



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

June 15, 2016

WELL WORK PLUGGING PERMIT

Plugging

This permit, API Well Number: 47-3903036, issued to CHESAPEAKE APPALACHIA, L.L.C., 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.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. The above named operator will also file, as required in WV Code 22-6-23, an affidavit on form WR-38 by two experienced persons in the operator's employment and the Oil and Gas inspector that the work authorized under this permit was performed and a description given. Failure to abide by all statutory and regulatory provisions governing all duties and operations here under may result in suspensions or revocation of this permit and in addition may result in civil and/or criminal penalties being imposed upon the operator.

This permit will expire in two (2) years from date of issue. If there are any questions, please free to contact me at (304) 926-0499 ext. 1654.


James Martin
Chief

Operator's Well No: 2510
Farm Name: QUEEN LAND CO.
API Well Number: 47-3903036
Permit Type: Plugging
Date Issued: 06/15/2016

Promoting a healthy environment.

PERMIT CONDITIONS

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

CONDITIONS

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

1) Date: 5/18/2016
2) Operator's Well No. 802510
3) API Well No. 47-039-03036

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

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

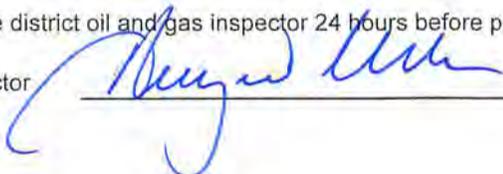
- 4) Well Type: Oil _____ Gas X Liquid injection _____ Waste disposal _____
(Is Gas, Production X or Underground storage _____) Deep _____ Shallow X
- 5) Location: Elevation 779' Watershed Elk River
District Big Sandy County Kanawha Quadrangle Clendenin, WV 7.5'
- 6) Well Operator Chesapeake Appalachia, L.L.C. 7) Designated Agent Jessica Greathouse
Address P.O. Box 18496 Address P.O. Box 6070
Oklahoma City, OK 73154-0496 Charleston, WV 25362
- 8) Oil and Gas Inspector to be notified Name Terry Urban
Address P.O. Box 1207
Clendenin, WV 25045
- 9) Plugging Contractor Name Chesapeake Appalachia, L.L.C.
Address P.O. Box 18496
Oklahoma City, OK 73154-0496

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

See Attached Sheet.

See Change to Prog.

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

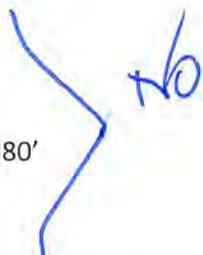
Work Order approved by Inspector  Date 5-26-15

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PLUGGING PROCEDURE

- 1) Prepare road and location, MIRU Service Rig
- 2) Run in hole to check TD at approximately 1600'
- 3) Attempt to pull 3" and packer
 - A) If successful
 - a) Rip or shoot holes in 6 5/8" at approximately 1400' and 1380;
 - b) Run W.S. to 1600', spot gel and pull W.S. to 1570'
 - c) Spot 270' cement plug 1570'-1300', pull W.S. OK
 - d) Proceed to step 4

- B) If unsuccessful
 - a) Run W.S. to 1600', spot gel
 - b) Spot 75' cement plug 1600'-1505', pull W.S. 100 ft plug Median
 - c) Cut 3" at free-point (approximately 1475') and pull
 - d) Rip or shoot holes in 6 5/8" at approximately 1400' and 1380'
 - e) Run W.S. to 1475', sot gel
 - f) Spot 175' cement plug 1475'-1300', pull W.S.
 - g) Proceed to step 4



- 4) Run in hole with tools to check TOC. If top of plug is below 1325', then add to top of plug
- 5) Cut 6 5/8" at free-point (approximately 780') and pull
- 6) Run W.S. to 780', spot gel 800 + 925 ft
- 7) Spot 150' cement plug 780'-630', pull W.S.

