



west virginia department of environmental protection

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

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

October 01, 2013

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-1706361, issued to ANTERO RESOURCES CORPORATION, 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 all 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 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.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-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) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: FARM UNIT 1H
Farm Name: FLOYD, HOMER LEROY
API Well Number: 47-1706361
Permit Type: Horizontal 6A Well
Date Issued: 10/01/2013

PERMIT CONDITIONS

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 (USACOE). Through this permit, you are hereby being advised to consult with USACOE 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 fifty (50) 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 fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. 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. 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.
8. 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.

10/04/2013

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

1) Well Operator: Antero Resources Corporation 494488557 017-Doddridge Greenbrier Big Isaac
Operator ID County District Quadrangle

04

252

2) Operator's Well Number: Farm Unit 1H Well Pad Name: Kirk Pad

3 Elevation, current ground: -1315' Elevation, proposed post-construction: 1297'

4) Well Type: (a) Gas Oil Underground Storage

Other
(b) If Gas: Shallow Deep
Horizontal

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Marcellus Shale: 7500' TVD, Anticipated Thickness- 50 Feet, Associated Pressure- 3200#

Don
8-25-2013

7) Proposed Total Vertical Depth: 7500' TVD

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 18,900' MD

10) Approximate Fresh Water Strata Depths: 246', 353'

11) Method to Determine Fresh Water Depth: Offset well records. Depths have been adjusted according to surface elevations.

12) Approximate Saltwater Depths: 1963'

13) Approximate Coal Seam Depths: 349', 633', 901'

14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No

16) Describe proposed well work: Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale

*Antero will be air drilling the fresh water string which makes it difficult to determine when freshwater is encountered, therefore we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

17) Describe fracturing/stimulating methods in detail:
Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well"

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 25.44 acres

19) Area to be disturbed for well pad only, less access road (acres): 4.69 acres

Received

Office of Oil and Gas
WV Dept. of Environmental Protection
Page 1 of 3
10/04/2013

20)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/ 48#	410'	410' *see above	CTS, 570 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2470'	2470'	CTS, 1006 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	18900'	18900'	4799 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

*DCW
8-28-2013*

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

Received

AUG 30 2013

21) 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.

22) Describe all cement additives associated with each cement type. _____
Conductor: no additives, Class A cement.
Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat
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

23) Proposed borehole conditioning procedures. Conductor: blowhole clean with air, run casing, 10 bbls fresh water.
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water. pump 48 bbls barite pill. pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

*Note: Attach additional sheets as needed.

Received

AUG 30 2013

Office of Oil and Gas
WV Dept. of Environmental Protection
Page 3 of 3

10/04/2013

17 - 06361 -

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 494488557

Watershed (HUC 10) Big Isaac Creek Quadrangle Big Isaac

Elevation 1297' County Doddridge District Greenbrier

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

Will a pit be used for drill cuttings? Yes _____ No X (*An associated frac pit will be used for flowback fluids)

If so, please describe anticipated pit waste: Drilling and Flowback Fluids

Will a synthetic liner be used in the pit? Yes X No _____ If so, what ml.? 60 mil.

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number Future permitted well locations when applicable. API# will be provided on Form WR-34)
- Off Site Disposal (Meadowfill Landfill Permit #SWF-1032-98)
- Other (Explain _____)

*DCW
9-28-2013*

Will closed loop system be used? Yes

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Surface - Air/Freshwater, Intermediate - Dust/Stiff Foam, Production - Water Based Mud

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

Additives to be used in drilling medium? Please See Attachment

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

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 *Gerard G. Alberts*

Company Official (Typed Name) Gerard G. Alberts

Company Official Title Environmental & Regulatory Manager

Subscribed and sworn before me this 20 day of Aug, 20 13

Notary Public

My commission expires 11/9/2016



17-06361

Form WW-9

Operator's Well No. 17 Farm Unit 101

Antero Resources Corporation

Proposed Revegetation Treatment: Acres Disturbed 25.44 Prevegetation pH _____

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

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum) Hay or straw or Wood Fiber (will be used where needed)

Mulch 2-3 Tons/acre

New Access Road A (9.94) + New Access Road B (2.67) + New Access Road C (.15) + New Drill Pad (4.69) + New Frac Pit (4.52) + New Frac Pit Truck Turn Pad (.72) + New Spoil Pad A (2.46) + New Road Pad (.29) = 25.44 Acres

Seed Mixtures

Seed Type	Area I (Temporary) lbs/acre
Tall Fescue	45
Perennial Rye Grass	20

*or type of grass seed requested by surface owner

Seed Type	Area II (Permanent) lbs/acre
Tall Fescue	45
Perennial Rye Grass	20

*or type of grass seed requested by surface owner

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Douglas Newton

Comments: Proceed & Mulch install EPS TO WV Dep regulations

Title: Oil & Gas inspector Date: 8-28-2013

Field Reviewed? Yes No

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WV Dept. of Environmental Protection
10/04/2013

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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17 - 06361 -

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

Received

2013 30

Office of Oil and Gas
WV Dept. of Environmental Protection

10/04/2013

17 - 06361 -

List of Anticipated Additives Used for Fracturing or Stimulating Well

Additives	Chemical Abstract Service Number (CAS #)
Fresh Water	7732-18-5
2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1
Ammonium Persulfate	7727-54-0
Anionic copolymer	proprietary
Anionic polymer	proprietary
BTEX Free Hydrotreated Heavy Naphtha	64742-48-9
Cellulase enzyme	(Proprietary)
Demulsifier Base	(Proprietary)
Ethoxylated alcohol blend	Mixture
Ethoxylated Nonylphenol	68412-54-4
Ethoxylated oleylamine	26635-93-8
Ethylene Glycol	107-21-1
Glycol Ethers	111-76-2
guar gum	9000-30-0
Hydrogen Chloride	7647-01-0
Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8
Isopropyl alcohol	67-63-0
liquid, 2,2-dibromo-3-nitrilopropionamide	10222-01-2
Microparticle	proprietary
Petroleum Distillates (BTEX Below Detect)	64742-47-8
Polyacrylamide	57-55-6
Propargyl Alcohol	107-19-7
Propylene Glycol	57-55-6
Quartz	14808-60-7
Sillica, crystalline quartz	7631-86-9
Sodium Chloride	7647-14-5
Sodium Hydroxide	1310-73-2
Sugar	57-50-1
Surfactant	68439-51-0
Suspending agent (solid)	14808-60-7
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7

Received

OCT 30 2013

Office of Oil and Gas
Wyoming Department of Environmental Protection

10/04/2013

8/30



Water Management Plan: Primary Water Sources



WMP-01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Important:

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

DEP is aware that some intake points will be used for mutiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interepreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at DEP.water.use@wv.gov.

APPROVED SEP 23 2013

10/04/2013

Source Summary

WMP- 01460

API Number:

047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Stream/River

● Source **Ohio River @ Ben's Run Withdrawal Site** Tyler Owner: **Ben's Run Land Company Limited Partnership**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
2/22/2015	2/22/2016	11,800,000		39.46593	-81.110781

Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): **3,360** Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: Refer to the specified station on the National Weather Service's Ohio River forecast website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>

● Source **West Fork River @ JCP Withdrawal** Harrison Owner: **James & Brenda Raines**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
2/22/2015	2/22/2016	11,800,000		39.320913	-80.337572

Regulated Stream? Stonewall Jackson Dam Ref. Gauge ID: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Max. Pump rate (gpm): **2,000** Min. Gauge Reading (cfs): **175.00** Min. Passby (cfs) **146.25**

DEP Comments:

● Source **West Fork River @ McDonald Withdrawal** Harrison Owner: **David Shrieves**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
2/22/2015	2/22/2016	11,800,000		39.16761	-80.45069

Regulated Stream? Stonewall Jackson Dam Ref. Gauge ID: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Max. Pump rate (gpm): **3,000** Min. Gauge Reading (cfs): **175.00** Min. Passby (cfs) **106.30**

DEP Comments:

10/04/2013

Source **West Fork River @ GAL Withdrawal** Harrison Owner: **David Shrieves**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:
2/22/2015 2/22/2016 11,800,000 39.16422 -80.45173

Regulated Stream? **Stonewall Jackson Dam** Ref. Gauge ID: **3061000** WEST FORK RIVER AT ENTERPRISE, WV

Max. Pump rate (gpm): **2,000** Min. Gauge Reading (cfs): **175.00** Min. Passby (cfs) **106.30**

DEP Comments:

Source **Middle Island Creek @ Mees Withdrawal Site** Pleasants Owner: **Sarah E. Mees**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:
2/22/2015 2/22/2016 11,800,000 39.43113 -81.079567

