymethylcellulose – Filtration Control Agent
8. New Drill  
Anionic Polyacrylamide Copolymer Emulsion – Shale Stabilizer
9. Caustic Soda  
Sodium Hydroxide – Alkalinity Control
10. Mil-Lime  
Calcium Hydroxide – Lime
11. LD-9  
Polyether Polyol – Drilling Fluid Defoamer
12. Mil Mica  
Hydro-Biotite Mica – LCM

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13. Escaid 110  
Drilling Fluid Solvent – Aliphatic Hydrocarbon
14. Ligco  
Highly Oxidized Leonardite – Filtration Control Agent
15. Super Sweep  
Polypropylene – Hole Cleaning Agent
16. Sulfatrol K  
Drilling Fluid Additive – Sulfonated Asphalt Residuum
17. Sodium Chloride, Anhydrous  
Inorganic Salt
18. D-D  
Drilling Detergent – Surfactant
19. Terra-Rate  
Organic Surfactant Blend
20. W.O. Defoam  
Alcohol-Based Defoamer
21. Perma-Lose HT  
Fluid Loss Reducer For Water-Based Muds
22. Xan-Plex D  
Polysaccharide Polymer – Drilling Fluid Viscosifier
23. Walnut Shells  
Ground Cellulosic Material – Ground Walnut Shells – LCM
24. Mil-Graphite  
Natural Graphite – LCM
25. Mil Bar  
Barite – Weighting Agent
26. X-Cide 102  
Biocide
27. Soda Ash  
Sodium Carbonate – Alkalinity Control Agent
28. Clay Trol  
Amine Acid complex – Shale Stabilizer
29. Sulfatrol  
Sulfonated Asphalt – Shale Control Additive
30. Xanvis  
Viscosifier For Water-Based Muds
31. Milstarch  
Starch – Fluid Loss Reducer For Water Based Muds
32. Mil-Lube  
Drilling Fluid Lubricant

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**911 Address**  
**3277 Lamberton Rd**  
**Pennsboro WV, 26415**

## **Well Site Safety Plan**

### **Antero Resources**

**Well Name: Olympus UNIT 5V**

**Pad Location: OLYMPUS PAD**  
Ritchie County/Clay District

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#### **GPS Coordinates:**

**Entrance - Lat 39.283689 / Long -81.005603 (Nad83)**  
**Pad Center - Lat 39.284798 / Long -81.007893 (Nad83)**

#### **Driving Directions:**

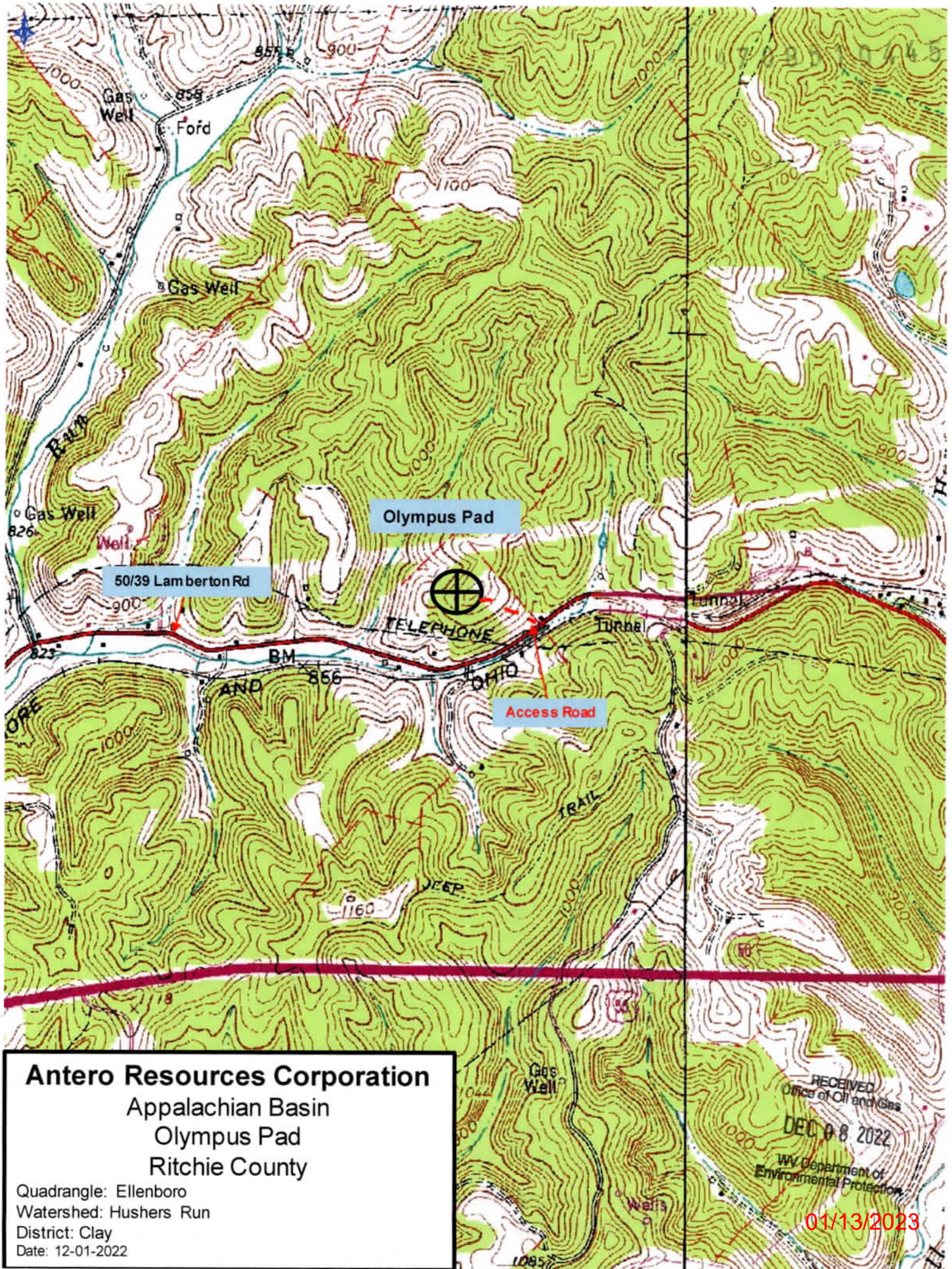
From the intersection of US50 and the Ellenboro exit turn north onto S. Main St. and travel for 0.2 miles. Turn right onto E. Eashington Avenue and Old US50 (CO-50/39) and continue 3.3 miles. The Olympus Lease Road is on the left.

