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west virginia department of environmental protection

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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

## PERMIT MODIFICATION APPROVAL

June 18, 2013

TRIANA ENERGY, LLC  
900 VIRGINIA STREET, EAST - SUITE 400  
CHARLESTON, WV 25301

Re: Permit Modification Approval for API Number 9101238 , Well #: MUSGROVE 3H  
**Modified Lateral & Well Bottom Coordinates**

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith  
Regulatory/Compliance Manager  
Office of Oil and Gas



April 25, 2013

RECEIVED  
Office of Oil and Gas

APR 26 2013

WV Department of  
Environmental Protection

Mr. Jeff McLaughlin  
West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57<sup>th</sup> Street, S. E.  
Charleston, West Virginia 25304

**Re: Triana Energy, LLC – Musgrove 3H Well Permit Modification, Taylor County, WV  
API Well Number 47-9101238**

Dear Mr. McLaughlin:

As we have discussed, Triana Energy desires to modify its existing approved well work permit 47-9101238, for the Musgrove 3H, located in Taylor County, West Virginia. Our geology and engineering staff believe that the original lateral spacing was not adequate to protect against well communication, thus the proposed new path for the Musgrove 3H lateral is moved further to the southwest. To accommodate this action, we had to acquire additional lease acreage. However, the surface location has not changed from the original permitted location. The Musgrove 1H and 5H were drilled in the Winter of 2011/2012.

Please find enclosed modified forms WW-6A1, WW-6B and an updated, certified well plat. We wish to begin drilling this well around the first part of June, 2013.

Please let me know if you have any questions or need additional information.

Sincerely,

Walter C. Showen, III  
Manager, Permitting

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

1) Well Operator: Triana Energy, LLC 494486431 Taylor Booth's Creek Grafton 7.5'  
Operator ID County District Quadrangle

2) Operator's Well Number: Musgrove #3H Well Pad Name: Musgrove

3 Elevation, current ground: 1,415' Elevation, proposed post-construction: 1,415'

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

Other  
(b) If Gas: Shallow  Deep   
Horizontal

5) Existing Pad? Yes or No: Yes

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):  
Marcellus

7) Proposed Total Vertical Depth: 7,560'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 14,000

10) Approximate Fresh Water Strata Depths: 330'

11) Method to Determine Fresh Water Depth: OG-10s, completion reports

12) Approximate Saltwater Depths: None indicated

13) Approximate Coal Seam Depths: 554', 740'

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

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, hydraulically fracture and complete a horizontal well in the Marcellus Shale formation.

17) Describe fracturing/stimulating methods in detail:  
Perforate the production casing and production zone with perforating guns at predetermined locations, isolate treatment zones in stages and perform high pressure slick-water fracture, introducing proppant to retain fractures.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): approx. 15 acres

19) Area to be disturbed for well pad only, less access road (acres): approx. 11.5 acres

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WW - 6B  
(3/13)

MAY 1 2011

20)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft.</b>	<b>FOOTAGE: For Drilling</b>	<b>INTERVALS: Left in Well</b>	<b>CEMENT: Fill -up (Cu. Ft.)</b>
Conductor	20"	New	LS	55#	40'	40'	Grout to surface
Fresh Water	13-3/8"	New	H-40	48#	935'	935'	C.T.S.
Coal	NA						
Intermediate	9-5/8"	New	J-55	40#	3,075'	3,075'	C.T.S.
Production	5-1/2"	New	P-110	20#	13,015'	13,015'	Top @ 5,500'
Tubing	2-3/8"	New	L-80	4.7#	As needed		None
Liners							

<b>TYPE</b>	<b>Size</b>	<b>Wellbore Diameter</b>	<b>Wall Thickness</b>	<b>Burst Pressure</b>	<b>Cement Type</b>	<b>Cement Yield</b>
Conductor	20"	24"	0.25	340	Ready mix concrete	N/A
Fresh Water	13-3/8"	17-1/2"	0.33	1,730	Class A w/additives	1.18 - 1.54
Coal						
Intermediate	9-5/8"	12-3/8" - 12-1/4"	0.395	3,950	Class A w/additives	1.18 - 1.54
Production	5-1/2"	8-3/4" - 7-7/8"	0.361	12,360	Type 1 w/additives	1.37 - 1.65
Tubing	2-3/8"	N/A	1.19	11,200	None	None
Liners						

**PACKERS**

Kind:	None			
Sizes:				
Depths Set:				

21) Describe centralizer placement for each casing string. \_\_\_\_\_

Centralizers will be used as needed. The number and type is dependent on hole conditions.