Regulated Stream? Ref. Gauge ID: **3114500** MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): **3,360** Min. Gauge Reading (cfs): **52.59** Min. Passby (cfs) **47.63**

DEP Comments:

Source **Middle Island Creek @ Dawson Withdrawal** Tyler Owner: **Gary D. and Rella A. Dawson**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:
2/22/2015 2/22/2016 11,800,000 39.379292 -80.867803

Regulated Stream? Ref. Gauge ID: **3114500** MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): **3,000** Min. Gauge Reading (cfs): **76.03** Min. Passby (cfs) **28.83**

DEP Comments:

10/04/2013

Source **McElroy Creek @ Forest Withdrawal** Tyler Owner: **Forest C. & Brenda L. Moore**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:
2/22/2015 2/22/2016 11,800,000 39.39675 -80.738197

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): 1,000 Min. Gauge Reading (cfs): 74.77 Min. Passby (cfs) 13.10

DEP Comments:

Source **Meathouse Fork @ Gagnon Withdrawal** Doddridge Owner: **George L. Gagnon and Susan C. Gagnon**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:
2/22/2015 2/22/2016 11,800,000 39.26054 -80.720998

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): 1,000 Min. Gauge Reading (cfs): 71.96 Min. Passby (cfs) 11.74

DEP Comments:

Source **Meathouse Fork @ Whitehair Withdrawal** Doddridge Owner: **Elton Whitehair**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:
2/22/2015 2/22/2016 11,800,000 39.211317 -80.679592

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): 1,000 Min. Gauge Reading (cfs): 69.73 Min. Passby (cfs) 7.28

DEP Comments:

10/04/2013

Source **Tom's Fork @ Erwin Withdrawal** Doddridge Owner: **John F. Erwin and Sandra E. Erwin**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:
2/22/2015 2/22/2016 11,800,000 39.174306 -80.702992

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): **1,000** Min. Gauge Reading (cfs): **69.73** Min. Passby (cfs) **0.59**

DEP Comments:

Source **Arnold Creek @ Davis Withdrawal** Doddridge Owner: **Jonathon Davis**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:
2/22/2015 2/22/2016 11,800,000 39.302006 -80.824561

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): **1,000** Min. Gauge Reading (cfs): **69.73** Min. Passby (cfs) **3.08**

DEP Comments:

Source **Buckeye Creek @ Powell Withdrawal** Doddridge Owner: **Dennis Powell**

Start Date End Date Total Volume (gal) Max. daily purchase (gal) Intake Latitude: Intake Longitude:
2/22/2015 2/22/2016 11,800,000 39.277142 -80.690386

Regulated Stream? Ref. Gauge ID: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Max. Pump rate (gpm): **1,000** Min. Gauge Reading (cfs): **69.73** Min. Passby (cfs) **4.59**

DEP Comments:

10/04/2013

● Source **South Fork of Hughes River @ Knight Withdrawal** Ritchie Owner: **Tracy C. Knight & Stephanie C. Knight**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
2/22/2015	2/22/2016	11,800,000		39.198369	-80.870969

Regulated Stream? Ref. Gauge ID: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WA

Max. Pump rate (gpm): **3,000** Min. Gauge Reading (cfs): **39.80** Min. Passby (cfs) **1.95**

DEP Comments:

● Source **North Fork of Hughes River @ Davis Withdrawal** Ritchie Owner: **Lewis P. Davis and Norma J. Davis**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
2/22/2015	2/22/2016	11,800,000		39.322363	-80.936771

Regulated Stream? Ref. Gauge ID: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WA

Max. Pump rate (gpm): **1,000** Min. Gauge Reading (cfs): **35.23** Min. Passby (cfs) **2.19**

DEP Comments:

10/04/2013

Source Summary

WMP- 01460

API Number:

047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Purchased Water

Source **Ohio River @ Select Energy** Pleasants Owner: **Select Energy**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
2/22/2015	2/22/2016	11,800,000	500,000	39.346473	-81.338727

Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999998 Ohio River Station: Racine Dam

Max. Pump rate (gpm): **1,680** Min. Gauge Reading (cfs): **7,216.00** Min. Passby (cfs)

DEP Comments: Refer to the specified station on the National Weather Service's Ohio River forecast website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>

Source **Middle Island Creek @ Solo Construction** Pleasants Owner: **Solo Construction, LLC**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
2/22/2015	2/22/2016	11,800,000	1,000,000	39.399094	-81.185548

Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: Elevation analysis indicates that this location has the same elevation as Middle Island Creek's pour point into the Ohio River. As such, it is deemed that water flow at this location is heavily influenced by the Ohio River.

Source **Claywood Park PSD** Wood Owner: **Claywood Park PSD**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
2/22/2015	2/22/2016	11,800,000		-	-

Regulated Stream? Ref. Gauge ID: 9999998 Ohio River Station: Racine Dam

Max. Pump rate (gpm): Min. Gauge Reading (cfs): **7,216.00** Min. Passby (cfs)

DEP Comments: Elevation analysis indicates that this location has approximately the same elevation as Little Kanawha's pour point into the Ohio River. As such, it is deemed that water flow at this location is heavily influenced by the Ohio River.

10/04/2013

Source **Sun Valley Public Service District** Harrison Owner: **Sun Valley PSD**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
2/22/2015	2/22/2016	11,800,000	200,000	-	-

Regulated Stream? **Stonewall Jackson Dam** Ref. Gauge ID: **3061000** **WEST FORK RIVER AT ENTERPRISE, WV**

Max. Pump rate (gpm): **Min. Gauge Reading (cfs): 171.48** **Min. Passby (cfs)**

DEP Comments:

10/04/2013

Source Detail

WMP-01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24852 Source Name: Ohio River @ Select Energy
Select Energy

Source Latitude: 39.346473
Source Longitude: -81.338727

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 25000 County: Pleasants

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 11,800,000

Trout Stream? Tier 3?

Regulated Stream? Ohio River Min. Flow

Max. Pump rate (gpm): 1,680

Proximate PSD?

Max. Simultaneous Trucks:

Gauged Stream?

Max. Truck pump rate (gpm)

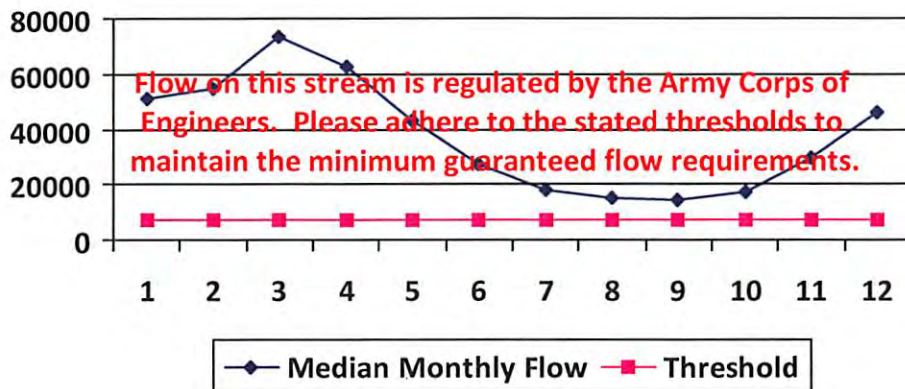
Reference Gaug: 9999998 Ohio River Station: Racine Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 7216

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	50,956.00	-	-
2	54,858.00	-	-
3	73,256.00	-	-
4	62,552.00	-	-
5	43,151.00	-	-
6	27,095.00	-	-
7	17,840.00	-	-
8	14,941.00	-	-
9	14,272.00	-	-
10	17,283.00	-	-
11	29,325.00	-	-
12	46,050.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	3.74
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00

Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP-01460

API/ID Number: 047-017-06361

Operator: Antero Resources

Farm Unit 1H

Source ID: 24853 Source Name: Middle Island Creek @ Solo Construction
Solo Construction, LLC

Source Latitude: 39.399094
Source Longitude: -81.185548

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 25000 County: Pleasants

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

- Endangered Species? Mussel Stream?
- Trout Stream? Tier 3?
- Regulated Stream? Ohio River Min. Flow
- Proximate PSD? City of St. Marys
- Gauged Stream?

