



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

March 17, 2016

WELL WORK PLUGGING PERMIT

Plugging

This permit, API Well Number: 47-3905791, 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: 825752

Farm Name: DAVID WARD ESTATE ET AL

API Well Number: 47-3905791

Permit Type: Plugging

Date Issued: 03/17/2016

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.

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 Liquid injection Waste disposal
(Is Gas, Production or Underground storage) Deep Shallow
- 5) Location: Elevation 1,486' Watershed Sugarcamp Branch of Hughes Creek
District Cabin Creek County Kanawha Quadrangle Cedar Grove, 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 9) Plugging Contractor
Name Terry Urban Name Chesapeake Appalachia, L.L.C.
Address P.O. Box 1207 Address P.O. Box 18496
Clendenin, WV 25045 Oklahoma City, OK 73154-0496

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

See Attached Sheet

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

Work Order approved by Inspector

[Signature]

Date

3-14-16

Around Hill from #9-5866 Plugging Permit

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PLUGGING PROCEDURE

1486 Elevations
Deep Coal 873

- 1) Prepare road and location, MIRU service rig
- 2) Pump water down 2" to kill well
- 3) Pull 2 3/8" tubing
- 4) Attempt to pull 7" and packer

A) If successful:

- a) Run W.S. to 2150', spot gel
- b) Spot 150' cement plug 2150'-2000', pull W.S. *1450' gpm*
- c) Run in hole with tools to check TOC. If top of cement is below *1950'* ~~2025'~~, then add cement to top of plug
- d) Proceed to step 5

Pay Zone @ 2020'

B) If unsuccessful:

- a) Rip or shoot holes at approximately 2040'
- b) Run W.S. to 2150', spot gel
- c) Spot 200' cement plug 2150'-1950', pull W.S.
- d) RIH with tools to check TOC. If top of cement is below *1950'* ~~2025'~~, then add cement to top of plug.
- e) Cut 7" at free-point (approximately 1225') and pull
- f) Proceed to step 5

Will Set Elevations
Plug 1486'

- 5) Run W.S. to 1225', spot gel
- 6) Spot 125' cement 1225'-1100', pull W.S. to 1000' *(SALT SAND)*
- 7) Spot 200' cement plug 1000'-800', pull W.S. *- Cover Both Coal*
- 8) RIH with tools to check TOC. If top of cement is below 840', then add cement to top of plug.
- 9) Run W.S. to 615', spot gel
- 10) Spot 100' cement plug 615'-515', pull W.S. to 485' *(Coal)*
- 11) Spot 100' cement plug 485'-385', pull W.S. to 205' *OPEN HOLE*
- 12) Spot 205' cement plug 205'-surface *(Coal)*
- 13) Pull W.S. and top off with cement
- 14) Erect monument and reclaim as prescribed by law

SET AS ONE
Plug

*Ag. W. Miller
3-14-16*

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Environmental Protection

WR-35

DATE: 07/21/06

API: 47-3905791

State of West Virginia
 Division of Environmental Protection
 Section of Oil and Gas
 Well Operator's Report of Well Work

Farm name: David Ward Estate, Et Al
 Location Elevation: 1486'
 District: Cabin Creek

Operator Well No: 825752
 Quadrangle: Cedar Grove
 County: Kanawha

CHESAPEAKE APPALACHIA, L.L.C.	Casing & Tubing	Used in drilling	Left in Well	Cement fill up Cu.Ft.
Address: P.O. Box 6070	13 3/8"	486	486	422
Charleston, WV 25362	9 5/8"	971	971	325
Agent: Michael A. John	7"	2170	2170	Set w/ Packer *
Inspector: Carlos Hively	2 3/8"		2056	
Date Permit Issued: 01/17/06				
Date Well work commenced: 02/20/06				
Date Well Work completed: 05/09/06				
Verbal Plugging:				
Date Permission granted on:				
<input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable <input type="checkbox"/> Rig				
Total Depth (feet): 2170				
Fresh Water Depth (ft): 50'				
Salt Water Depth (ft.): 1550'				
Is coal being mined in area <input checked="" type="checkbox"/> N <input type="checkbox"/> Y				
Coal Depths (ft): 15', 175', 560', 448'				