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NOTE: 8 1/4" was cemented in hole

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- 8) Find free-point on 8 1/4" casing. Well will be cemented from 350'-surface
 - A) Run W.S. to 350', spot cement plug from 350' to 20' below free-point, pull W.S.
 - B) Cut 8 1/4" at free-point and pull
 - C) Run W.S. to casing cut or deeper if possible OK
 - D) Spot cement plug from casing cut to surface

- 9) Pull W.S. and top off with cement
- 10) Erect monument and reclaim as prescribed by law

779 Elevation AS per Plot

Key with hole
5-26-16



300 ft
8.250 CS9

1439 ft
6 5/8 CS9

1616 ft
3" + b9

TD well 1605'?

Serial Well No. 2510
PARAGON PRINT. 2K & 26 80128

Lease No. 4590

RECORD OF WELL No. 2510 on the
Queen Land Co. Farm of 1052 Acres
in Big Sandy, District
Kan. County
Clendenin Field, State of W. Va.

Rig Commenced 192
Rig Completed 192
Drilling Commenced Jan. 24, 1929 192
Drilling Completed Mar. 6, 1929 192
Drilling to cost 1.75 per foot
Contractor is: Lawrence Hoffman,
Address: Clendenin, W. Va.

Driller's Name

CASING AND TUBING

Size	Used in Drilling	Left in Well
10		
13		
10		
8 1/4	305	305
6 5/8	1439	1439
5 3/16		
4 7/8		
4		
3	1616	1616
2		

TEST BEFORE SHOT

36 of Water in 2 inch
10ths of Merc. in inch
10ths Volume 785000 Cu. ft

TEST AFTER SHOT

of Water in inch
10ths of Merc. in inch
Volume Cu. ft
Back pressure 11 1/2

Date shot
Size of Torpedo
Oil Flowed bbls. 1st 24 hrs.
Oil Pumped bbls. 1st 24 hrs.

SHUT IN

Date March 6, 1929

3 Tubing or Casing

Size of Packer 3 x 5 3/16

Kind of Packer anchor set

1st Perf. Set from 1595 to 1605

2nd Perf. Set from 1552 1" to 1559 5"

Well abandoned and

Plugged at 1505' 7"

at 1605'

to 1605'

1" to 1559 5"

DRILLER'S RECORD

Formation	Top	Bottom	Thickness	Remarks
Clay		13		
Sand	13	130		Run 6 3/4" casing run at 300' S.L.M. on 8 1/2" shoe and cemented in hole.
Coal	130	134	Coal	
Sand	134	157		6 5/8" casing run at 1418' S.L.M. on 6 5/8"x8 1/2" bottom hole packer.
Coal	157	160	Coal	
Slate	160	232		Hole reduced at 1484' S.L.M.
Coal	232	237	Coal	* Gas pay 1543' to 1553' 40/10 water 2"
Slate	237	270		Final test 36/10 water 2".
Sand	270	340		Used rig # 19.
Slate	340	530		
Sand	530	600		Approved <i>[Signature]</i>
Slate	600	680		Supt. Clend. Dist.
Sand	680	735		
Slate	735	760		
SALT SAND	760	1165		} Salt water
Slate	1165	1185		
MAXON SAND	1185	1340		} Dry zone
Little Lime	1340	1390		
Pencil Cave	1390	1400		
BIG LIME	1400	1539		
BIG INJUN	1539	1562		
Slate & Lime	1562	1605		
Total Depth		1605		

037 3036

JAS

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WW4-A
Revised 6-07

1) Date: 5/18/2016
2) Operator's Well No. 802510
3) API Well No. 47-039-03036

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

4) Surface Owner(s) to be served:
(a) Name Bruce B. & Louise W. Cameron
Address Charitable Trust
P.O. Box 3649
Wilmington, NC 28406

(b) Name Bruce Barclay Cameron Foundation
Address P.O. Box 3649
Wilmington, NC 28406

(c) Name _____
Address _____

6) Inspector Terry Urban
Address P.O. Box 1207
Clendenin, WV 25045

Telephone 304-549-5915

5) (a) Coal Operator
Name None

(b) Coal Owner(s) with Declaration
Name Bruce B. & Louise W. Cameron
Address Charitable Trust
P.O. Box 3649
Wilmington, NC 28406