**EMERGENCY (24 HOUR) CONTACT 1-800-878-1373**

*OC* 12/14/22

01/13/2023





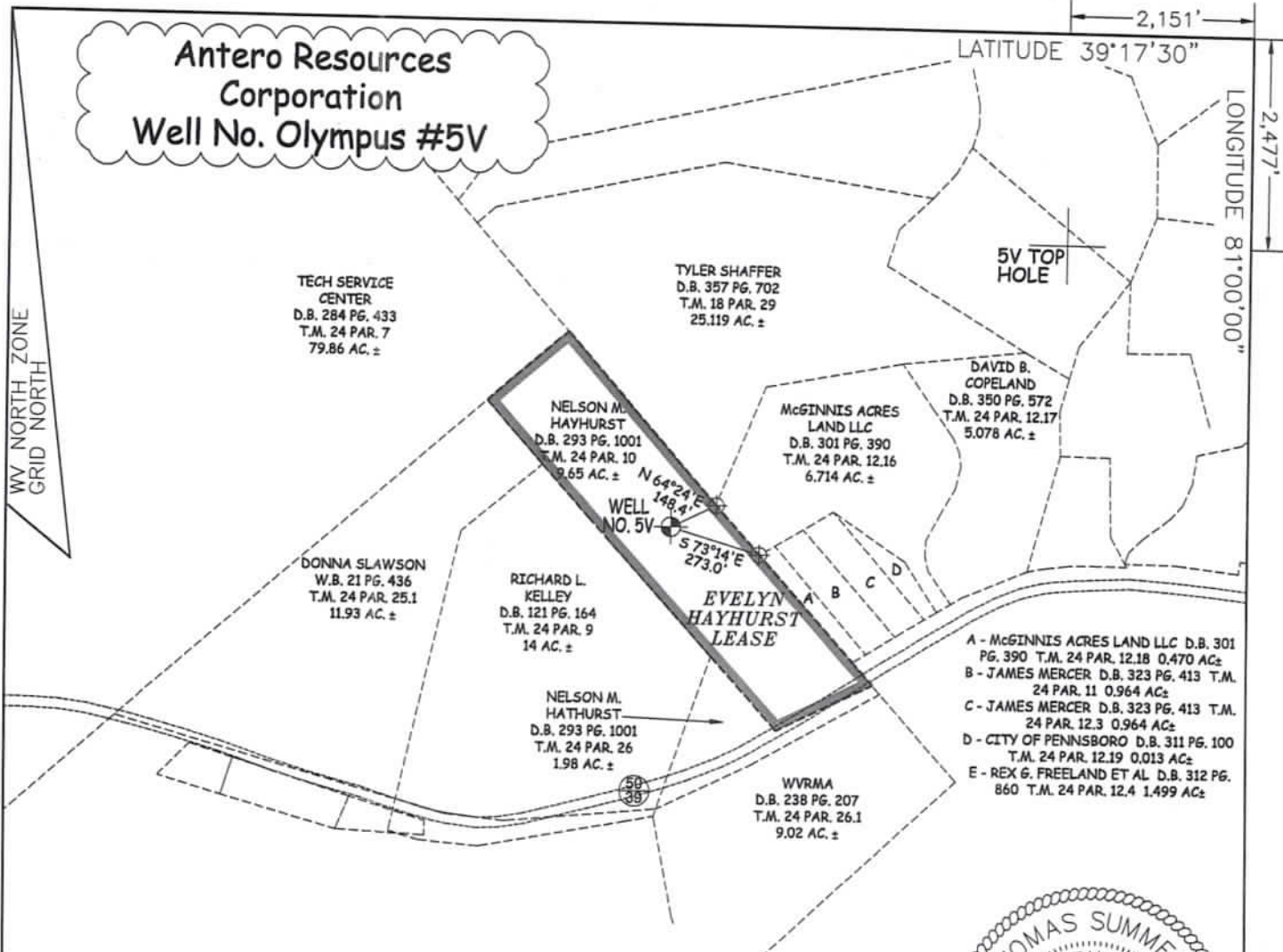
**Antero Resources Corporation**  
Appalachian Basin  
Olympus Pad  
Ritchie County

Quadrangle: Ellenboro  
Watershed: Hushers Run  
District: Clay  
Date: 12-01-2022

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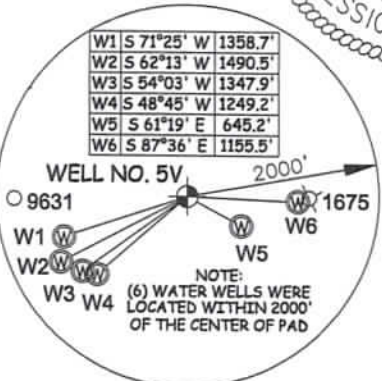
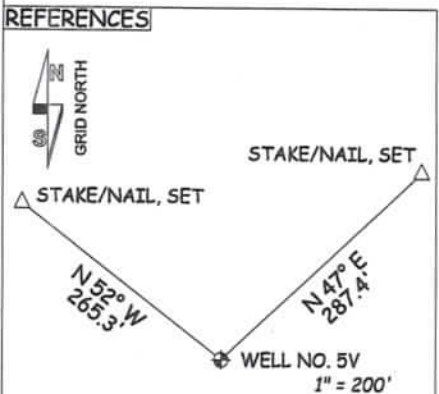
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**NOTES**  
 1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD. THERE ARE NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE PROPOSED WELL.

**NOTES:**  
**WELL 5V TOP HOLE INFORMATION:**  
 WV STATE PLANE NAD 27 COORDS:  
 N: 289,445ft E: 1,573,280ft  
**GEOGRAPHIC NAD 27 COORDS:**  
 LAT: 39°17'05.52" LON: 81°00'27.36"  
 (NAD) 83 (UTM) ZONE 17 COORDS:  
 N: 4,348,398m E: 499,359m  
 (NAD) 27 (UTM) ZONE 17 COORDS:  
 N: 14,265,656ft E: 1,638,266ft  
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.



JOB # 22-001WA  
 DRAWING # OLYMPUSSV  
 SCALE 1" = 500'  
 MINIMUM DEGREE OF ACCURACY SUBMETER  
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

**LEGEND**  
 - - - - - Surface Owner Boundary Lines +/-  
 - - - - - Adjoining Surface Tracts +/-  
 ⊕ 5/8" Rebar, Found  
 THOMAS SUMMERS P.S. 2109



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
 WILLOW LAND SURVEYING PLLC  
 266 HUSHERS RUN RD PENNSBORO WEST VIRGINIA 26415

DATE 12/02/22  
 OPERATOR'S WELL # OLYMPUS#5V

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL   
 (IF "GAS") PRODUCTION  STORAGE  DEEP  SHALLOW   
 LOCATION: ELEVATION PROPOSED - 1,025' EXISTING - 1,047' WATERSHED NORTH FORK HUGHES RIVER  
 QUADRANGLE ELLENBORO 7.5' DISTRICT CLAY COUNTY RITCHIE

SURFACE OWNER NELSON MARK HAYHURST ACREAGE 9.65 ACRES +/-  
 OIL & GAS ROYALTY OWNER EVELYN HAYHURST LEASE ACREAGE 9.65 ACRES±

PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION

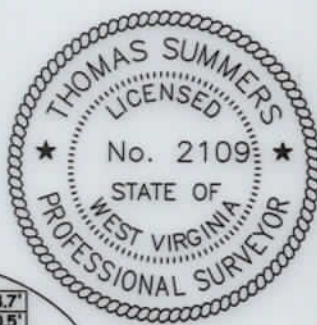
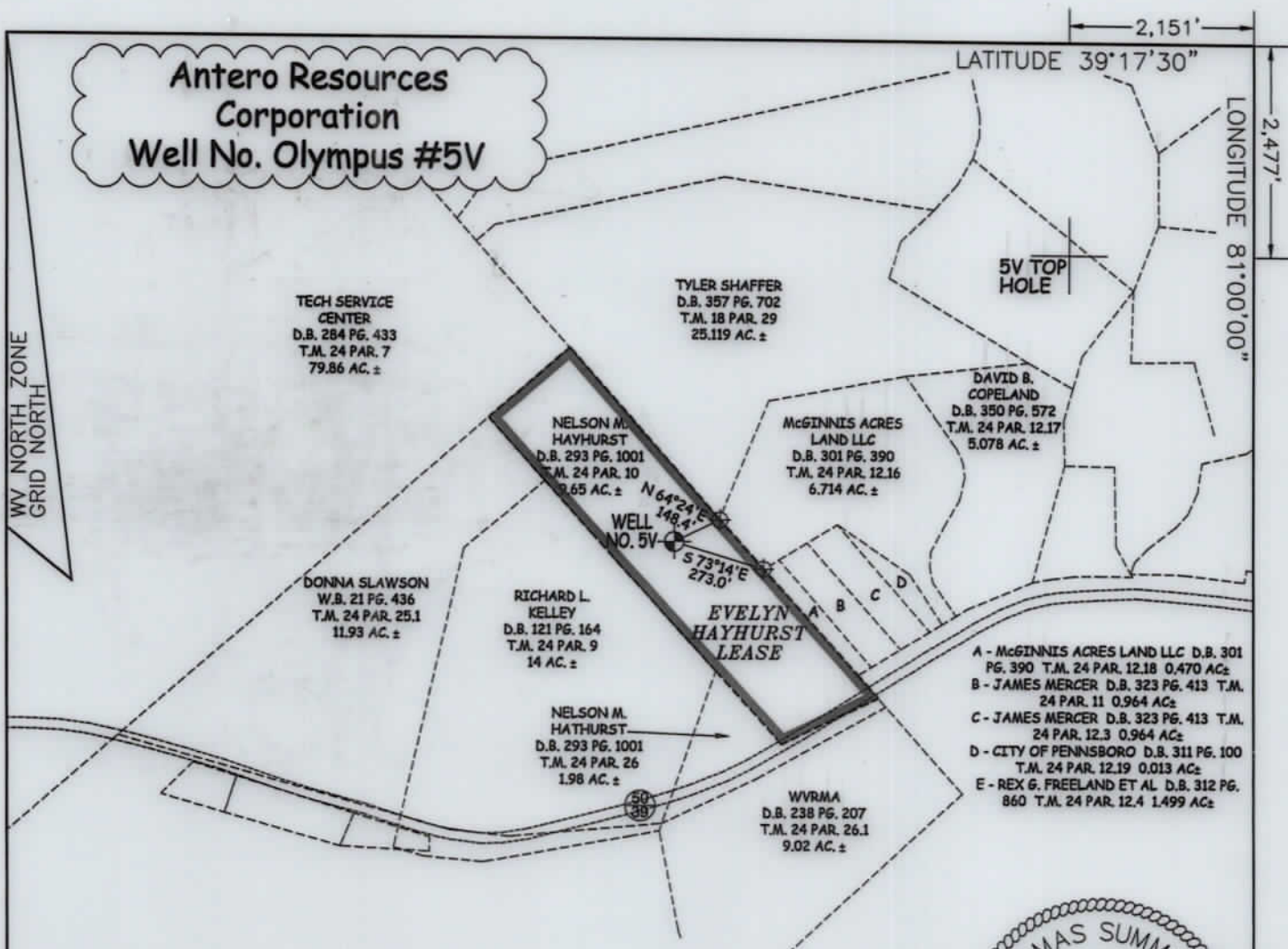
OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_  
 PLUG & ABANDON  CLEAN OUT & REPLUG  ESTIMATED DEPTH 6,700' TVD 6,700' MD