Total Volume from Source (gal): 11,800,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm) 0

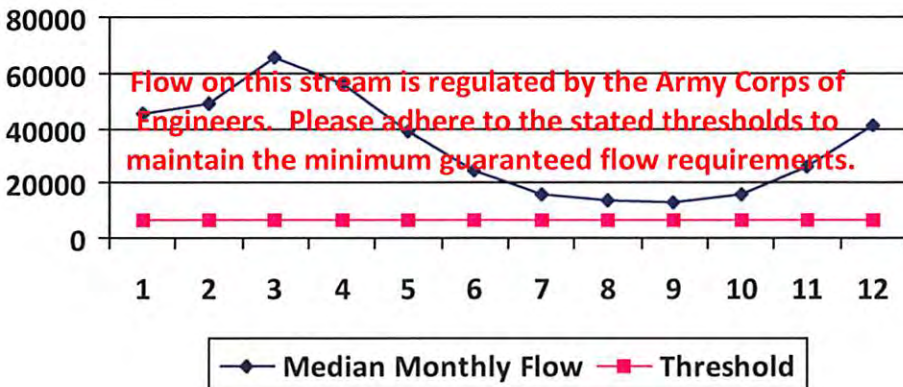
Reference Gaug 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	-
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
<hr/>	
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP-01460

API/ID Number: 047-017-06361

Operator: Antero Resources

Farm Unit 1H

Source ID: 24854 Source Name: Claywood Park PSD
Claywood Park PSD

Source Latitude: -
Source Longitude: -

HUC-8 Code: 5030203

Drainage Area (sq. mi.): 25000 County: Wood

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 11,800,000

Trout Stream? Tier 3?

Max. Pump rate (gpm):

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD? Claywood Park PSD

Max. Truck pump rate (gpm): 0

Gauged Stream?

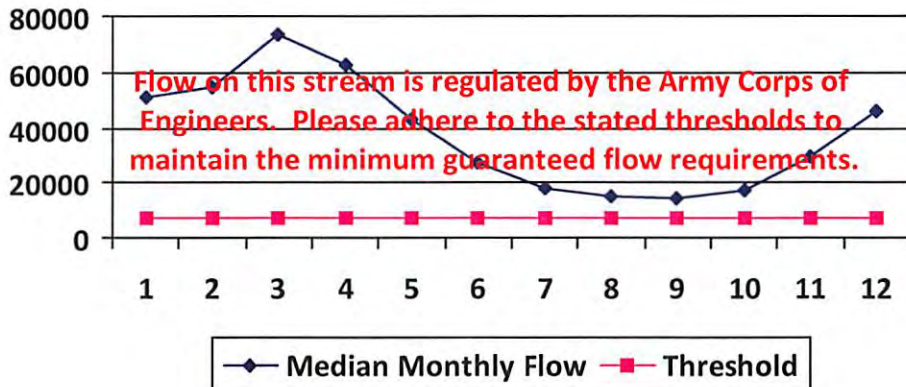
Reference Gaug: 9999998 Ohio River Station: Racine Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 7216

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	50,956.00	-	-
2	54,858.00	-	-
3	73,256.00	-	-
4	62,552.00	-	-
5	43,151.00	-	-
6	27,095.00	-	-
7	17,840.00	-	-
8	14,941.00	-	-
9	14,272.00	-	-
10	17,283.00	-	-
11	29,325.00	-	-
12	46,050.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP- 01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24855 Source Name: Sun Valley Public Service District
Sun Valley PSD

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 391.85 County: Harrison

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Total Volume from Source (gal): 11,800,000

Endangered Species? Mussel Stream?

Trout Stream? Tier 3?

Regulated Stream? Stonewall Jackson Dam

Proximate PSD?

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Gauged Stream?

Max. Truck pump rate (gpm)

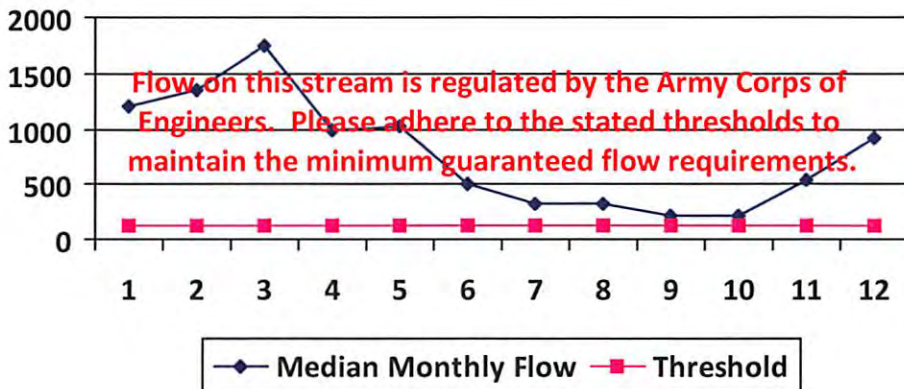
Reference Gaug: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.): 759.00

Gauge Threshold (cfs): 234

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	1,200.75	-	-
2	1,351.92	-	-
3	1,741.33	-	-
4	995.89	-	-
5	1,022.23	-	-
6	512.21	-	-
7	331.86	-	-
8	316.87	-	-
9	220.48	-	-
10	216.17	-	-
11	542.45	-	-
12	926.12	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	-
Downstream Demand (cfs):	-
Pump rate (cfs):	-
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP- 01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24838 Source Name: Ohio River @ Ben's Run Withdrawal Site
 Ben's Run Land Company Limited Partnership

Source Latitude: 39.46593
 Source Longitude: -81.110781

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 25000 County: Tyler

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

- Endangered Species? Mussel Stream?
- Trout Stream? Tier 3?
- Regulated Stream? Ohio River Min. Flow
- Proximate PSD?
- Gauged Stream?

Total Volume from Source (gal): 11,800,000

Max. Pump rate (gpm): 3,360

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm): 0

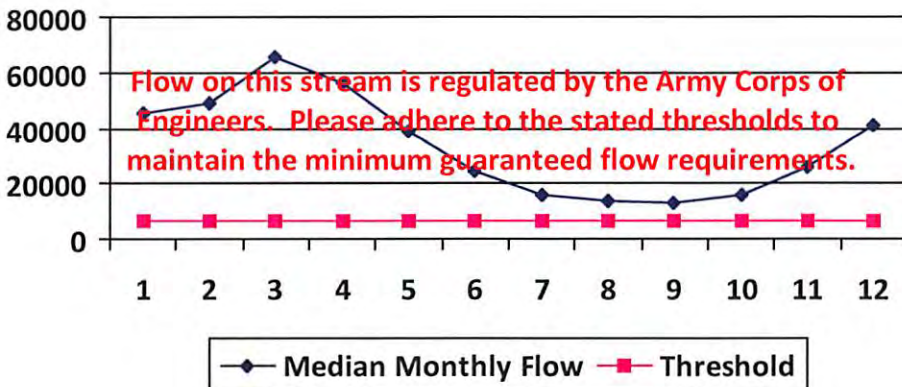
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	7.49
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP-01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24839 Source Name: West Fork River @ JCP Withdrawal
James & Brenda Raines

Source Latitude: 39.320913

Source Longitude: -80.337572

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 532.2 County: Harrison

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Total Volume from Source (gal): 11,800,000

Endangered Species? Mussel Stream?

Max. Pump rate (gpm): 2,000

Trout Stream? Tier 3?

Max. Simultaneous Trucks: 0

Regulated Stream? Stonewall Jackson Dam

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

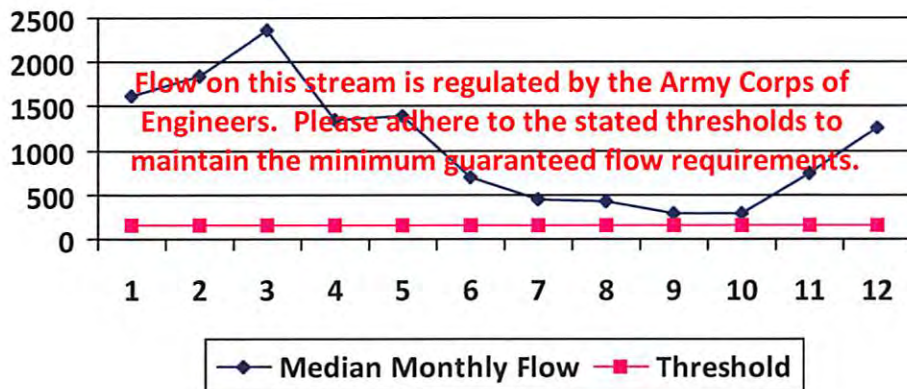
Reference Gaug: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.): 759.00

Gauge Threshold (cfs): 234

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	1,630.82	-	-
2	1,836.14	-	-
3	2,365.03	-	-
4	1,352.59	-	-
5	1,388.37	-	-
6	695.67	-	-
7	450.73	-	-
8	430.37	-	-
9	299.45	-	-
10	293.59	-	-
11	736.74	-	-
12	1,257.84	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	24.29
Downstream Demand (cfs):	0.00
Pump rate (cfs):	4.46
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP- 01460

API/ID Number: 047-017-06361

Operator: Antero Resources

Farm Unit 1H

Source ID: 24840 Source Name: West Fork River @ McDonald Withdrawal
David Shrieves

Source Latitude: 39.16761
Source Longitude: -80.45069

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 314.91 County: Harrison

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 11,800,000

Trout Stream? Tier 3?