Name Bruce Barclay Cameron Foundation
Address P.O. Box 3649
Wilmington, NC 28406

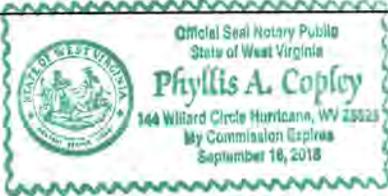
(c) Coal Lessee with Declaration
Name None
Address _____

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

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

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

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



Well Operator: Chesapeake Appalachia, L.L.C.
By: [Signature]
Its: Manager - Operations, Appalachia South
Address: P.O. Box 18496
Oklahoma City, OK 73154-0496
Telephone: 405-935-4073

Subscribed and sworn before me this 18th day of May the year of 2016
Phyllis A. Copley Notary Public

My Commission Expires September 16, 2018
Form WW-9

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MAY 23 2016
WV Department of
Environmental Protection

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Office of Oil and Gas

JUN 13 2016

Form WW-9
4/16)

API Number 47-039-03036
Operator's Well No. 802610

WV Department of Environmental Protection
STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FLUIDS/CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Chesapeake Appalachia, L.L.C. OP Code 494477557

Watershed (HUC 10) Elk River Quadrangle Clendenin, WV 7.5

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

Description of anticipated Pit Waste: Plugging Returns/Cement

Will a synthetic liner be used in the pit? Yes If so, what ml.? 20 ml.

Proposed Disposal Method For Treated Pit Wastes:
 Land Application
 Underground Injection (UIC Permit Number _____)
 Reuse (at API Number _____)
 Off Site Disposal (Supply form WW-9 for disposal location)
 Other (Explain: Fluid will be collected in steel tank and hauled for proper disposal)

Will closed loop system be used? No If so, describe: _____

Drilling medium anticipated for this well (Vertical and horizontal)? Air, freshwater, oil based, etc.
-If oil based, what type? Synthetic, petroleum, etc.

Additives to be used in drilling medium? _____

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc.
-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) _____
-Landfill or offsite name/permit number? _____

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

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2015, 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 *David Gocke*

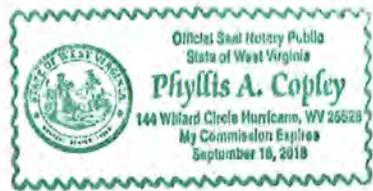
Company Official (Typed Name) David Gocke

Company Official Title Manager - Operations, Appalachia South

Subscribed and sworn before me this 13th day of June, 2016.

Phyllis A. Copley Notary Public.

My Commission Expires September 16, 2018



API Number 47-039-03036
Operator's Well No. 802510

Proposed Revegetation Treatment: Acres disturbed 1.0 Prevegetation pH 6.1
Lime 3 Tons/acre or to correct to pH 6.0
Fertilizer type 10-20-20 or equivalent
Fertilizer amount 500 lbs/acre
Mulch 2 to 3 Tons/acre

Seed Mixtures

October 1st to April 30th		May 1st to September 30th	
Seed Type	lbs/acre	Seed Type	lbs/acre
Creeping Red Fescue	68.60%	Creeping Red Fescue	68.60%
Wheat	14.76%	Oats	14.18%
Annual Ryegrass	9.80%	Annual Ryegrass	9.80%
Ladino Clover	3.21%	Ladino Clover	3.21%

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]