TARGET FORMATION MARCELLUS  
 WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT KEVIN ELLIS  
 ADDRESS 1615 WYNKOOP STREET ADDRESS 535 WHITE OAK BLVD.  
DENVER, CO 80202 BRIDGEPORT, WV 26330

01/13/2023



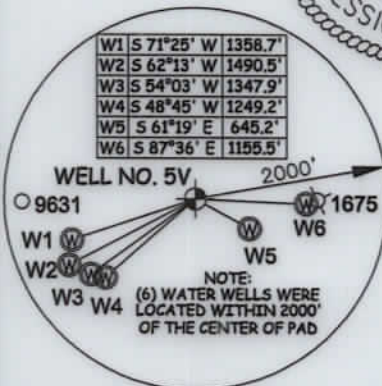
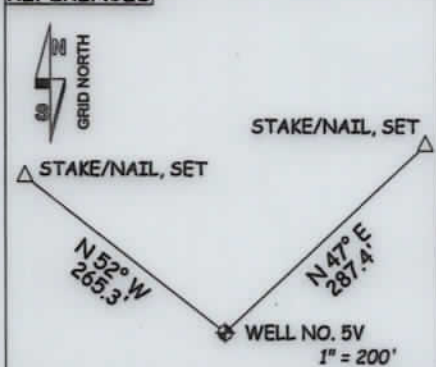
**Antero Resources Corporation  
Well No. Olympus #5V**



**NOTES**  
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD. THERE ARE NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE PROPOSED WELL.

**NOTES:**  
WELL 5V TOP HOLE INFORMATION:  
WV STATE PLANE NAD 27 COORDS:  
N: 289,445ft E: 1,573,280ft  
GEOGRAPHIC NAD 27 COORDS:  
LAT: 39°17'05.52" LON: 81°00'27.36"  
(NAD) 83 (UTM) ZONE 17 COORDS:  
N: 4,348,398m E: 499,359m  
(NAD) 27 (UTM) ZONE 17 COORDS:  
N: 14,265,656ft E: 1,638,266ft  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

**REFERENCES**



JOB # 22-001WA  
DRAWING # OLYMPUS5V  
SCALE 1" = 500'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WILLOW LAND SURVEYING PLLC  
266 HUSHERS RUN RD PENNSBORO WEST VIRGINIA 26415

**LEGEND**  
----- Surface Owner Boundary Lines +/-  
----- Adjoining Surface Tracts +/-  
⊕ 5/8" Rebar, Found  
*Thomas Summers*  
THOMAS SUMMERS P.S. 2109

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

DATE 12/02/22  
OPERATOR'S WELL # OLYMPUS #5V

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
(IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X  
LOCATION: ELEVATION PROPOSED -1,025' EXISTING -1,047' WATERSHED NORTH FORK HUGHES RIVER  
QUADRANGLE ELLENBORO 7.5' DISTRICT CLAY COUNTY RITCHIE

SURFACE OWNER NELSON MARK HAYHURST ACREAGE 9.85 ACRES +/-  
OIL & GAS ROYALTY OWNER EVELYN HAYHURST LEASE ACREAGE 9.85 ACRES±

PROPOSED WORK: DRILL X CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION X

OTHER PHYSICAL CHANGE IN WELL (SPECIFY)  
PLUG & ABANDON \_\_\_ CLEAN OUT & REPLUG \_\_\_ ESTIMATED DEPTH 6,700' TVD 6,700' MD

TARGET FORMATION MARCELLUS  
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT KEVIN ELLIS

ADDRESS 1615 WYNKOOP STREET DENVER, CO 80202 ADDRESS 535 WHITE OAK BLVD. BRIDGEPORT, WV 26330

01/13/2023

WW-6A1  
(5/13)

Operator's Well No. Olympus Unit 5V

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE  
Chapter 22, Article 6A, Section 5(a)(5)  
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that -

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Evelyn Hayhurst Lease</u>	Evelyn Hayhurst	Antero Resources Appalachian Corporation	1/8+	0260/0279
	Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0015/0705

\*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

**Acknowledgement of Possible Permitting/Approval  
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Antero Resources Corporation

By: Tim Rady

Its: SR VP of Land

4708510445

December 1, 2022

West Virginia Department of Environmental Protection  
Chief, Office of Oil and Gas  
Attn: Mr. James Martin  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304

RE: Olympus Unit 5V  
Quadrangle: ~~Ellenboro~~ 7.5'  
Ritchie County/Clay District, West Virginia

Mr. Martin:

Antero Resources Corporation (Antero) is submitting the following application for a new well work permit for the Olympus Unit 5V horizontal shallow well. As an authorized representative, I certify that Antero has the right to extract, produce or market the oil or gas for all leases through which the Olympus Unit 5V horizontal lateral will drill through including any and all roads crossed under as identified on the attached survey plat.

Sincerely,



Anthony Hoehler  
Landman Associate

01/13/2023



WW-6AC  
(1/12)

4708510445

RECEIVED  
Office of Oil and Gas

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE CERTIFICATION

DEC 08 2022  
WV Department of  
Environmental Protection

Date of Notice Certification: 12/06/2022

API No. 47- 086  
Operator's Well No. Olympus Unit 5V  
Well Pad Name: Olympus Pad

**Notice has been given:**

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>499359m</u>
County:	<u>Ritchie</u>		Northing:	<u>4348398m</u>
District:	<u>Clay</u>	Public Road Access:	<u>Lamberton Road</u>	
Quadrangle:	<u>Ellenboro 7.5'</u>	Generally used farm name:	<u>Nelson Mark Hayhurst</u>	
Watershed:	<u>North Fork Hughes River</u>			

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input checked="" type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
---	---

**Required Attachments:**

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

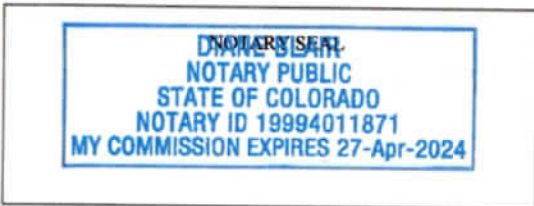
01/13/2023

**Certification of Notice is hereby given:**

THEREFORE, I Diana Hoff, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, 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 and imprisonment.

Well Operator: Antero Resources Corporation  
By: Diana Hoff *Diana O. Hoff*  
Its: Senior Vice President of Operations  
Telephone: 303-357-6904

Address: 1615 Wynkoop Street  
Denver, CO 80202  
Facsimile: 303-357-7315  
Email: mturco@anteroresources.com



Subscribed and sworn before me this 7<sup>th</sup> day of June 2022.

