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

July 24, 2015

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-10303124, issued to AMERICAN ENERGY-MARCELLUS, 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 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: HOGE S GRN WZ 2H
Farm Name: STATE OF WV PUBLIC LD CORP
API Well Number: 47- 10303124
Permit Type: Horizontal 6A Well
Date Issued: 07/24/2015

Promoting a healthy environment.

API Number: 103-03124

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 (USACE) and WV DEP Department of Water and Waste Management (DWWM). No activity authorized under this permit shall be commenced until all necessary permits from USACE and DWWM are obtained.

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 moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.

4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.

5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations,* 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

7. 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.

9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

west virginia department of environmental protection

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

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

ORDER
ISSUED UNDER
WEST VIRGINIA CODE, CHAPTER 22, ARTICLE 6A

TO: American Energy Marcellus, LLC
3501 NW 63rd Street
Oklahoma City, OK 73116

DATE: July 24, 2015
ORDER NO.: 2015-W-7

INTRODUCTION

This Order (hereinafter "Order") is issued by the Office of Oil and Gas (hereinafter "OOG"), by and through its Chief, pursuant to the authority of W. Va. Code §§ 22-1-1, 22-6-1 and 22-6A-1 *et seq.* to American Energy Marcellus, LLC. (hereinafter "AEM" or "Operator"), collectively the "Parties."

FINDINGS OF THE CHIEF

In support of this Order, the Chief hereby finds the following:

1. OOG, an office within the West Virginia Department of Environmental Protection, is the agency with the duty and authority to execute and enforce W. Va. Code §22-6-1 and §22-6A-1 *et seq.*, and the rules and regulations promulgated thereunder.

2. AEM is a "person" as defined by W. Va. Code §22-6-1(n), with a corporate address as 3501 NW 63rd Street Oklahoma City, Oklahoma.

3. On June 12, 2015, AEM submitted well work permit applications identified as API#s 47-103-03124, 47-103-03125, 47-103-03126, and 47-103-03127. On June 29, 2015, AEM submitted a well work permit application identified as 47-103-03133. Five proposed wells are to be located on the Hoge GRN WZ Pad in Green District of Wetzel County, West Virginia.

4. On June 12, 2015, AEM requested a waiver for Wetland #3 and Wetland #5 outlined in Exhibit A, from well location restriction requirements in W. Va. Code §22-6A-12(b) for gas well permit applications identified as 47-103-03124, 47-103-03125, 47-103-03126, 47-103-03127 and 47-103-03133 located on the Hoge GRN WZ Pad in Green District of Wetzel County, West Virginia.

CONCLUSIONS OF LAW

1. West Virginia Code §22-1-6(d) requires, in part, that "[i]n addition to other powers, duties and responsibilities granted and assigned to the secretary by this chapter, the secretary is authorized and empowered to...(3) Enter private lands to make surveys and inspections for environmental protection purposes; to investigate for violations of statutes or rules which the Office of Oil and Gas is charged with enforcing; to serve and execute warrants and processes; to make arrests; issue orders, which for the purposes of this chapter include consent agreements; and to otherwise enforce the statutes or rules which the Office of Oil and Gas is charged with enforcing."

2. West Virginia Code §22-6A-2(a)(6) requires, in part, that "Concomitant with the broad powers to condition the issuance of well work permits, the secretary should also have broad authority to waive certain minimum requirements of this article when, in his or her discretion, such waiver is appropriate: *Provided*, That the secretary shall submit a written report of the number of waivers granted to the Legislature commencing January 1, 2013, and each year thereafter."

3. West Virginia Code §22-6A-12(b) requires, in part, that "[n]o well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the Office of Oil and Gas shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The Office of Oil and Gas may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary."