*Parmaco 7" x 8 3/4" Anchor Packer set at 2082'

OPEN FLOW DATA

Producing formation: Maxon

Pay zone depth (ft) Natural at 2020'

Gas: Initial open flow MCF/d Oil: Initial open flow Bbl/d
 Final open flow 650 MCF/d Final open flow Bbl/d
 Time of open flow between initial and final tests Hours
 Static rock Pressure 340 psig (surface pressure) after 120 Hours

2nd producing formation:

Pay zone depth (ft) from to; from to

Gas: Initial open flow MCF/d Oil: Initial open flow Bbl/d
 Final open flow MCF/d Final open flow Bbl/d
 Time of open flow between initial and final tests Hours
 Static rock Pressure psig (surface pressure) after Hours

3rd producing formation:

Pay zone depth (ft) from to; from to

Gas: Initial open flow MCF/d Oil: Initial open flow Bbl/d
 Final open flow MCF/d Final open flow Bbl/d
 Time of open flow between initial and final tests Hours
 Static rock Pressure psig (surface pressure) after Hours

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NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

WELL OPERATOR: CHESAPEAKE APPALACHIA, L.L.C.

KANAWHA 791

Chesapeake Energy Corp.-Eastern Division
 Chesapeake Energy 825752
 Cabin Creek District, Kanawha County, WV
 47-039-05791-0000
 Ground Elevation: 1486'

Formation	Top	Bottom
KB-GL	0	10
Fill	10	15
Coal	15	18
Sand & Shale	18	175
Coal	175	175
Sand & Shale	178	448
Open Mine	448	455
Sand & Shale	455	560
Coal	560	564
Sand & Shale	564	870
Coal	870	873
Sand & Shale	873	1231
Salt Sand	1231	1610
Shale	1610	1648
Upper Maxon	1648	1741
Shale	1741	1758
Upper Maxon	1758	1793
RR Shale	1793	1865
Middle Maxon	1865	1932
RR Shale	1932	2024
Lower Maxon	2024	2133
L. Lime	2133	
DTD	2170	

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WW4-A
Revised
2/01

1) Date: 3/9/2016
2) Operator's Well No. 825752 P&A
3) API Well No. 47-039-05791

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 David Ward Heirs
Address C/O James F. Brown IV
Attorney-in-Fact D. Ward Heirs
P.O. Box 88
Charleston, WV 25321

5) Coal Operator
(a) Name None
Address _____

(b) Name Blackhawk Land & Resources, LLC
Address 3228 Summit Square Place
Suite 180
Lexington, KY 40509

Coal Owner(s) with Declaration
(b) Name David Ward Heirs
Address C/O James F. Brown IV
Attorney-in-Fact D. Ward Heirs
P.O. Box 88
Charleston, WV 25321

(c) Name _____
Address _____

Name Blackhawk Land & Resources, LLC
Address 3228 Summit Square Place, Suite 180
Lexington, KY 40509

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

Coal Lessee with Declaration
(c) Name Caternary Coal Company
Address C/O Blackhawk Energy
100 Technology Drive
South Charleston, WV 25309

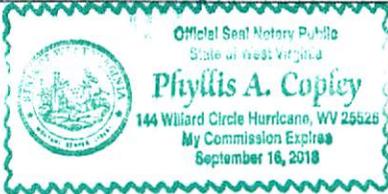
Telephone ~~304-289-7583~~ 304-549-5915

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 9th day of March the year of 2016
Phyllis A. Copley Notary Public
My Commission Expires September 16, 2018

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API Number 47-039-05791
Operator's Well No. 826752 P&A

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name Chesapeake Appalachia, L.L.C. OP Code 494477557
Watershed Mill Hollow of Kellys Creek Quadrangle Cedar Grove, WV 7.5'
Elevation 1,486' County Kanawha District Cabin Creek

Description of anticipated Pit Waste: Plugging Returns/Cement

Will a synthetic liner be used in the pit? Yes 3-14-16 20 MIL.