Max. Pump rate (gpm): 3,000

Regulated Stream? Stonewall Jackson Dam

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

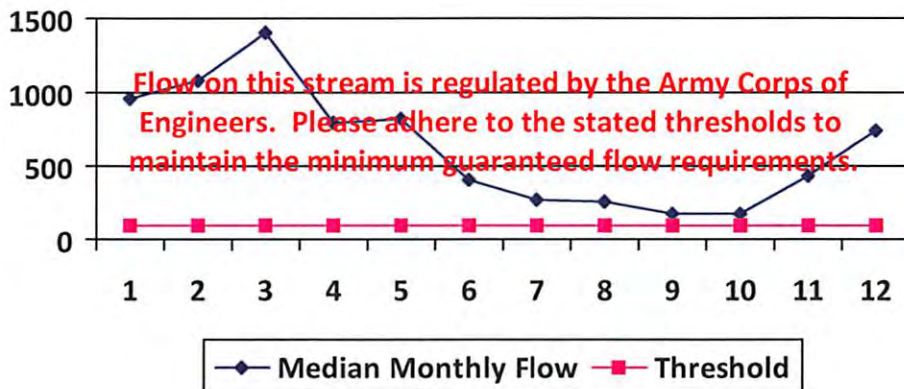
Reference Gaug 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.) 759.00

Gauge Threshold (cfs): 234

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	964.98	-	-
2	1,086.47	-	-
3	1,399.42	-	-
4	800.34	-	-
5	821.52	-	-
6	411.64	-	-
7	266.70	-	-
8	254.66	-	-
9	177.19	-	-
10	173.72	-	-
11	435.94	-	-
12	744.28	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	24.29
Downstream Demand (cfs):	0.00
Pump rate (cfs):	6.68
Headwater Safety (cfs):	24.27
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP-01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24841 Source Name: West Fork River @ GAL Withdrawal
David Shrieves

Source Latitude: 39.16422
Source Longitude: -80.45173

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 313.67 County: Harrison

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

- Endangered Species? Mussel Stream?
- Trout Stream? Tier 3?
- Regulated Stream? Stonewall Jackson Dam
- Proximate PSD?
- Gauged Stream?

Total Volume from Source (gal): 11,800,000

Max. Pump rate (gpm): 2,000

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm): 0

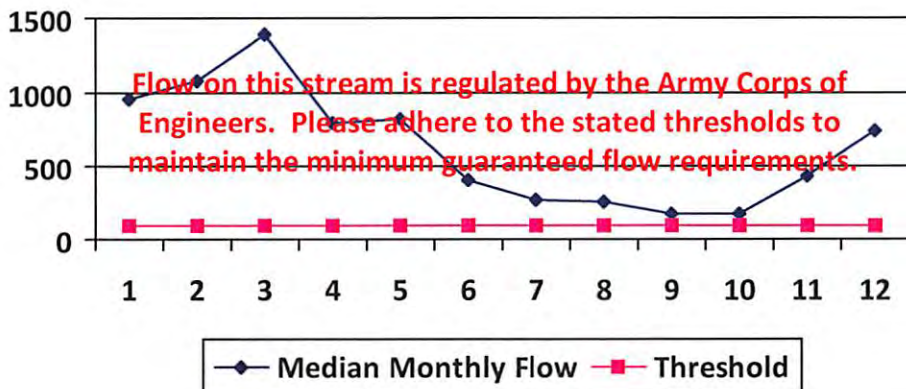
Reference Gaug 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.) 759.00

Gauge Threshold (cfs): 234

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	961.18	-	-
2	1,082.19	-	-
3	1,393.91	-	-
4	797.19	-	-
5	818.28	-	-
6	410.02	-	-
7	265.65	-	-
8	253.65	-	-
9	176.49	-	-
10	173.04	-	-
11	434.22	-	-
12	741.35	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	24.29
Downstream Demand (cfs):	0.00
Pump rate (cfs):	4.46
Headwater Safety (cfs):	24.18
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP-01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24842 Source Name: Middle Island Creek @ Mees Withdrawal Site
Sarah E. Mees

Source Latitude: 39.43113
Source Longitude: -81.079567

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 484.78 County: Pleasants

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

- Endangered Species? Mussel Stream?
- Trout Stream? Tier 3?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?

Total Volume from Source (gal): 11,800,000

Max. Pump rate (gpm): 3,360

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm): 0

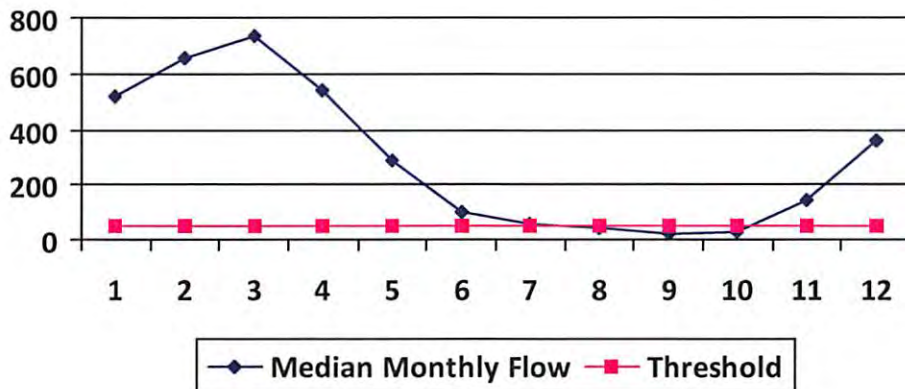
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	519.88	55.12	465.14
2	653.95	55.12	599.22
3	731.75	55.12	677.01
4	543.38	55.12	488.65
5	286.64	55.12	231.90
6	100.10	55.12	45.36
7	56.65	55.12	1.91
8	46.64	55.12	-8.10
9	23.89	55.12	-30.85
10	30.01	55.12	-24.72
11	146.56	55.12	91.83
12	358.10	55.12	303.37

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): 47.63
 Upstream Demand (cfs): 0.00
 Downstream Demand (cfs): 0.00
 Pump rate (cfs): 7.49
 Headwater Safety (cfs): 0.00
 Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): 52.49

Passby at Location (cfs): 47.63

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP-01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24843 Source Name: Middle Island Creek @ Dawson Withdrawal
Gary D. and Rella A. Dawson

Source Latitude: 39.379292
Source Longitude: -80.867803

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 181.34 County: Tyler

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 11,800,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 3,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

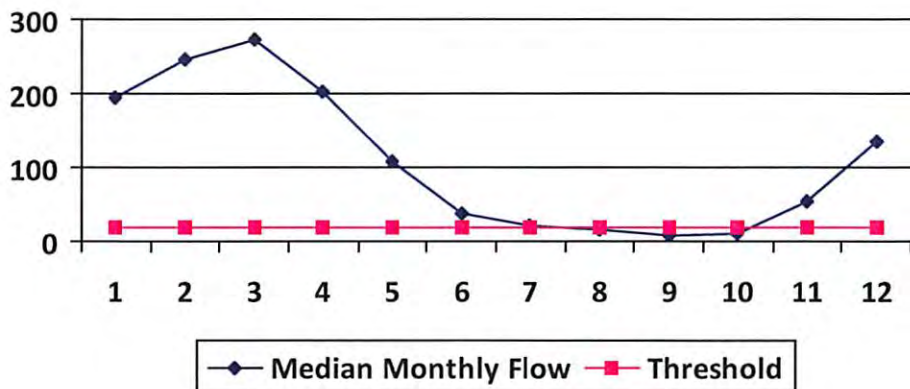
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	194.47	42.06	152.68
2	244.62	42.06	202.83
3	273.72	42.06	231.93
4	203.26	42.06	161.47
5	107.22	42.06	65.43
6	37.44	42.06	-4.35
7	21.19	42.06	-20.60
8	17.45	42.06	-24.34
9	8.94	42.06	-32.85
10	11.23	42.06	-30.56
11	54.82	42.06	13.04
12	133.96	42.06	92.17

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): 17.82
 Upstream Demand (cfs): 13.10
 Downstream Demand (cfs): 6.55
 Pump rate (cfs): 6.68
 Headwater Safety (cfs): 4.45
 Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): 76.03

Passby at Location (cfs): 28.82

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP- 01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24844 Source Name: McElroy Creek @ Forest Withdrawal
 Forest C. & Brenda L. Moore

Source Latitude: 39.39675

Source Longitude: -80.738197

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 88.85 County: Tyler

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

- Endangered Species? Mussel Stream?
- Trout Stream? Tier 3?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?