ORDER

Therefore, the Office of Oil and Gas grants AEM a waiver for Wetland #3 and Wetland #5 from well location restriction requirements in W. Va. Code §22-6A-12(b) for gas well permit applications identified as API#s 47-103-03124, 47-103-03125, 47-103-03126, 47-103-03127, and 47-103-03133 located on the Hoge GRN WZ Pad in Green District of Wetzel County, West Virginia. The Office of Oil and Gas hereby **ORDERS** that AEM shall meet the following site construction and operational requirements for the Hoge GRN WZ well pad:

a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least two feet (2') in height;
b. Filter/silt socks and erosion control blankets shall be installed on all slopes and down gradient locations of the pad and topsoil pile areas as erosion and sediment controlling BMPs;
c. Wetland #3 and Wetland #5 shall have a 32" compost filter sock and super silt fencing installed adjacent to the wetlands;
d. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual;
e. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill;
f. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill;
g. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls;
h. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs;
i. Inspections of the storm water and spill prevention measures shall be conducted after any major storm event defined as a half inch (½") rain within any twenty-four (24) hour period;
j. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies;
k. All records from inspections shall be maintained on site for the life of the project and be available upon request.

Thus ORDERED, the 24th day of July, 2015.

IN THE NAME OF THE STATE OF WEST VIRGINIA:

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

By: _____
JAMES A. MARTIN, CHIEF

Wetland Waiver Request

API Number 103-03125 Well Number HOGES GRN WZ 4H

Operator American Energy Marcellus, LLC Pad Name Hoge GRN WZ Well Pad

Submit a conclusive demonstration to justify the proposed activity by addressing the following:

1. **Demonstrate that there is not a practical alternative to impact the Waters of the U.S. by including other alternatives that were considered but eliminated.**
    a. Include a No-Action Alternative as to show "the future without the project
    b. Location Alternatives must be shown
    c. Must demonstrate why a 100' buffer cannot be maintained

a. A No-action alternative would result in the in-ability to extract any gas from this unit. The only available area for pad construction would be in the proposed location as shown in the attached drawing. Within this unit boundary there are no other viable pad locations, due to steepness of slope and impacts to waters of the U.S. In essence, the land surface and gas below would be unable to be developed in the Unit Boundary as shown.

b. See Exhibit (b) for overview of elimination of alternatives.
East and West: Pad was unable to be shifted East or West away 100' of the proposed pad location because of impacts to Waters of the U.S. and steep terrain.
North West: Pad was unable to be shifted North West of the proposed pad location without affecting waters of the U.S. because of the steepness of terrain. Refer to Exhibit "A".
South East: Pad was unable to be shifted South East of the proposed location without affecting water of the U.S. because of steepness of terrain. In addition, other areas that are more flat in nature are located on the banks of major watercourses where dwellings are located.

c.Steep terrain and other environmental features prohibit any other location within the area to be utilized Specifically, an odd shaped pad has been utilized to prevent encroachments into the wetlands themselves and encroachment into the 100' buffer of other wetlands.
Wetland #3 & Wetland #5-> The majority of the well pad proposed above wetland #3 & #5 is in fill. This fill slope results in the encroachment of the 100' buffer. However, shifting the pad away from the wetland #3 & #5 anymore to avoid the 100' setback requirement would result in encroaching into Wetland #2 100' buffer.

2. **Show that treatment facilities (Erosion and Sediment Control Features) will be located as close as practical to the source(s) with which it is associated.**

Erosion and Sedimentation Controls have been located as close as practicably possible. Erosion & Sediment Control and Site Plan display the location of these controls. These controls are unable to be any closer to the the proposed well pad as area is needed to construct the toe benches and fill slopes. This area is already squeezed as tightly as possible for safe construction practices to be met. Exhibits for the wetland shows the location of erosion and sediment controls in relation to the associated wetland.

3. **Demonstrate that all proposed activity will not impact Waters of the U.S. more than is necessary to accommodate the proper construction and operation of the facility.**

    a. Specify and identify wetlands using unique identification and/or perennial streams located within 100' of the pad's limit of disturbance (including erosion and sediment controls).
    b. Is the proposed project the least environmentally damaging practicable alternative to the waters of the United States, so long as the alternative does not have other environmental consequences

No proposed activity will impact waters of the U.S.

a. Three wetlands area located within the 100' of the pad's limit of disturbance.

Wetland #1 is located adjacent to an existing access road and is 0.03 acres or 1,378.8 SF in size. Based on it's location, and long and slender shape this wetland appears to have been created as a result of the previous construction of the adjacent access road. This wetland will be eliminated and a NW-39 permit from ACOE is being obtained.