- 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 _____)

- Proposed Work For Which Pit Will Be Used:
- Drilling
 - Workover
 - Swabbing
 - Plugging
 - Other (Explain _____)

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on December 31, 1999, 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*

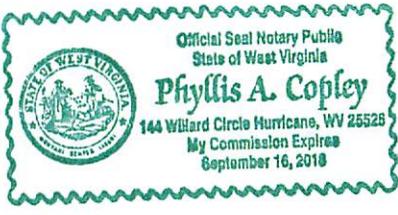
Company Official (Typed Name) David Gocke

Company Official Title Manager - Operations, Appalachia South

Subscribed and sworn before me this 9th day of March, 2016.

Phyllis A. Copley Notary Public.

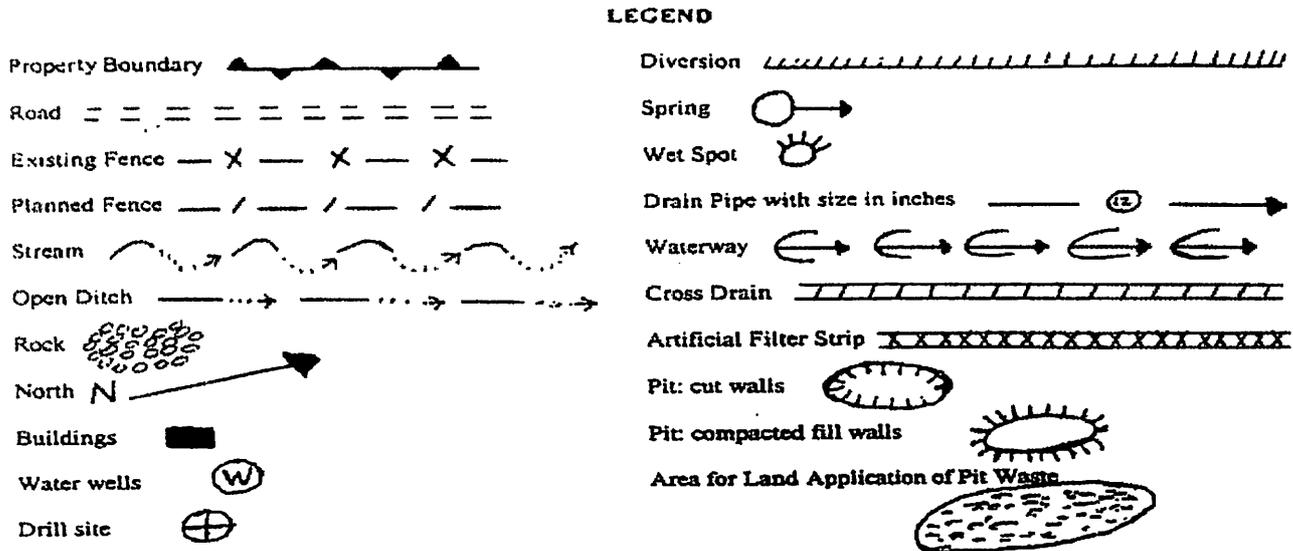
My Commission Expires September 16, 2018



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Attachment #1

API #: 47-039-05791
 Operator's Well No. 825752 P&A



Proposed Revegetation Treatment: Acres Disturbed 1.0 Prevegetation pH 6.1
 Lime 3 Tons/acre or to correct to pH 6.5
 Fertilizer (10-20-20 or equivalent) 1/3 Tons/acre (500 lbs minimum)
 Mulch Weed Free Straw 2 Tons/acre

Seed Mixtures

October 1st to April 30th		May 1st to September 30th	
Creeping Red Fescue	68.60%	Creeping Red Fescue	68.60%
Wheat	14.76%	Wheat	17.18%
Annual Ryegrass	9.80%	Annual Ryegrass	9.80%
Ladino Clover	3.21%	Ladino Clover	4.97%

Total seeding will be 50 lbs/acre

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

Photocopied section of involved 7.5' topographic sheet.