*Diane Blain* Notary Public

My Commission Expires 27 Apr 2024

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as 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 or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

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Office of Oil and Gas  
DEC 08 2022  
WV Department of  
Environmental Protection

WW-6A  
(9-13)

API NO. 47- 085  
OPERATOR WELL NO. Olympus Unit 5V  
Well Pad Name: Olympus Pad

**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF APPLICATION**

**Notice Time Requirement:** notice shall be provided no later than the filing date of permit application.

**Date of Notice:** 12/7/2022 **Date Permit Application Filed:** 12/7/2022

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

**Delivery method pursuant to West Virginia Code § 22-6A-10(b)**

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice  WSSP Notice  E&S Plan Notice  Well Plat Notice is hereby provided to:

SURFACE OWNER(s)  
Name: PLEASE SEE ATTACHMENT  
Address: \_\_\_\_\_  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

COAL OWNER OR LESSEE  
Name: NO DECLARATIONS ON RECORD WITH COUNTY  
Address: \_\_\_\_\_

COAL OPERATOR  
Name: NO DECLARATIONS ON RECORD WITH COUNTY  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

WATER PURVEYOR(s)/OWNER(s) OF WATER WELL, SPRING OR OTHER WATER SUPPLY SOURCE  
Name: PLEASE SEE ATTACHMENT  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Impoundments or Pits)  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary

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DEC 08 2022  
WV Department of  
Environmental Protection  
01/13/2023



WW-6A  
(8-13)

4708510445  
API NO. 47- 085 -  
OPERATOR WELL NO. Olympus Unit 5V  
Well Pad Name: Olympus Pad

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

**This Notice Shall Include:**

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dcp.wv.gov/oil-and-gas/pages/default.aspx](http://www.dcp.wv.gov/oil-and-gas/pages/default.aspx).

**Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

01/13/2023



WW-6A  
(8-13)

API NO. 47-085  
OPERATOR WELL NO. Olympus Unit 5V  
Well Pad Name: Olympus Pad

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

**Water Well Testing:**

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

**Water Testing Laboratories:**

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

**Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:**

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

**Written Comment:**

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

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

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

WW-6A  
(8-13)

4708510445

API NO. 47-085 -  
OPERATOR WELL NO. Olympus Unit 5V  
Well Pad Name: Olympus Pad

**Time Limits and Methods for Filing Comments.**

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) 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.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

**Comment Requirements**

Your comments must be in writing and 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.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

**Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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01/13/2023

4708510445

WW-6A  
(8-13)

API NO. 47- 085 -  
OPERATOR WELL NO. Olympus Unit 5V  
Well Pad Name: Olympus Pad

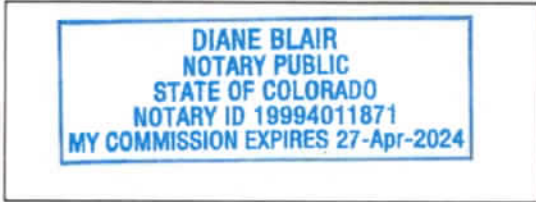
**Notice is hereby given by:**

Well Operator: Antero Resources Corporation  
Telephone: (303) 357-7310 *Diana O. Hoff*  
Email: [mturco@anteroresources.com](mailto:mturco@anteroresources.com)

Address: 1615 Wynkoop Street  
Denver, CO 80202  
Facsimile: 303-357-7315

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as 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 or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).



Subscribed and sworn before me this 7<sup>th</sup> day of Dec 2022.

*Diane Blair*

Notary Public

My Commission Expires 27 Apr 2024

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# OLYMPUS PAD ANTERO RESOURCES CORPORATION



NOTE: LATITUDE & LONGITUDE SHOWN HEREON BASED ON SUBMETER MAPPING GRADE DGPS.

W1	S 71°25' W	1358.7'
W2	S 62°13' W	1490.5'
W3	S 54°03' W	1347.9'
W4	S 48°45' W	1249.2'
W5	S 61°19' E	645.2'
W6	S 87°36' E	1155.5'

WELL	SURFACE OWNER	ADDRESS	DISTRICT-TAX MAP-PARCEL	WELL LATITUDE	WELL LONGITUDE
W1	DONNA SLAWSON	2961 LAMBERTON RD. PENNSBORO, WV 26415	3-24-25.1	39°17'01.03"	81°00'43.65"
W2	JORDAN FLUHARTY ET UX	3001 HACKBERRY RD. IRVING, TX 75063	3-24-25.2	39°16'58.43"	81°00'43.98"
W3	STEPHEN HILEY ET UX	3010 LAMBERTON RD. PENNSBORO, WV 26415	3-24-08	39°16'57.51"	81°00'41.07"
W4	JAMES T. BEVER ET UX	3066 LAMBERTON RD. PENNSBORO, WV 26415	3-24-8.1	39°16'57.22"	81°00'12.67"
W5	JAMES MERCER	3367 LAMBERTON RD. PENNSBORO, WV 26415	3-24-12.4	39°17'02.55"	81°00'20.10"
W6	REX G. FREELAND ET AL	9 TUNNEL RIDGE RD. PENNSBORO, WV 26415	3-24-11	39°17'05.23"	81°00'39.13"

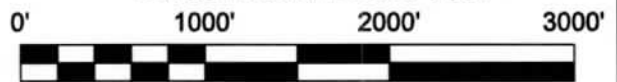
**WILLOW LAND SURVEYING, PLLC**  
P.O. BOX 17, PENNSBORO, WV 26415  
(304) 659-1717

TOPO SECTION(S) OF ;  
PENNSBORO 7.5' &  
ELLENBORO 7.5'

JOB #: 22-001WA

FILE: OLYMPUSPADWATERMAP

SCALE : 1-INCH = 1000-FEET



DATE: 11/02/22

DRAWN BY: T.B.S.

01/13/2023



**WW-6A Attachment - Notice of Application:****Surface Owners and/or Water  
Purveyor(s)/Owner(s) of Water Well,  
Spring, or Other Water Supply Source:****TM 24-10**

**Owner:** Nelson Mark Hayhurst  
**Address:** 1293 Bonds Creek Road  
Pennsboro, WV 26415-6129

**TM 24-9**

**Owner:** Richard L. Kelly, c/o Twila Simmons  
**Address:** 249 Pricetown Road  
Weston, WV 26452-8460

**TM 24-25.1;**

**Owner:** Don & Donna Slawson  
**Address:** 2961 Lamberton Road  
Pennsboro, WV 26415-6060

**TM 24-25.2**

**Owner:** Jordan Fluharty et ux  
**Address:** 3001 Hackberry Rd.  
Irving, TX 75063

**TM 24-08**

**Owner:** Stephen Hiley et ux  
**Address:** 3010 Lamberton Rd.  
Pennsboro, WV 26415

**TM 24-8.1**

**Owner:** James T. Bever et ux  
**Address:** 3066 Lamberton Rd.  
Pennsboro, WV 26415

**TM 24-12.4**

**Owner:** James Mercer  
**Address:** 3367 Lamberton Rd.  
Pennsboro, WV 26415

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**TM 24-11**

**Owner:** Rex G. Freeland et al  
**Address:** 9 Tunnel Ridge Rd.  
Pennsboro, WV 26415

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**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF INTENT TO DRILL**

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

**Notice Time Requirement:** Notice shall be provided at least **TEN (10)** days prior to filing a permit application.  
**Date of Notice:** 10/19/2022      **Date Permit Application Filed:** 12/07/2022

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**Delivery method pursuant to West Virginia Code § 22-6A-16(b)**

HAND DELIVERY       CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

**Notice is hereby provided to the SURFACE OWNER(s):**

Name: PLEASE SEE ATTACHMENT  
Address: \_\_\_\_\_  
\_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: West Virginia      UTM NAD 83      Easting: 499359m  
County: Ritchie      Northing: 4348398m  
District: Clay      Public Road Access: Lamberton Rd  
Quadrangle: Ellenboro 7.5'      Generally used farm name: Nelson Mark Hayhurst  
Watershed: North Fork Hughes River

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: Antero Resources Corporation  
Address: 1615 Wynkoop St.  
Denver, CO 80202  
Telephone: 303-357-7310  
Email: mturco@anteroresources.com  
Facsimile: 303-357-7315

Authorized Representative: Mallory Turco  
Address: 1615 Wynkoop St.  
Denver, CO 80202  
Telephone: 303-357-7310  
Email: mturco@anteroresources.com  
Facsimile: 303-357-7315

**Oil and Gas Privacy Notice:**

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as 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 or your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).