Rigid style centralizers will be used in the lateral and curve sections of the well bore.

22) Describe all cement additives associated with each cement type. \_\_\_\_\_

Cement additives will be used as needed. The amount and type is dependent on hole conditions.

23) Proposed borehole conditioning procedures. \_\_\_\_\_

Proposed borehole conditioning procedures will depend on hole conditions. These may include, but are not limited to: weighted or high viscosity fluid sweeps, mud solvent fluid sweeps, surfactant sweeps, scouring sweeps, high rate or extended circulation, pipe rotation and reciprocation, short trips and other methods.

\*Note: Attach additional sheets as needed.

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Office of Oil & Gas  
APR 26 2013

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

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

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


Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Carrizo (Marcellus) LLC	Triana Energy, LLC	0.125	33/208
Carrizo (Marcellus) LLC	Triana Energy, LLC	0.125	33/208
John N. Musgrove, Jr.	Triana Energy, LLC	0.125+	59/139
John N. Musgrove, Jr. and Ruby Jean Musgrove	Triana Energy, LLC	0.125+	59/132
West Virginia Dept. of Transportation, Div. of Highways	Triana Energy, LLC	0.125+	See Attached

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

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

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

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

Well Operator: Triana Energy, LLC  
 By: Walter C. Showen, III   
 Its: Permitting Manager

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Office of Oil & Gas

JUN 11 2013

06/21/2013

**MEMORANDUM OF LEASE**

Pursuant to and in accordance with applicable statute, this **MEMORANDUM OF LEASE** is hereby recorded in lieu of the Lease between the parties hereto and, accordingly, the following information is set forth:

**1. Reference to Lease and Date of Execution of Lease.**

Lessor (as defined below) and Lessee (as defined below) entered into a certain Oil, Gas and Coalbed Methane Gas lease (referred to herein as the "Lease") on the 5<sup>th</sup> day of July 2011, with an effective date of July 5<sup>th</sup>, 2011.

**2. Name and Address of Lessor.**

The names and addresses of the Lessor as set forth in the Lease are:  
West Virginia Department of Transportation, Division of Highways, 1900 Kanawha Blvd, East, Building 5, Room A-631 Charleston, WV 25305-0430, which party is called the "Lessor" in this Memorandum of Lease.

**3. Name and Address of Lessee.**

The name and address of the Lessee as set forth in the Lease is: Triana Energy, LLC, 900 Virginia Street, East, Charleston, West Virginia 25301, which party is called the "Lessee" in this Memorandum of Lease.

**4. Description of Leased Premises.**

Lessor leased to Lessee all the oil and gas and coalbed methane gas (referred to hereafter as leased minerals) that is within and underlying those certain tracts or parcels of land containing in the aggregate a total of nine and 56/100 (9.56) acres, more or less, situate in Booths Creek District, Taylor County, State of West Virginia, and also known

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JUN 17

06/21/2013

as County Road 12 (Lost Run) which lands were acquired by the State of West Virginia by the following deeds:

- Deed dated September 18, 1939 from Charles Stout and Effie Stout, his wife, recorded in Book 85, at Page 158;
- Deed dated March 7, 1940 from Keson B. Kepler, recorded in Book 85, at Page 246;
- Deed dated March 8, 1940 from Lovie Lambert and Charles D. Lambert, recorded in Book 85, at Page 247;
- Deed dated March 7, 1940 from N. C. Musgrove, et al, recorded in Book 85, at Page 248;
- Deed dated March 15, 1940 from Perta Mauller and Lloyd Mauller, recorded in Book 85, at Page 249;
- Deed dated March 15, 1940 from Curtis Norris and Barbara Norris, recorded in Book 85, at Page 250;
- Deed dated March 8, 1940 from Joseph L. Peters and Susan Peters, recorded in Book 85, at Page 251;
- Deed dated March 7, 1940 from H. E. Richardson and Willa J. Richardson, recorded in Book 85, at Page 252;
- Deed dated March 14, 1940 from Susie Virginia B. Shuttleworth and C. A. Shuttleworth, her husband, recorded in Book 85, at Page 253;
- Deed dated September 7, 1939 from Alice Withers, et al, recorded in Book 85, at Page 278;
- Deed dated December 29, 1939 from J. M. Riley and Ada Riley, his wife, recorded in Book 85, at Page 279;
- Deed dated March 13, 1940 from Jane Wiseman, widow, et al, recorded in Book 85, at Page 281;
- Deed dated April 10, 1940 from Effie Currey and Jonah Currey, recorded in Book 85, at Page 282; and
- Deed dated June 4, 1940 from Sarah Biddle and Ingle Biddle, her husband, et al recorded in Book 86, at Page 118.