Comments: Left toward River Manors Crk

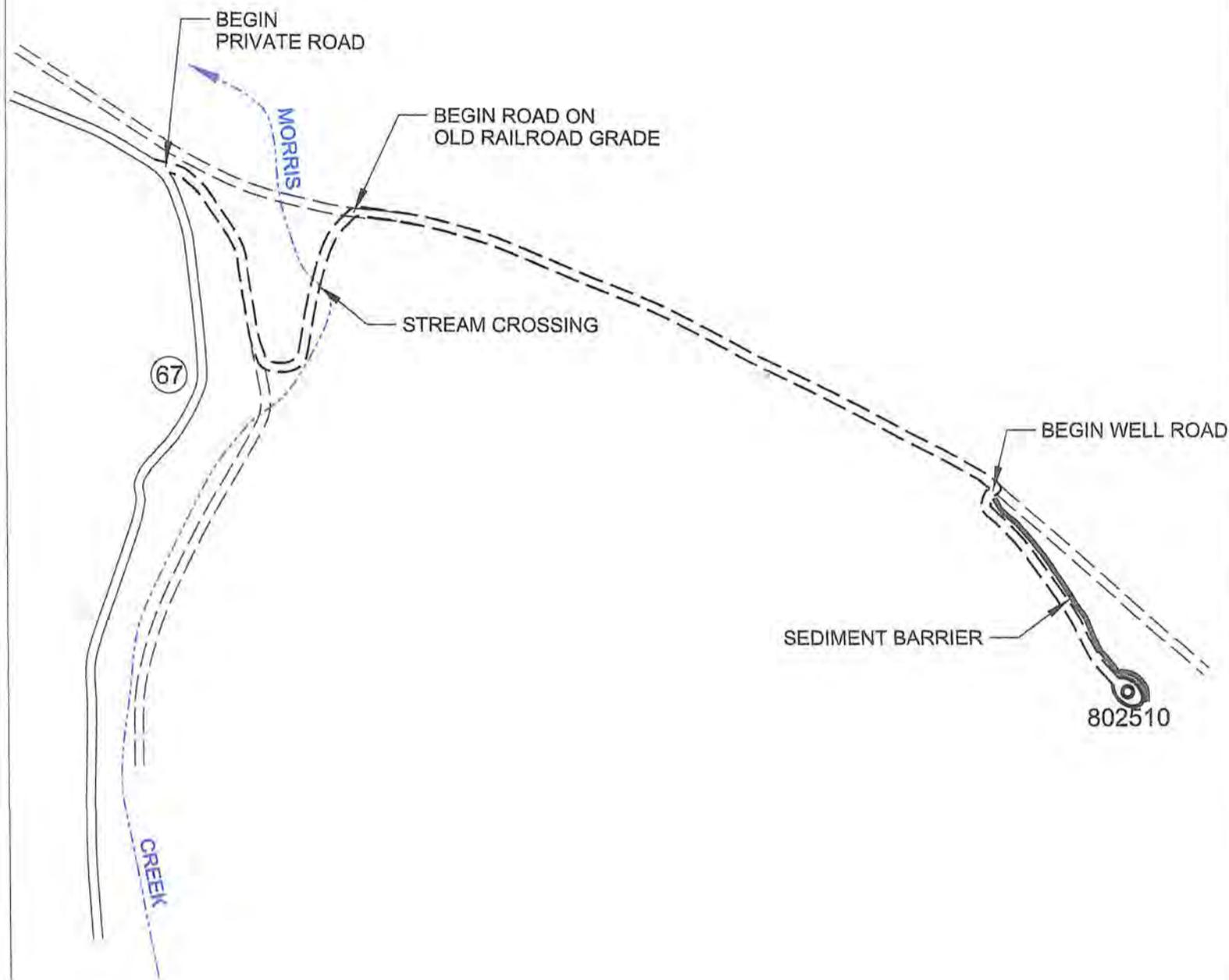
Title: Field Inspection of Gas Date: 5-26-16

Field Reviewed? () Yes () No

CHESAPEAKE APPALACHIA, L.L.C.

RECLAMATION DIAGRAM WELL LOCATION 802510

API 47-039-03036



GENERAL NOTES

This drawing is a schematic representation of the well site and access road. Proposed structures such as well site, drilling pit, roadways, culverts, sediment barriers, etc. are shown in approximate pre-planning configurations.

All culvert pipes will be a minimum of 15 inches in diameter. All culvert pipes installed will be accompanied by an entrance sump with dimensions no less than 3 feet (width) x 3 feet (length) x 4 feet (deep). Culverts will be installed at an angle to ensure proper flow. The out fall of culverts will be protected from erosion and sedimentation using large rocks or other sediment controls deemed necessary in the prevention of erosion and sedimentation. Storm water from the ditches to the culverts will be directed to stable natural vegetative areas. Where culverts are not practical, operator will have other sediment control in place to minimize erosion sedimentation.