4708510445

**WW-6A4 Attachment - Notice of Intent to Drill:**

**Surface Owners:**

**TM 24-10**

**Owner:** Nelson Mark Hayhurst  
**Address:** 1293 Bonds Creek Road  
Pennsboro, WV 26415-6129

**TM 24-9**

**Owner:** Richard L. Kelly, c/o Twila Simmons  
**Address:** 249 Pricetown Road  
Weston, WV 26452-8460

**TM 24-25.1**

**Owner:** Don & Donna Slawson  
**Address:** 2961 Lamberton Road  
Pennsboro, WV 26415-6060

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01/13/2023

WW-6A5  
(1/12)

**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF PLANNED OPERATION**

**Notice Time Requirement:** notice shall be provided no later than the **filing date of permit application.**

**Date of Notice:** 12/07/2022      **Date Permit Application Filed:** 12/07/2022

**Delivery method pursuant to West Virginia Code § 22-6A-16(c)**

- CERTIFIED MAIL                                       HAND  
RETURN RECEIPT REQUESTED                                      DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

**Notice is hereby provided to the SURFACE OWNER(s)**

(at the address listed in the records of the sheriff at the time of notice):

Name: PLEASE SEE ATTACHMENT                                      Name: \_\_\_\_\_  
Address: \_\_\_\_\_    Address: \_\_\_\_\_

**Notice is hereby given:**

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>499359m</u>
County: <u>Ritchie</u>		Northing: <u>4348398m</u>
District: <u>Clay</u>	Public Road Access: <u>Lamberton Rd</u>	
Quadrangle: <u>Ellenboro 7.5'</u>	Generally used farm name: <u>Nelson Mark Hayhurst</u>	
Watershed: <u>North Fork Hughes River</u>		

**This Notice Shall Include:**

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by **W. Va. Code § 22-6A-10(b)** to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

Well Operator: <u>Antero Resources Corporation</u>	Address: <u>1615 Wynkoop Street</u>
Telephone: <u>(303) 357-7310</u>	<u>Denver, CO 80202</u>
Email: <u>mturco@anteroresources.com</u>	Facsimile: <u>303-357-7315</u>

**Oil and Gas Privacy Notice:**

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WV Department of  
Environmental Protection  
**01/13/2023**

**WW-6A5 Attachment – Notice of Planned Operation:**

**Surface Owners:**

**TM 24-10**

**Owner:** Nelson Mark Hayhurst  
**Address:** 1293 Bonds Creek Road  
Pennsboro, WV 26415-6129

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Environmental Protection

**TM 24-9**

**Owner:** Richard L. Kelly, c/o Twila Simmons  
**Address:** 249 Pricetown Road  
Weston, WV 26452-8460

**TM 24-25.1**

**Owner:** Don & Donna Slawson  
**Address:** 2961 Lambertson Road  
Pennsboro, WV 26415-6060

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110  
Charleston, West Virginia 25305-0430 • (304) 558-3505

D. Alan Reed, P.E.  
State Highway Engineer

Jimmy Wriston, P. E.  
Secretary of Transportation  
Commissioner of Highways

December 1, 2022 ✓

James A. Martin, Chief  
Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

Subject: DOH Permit for the Olympus Pad, Ritchie County  
Olympus Unit 5V Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #03-2022-0330 which has been issued to Antero Resources for access to the State Road for a well site located off Ritchie County Route 50/39 SLS MP 3.22.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018. This letter is valid for permitting purposes for one year from the date of this letter.

Very Truly Yours,

Handwritten signature of Gary K. Clayton in blue ink.

Gary K. Clayton, P.E.  
Regional Operations Engineer  
Central Office O&G Coordinator

Cc: Stefan Gaspar  
Antero Resources  
CH, OM, D-3  
File

OPERATOR: Antero Resources Corp. WELL NO: Olympus Unit 5V

PAD NAME: Olympus Pad

REVIEWED BY: Mallory Turco SIGNATURE: Mallory Turco

### WELL RESTRICTIONS CHECKLIST

#### HORIZONTAL 6A WELL

#### Well Restrictions

- At Least 100 Feet from Pad and LOD (including any E&S Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland; OR
  - DEP Waiver and Permit Conditions
- At Least 300 Feet from Pad and LOD (including any E&S Control Feature) to any Naturally Producing Trout Stream; OR
  - DEP Waiver and Permit Conditions
- At Least 1000 Feet from Pad and LOD (including any E&S Control Feature) to any Groundwater Intake or Public Water Supply; OR
  - DEP Waiver and Permit Conditions
- At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled; OR
  - Surface Owner Waiver and Recorded with County Clerk, OR
  - DEP Variance and Permit Conditions
- At Least 625 Feet from an Occupied Dwelling Structure to Center of the Pad; OR
  - Surface Owner Waiver and Recorded with County Clerk, OR
  - DEP Variance and Permit Conditions
- At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad; OR
  - Surface Owner Waiver and Recorded with County Clerk, OR
  - DEP Variance and Permit Conditions

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Environmental Protection

01/13/2023



Subdivision 3.3.e A listing of the anticipated additives that may be used in the water used for fracturing or stimulating the well. (A listing of the additives that were actually used in the fracturing or stimulating of the well shall be submitted as part of the completion report required by W. Va. Code 22-6-22.)

**FRACTURING/STIMULATING INTERVAL**

<b>Additive</b>	<b>Chemical Abstract Service Number (CAS #)</b>
1. Fresh Water	7732-18-5
2. 2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
3. Ammonium Persulfate	7727-54-0
4. Anionic copolymer	Proprietary
5. Anionic polymer	Proprietary
6. BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
7. Cellulase enzyme	(Proprietary)
8. Demulsifier Base	(Proprietary)
9. Ethoxylated alcohol blend	Mixture
10. Ethoxylated Nonylphenol	68412-54-4
11. Ethoxylated oleylamine	26635-93-8
12. Ethylene Glycol	107-21-1
13. Glycol Ethers	111-76-2
14. Guar gum	9000-30-0
15. Hydrogen Chloride	7647-01-0
16. Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
17. Isopropyl alcohol	67-63-0
18. Liquid, 2,2-dibromo-3- nitrilopropionamide	10222-01-2
19. Microparticle	Proprietary
20. Petroleum Distillates (BTEX Below Detect)	64742-47-8
21. Polyacrylamide	57-55-6
22. Propargyl Alcohol	107-19-7
23. Propylene Glycol	57-55-6
24. Quartz	14808-60-7
25. Silica crystalline quartz	7631-86-9
26. Sodium Chloride	7647-14-5
27. Sodium Hydroxide	1310-73-2
28. Sugar	57-50-1
29. Surfactant	68439-51-0
30. Suspending agent (solid)	14808-60-7
31. Tar bases, quinolone derivs. benzyl chloride-quaternized	72480-70-7
32. Solvent Naptha, petroleum, heavy aliph	64742-96-7
33. Soybean Oil, Me ester	67784-80-9
34. Copolymer of Maleic and Acrylic Acid	52255-49-9
35. DETA Phosphonate	15827-60-8
36. Hexamethylene Triamine Penta	34690-00-1
37. Phosphino Carboxylic acid polymer	71050-62-9
38. Hexamethylene diamine penta	23605-74-5
39. 2-Propenoic acid, polymer with 2 propanamide	9003-06-9
40. Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5
41. Diethylene Glycol	111-46-6
42. Methenamine	100-97-0
43. Polyethylene polyamine	68603-67-8
44. Coco amine	61791-14-8
45. 2-Propyn-1-olcompound with methyloxirane	38172-91-7

# OLYMPUS WELL PAD & WATER CONTAINMENT PAD

## SITE DESIGN & CONSTRUCTION PLAN, EROSION & SEDIMENT CONTROL PLANS

CLAY DISTRICT, RITCHIE COUNTY, WV  
BONDS CREEK WATERSHED

PENNSHORO & ELLENBORO LINES 7.5 QUAD MAP(S)