herein referred to as the "Premises," together with any and all rights necessary or convenient to develop, produce, market and sell any leased minerals as set forth in the Lease.

**5. Lease Term, Commencement, Termination, Extension and Renewal**

The initial term of the Lease shall begin as of the date of the Lease and continue in full force and effect for a Primary Term of five (5) years and as long thereafter as any

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Office of Oil & Gas

JUN 17



leased minerals are produced in commercial quantities from the Premises or Operations are underway on the Premises or land(s) unitized therewith or for as long thereafter as any leased minerals, or other products are being stored in, held in storage, or withdrawn from, any part of the Premises by Lessee or said Premises are used for the protection of any stored leased minerals or stored other products alone or in conjunction with other lands or Lessee is actively engaged in developing the area including said lands for the storage of any leased minerals or other products.

Lessee shall have the option to extend the Primary Term for the leased minerals, or oil and gas or coalbed methane, for an additional five (5) years by providing prior written notice to Lessor.

THIS MEMORANDUM OF LEASE IS NOT A COMPLETE SUMMARY OF THE LEASE. IN THE EVENT OF CONFLICT BETWEEN THIS MEMORANDUM OF LEASE AND THE LEASE, THE TERMS AND PROVISIONS OF THE LEASE SHALL CONTROL.

[Signature pages to follow.]

IN WITNESS WHEREOF, this Lease is executed by the Lessor and Lessee on the date first written above.

LESSOR:

Paul A. Mattox, Jr.  
Paul A. Mattox, Jr.  
P.E., Secretary of Transportation/Commissioner of Highways

LESSEE:

Triana Energy, LLC  
By: Sharon E. Casley  
Its: Senior Vice President

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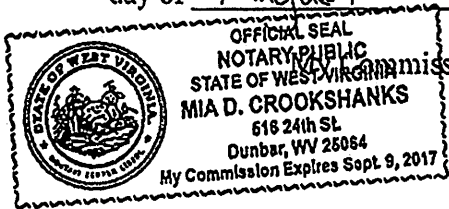
06/21/2013

STATE OF WEST VIRGINIA,  
COUNTY OF Kanawha, TO-WIT:

The foregoing instrument was acknowledged before me on the day and  
year written next below by Paul A. Mattox, Jr.

Given under my hand and notarial seal this 16<sup>th</sup>

day of August, 2011.



My Commission Expires 9-9-2017

Mia D. Crookshanks  
Notary Public

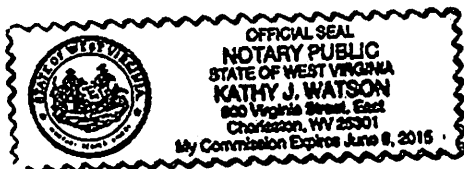
STATE OF WEST VIRGINIA,  
COUNTY OF KANAWHA, TO-WIT:

The foregoing instrument was acknowledged before me on the day and  
year written next below by Shawn E. Casey, Senior Vice President of Triana Energy,  
LLC.

Given under my hand and notarial seal this 5<sup>th</sup>

day of July, 2011.

My Commission Expires June 8, 2015



Kathy J. Watson  
Notary Public

APPROVED AS TO FORM THIS  
26<sup>th</sup> DAY OF July, 2011

B. E. Ellis  
ATTORNEY LEGAL DIVISION  
WEST VIRGINIA DEPARTMENT  
OF HIGHWAYS

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Office of Oil & Gas



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**west virginia** department of environmental protection

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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

August 26, 2011

**WELL WORK PERMIT**

**Horizontal Well**

This permit, API Well Number: 47-9101238, issued to TRIANA ENERGY, LLC, 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 of completion of drilling, 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: MUSGROVE 3H  
Farm Name: MUSGROVE JR. ET UX, JOHN

**API Well Number: 47-9101238**

**Permit Type: Horizontal Well**

Date Issued: 08/26/2011

**Promoting a healthy environment.**

**06/21/2013**

# 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

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1. 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 § 22-6-20, 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.
2. 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. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within twenty-five 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.
3. Pursuant to 35 CSR § 4-19.1.c, if the operator is unable to sample and analyze any water well or spring within one thousand (1,000) feet of the permitted well location, the Office of Oil and Gas requires the operator to sample, at a minimum, one water well or spring located between one thousand (1,000) feet and two thousand (2,000) feet of the permitted well location.