Cross drains, broad based dips, water bars, and diversion ditches, will be employed during the construction phase. These erosion and sediment control structures will be used to control erosion and sedimentation during the construction phase, where applicable, and in areas that will allow. These structures will be considered permanent and used as such.

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Office of Oil and Gas

MAY 26 2016

CHESAPEAKE ENERGY CORPORATION - EASTERN DIVISION
P.O. BOX 579 - 8165 COURT AVENUE - HAMLIN, WV 25523
304 824-5141 - FAX 304 824-2247

WV Department of
Environmental Protection

Form WW-9

API Number 47-039-03036
Operator's Well No. 802510

Proposed Revegetation Treatment: Acres disturbed 1.0 Prevegtation pH 6.1
Lime 3 Tons/acre or to correct to pH 6.0
Fertilizer type 10-20-20 or equivalent
Fertilizer amount 500 lbs/acre
Mulch 2 to 3 Tons/acre

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Photocopied section of involved 7.5' topographic sheet

Plan Approved by: _____

Comments: _____

Title: _____

Date: _____

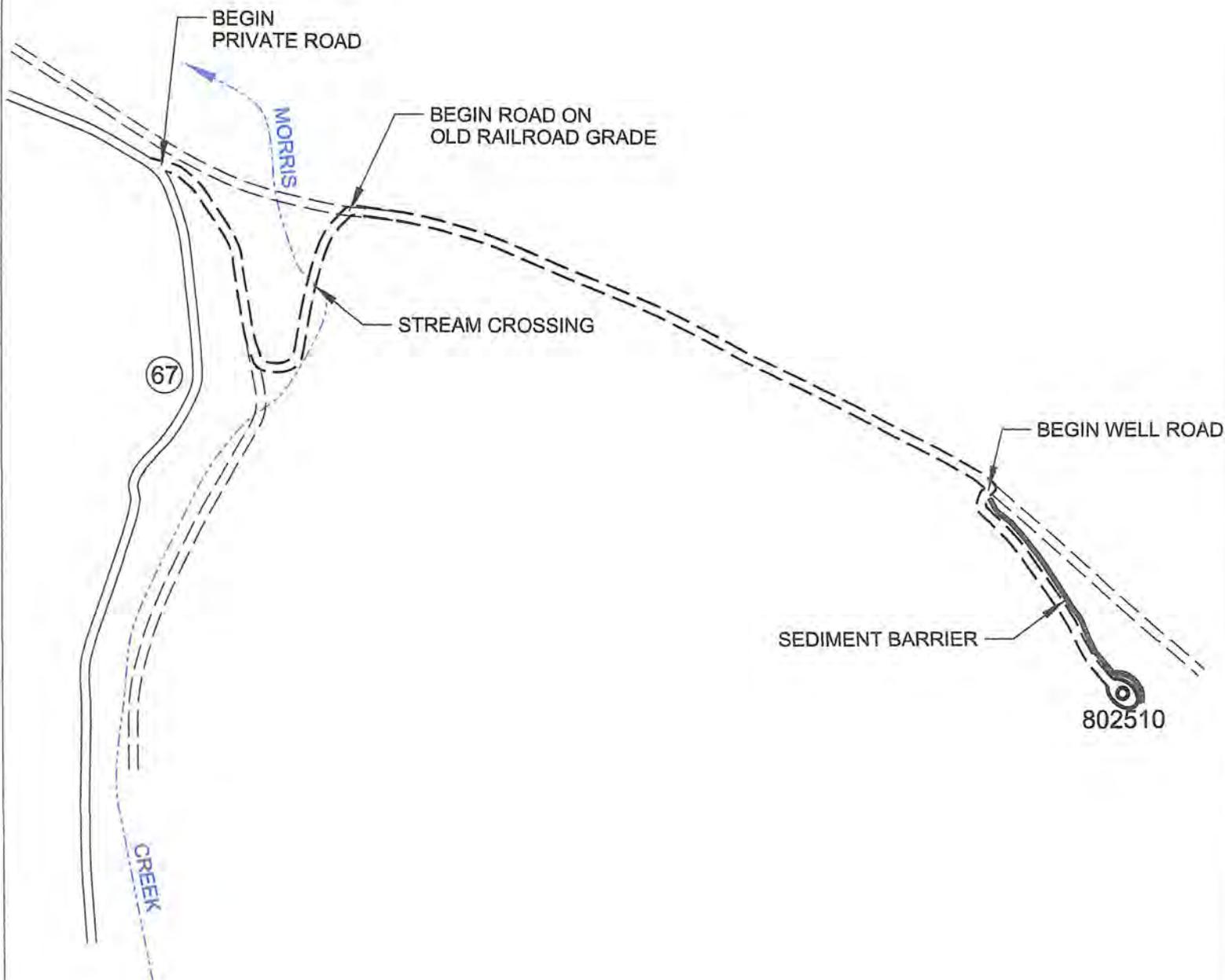
Field Reviewed? () Yes () No

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Office of Oil and Gas
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WV Department of Environmental Protection

CHESAPEAKE APPALACHIA, L.L.C.

RECLAMATION DIAGRAM
WELL LOCATION 802510

API 47-039-03036



GENERAL NOTES

This drawing is a schematic representation of the well site and access road. Proposed structures such as well site, drilling pit, roadways, culverts, sediment barriers, etc. are shown in approximate pre-planning configurations.

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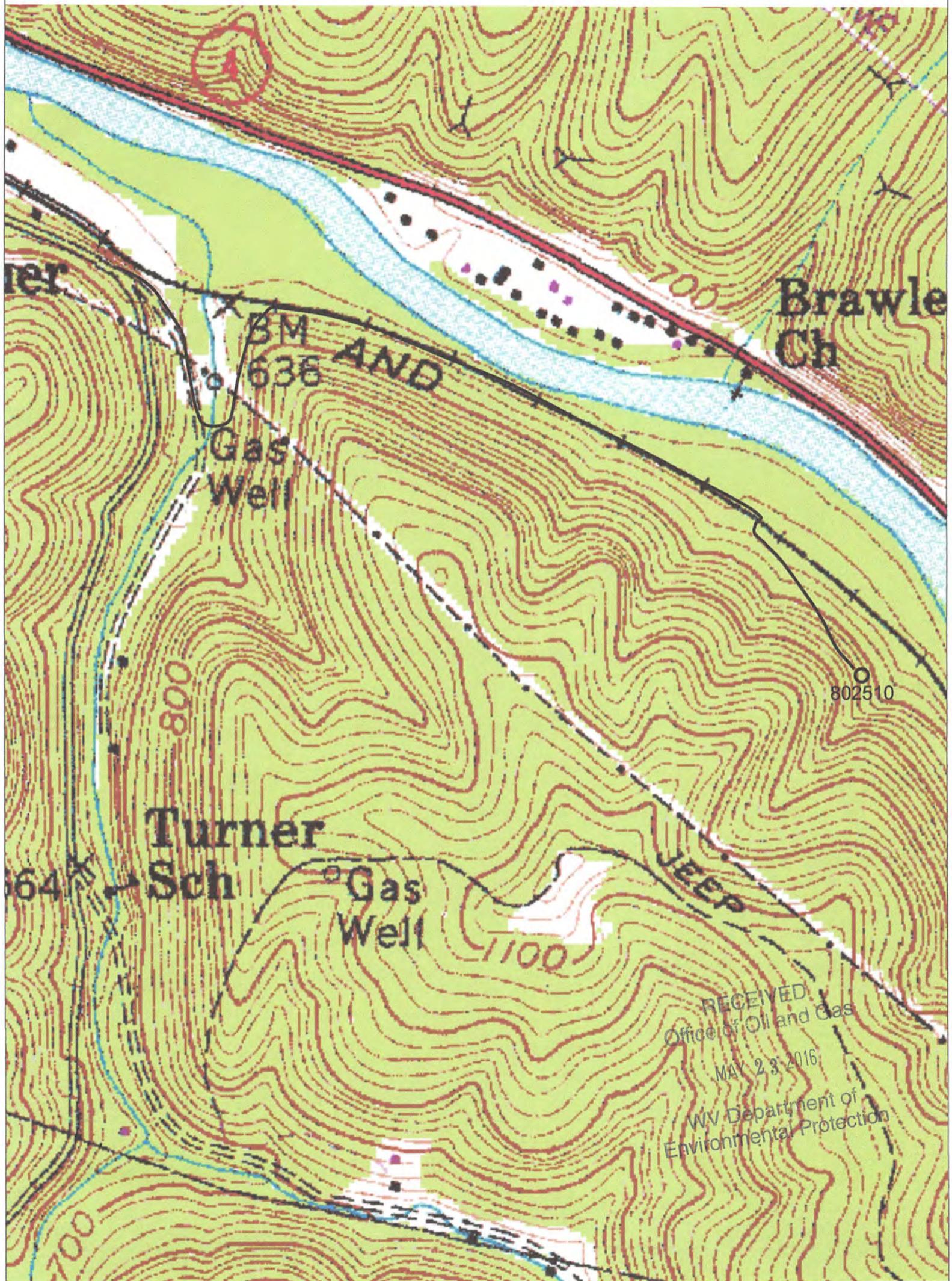
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CHESAPEAKE APPALACHIA, L.L.C.