**APPROVED**  
**WV DEP OOG**  
1/9/2023

### SHEET INDEX

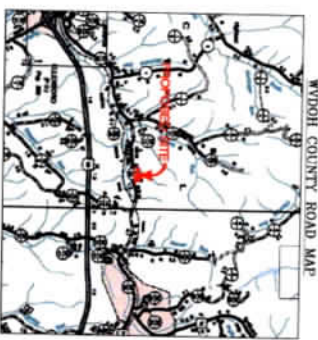
- 1 - COVER SHEET
- 2 - LEGEND
- 3 - MATERIAL QUANTITIES AND COST ESTIMATES
- 4 - EROSION CONTROL
- 5 - EROSION CONTROL
- 6 - EROSION CONTROL
- 7 - EROSION CONTROL
- 8 - ACCESS ROAD & WELL PAD PLAN
- 9 - ACCESS ROAD SERVING SECTIONS
- 10 - ACCESS ROAD SERVING SECTIONS
- 11 - ACCESS ROAD SERVING SECTIONS
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- 100 - ACCESS ROAD SERVING SECTIONS



SCALE: 1" = 200'



WEST VIRGINIA COUNTY MAP



WYDOLH COUNTY ROAD MAP

Well Name	Well ID	Well Depth (ft)	Well Diameter (in)	Well Status	Well Type
OLYMPUS WELL PAD	OLYMPUS	121.7	12.75	Active	Water
WATER CONTAINMENT PAD	WATER	121.7	12.75	Active	Water

Category	Item	Quantity	Unit	Notes
Excavation	Excavate (12" x 12" x 12")	4.00	cuyd	
	Excavate (12" x 12" x 12")	10.00	cuyd	
	Excavate (12" x 12" x 12")	18.11	cuyd	
	Excavate (12" x 12" x 12")	16.13	cuyd	
Access Road	Access Road (4" x 12")	1.75	sqyd	
	Access Road (4" x 12")	5.50	sqyd	
Total	Total Excavation	35.90	cuyd	
	Total Access Road	7.25	sqyd	

Stream and Impact Cause	Permitted Impacts	Total Impacts	Distance to Impact (ft)	Total Temp. Change (°F)
OLYMPUS WELL PAD	0	0	0	0
WATER CONTAINMENT PAD	0	0	0	0
Access Road	28	28	24	8
Excavation	11	11	14	33
Other	0	0	0	0
<b>Total</b>	<b>39</b>	<b>39</b>	<b>38</b>	<b>41</b>

MISSILITY OF West Virginia  
West Virginia State Law  
(Section Chapter 24-C)  
Requires that Chapter 24-C  
business days before you file  
ITS THE LAW!

DESIGN CERTIFICATION  
This plan was prepared in accordance with the  
requirements of the West Virginia State Law  
and the West Virginia State Board of  
Professional Engineers, Inc. (WVPEI).  
I, the undersigned, am a duly licensed  
Professional Engineer in the State of West Virginia.  
I hereby certify that this plan was prepared  
by me or under my direct supervision and  
I am a duly licensed Professional Engineer in the  
State of West Virginia.

**LOCATION COORDINATES:**  
ACCESS ROAD CENTERLINE: -81 006603 (NAD 83)  
LATITUDE: 39 283800 (NAD 83)  
LONGITUDE: -81 006603 (NAD 83)  
ACCESS ROAD CENTERLINE: -81 006603 (NAD 83)  
LATITUDE: 39 283800 (NAD 83)  
LONGITUDE: -81 006603 (NAD 83)  
ACCESS ROAD CENTERLINE: -81 006603 (NAD 83)  
LATITUDE: 39 283800 (NAD 83)  
LONGITUDE: -81 006603 (NAD 83)

**GENERAL DESCRIPTION:**  
THE ACCESS ROAD, WATER CONTAINMENT PAD & WELL PAD ARE BEING CONSTRUCTED TO AND IN  
THE WATERSHED OF BONDS CREEK WATERSHED.

**ENVIRONMENTAL NOTES:**  
THE ACCESS ROAD, WATER CONTAINMENT PAD & WELL PAD ARE BEING CONSTRUCTED TO AND IN  
THE WATERSHED OF BONDS CREEK WATERSHED.

**RESTRICTIONS NOTES:**  
1. THERE ARE NO REGULATIONS ON FEDERAL STREAMS WITHIN 100 FEET OF THE  
WELL PAD AND WATER CONTAINMENT PAD.  
2. THERE ARE NO REGULATIONS ON FEDERAL STREAMS WITHIN 100 FEET OF THE  
WELL PAD AND WATER CONTAINMENT PAD.  
3. THERE ARE NO REGULATIONS ON FEDERAL STREAMS WITHIN 100 FEET OF THE  
WELL PAD AND WATER CONTAINMENT PAD.  
4. THERE ARE NO REGULATIONS ON FEDERAL STREAMS WITHIN 100 FEET OF THE  
WELL PAD AND WATER CONTAINMENT PAD.  
5. THERE ARE NO REGULATIONS ON FEDERAL STREAMS WITHIN 100 FEET OF THE  
WELL PAD AND WATER CONTAINMENT PAD.

**PROJECT CONTACTS:**  
OWNER: OLYMPUS WELL PAD & WATER CONTAINMENT PAD  
DESIGNER: NAVITUS ENERGY ENGINEERING, INC.  
CONTRACT NO.: 2022-001



COVER SHEET  
**OLYMPUS**  
WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA

DATE	REVISION

**NAVITUS**  
ENERGY ENGINEERING

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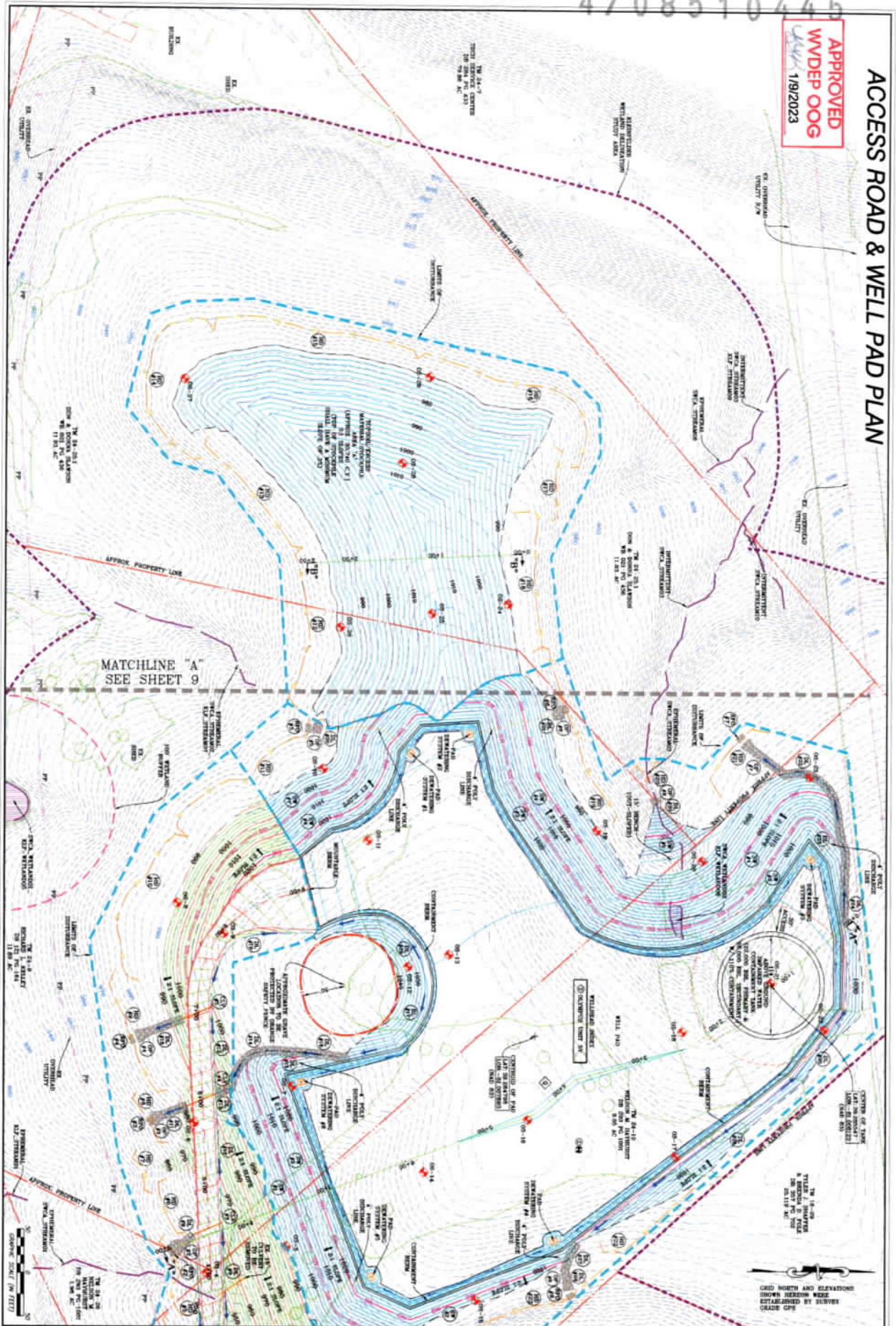
01/13/2023