1). Date: July 5, 2011  
2.) Operator's Well Number Musgrove #3H  
State County Permit  
3.) API Well No.: 47- 091 - 01238+1

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

4) Surface Owner(s) to be served:  
(a) Name John N. Musgrove, Jr. et ux Address 393A RR 3  
Grafton, WV 26354  
(b) Name \_\_\_\_\_ Address \_\_\_\_\_  
(c) Name \_\_\_\_\_ Address \_\_\_\_\_  
6) Inspector Bryan Harris Address P.O. Box 157  
Volga, WV 26238 Telephone 304-553-6087  
5) (a) Coal Operator Name \_\_\_\_\_ Address \_\_\_\_\_  
(b) Coal Owner(s) with Declaration Name John N. Musgrove, Jr. et ux Address 393A RR 3  
Grafton, WV 26354  
(c) Coal Lessee with Declaration Name \_\_\_\_\_ Address \_\_\_\_\_

**TO THE PERSONS NAMED ABOVE TAKE NOTICE THAT:**

Included is the lease or leases or other continuing contract or contracts by which I hold the right to extract oil and gas

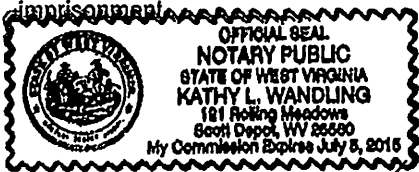
OR  
X Included is the information required by Chapter 22, Article 6, Section 8(d) of the Code of West Virginia (see page 2)  
I certify that as required under Chapter 22-6 of the West Virginia Code I have served copies of this notice and application, a location plat, and accompanying documents pages 1 through \_\_\_ on the above named parties by:

- Personal Service (Affidavit attached)
- Certified Mail (Postmarked postal receipt attached)
- Publication (Notice of Publication attached)

I have read and understand Chapter 22-6 and 35 CSR 4, and I agree to the terms and conditions of any permit issued under this application.

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, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



Well Operator Triana Energy, LLC  
By: Rachelle A. King  
Its: Designated Agent  
Address 900 Virginia St. East, Suite 400  
Charleston, WV 25301  
Telephone 304-205-8560

Subscribed and sworn before me this 20th day of July, 2011  
Kathy L. Wandling Notary Public  
My Commission Expires July 5, 2015

Oil and Gas Privacy Notice

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

**INSTRUCTIONS TO SURFACE OWNERS NAMED ON PAGE WW2-A**

The well operator named on page WW2A is applying for a permit from the State to do oil or gas well work. (Note: If the surface tract is owned by more than three persons, then these materials were served on you because your name appeared on the Sheriff's tax ticket on the land or because you actually occupy the surface tract. In either case, you may be the only owner who will actually receive these materials.) See Chapter 22 of the West Virginia Code. Well work permits are valid for 24 months. If you do not own any interest in the surface tract, please forward these materials to the true owner immediately if you know who it is. Also, please notify the well operator and the Office of Oil and Gas.

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

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

**Time Limits and methods for filing comments.** The law requires these materials to be served on or before the date the operator files his Application. You have **FIFTEEN (15) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

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

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

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

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

**List of Water Testing Laboratories.** The Office maintains a list of water testing laboratories which you can hire to test your water to establish water quality prior to and after drilling. Contact the Chief to obtain a copy.


**VOLUNTARY STATEMENT OF NO OBJECTION**

I hereby state that I have read the instructions to surface owners and that I have received copies of a Notice and Application for a Well Work Permit on Form WW2-A, and attachments consisting of pages 1 through \_\_\_ including a work order on Form WW2-B, a survey plat, and a soil and erosion plan, all for proposed well work on my surface land as described therein.