Total Volume from Source (gal): 11,800,000

Max. Pump rate (gpm): 1,000

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm): 0

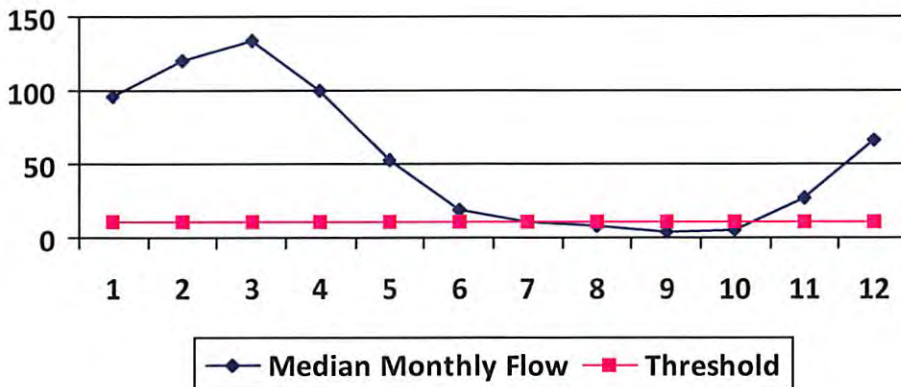
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	95.28	19.78	75.68
2	119.86	19.78	100.25
3	134.11	19.78	114.51
4	99.59	19.78	79.99
5	52.54	19.78	32.93
6	18.35	19.78	-1.26
7	10.38	19.78	-9.22
8	8.55	19.78	-11.05
9	4.38	19.78	-15.23
10	5.50	19.78	-14.10
11	26.86	19.78	7.26
12	65.63	19.78	46.03

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	8.73
Upstream Demand (cfs):	4.46
Downstream Demand (cfs):	0.00
Pump rate (cfs):	2.23
Headwater Safety (cfs):	2.18
Ungauged Stream Safety (cfs):	2.18

Min. Gauge Reading (cfs): 74.19

Passby at Location (cfs): 13.09

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP- 01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24845 Source Name: Meathouse Fork @ Gagnon Withdrawal
George L. Gagnon and Susan C. Gagnon

Source Latitude: 39.26054
Source Longitude: -80.720998

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 60.6 County: Doddridge

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Endangered Species? Mussel Stream?

Trout Stream? Tier 3?

Total Volume from Source (gal): 11,800,000

Regulated Stream?

Max. Pump rate (gpm): 1,000

Proximate PSD?

Max. Simultaneous Trucks: 0

Gauged Stream?

Max. Truck pump rate (gpm): 0

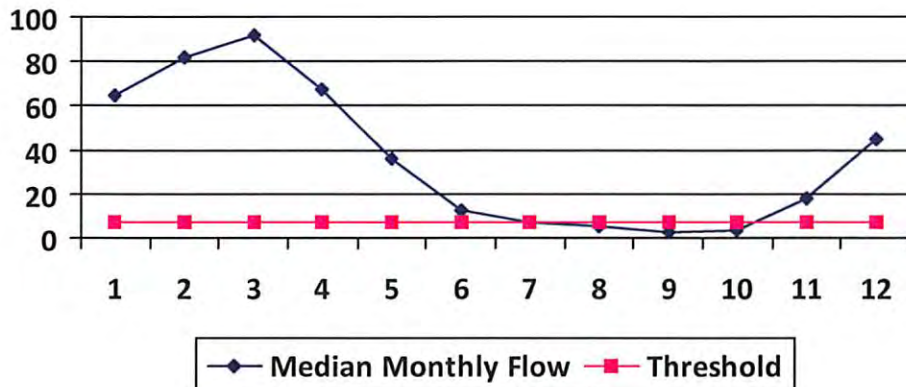
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	64.99	13.39	51.70
2	81.75	13.39	68.46
3	91.47	13.39	78.19
4	67.93	13.39	54.64
5	35.83	13.39	22.55
6	12.51	13.39	-0.77
7	7.08	13.39	-6.20
8	5.83	13.39	-7.45
9	2.99	13.39	-10.30
10	3.75	13.39	-9.53
11	18.32	13.39	5.04
12	44.76	13.39	31.48

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	5.95
Upstream Demand (cfs):	2.23
Downstream Demand (cfs):	2.81
Pump rate (cfs):	2.23
Headwater Safety (cfs):	1.49
Ungauged Stream Safety (cfs):	1.49
Min. Gauge Reading (cfs):	71.96
Passby at Location (cfs):	11.74

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP- 01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24846 Source Name: Meathouse Fork @ Whitehair Withdrawal
Elton Whitehair

Source Latitude: 39.211317
Source Longitude: -80.679592

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 30.37 County: Doddridge

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 11,800,000

Trout Stream? Tier 3?

Max. Pump rate (gpm): 1,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

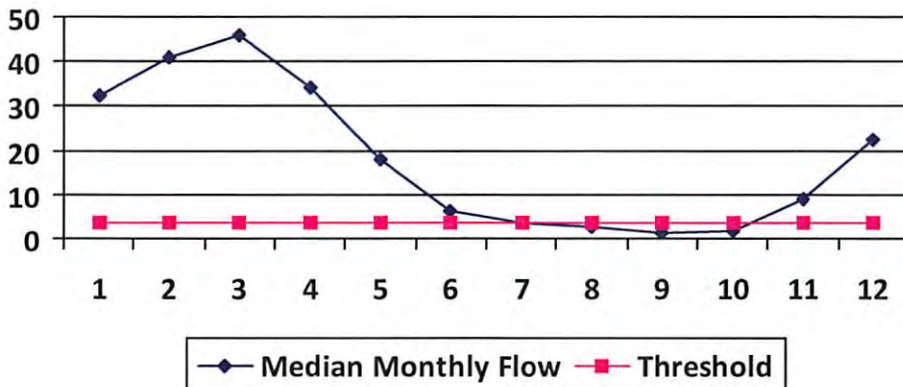
Reference Gaug 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.) 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	32.57	6.70	26.15
2	40.97	6.70	34.55
3	45.84	6.70	39.42
4	34.04	6.70	27.62
5	17.96	6.70	11.54
6	6.27	6.70	-0.15
7	3.55	6.70	-2.87
8	2.92	6.70	-3.50
9	1.50	6.70	-4.92
10	1.88	6.70	-4.54
11	9.18	6.70	2.76
12	22.43	6.70	16.01

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	2.98
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	2.81
Pump rate (cfs):	2.23
Headwater Safety (cfs):	0.75
Ungauged Stream Safety (cfs):	0.75
Min. Gauge Reading (cfs):	69.73
Passby at Location (cfs):	7.29

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP- 01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24847 Source Name: Tom's Fork @ Erwin Withdrawal
John F. Erwin and Sandra E. Erwin

Source Latitude: 39.174306

Source Longitude: -80.702992

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 4.01 County: Doddridge

- Endangered Species? Mussel Stream?
- Trout Stream? Tier 3?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Total Volume from Source (gal): 11,800,000

Max. Pump rate (gpm): 1,000

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm): 0

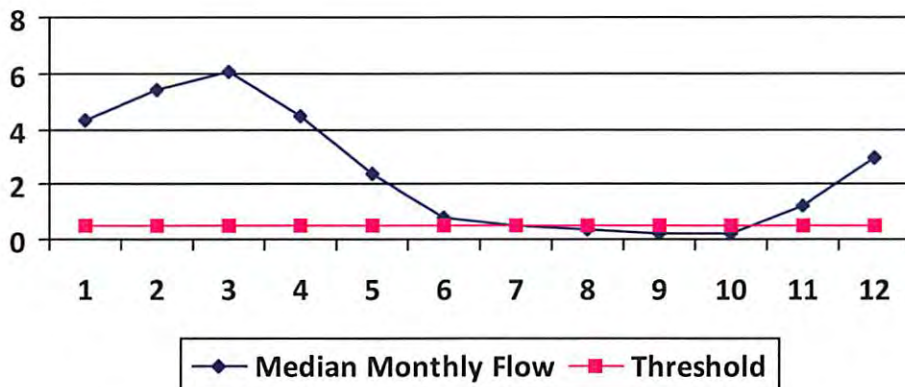
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	4.30	2.82	1.88
2	5.41	2.82	2.98
3	6.05	2.82	3.63
4	4.49	2.82	2.07
5	2.37	2.82	-0.05
6	0.83	2.82	-1.60
7	0.47	2.82	-1.96
8	0.39	2.82	-2.04
9	0.20	2.82	-2.23
10	0.25	2.82	-2.18
11	1.21	2.82	-1.21
12	2.96	2.82	0.54

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): 0.39

Upstream Demand (cfs): 0.00

Downstream Demand (cfs): 0.00

Pump rate (cfs): 2.23

Headwater Safety (cfs): 0.10

Ungauged Stream Safety (cfs): 0.10

Min. Gauge Reading (cfs): 69.73

Passby at Location (cfs): 0.59

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP-01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24848 Source Name: Arnold Creek @ Davis Withdrawal
Jonathon Davis

Source Latitude: 39.302006
Source Longitude: -80.824561

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 20.83 County: Doddridge

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 11,800,000

Trout Stream? Tier 3?