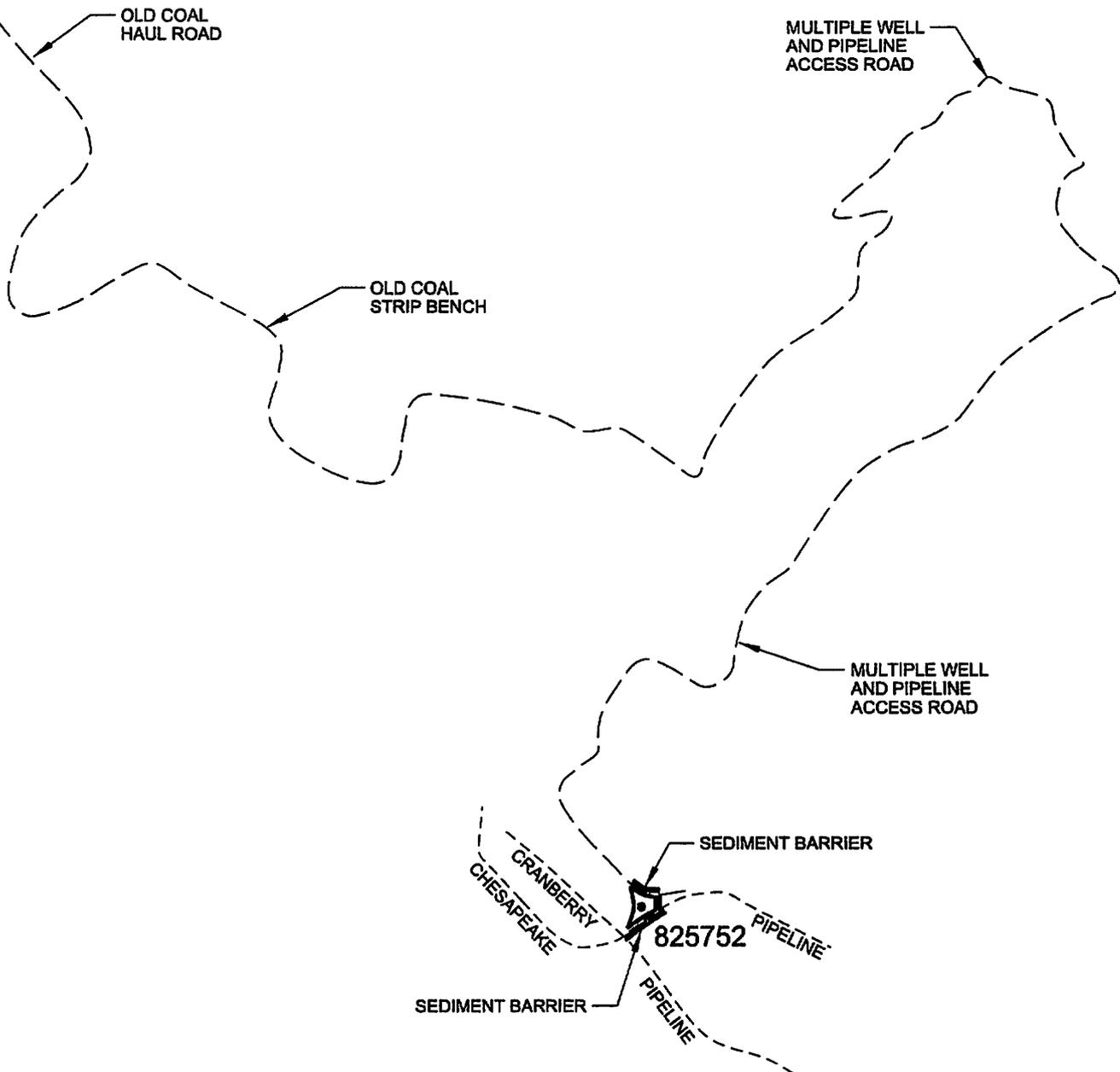
Plan Approved by: *Henry W. White*
 Title: *Field Trip at E. Coas*
 Date: *3-14-16*
 Field Reviewed? Yes No

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CHESAPEAKE APPALACHIA, L.L.C.