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

FOR EXECUTION BY A NATURAL PERSON

FOR EXECUTION BY A CORPORATION, ETC.

 Date 7/12/11

Company Name \_\_\_\_\_  
By \_\_\_\_\_  
Its \_\_\_\_\_ Date \_\_\_\_\_

John N. Musgrove, Jr.

Print Name

Signature

Date

**RECEIVED**  
Office of Oil & Gas

JUL 20 2011

WV Department of  
Environmental Protection

WW-2A Coal Waiver

COAL OPERATOR, OWNER, OR LESSEE WAIVER

County Taylor  
Operator Triana Energy, LLC

Operator's Well Number Musgrove #3H

INSTRUCTIONS TO COAL OPERATOR, OWNER, OR LESSEE

To the coal operator, owner, or lessee named on page WW2-A. You are hereby notified that any objection you wish to make or are required to make by WV Code 22-6-15, 16 or 17, must be filed with the Chief of the Office of Oil and Gas within fifteen (15) days after the receipt of this application by the Office. Mail objections to:

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0499 extension 1654

WAIVER

The undersigned coal operator \_\_\_\_ / owner \_\_\_\_ / lessee \_\_\_\_ / of the coal under this well location has examined this proposed well location. If a mine map exists which covers the area of well location, the well location has been added to the mine map. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

FOR EXECUTION BY A NATURAL PERSON

FOR EXECUTION BY A CORPORATION, ETC.

 Signature  
Date 7/12/11

Company Name \_\_\_\_\_  
By \_\_\_\_\_  
Its \_\_\_\_\_ Date \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

RECEIVED

Office of Oil & Gas

JUL 20 2011

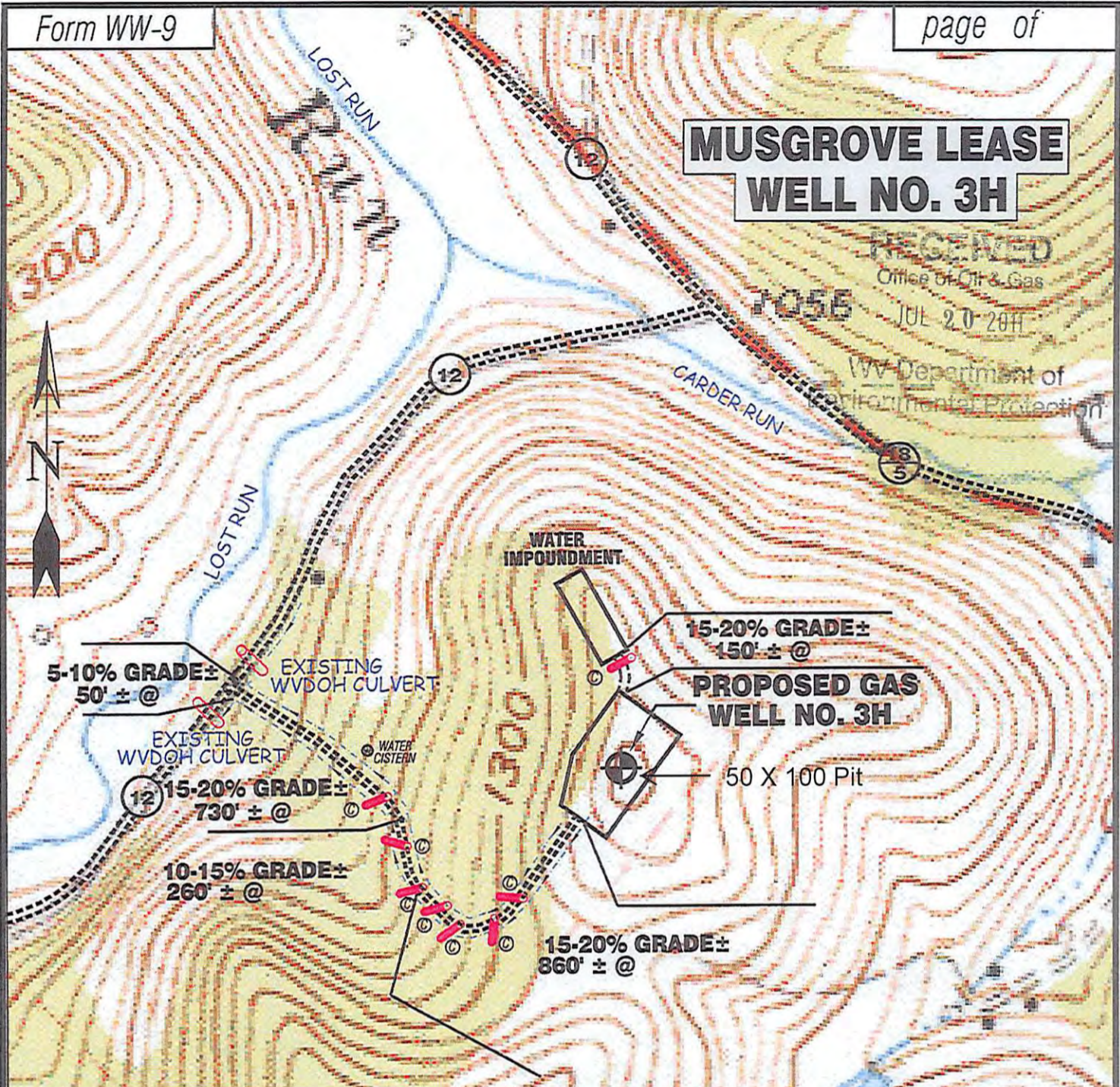
WV Department of  
Environmental Protection