Max. Pump rate (gpm): 1,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

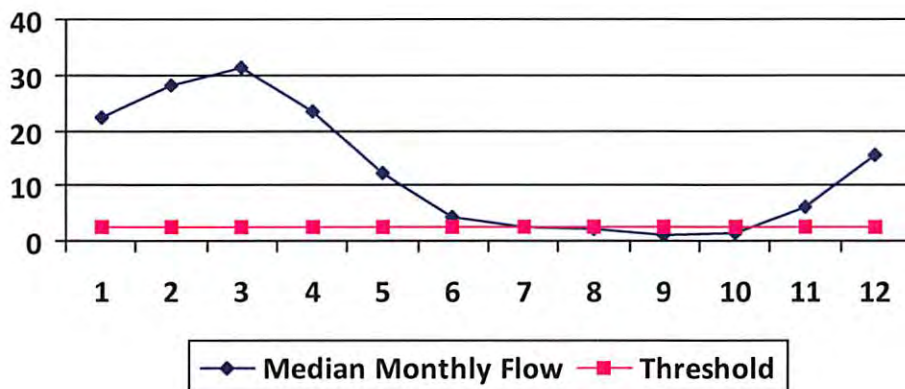
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	22.34	5.30	17.29
2	28.10	5.30	23.05
3	31.44	5.30	26.39
4	23.35	5.30	18.30
5	12.32	5.30	7.26
6	4.30	5.30	-0.75
7	2.43	5.30	-2.62
8	2.00	5.30	-3.05
9	1.03	5.30	-4.03
10	1.29	5.30	-3.76
11	6.30	5.30	1.25
12	15.39	5.30	10.34

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): 2.05
 Upstream Demand (cfs): 0.00
 Downstream Demand (cfs): 0.00
 Pump rate (cfs): 2.23
 Headwater Safety (cfs): 0.51
 Ungauged Stream Safety (cfs): 0.51

Min. Gauge Reading (cfs): 69.73

Passby at Location (cfs): 3.07

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP- 01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24849 Source Name: Buckeye Creek @ Powell Withdrawal
Dennis Powell

Source Latitude: 39.277142
Source Longitude: -80.690386

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 31.15 County: Doddridge

Anticipated withdrawal start date: 2/22/2015

Anticipated withdrawal end date: 2/22/2016

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 11,800,000

Trout Stream? Tier 3?

Max. Pump rate (gpm): 1,000

Regulated Stream?

Max. Simultaneous Trucks: 0

Proximate PSD?

Max. Truck pump rate (gpm): 0

Gauged Stream?

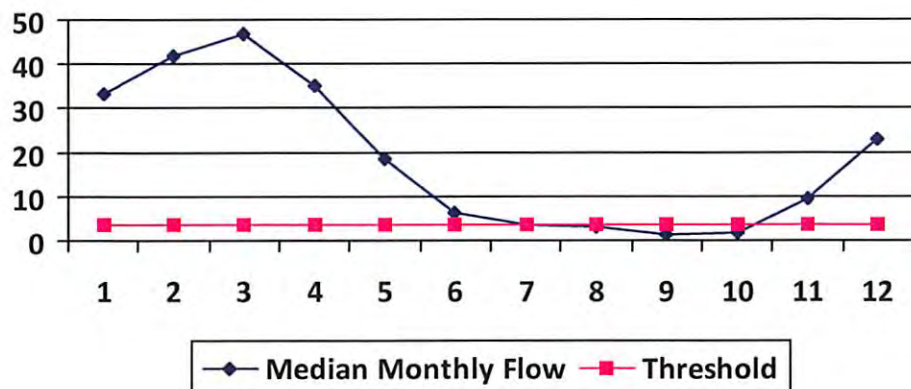
Reference Gaug: 3114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Drainage Area (sq. mi.): 458.00

Gauge Threshold (cfs): 45

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	33.41	6.82	26.95
2	42.02	6.82	35.56
3	47.02	6.82	40.56
4	34.92	6.82	28.46
5	18.42	6.82	11.96
6	6.43	6.82	-0.03
7	3.64	6.82	-2.82
8	3.00	6.82	-3.46
9	1.53	6.82	-4.92
10	1.93	6.82	-4.53
11	9.42	6.82	2.96
12	23.01	6.82	16.55

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): 3.06
 Upstream Demand (cfs): 0.00
 Downstream Demand (cfs): 0.00
 Pump rate (cfs): 2.23
 Headwater Safety (cfs): 0.77
 Ungauged Stream Safety (cfs): 0.77

Min. Gauge Reading (cfs): 69.73

Passby at Location (cfs): 4.59

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP- 01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24850 Source Name South Fork of Hughes River @ Knight Withdrawal
Tracy C. Knight & Stephanie C. Knight

Source Latitude: 39.198369
Source Longitude: -80.870969

HUC-8 Code: 5030203

Drainage Area (sq. mi.): 16.26 County: Ritchie

- Endangered Species? Mussel Stream?
- Trout Stream? Tier 3?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?

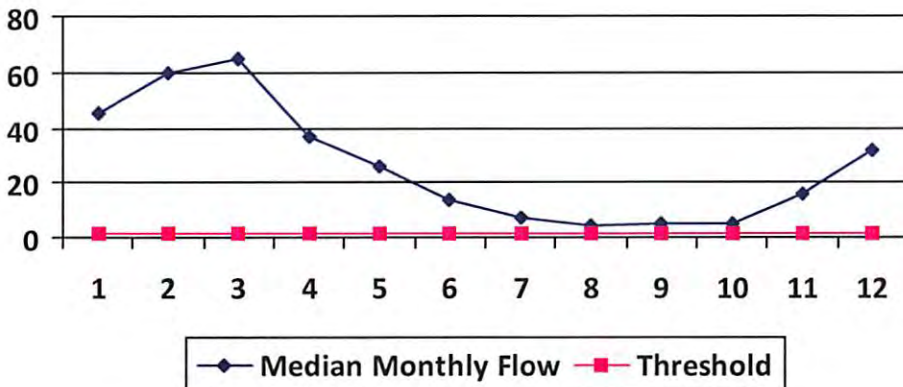
Anticipated withdrawal start date: 2/22/2015
Anticipated withdrawal end date: 2/22/2016
Total Volume from Source (gal): 11,800,000
Max. Pump rate (gpm): 3,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm): 0

Reference Gaug 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

Drainage Area (sq. mi.) 229.00 Gauge Threshold (cfs): 22

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45.67	14.26	31.44
2	59.55	14.26	45.31
3	65.21	14.26	50.97
4	36.87	14.26	22.63
5	25.86	14.26	11.63
6	13.90	14.26	-0.33
7	6.89	14.26	-7.34
8	3.98	14.26	-10.25
9	4.79	14.26	-9.45
10	5.20	14.26	-9.04
11	15.54	14.26	1.30
12	32.06	14.26	17.82

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): 1.56
Upstream Demand (cfs): 5.62
Downstream Demand (cfs): 0.00
Pump rate (cfs): 6.68
Headwater Safety (cfs): 0.39
Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): 39.80
Passby at Location (cfs): 1.95

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013

Source Detail

WMP-01460

API/ID Number: 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Source ID: 24851 Source Name: North Fork of Hughes River @ Davis Withdrawal
Lewis P. Davis and Norma J. Davis

Source Latitude: 39.322363
Source Longitude: -80.936771

HUC-8 Code: 5030203

Drainage Area (sq. mi.): 15.18 County: Ritchie

- Endangered Species? Mussel Stream?
- Trout Stream? Tier 3?
- Regulated Stream?
- Proximate PSD?
- Gauged Stream?