Wetland #3 is located south of the proposed well pad and below the fill slope. It is 0.05 acres or 2,105.0 SF in size.

Wetland #5 is located southeast of the proposed well pad. It is located overtop an existing access road. Based on it's location, it appears this wetland was most likely created as a result of improper maintaince of this access road. It's 0.29 acres or 12,741.9 SF

b. Yes, this project avoids being 100' from all perennial streams. In additon, this project completely avoids Wetland #2 which is 1.38 acres 60,149.5 SF. In order to acheive 100' buffer from Wetland #3 & #5 then Wetland #2 would be impacted.
Fill slope heights in this area have been minimized to stay maximum distance away from wetlands.

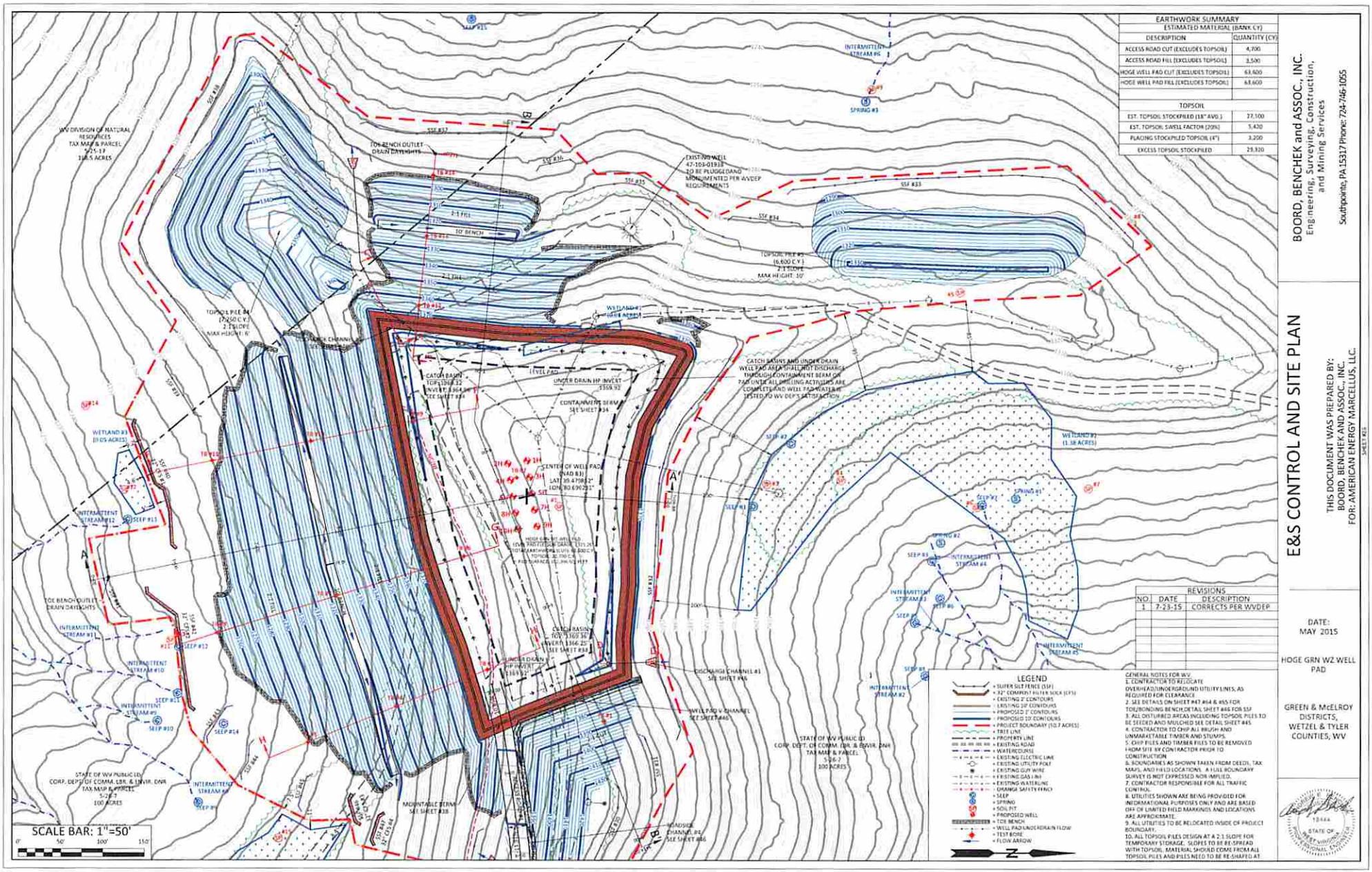
4. **Provide mapping, plans, specifications and design analysis for the preferred alternative to the project.**