RECLAMATION DIAGRAM
WELL LOCATION 825752

API 47-039-05791



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 outfall 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 and 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.

Permanent seeding: See Attachment #1.

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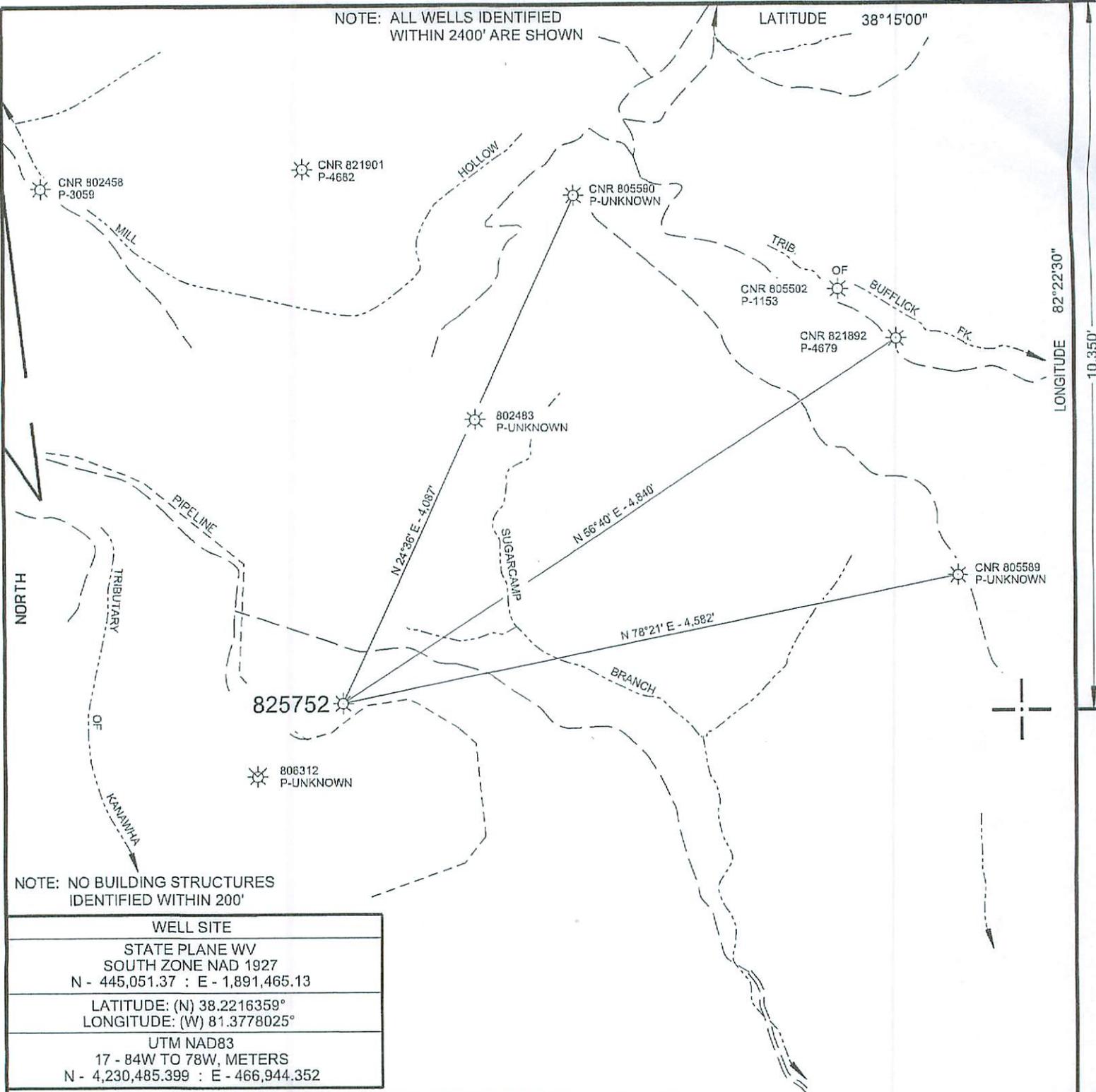
CHESAPEAKE ENERGY CORPORATION - EASTERN DIVISION
P.O. BOX 579 - 8165 COURT AVENUE - HAMLIN, WV 25523
304 824-5141 - FAX 304 824-2247