06/21/2013

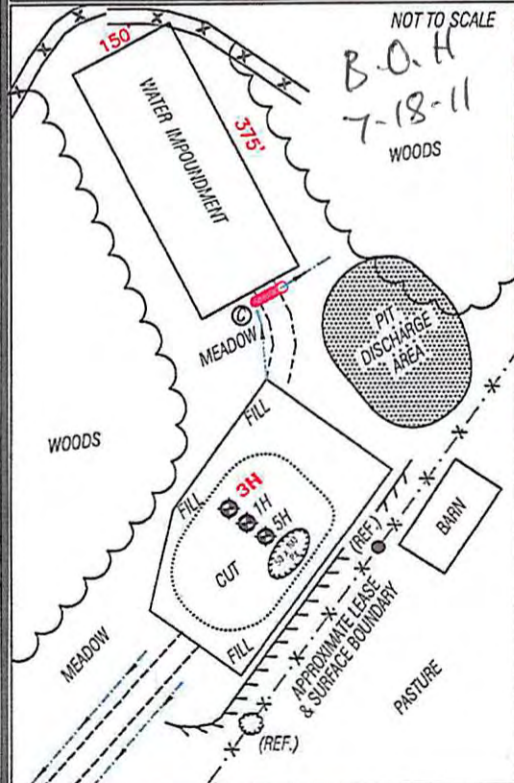
# MUSGROVE LEASE WELL NO. 3H

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Office of Oil & Gas  
7056 JUL 20 2011

WV Department of Environmental Protection



Detail Sketch for Proposed Well Musgrove 3H



SCALE: 1"=500'

ALL ROADS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.E.P. OIL AND GAS BMP MANUAL ENTRANCES AT COUNTY/STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATION. SEPARATE PERMITS MAY BE REQUIRED BY THE D.O.T.

SEDIMENT BASINS (TRAPS) AND APPROPRIATE EROSION CONTROL BARRIERS ARE TO BE CONSTRUCTED AT ALL CULVERT AND CROSS DRAIN INLETS AND OUTLETS AS REQUIRED IN THE WV D.E.P. OIL AND GAS BMP MANUAL. FIELD CONDITIONS (ROCK OUTCROPS AND BEDROCK) MAY PROHIBIT INLET TRAPS BEING INSTALLED. WHEN THESE CONDITIONS EXIST ADDITIONAL EROSION CONTROL MEASURES SHALL BE EVALUATED AND UTILIZED AS NEEDED.

EARTHWORK CONTRACTORS ARE RESPONSIBLE FOR NOTIFICATION TO THE OPERATOR AND INSPECTOR PRIOR TO ANY DEVIATION FROM THIS PLAN.

TEMPORARY SEED & MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT & STACK ALL MARKETABLE TIMBER.  
STACKED BRUSH MAY BE USED FOR SEDIMENT CONTROL.

APPLICATIONS FOR SEPARATE PLC PERMITS ON THE ACCESS ROAD STREAM CROSSINGS HAVE BEEN PREPARED (IF APPLIES).