Anticipated withdrawal start date: 2/22/2015
Anticipated withdrawal end date: 2/22/2016
Total Volume from Source (gal): 11,800,000

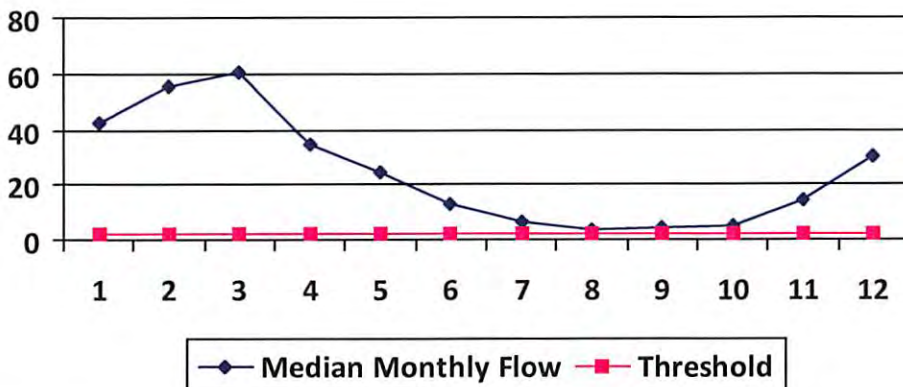
Max. Pump rate (gpm): 1,000
Max. Simultaneous Trucks: 0
Max. Truck pump rate (gpm): 0

Reference Gaug: 3155220 SOUTH FORK HUGHES RIVER BELOW MACFARLAN, WV

Drainage Area (sq. mi.): 229.00 Gauge Threshold (cfs): 22

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	42.64	4.42	38.36
2	55.59	4.42	51.32
3	60.88	4.42	56.60
4	34.42	4.42	30.14
5	24.15	4.42	19.87
6	12.98	4.42	8.70
7	6.44	4.42	2.16
8	3.72	4.42	-0.56
9	4.47	4.42	0.19
10	4.85	4.42	0.57
11	14.50	4.42	10.23
12	29.93	4.42	25.65

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs): 1.46
Upstream Demand (cfs): 0.00
Downstream Demand (cfs): 0.00
Pump rate (cfs): 2.23
Headwater Safety (cfs): 0.36
Ungauged Stream Safety (cfs): 0.36

Min. Gauge Reading (cfs): 35.23
Passby at Location (cfs): 2.19

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

10/04/2013



Water Management Plan: Secondary Water Sources



WMP- 01460

API/ID Number 047-017-06361

Operator:

Antero Resources

Farm Unit 1H

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Lake/Reservoir

Source ID:	24856	Source Name	City of Salem Reservoir (Lower Dog Run)		Source start date:	2/22/2015
			Public Water Provider		Source end date:	2/22/2016
Source Lat:	39.28834	Source Long:	-80.54966	County	Harrison	
Max. Daily Purchase (gal)	1,000,000	Total Volume from Source (gal):	11,800,000			

DEP Comments:

Farm Unit 1H

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	24857	Source Name	Pennsboro Lake		Source start date:	2/22/2015	
					Source end date:	2/22/2016	
		Source Lat:	39.281689	Source Long:	-80.925526	County	Ritchie
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		11,800,000	
DEP Comments:							

Source ID:	24858	Source Name	Powers Lake (Wilderness Water Park Dam)		Source start date:	2/22/2015	
					Source end date:	2/22/2016	
		Source Lat:	39.255752	Source Long:	-80.463262	County	Harrison
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		11,800,000	
DEP Comments:							

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	24859	Source Name	Powers Lake Two		Source start date:	2/22/2015	
					Source end date:	2/22/2016	
		Source Lat:	39.247604	Source Long:	-80.466642	County	Harrison
		Max. Daily Purchase (gal)		Total Volume from Source (gal):		11,800,000	

DEP Comments:

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Other

Source ID:	24860	Source Name	Poth Lake (Landowner Pond)		Source start date:	2/22/2015	
			Private Owner		Source end date:	2/22/2016	
		Source Lat:	39.221306	Source Long:	-80.463028	County	Harrison
		Max. Daily Purchase (gal)		Total Volume from Source (gal):			11,800,000
		DEP Comments:					

Source ID:	24861	Source Name	Williamson Pond (Landowner Pond)		Source start date:	2/22/2015	
					Source end date:	2/22/2016	
		Source Lat:	39.19924	Source Long:	-80.886161	County	Ritchie
		Max. Daily Purchase (gal)		Total Volume from Source (gal):			11,800,000
		DEP Comments:					

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	24862	Source Name	Eddy Pond (Landowner Pond)		Source start date:	2/22/2015	
					Source end date:	2/22/2016	
		Source Lat:	39.19924	Source Long:	-80.886161	County	Ritchie
		Max. Daily Purchase (gal)		Total Volume from Source (gal):			11,800,000

DEP Comments:

Source ID:	24863	Source Name	Hog Lick Quarry Industrial Facility		Source start date:	2/22/2015	
					Source end date:	2/22/2016	
		Source Lat:	39.419272	Source Long:	-80.217941	County	Marion
		Max. Daily Purchase (gal)	1,000,000	Total Volume from Source (gal):			11,800,000

DEP Comments:

Farm Unit 1H

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

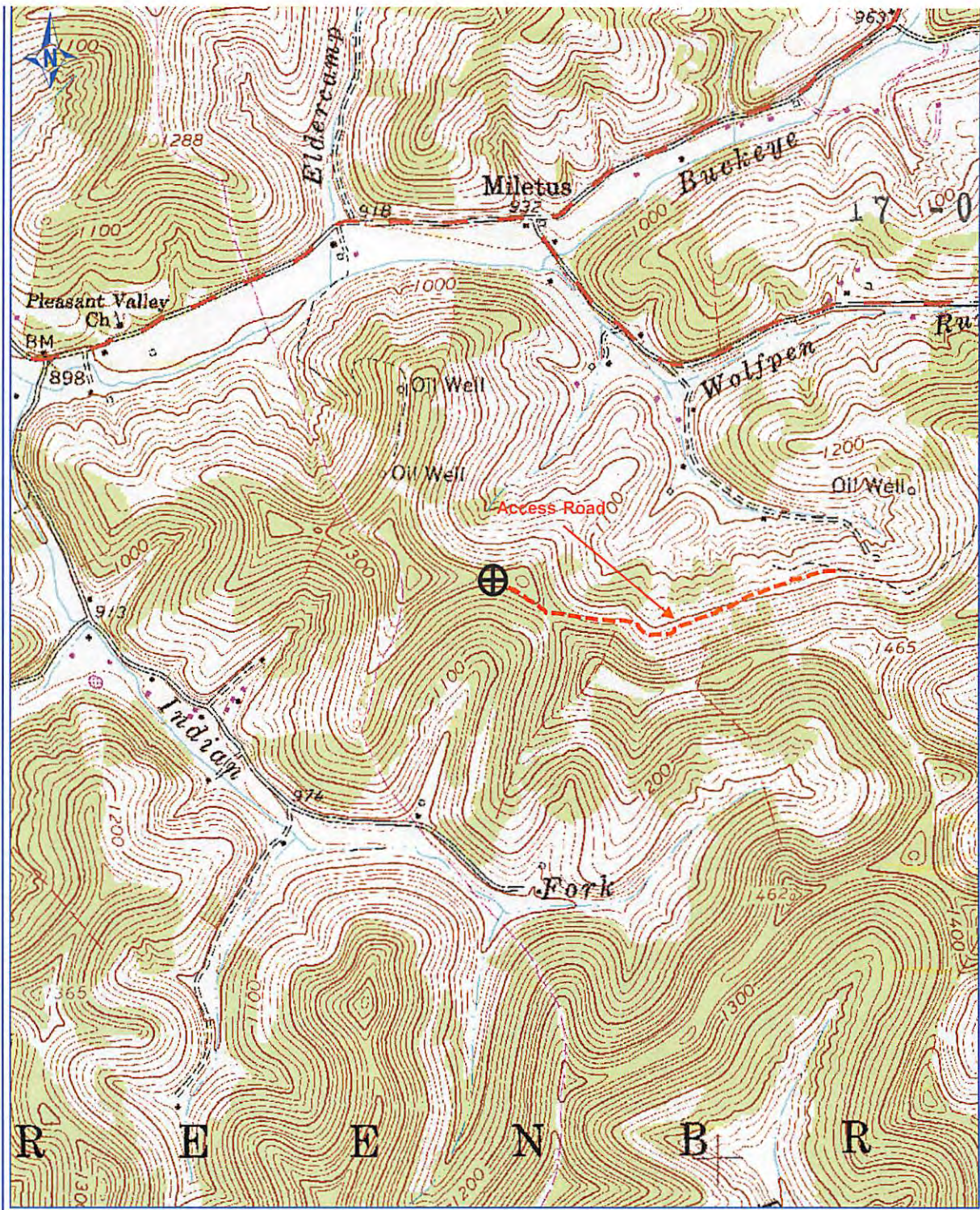
Source ID:	24864	Source Name	Glade Fork Mine Industrial Facility		Source start date:	2/22/2015	
					Source end date:	2/22/2016	
		Source Lat:	38.965767	Source Long:	-80.299313	County	Upshur
		Max. Daily Purchase (gal)	1,000,000	Total Volume from Source (gal):	11,800,000		