WV Department of
Environmental Protection

3905791P

NOTE: ALL WELLS IDENTIFIED WITHIN 2400' ARE SHOWN

LATITUDE 38°15'00"



NOTE: NO BUILDING STRUCTURES IDENTIFIED WITHIN 200'

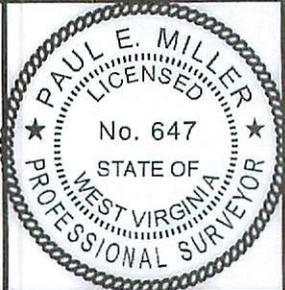
WELL SITE	
STATE PLANE WV SOUTH ZONE NAD 1927 N - 445,051.37 : E - 1,891,465.13	
LATITUDE: (N) 38.2216359° LONGITUDE: (W) 81.3778025°	
UTM NAD83 17 - 84W TO 78W, METERS N - 4,230,485.399 : E - 466,944.352	

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

FILE NO.	825752 P&A.DGN
DRAWING NO.	825752 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 MARCH 4, 2016
OPERATOR'S WELL NO. 825752
API WELL NO.

47 039 05791P
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS,") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION: ELEVATION 1486' WATER SHED SUGARCAMP BRANCH OF HUGHES CREEK
DISTRICT CABIN CREEK COUNTY KANAWHA
QUADRANGLE CEDAR GROVE, WV 7.5'

SURFACE OWNER DAVID WARD HEIRS ACREAGE 4.814.41
OIL & GAS ROYALTY OWNER DAVID WARD HEIRS LEASE ACREAGE 4.814.41
LEASE NO. 1-025660-000

PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____

PLUG AND ABANDON X 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

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WV Department of Environmental Protection