TOPO SECTION OF USGS GRAFTON 7.5' QUADRANGLE

PROPOSED CULVERT INVENTORY (FOR BID PURPOSES ONLY)

12" (MINIMUM) CULVERT	8 CUL.
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ADDITIONAL CULVERTS AND/OR OTHER DRAINAGE STRUCTURES & SEDIMENT CONTROL DEVICES MAY BE REQUIRED BY THE WV D.E.P. OIL & GAS INSPECTOR. OPERATOR IS RESPONSIBLE FOR COORDINATION WITH CONTRACTOR AND SLS REGARDING ANY CHANGES OR ADDITIONS THE STATE MAY REQUIRE.

Projected Earthen Disturbance Area

Well & Pit Location Sites	13.0 ac. +/-
Access Road	2.4 ac. +/-
Approximate Total Disturbance	15.4 ac. +/-

- = EXISTING CULVERT
- = PROPOSED CULVERT 12" MIN. UNLESS OTHERWISE NOTED



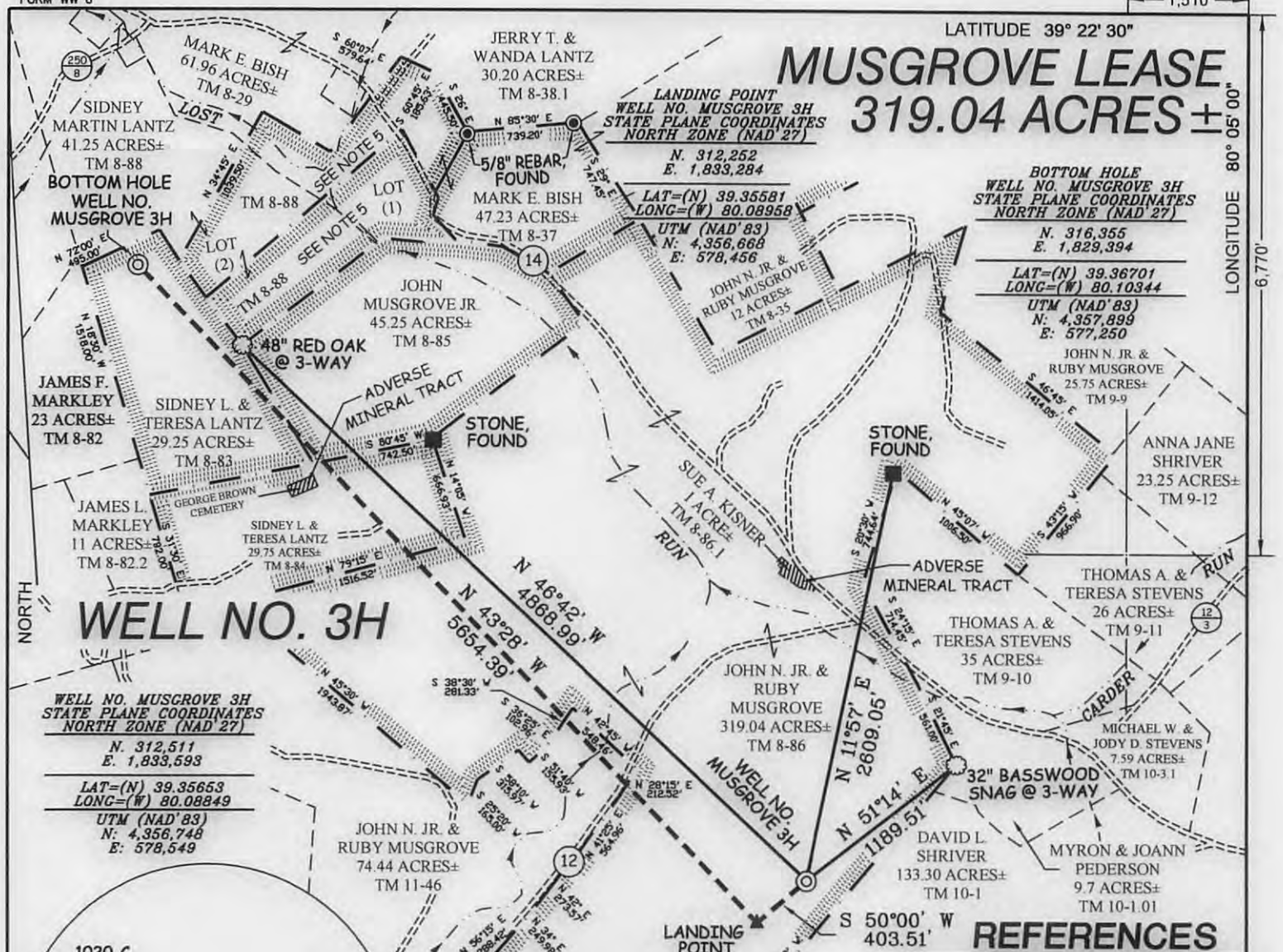
SMITH LAND SURVEYING, INC.  
P.O. BOX 150 GLENVILLE, WV. 26351  
PH: (304)462-5634 FAX: (304)462-5656 E-MAIL: sls@slssurveys.com