TOPOGRAPHICAL MAP OF ACCESS AND WELL LOCATION 802510

API 47-039-03036



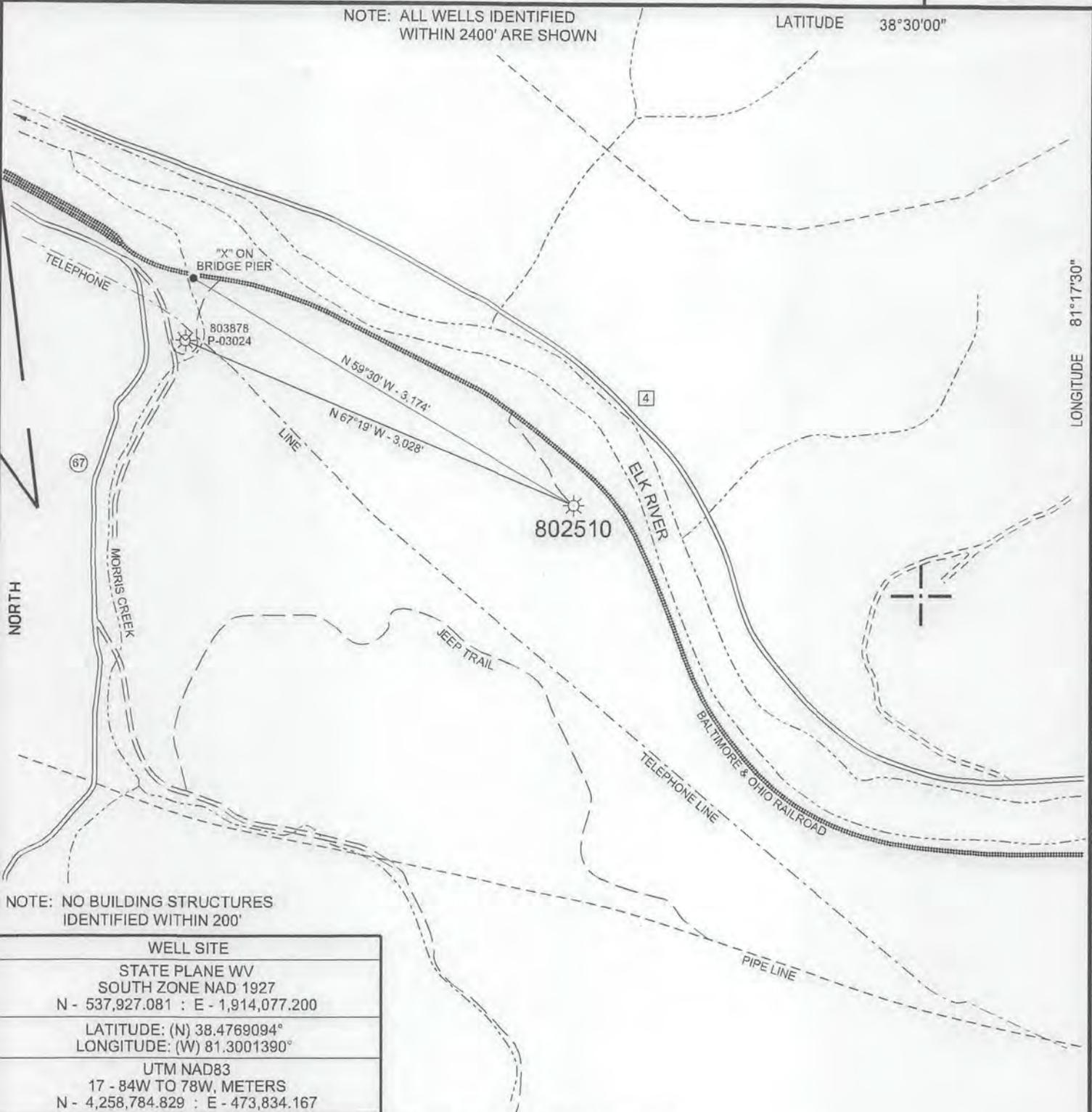
2,439'