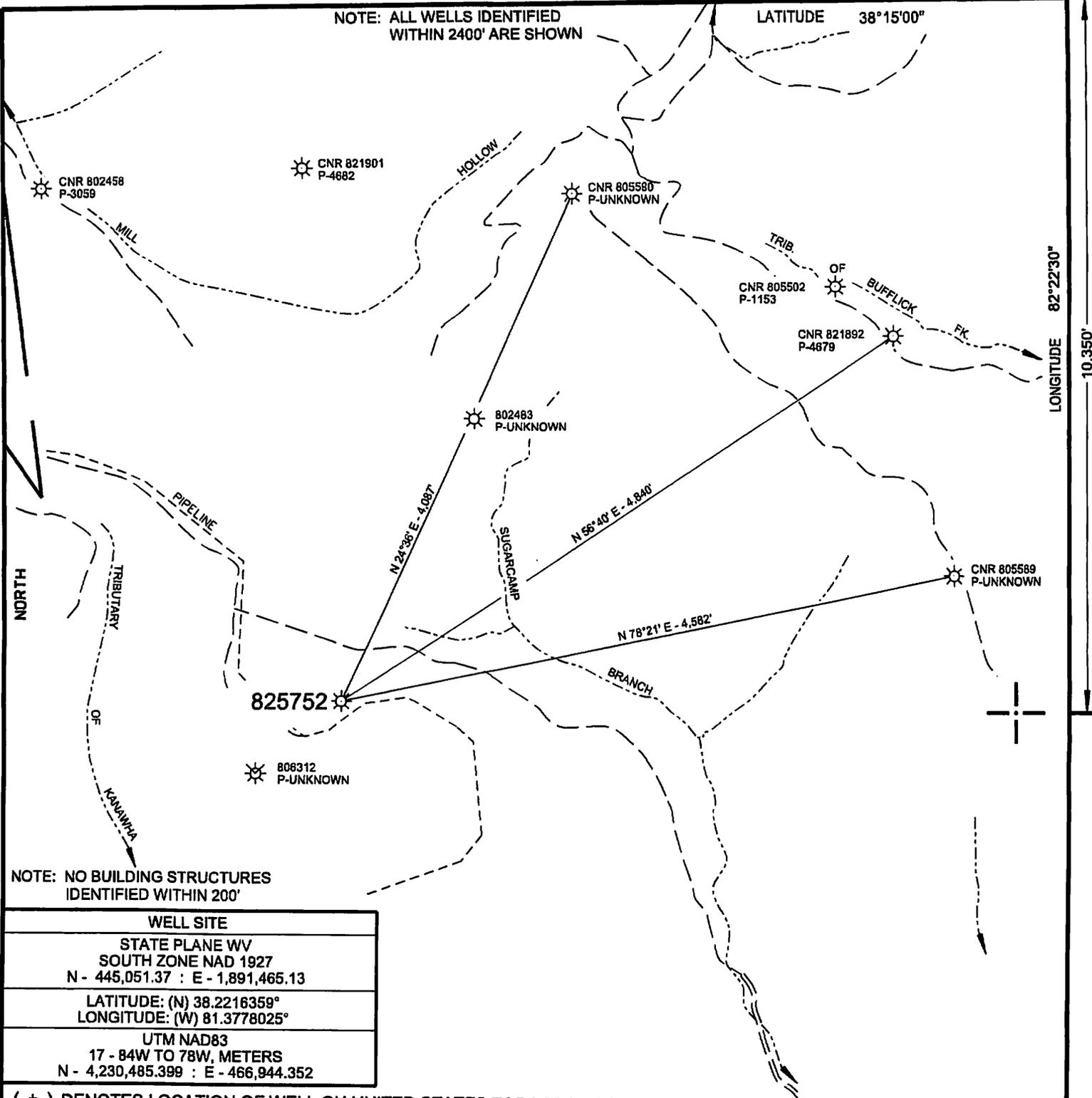
COUNTY NAME

PERMIT

FORM WV-6

NOTE: ALL WELLS IDENTIFIED WITHIN 2400' ARE SHOWN

LATITUDE 38°15'00"



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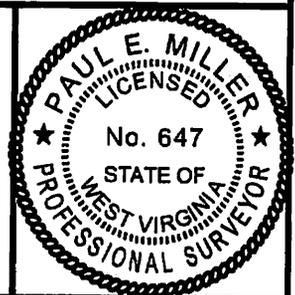
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(SIGNED) *Paul E. Miller*
R.P.E. _____ L.L.S. 647



STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION



DATE MARCH 4, 2016
OPERATOR'S WELL NO. 825752
API WELL NO.

47 STATE 039 COUNTY 05791 P PERMIT

WELL TYPE: OIL ___ GAS LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS,") PRODUCTION STORAGE ___ DEEP ___ SHALLOW
LOCATION: ELEVATION 1486' WATER SHED SUGARCAMP BRANCH OF HUGHES CREEK
DISTRICT CABIN CREEK COUNTY KANAWHA
QUADRANGLE CEDAR GROVE, WV 7.5'

SURFACE OWNER DAVID WARD HEIRS ACREAGE 4.814.41
OIL & GAS ROYALTY OWNER DAVID WARD HEIRS LEASE ACREAGE 8.000
LEASE NO. 1-025660-000

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PLUG AND ABANDON 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 8070, CHARLESTON, WV 25362

FORM WW-6

COUNTY NAME

PERMIT