DRAWN BY: J.L.B. FILE NO: 7535 DATE: 06/30/11 CADD FILE: 7535REC3-REV1.DWG

06/21/2013



# MUSGROVE LEASE 319.04 ACRES±



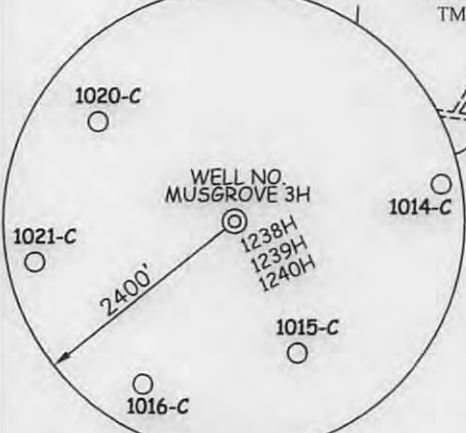
**WELL NO. MUSGROVE 3H**  
STATE PLANE COORDINATES  
NORTH ZONE (NAD'27)

N. 312,511  
E. 1,833,593

LAT=(N) 39.35653  
LONG=(W) 80.08849

UTM (NAD'83)  
N: 4,356,748  
E: 578,549

## REFERENCES



- NOTES ON SURVEY**
1. TIES TO WELLS, REFERENCES AND CORNERS ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD '27.
  2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DEED BOOK 220 PAGE 544, DEED BOOK 99 PAGE 314 AND DEED BOOK 63 PAGE 63.
  3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF TAYLOR COUNTY IN JULY, 2010.
  4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS (SUBMETER MAPPING GRADE).
  5. LOTS 1 & 2 ARE SHOWN HEREON TAKEN FROM A PARTITION PLAT DATED MARCH 23, 1921 RECORDED IN DEED BOOK 63 PAGE 63. SAID LOTS REMAINED AS MINERAL TRACTS, WHICH DIFFER FROM THE CURRENT SURFACE TRACTS.
  6. THE GEORGE BROWN CEMETERY IS BASED ON INFORMATION PROVIDED TO SLS BY TRIANA ENERGY AND IS SET OUT IN DEED BOOK 29 ON PAGE 57.



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 DIVISION OF ENVIRONMENTAL PROTECTION.

P.S.  
677

*Gregory A. Smith*



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

DATE MARCH 18, 20 13

OPERATORS WELL NO. MUSGROVE 3H


API WELL NO. 47 - 091 - 01238H

STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 7535P3HR3 (327-6)

PROVEN SOURCE OF ELEVATION (SURVEY GRADE) SCALE 1" = 1000'

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



WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION 1,415' WATERSHED LOST RUN

DISTRICT BOOTH'S CREEK COUNTY TAYLOR QUADRANGLE GRAFTON 7.5'

SURFACE OWNER JOHN N. MUSGROVE, JR. ET UX ACREAGE 319.04±

ROYALTY OWNER JOHN N. MUSGROVE, JR. ET UX - 319.04 AC.± & 45.25 AC.± & MARK BISH - 14.57 AC.± (LOT 1) & 14.57 AC.± (LOT 2)

PROPOSED WORK: LEASE NO. 06/21/2013

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH TVD 7,560' TMD 14,000'

WELL OPERATOR TRIANA ENERGY DESIGNATED AGENT RACHELLE A. KING

ADDRESS 900 VIRGINIA ST. EAST SUITE 400 ADDRESS 900 VIRGINIA ST. EAST SUITE 400

CHARLESTON, WV 25301 CHARLESTON, WV 25301

COUNTY NAME PERMIT