DEP Comments:

Recycled Frac Water

Source ID:	24865	Source Name	Farm Unit 2H		Source start date:	2/22/2015
					Source end date:	2/22/2016
		Source Lat:		Source Long:		County
		Max. Daily Purchase (gal)		Total Volume from Source (gal):	11,800,000	

DEP Comments:



Plat spotted
CPL

06361

PETRA 5/1/2013 4:09:35 PM

Antero Resources Corp

APPALACHIAN BASIN

Farm Unit 1H

Doddridge County

REMARKS
 QUADRANGLE: BIG ISAAC
 WATERSHED: BIG ISAAC CREEK
 DISTRICT: GREENBRIER

By: ECM

Received

AUG 30 2013

Office of Oil and Gas
 Environmental Protection
 WV Dept of Environmental Protection

10/04/2013

9,139' to Bottom Hole

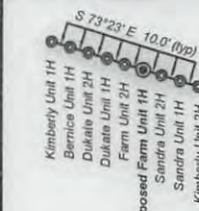
1,852' to Top Hole

Bottom Hole LATITUDE 39 - 12 - 30
Top Hole LATITUDE 39 - 15 - 00

Top Hole LONGITUDE 80 - 35 - 00
Bottom Hole LONGITUDE 80 - 32 - 30
4,928' to Bottom Hole
10,086' to Top Hole

Antero Resources
Well No. Farm Unit 1H
Antero Resources
Corporation

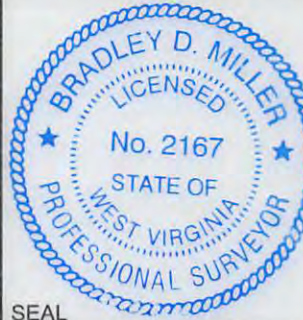
Bearing	Dist.
L1 S 73°20' E	1,262.4'
L2 N 74°46' E	823.9'
L3 N 43°14' W	898.5'
L4 N 52°52' W	999.5'
L5 N 79°14' E	993.5'



Detail Not to Scale

Legend

- Proposed gas well
- Found corner, as noted
- Found Well, as noted
- Surface boundary (approx.)
- Interior surface tracts (approx.)
- Existing Road
- Creek or Drain



Tag	TM / Par	Parcel Owner	Bk / Pg	Acres
1	7 / 29	James L. Dukala	211 / 292	80.50
2	7 / 41	Richard L. & Donna R. Campbell	222 / 634	16.40
3	7 / 42	William W. Nicholas	152 / 719	13.00
4	7 / 43	Martha M. & Blaine E. Devericks	163 / 590	10.00
5	7 / 43.1	Martha M. & Blaine E. Devericks	163 / 590	28.00
6	8 / 25.5	Leo G. & Martha L. King	260 / 596	0.71
7	8 / 25	Pamela Clevenger	WB 40 / 199	1.16
8	8 / 25.3	John K. & Mary J. Davis	200 / 338	66.17
9	10 / 9.1	Kenneth A. Kirk	267 / 652	46.05
10	10 / 9	Kenneth A. Kirk	267 / 652	18.50
11	10 / 17.5	Rae D. & Thomas A. Johnson Sr.	274 / 606	36.40
12	10 / 10.1	Adam L. Swentzel	273 / 121	1.09
13	10 / 17.6	Demetrius Travis	233 / 370	5.76
14	10 / 17.1	Meredith A. & Patrick S. Manning	271 / 632	1.59
15	10 / 17.9	Joshua D. Powell	261 / 238	1.07
16	10 / 17.4	Joshua D. & Chastly L. Powell	250 / 351	1.38
17	11 / 5	Robert B. & Evelyn M. Hughes	253 / 633	25.00
18	11 / 16	Kimberly Ann Lopez, et al	257 / 457	38.30
19	11 / 22.1	Sandra K. Richards	WB 26 / 32	35.80
20	11 / 22	Sandra K. Richards	WB 26 / 32	23.00
21	11 / 23	Paul D. & Lee K. Hutson	273 / 682	50.79
22	11 / 7	John K. & Mary Jo Davis	250 / 506	72.00
23	15 / 2.1	Larry B. & Patricia A. Jenkins	190 / 601	11.70

U	ARAC - Osburn	Donald E. Osburn, et ux
T	ARAC - Guy Brown	Guy R. Brown, et ux
S	p/o Third Party - Mutschelknaus	Gary R. Brown, et ux
R	No Lease Found	White Space, p/o 4-10-24 & p/o 4-10-25
Q	DV011298, DV000792	Dominion Exploration & Production Inc. 70 Ac., Ora Virginia White 70 Ac.
P	DAD37927/001	Cecil E. Knight, et ux
N	ARAC - Knight, et al	Opal B. Knight
Tag	Lease	Lesscr

M	ARAC - Jessie Knight	Jessie Knight, et al
L	ARAC - Devericks	Blaine W. Devericks, et ux Memorandum of Oil & Gas 4-7-43, 43.1
K	ARAC - Broome	Ed Broome Inc. Memorandum of Oil & Gas p/o 4-10-24, p/o 4-10-25
J	ARAC - Welch	Mary Maxine Welch p/o 4-10-10, 1.09 Ac.
H	ARAC - Welch	Mary Maxine Welch p/o 4-10-10, 68.16 Ac.
G	ARAC - Welch	Mary Maxine Welch p/o 4-10-10, 31.628 Ac.
F	DAD37999/004	Cecil E. Knight, et ux
E	DAD35254	Pauline M. Coltrill & Margaret H. Vincent
D	ARAC - Ford	Darrell Ford, et ux, et al
C	ARAC - Carder	Hillis Perkins, et al
B	010278	Joseph B. & S.H. Carder
A	ARAC 4-15-3	Avery Gaskins, et ux
Tag	Lease	Lesscr

Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Farm Unit 1H Top Hole coordinates are
N: 264,929.25 Latitude: 39°13'20.10"
E: 1,691,355.31 Longitude: 80°35'21.98"
Bottom Hole coordinates are
N: 254,772.62 Latitude: 39°11'40.23"
E: 1,695,691.73 Longitude: 80°34'25.34"
UTM Zone 17, NAD 1983
Top Hole Coordinates: Bottom Hole Coordinates:
N: 4,341,530.414m N: 4,338,458.231m
E: 535,455.275m E: 536,827.968m
Plat orientation and corner and well references are based upon the grid north meridian. Well location references are based upon the magnetic meridian.

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 rules issued and prescribed by the Department of Environment Protection.
Bradley D. Miller
Bradley D. Miller, P.S. 2167

FILE NO: 316-30-G-12
DRAWING NO: 316-12 Farm Unit 1H
SCALE: 1" = 1600'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

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

DATE: July 15 20 13
OPERATOR'S WELL NO. Farm Unit 1H
API WELL NO
47 - 017 - 06361 H6A
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
LOCATION: ELEVATION: 1297' WATERSHED: Big Isaac Creek QUADRANGLE: Big Isaac
DISTRICT: Greenbier Rodney Russell Martin, Memorandum of Oil & Gas; COUNTY: Doddridge
SURFACE OWNER: Homer Leroy Floyd James Romel; Mark & Teresa Freeman; ACREAGE: 54.25 31,628;124;
OIL & GAS ROYALTY OWNER: Mary Maxine Welch (2); N.J. & G.A. Jackson LEASE #: DV019229; DV011410; DV011358; ACREAGE: 38.3; 50.99;
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) TVD 7,500'
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: MD 18,900'

WELL OPERATOR: Antero Resources Corporation DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 1625 17th Street ADDRESS: 5400 D Big Tyler Road
Denver, CO 80202 Charleston, WV 25313