4708510445

APPROVED  
WVDEP 006  
1/9/2023

# ACCESS ROAD & WELL PAD PLAN



DATE: 10/13/2022  
SCALE: 1" = 50'  
SHEET: 10 OF 26

ACCESS ROAD & WELL PAD PLAN  
**OLYMPUS**  
WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA



DATE	REVISION

**NAVITUS**  
ENERGY ENGINEERING 01/13/2023  
Telephone: (888) 992-4185 | www.NavitusEng.com



**LOCATION COORDINATES:**

ACCESS ROAD ENTRANCE  
LATITUDE: 39.283689 LONGITUDE: -81.005603 (NAD 83)  
LATITUDE: 39.283610 LONGITUDE: -81.005771 (NAD 27)  
N 4348258.66 E 499516.75 (UTM ZONE 17 METERS)

CENTROID OF PAD  
LATITUDE: 39.284798 LONGITUDE: -81.007893 (NAD 83)  
LATITUDE: 39.284719 LONGITUDE: -81.008061 (NAD 27)  
N 4348381.71 E 499319.30 (UTM ZONE 17 METERS)

CENTER OF TANK  
LATITUDE: 39.285547 LONGITUDE: -81.008123 (NAD 83)  
LATITUDE: 39.285468 LONGITUDE: -81.008291 (NAD 27)  
N 4348464.86 E 499299.49 (UTM ZONE 17 METERS)

**GENERAL DESCRIPTION:**

THE ACCESS ROAD(S), WATER CONTAINMENT PAD & WELL PAD ARE BEING CONSTRUCTED TO AID IN THE DEVELOPMENT OF INDIVIDUAL MARCELLUS SHALE GAS WELLS.

**FLOODPLAIN NOTES:**

THE PROPOSED SITE IS LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP #54085C0095C.

**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 WILL OBTAIN AN ENCROACHMENT PERMIT (FORM MM-109) FROM THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

**ENVIRONMENTAL NOTES:**

STREAM AND WETLAND DELINEATIONS WERE PERFORMED IN JULY/AUGUST, 2021 BY KLEINFELDER 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 AUGUST 24, 2022 STREAM AND WETLAND DELINEATION INDEX MAP WAS PREPARED BY KLEINFELDER 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. IT IS STRONGLY RECOMMENDED THAT THE AFOREMENTIONED AGENCIES BE CONSULTED IN AN EFFORT TO GAIN WRITTEN CONFIRMATION OF THE DELINEATION SHOWN ON THIS EXHIBIT PRIOR TO ENGAGING CONSTRUCTION ON THE PROPERTY DESCRIBED HEREIN. THE DEVELOPER SHALL OBTAIN THE APPROPRIATE PERMITS FROM THE FEDERAL AND/OR STATE REGULATORY AGENCIES PRIOR TO ANY PROPOSED IMPACTS TO WATERS OF THE U.S., INCLUDING WETLAND FILLS AND STREAM CROSSINGS.

**GEOTECHNICAL NOTES:**

THE PROPOSED ACCESS ROAD CUT SLOPE (1.5:1) SHALL BE FIELD VERIFIED BY A CERTIFIED GEOTECHNICAL ENGINEER TO ENSURE THE PROPOSED SLOPES ARE ADEQUATE PRIOR TO CONSTRUCTION. ACCESS ROAD CONSTRUCTION SHALL BE MONITORED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER OR PROJECT DESIGN ENGINEER DURING CONSTRUCTION.

A SUBSURFACE INVESTIGATION OF THE PROPOSED SITE WAS PERFORMED BY PENNSYLVANIA SOIL & ROCK, INC. ON \_\_\_\_\_, 2022. THE REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. DATED \_\_\_\_\_, 2022, REFLECTS THE RESULTS OF THE SUBSURFACE INVESTIGATION. THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS REPORT WERE USED IN THE PREPARATION OF THESE PLANS. PLEASE REFER TO THE SUBSURFACE INVESTIGATION REPORT BY PENNSYLVANIA SOIL & ROCK, INC. FOR ADDITIONAL INFORMATION, AS NEEDED.

**PROJECT CONTACTS:**

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

**OPERATOR:**

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

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) 686-6747

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

DIANA HOFF - SVP OPERATIONS  
OFFICE: (303) 357-6904

**ENVIRONMENTAL:**

KLEINFELDER  
MATT ALBRIGHT - PROJECT MANAGER  
OFFICE: (724) 772-7072 CELL: (809) 947-5296

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

**GEOTECHNICAL:**

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

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

**RESTRICTIONS NOTES:**

1. THERE ARE NO LAKES, RESERVOIRS, OR PERENNIAL STREAMS WITHIN 100 FEET OF THE WELL PAD AND LOD. THERE ARE WETLAND IMPACTS THAT WILL NEED TO BE PERMITTED BY THE APPROPRIATE AGENCIES. THERE IS A POND WITHIN 100' OF THE ACCESS ROAD LOD THAT WILL REMAIN UNDISTURBED.
2. THERE ARE NO NATURALLY PRODUCING TROUT STREAMS WITHIN 300 FEET OF THE WELL PAD AND LOD.
3. THERE ARE NO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY FACILITIES WITHIN 1000 FEET OF THE WELL PAD AND LOD.
4. THERE ARE NO APPARENT EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF THE WELL(S) BEING DRILLED.
5. THERE ARE NO OCCUPIED DWELLING STRUCTURES WITHIN 625 FEET OF THE CENTER OF THE WELL PAD.
6. THERE ARE NO AGRICULTURAL BUILDINGS LARGER THAN 2,500 SQUARE FEET WITHIN 825 FEET OF THE CENTER OF THE WELL PAD.

**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.

# OLYMPUS WELL PAD & WATER CONTAINMENT PAD SITE DESIGN & CONSTRUCTION EROSION & SEDIMENT CONTROL

CLAY DISTRICT, RITCHIE COUNTY  
BONDS CREEK WATERSHED

PENNSBORO & ELLENBORO USGS 7.5



**WEST VIRGINIA COUNTY MAP**



(NOT TO SCALE)

**DESIGN CERTIFICATION:**

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  
1-800-441-1111  
West Virginia  
(Section X)  
Requires  
business days  
the state  
IT'S

01/13/2023



# CONTAINMENT PAD ACTION PLAN, CONTROL PLANS

TY, WV  
D

## QUAD MAP(S)



WEST VIRGINIA STATE PLANE COORDINATE SYSTEM  
NORTH ZONE, NAD83  
ELEVATION BASED ON NAVD83  
ESTABLISHED BY SURVEY GRADE GPS & OPUS  
POST-PROCESSING