NOTE: ALL WELLS IDENTIFIED WITHIN 2400' ARE SHOWN

LATITUDE 38°30'00"

LONGITUDE 81°17'30"

8,424'



NOTE: NO BUILDING STRUCTURES IDENTIFIED WITHIN 200'

WELL SITE	
STATE PLANE WV SOUTH ZONE NAD 1927 N - 537,927.081 : E - 1,914,077.200	
LATITUDE: (N) 38.4769094° LONGITUDE: (W) 81.3001390°	
UTM NAD83 17 - 84W TO 78W, METERS N - 4,258,784.829 : E - 473,834.167	

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FILE NO.	802510 P&A.DGN
DRAWING NO.	802510 P&A
SCALE	1" = 1000'
MINIMUM DEGREE OF ACCURACY	1 : 200
PROVEN SOURCE OF ELEVATION	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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

(SIGNED) *Paul E. Miller*
R.P.E. _____ L.L.S. 647



STATE OF WEST VIRGINIA DIVISION OF ENVIRONMENTAL PROTECTION OIL AND GAS DIVISION		DATE	MAY 6	, 20	16
		OPERATOR'S WELL NO.	802510		
WELL TYPE: OIL ___ GAS <u>X</u> LIQUID INJECTION ___ WASTE DISPOSAL ___ (IF "GAS,") PRODUCTION <u>X</u> STORAGE ___ DEEP ___ SHALLOW <u>X</u>		API WELL NO.	47 039 03036 P		
LOCATION: ELEVATION 779' WATER SHED _____ ELK RIVER DISTRICT BIG SANDY COUNTY KANAWHA QUADRANGLE CLENDENIN, WV 7.5'		STATE	COUNTY	PERMIT	
SURFACE OWNER BRUCE B. & LOUISE W. CAMERON CHARITABLE TRUST ACREAGE 9.874.11 OIL & GAS ROYALTY OWNER J. A. HOLLEY ESTATE LEASE ACREAGE 9.874.11 LEASE NO. 1-004590-000		COUNTY NAME			
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____		PERMIT			
PLUG AND ABANDON <u>X</u> CLEAN OUT AND REPLUG ___ TARGET FORMATION _____ ESTIMATED DEPTH _____ WELL OPERATOR CHESAPEAKE APPALACHIA, L.L.C. DESIGNATED AGENT JESSICA GREATHOUSE ADDRESS P.O. BOX 18496, OKLAHOMA CITY, OK 73154-0496 ADDRESS CHESAPEAKE APPALACHIA, L.L.C., PO BOX 6070, CHARLESTON, WV 25362					