### SHEET INDEX:

- 1 - COVER SHEET
- 2 - CONSTRUCTION AND E&S CONTROLS NOTES
- 3 - LEGEND
- 4 - MATERIAL QUANTITIES
- 5 - STORM DRAINAGE & E&S COMPUTATIONS
- 6 - EXISTING CONDITIONS
- 7 - EXISTING STRUCTURES & FEATURES
- 8 - OVERALL PLAN SHEET INDEX & VOLUMES
- 9-10 - ACCESS ROAD & WELL PAD PLAN
- 11 - WELL PAD GRADING PLAN
- 12 - ACCESS ROAD PROFILE
- 13 - ACCESS ROAD SECTIONS
- 14 - WELL PAD & STOCKPILE SECTIONS
- 15-16 - WELL PAD SECTIONS
- 17-24 - CONSTRUCTION DETAILS
- 25-26 - ACCESS ROAD & WELL PAD RECLAMATION PLAN
- GESXX-GESXX GEOTECHNICAL DETAILS**

# NAVITUS

ENERGY ENGINEERING

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REVISION

DATE



THIS DOCUMENT  
WAS PREPARED FOR  
ANTERO RESOURCES  
CORPORATION

COVER SHEET

## OLYMPUS

WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA

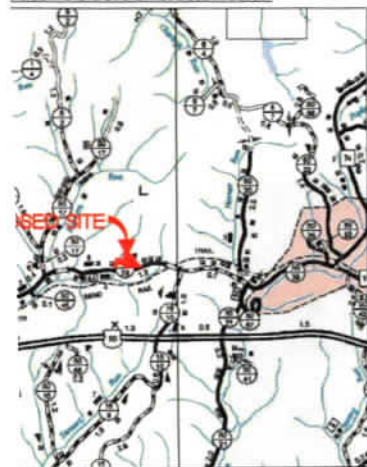


DATE: 10/13/2022

SCALE: AS SHOWN

SHEET 1 OF 28

## JOHNS HOPKINS COUNTY ROAD MAP



5000 0 5000  
SCALE: 1" = 5000'

OLYMPUS LIMITS OF DISTURBANCE AREA (AC)	
<b>Total Site</b>	
Access Road "A" (910')	4.08
Well Pad	10.00
Excess/Topsoil Material Stockpiles	4.03
<b>Total Affected Area</b>	<b>18.11</b>
<b>Total Wooded Acres Disturbed</b>	
	14.13
<b>Impacts to Nelson M. Hayhurst TM 24-10</b>	
Access Road "A" (369')	1.76
Well Pad	5.53
<b>Total Affected Area</b>	<b>7.29</b>
<b>Total Wooded Acres Disturbed</b>	
	3.87
<b>Impacts to Nelson M. Hayhurst TM 24-26</b>	
Access Road "A"	0.06
<b>Total Affected Area</b>	<b>0.06</b>
<b>Total Wooded Acres Disturbed</b>	
	0.06
<b>Impacts to Richard L. Kelley TM 24-9</b>	
Access Road "A" (513')	2.12
Well Pad	4.15
Excess/Topsoil Material Stockpiles	0.60
<b>Total Affected Area</b>	<b>6.87</b>
<b>Total Wooded Acres Disturbed</b>	
	6.45
<b>Impacts to Don &amp; Donna Slawson TM 24-25.1</b>	
Well Pad	0.32
Excess/Topsoil Material Stockpiles	3.43
<b>Total Affected Area</b>	<b>3.75</b>
<b>Total Wooded Acres Disturbed</b>	
	3.75
<b>Impacts to CO RD 50/39 RW</b>	
Access Road "A" (28')	0.14
<b>Total Affected Area</b>	<b>0.14</b>
<b>Total Wooded Acres Disturbed</b>	
	0.00

Well Name	WV North NAD 27		NAD 83 UTM (METERS) ZONE 17	
	NAD 27 Lat & Long	Permitted Location	NAD 83 Lat & Long	
OLYMPUS UNIT 5V	N 289444.60	E 1573279.90	N 4348398.05	E 499359.01
	LAT 39-17-05.5175	LONG -81-00-27.3614	LAT 39-17-05.8026	LONG -81-00-26.7565
Proposed Well Pad Elevation	1,025.0			

OLYMPUS WETLAND PERMANENT IMPACT (SQUARE FEET)			
Wetland and Impact Cause	FII (SF)	Total Impact (SF)	Total Impact (AC)
SWCA_Wetland02_KLF_Wetland06 (Well Pad)	437	437	0.010

OLYMPUS EPHEMERAL STREAM IMPACT (LINEAR FEET)						
Stream and Impact Cause	Permanent Impacts		Total Permanent Impact (LF)	Temp. Impacts		Total Temp. Impact (LF)
	Culvert / Fill (LF)	Inlets/Outlets Structures (LF)		Cofferdam/ E&S Controls (LF)	Distance To L.O.D. (LF)	
SWCA_Stream01 (Access Road)	28	0	28	24	8	32
SWCA_Stream03 (Well Pad)	86	11	97	29	14	43
KLF_Stream04 (Access Road)	0	0	0	0	58	58

West Virginia  
5-4848  
State Law  
Chapter 24-C)  
you call two  
before you dig in  
West Virginia.  
LAW!!

*Handwritten signature and date: 12/19/22*

01/13/2023



OVERALL

**NOTES:**

1. THE EARTHWORK QUANTITIES PROVIDED ARE AN ESTIMATE FOR CONSIDERATION. THE QUANTITIES SHOWN ARE CALCULATED USING A 1:1 CUT/SWELL & FILL SHRINK FACTOR. THE EXCESS MATERIAL & TOPSOIL STOCKPILES ARE SIZED TO ACCOMMODATE A CUT/SWELL FACTOR OF 1.1:1. THIS ADDITIONAL MATERIAL IS REFLECTED IN THE TOTAL SPOIL SHOWN ON THE MATERIAL QUANTITIES TABLE. IF THE CALCULATED SWELL IS LESS THAN 1.1:1, THE STOCKPILES SIZES CAN BE REDUCED DURING CONSTRUCTION. THE QUANTITIES SHOWN MAY BE GREATER OR LESSER THAN ACTUALLY EXCAVATED. THE ENGINEER IS NOT RESPONSIBLE FOR VARIANCES FROM THE ESTIMATED QUANTITIES AND DOES NOT CERTIFY THEIR ACCURACY.
2. THE TOE BENCH DEPTHS AND QUANTITIES PROVIDED IN THE TABLE ARE AN ESTIMATE, CALCULATED FROM THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT PREPARED BY PENNSYLVANIA SOIL & ROCK, INC. SEE PAGES GES07-GES09 & GEOTECHNICAL INVESTIGATION REPORT PROVIDED BY PENNSYLVANIA SOIL & ROCK, INC. FOR TOE BENCH DETAILS, VOLUMES, AND SPECIFICATIONS.

TM 24-7  
TECH SERVICE CENTER

SHEET 10

TM 24-25.1  
DON & DONNA SLAWSON  
(3.75 DISTURBED ACRES)

TM 24-7  
TECH SERVICE CENTER

SHEET 10

MATERIAL STOCKPILES		
Name	Excess	Topsoil
A	10,740	20,000
<b>TOTAL</b>	<b>10,740</b>	<b>20,000</b>

OLYMPUS WELL PAD & WATER CONTAINMENT PAD						
Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)	Max. Slope (%)	Length of Slope (FT)
Access Road "A"	22,616.3	8,952.9	13,663.4	0.0	15.0	820.0
Well Pad	64,198.6	76,930.4	0.0	12,731.8	n/a	n/a
Stripped Topsoil (12")	16,515.4	0.0	16,515.4	0.0	n/a	n/a
Material Stockpiles	0.0	30,740.0	0.0	30,740.0	n/a	n/a
<b>Totals</b>	<b>103,330.3</b>	<b>116,623.3</b>	<b>30,178.8</b>	<b>43,471.8</b>	<b>n/a</b>	<b>n/a</b>
	Total Spoil (CY) =		-13,293.0			

TM 24-25  
MARK A. & MARILYN J. SPIKER

01/13/2023



# PLAN SHEET INDEX & VOLUMES



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

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REVISION	DATE



THIS DOCUMENT WAS PREPARED FOR:  
ANTERO RESOURCES CORPORATION

OVERALL PLAN SHEET INDEX & VOLUMES  
**OLYMPUS**  
WELL PAD & WATER CONTAINMENT PAD  
CLAY DISTRICT  
RITCHIE COUNTY, WEST VIRGINIA



DATE: 10/13/2022  
SCALE: 1" = 100'  
SHEET 8 OF 26



*Handwritten signature and date: 12/14/2022*

01/13/2023