    a. Specify in writing what additional controls, measures, devices, monitoring, etc will be utilized to protect these wetlands and/or perennial streams.

Erosion and Sediment Control and Site Plan has already been provided. Overviews of these impact areas is attached showing E&S Controls.

Wetland #3
In addition to the Super Silt Fence typically used on sites we have placed 24" compost filter sock in front of the SSF.
A geotechnical inspector will be on-site to insure the recommended construction techniques are followed. An earthern berm is proposed to be placed on the perimeter of the pad. It is 3.3 feet in height with a top width of 2 feet and 2:1 slopes with a base of 15.2 feet.
This provides for more than adequate containment during and after drilling activites. While the distance from the LOD is only 5 feet in the closest area the distance from the fill slope itself is 75.3 feet in its closest spot.

Wetland #5
In addition to the Super Silt Fence typically used on sites we have placed 24" compost filter sock in front of the SSF. While this wetland is within the 100' buffer for the LOD of the Well pad it is not directly below the fill slope of the well pad. It is actually directly below the proposed access road.
A geotechnical inspector will be on-site to insure the recommended construction techniques are followed. An earthern berm is proposed to be placed on the perimeter of the pad. It is 3.3 feet in height with a top width of 2 feet and 2:1 slopes with a base of 15.2 feet.
This provides for more than adequate containment during and after drilling activites. While the distance from the LOD is only 6.5 feet in the closest area the distance from the fill slope itself is 56.7 feet in its closest spot which is not located above the wetland but more towards the side of it.


EARTHWORK SUMMARY
ESTIMATED MATERIAL (BANK CY)
DESCRIPTION | QUANTITY (CY)
ACCESS ROAD CUT (EXCLUDES TOPSOIL) 4,700
ACCESS ROAD FILL (EXCLUDES TOPSOIL) 3,500
HOGE WELL PAD CUT (EXCLUDES TOPSOIL) 63,600
HOGE WELL PAD FILL (EXCLUDES TOPSOIL) 63,600
TOPSOIL
EST. TOPSOIL STOCKPILED (18" AVG.) 27,100
EST. TOPSOIL SWELL FACTOR (20%) 5,420
PLACING STOCKPILED TOPSOIL (4") 3,200
EXCESS TOPSOIL STOCKPILED 29,320
BOORD, BENCHEK and ASSOC., INC.
Engineering, Surveying, Construction, and Mining Services
Southpointe, PA 15317 Phone: 724-746-1055
E&S CONTROL AND SITE PLAN
THIS DOCUMENT WAS PREPARED BY: BOORD, BENCHEK AND ASSOC., INC.
FOR: AMERICAN ENERGY MARCELLUS, LLC.
SHEET #25
REVISIONS
NO. DATE DESCRIPTION
1 7-23-15 CORRECTS PER WVDEP
DATE: MAY 2015
HOGE GRN WZ WELL PAD
GREEN & McELROY DISTRICTS, WETZEL & TYLER COUNTIES, WV
LEGEND
SILTFENCE (SF)
32" COMPOST FILTER SOCK (CFS)
EXISTING 2' CONTOURS
EXISTING 10' CONTOURS
PROPOSED 2' CONTOURS
PROPOSED 10' CONTOURS
PROJECT BOUNDARY (50.7 ACRES)
TREE LINE
PROPERTY LINE
EXISTING ROAD
WATERCOURSE
EXISTING ELECTRIC LINE
EXISTING UTILITY POLE
EXISTING GUY WIRE
EXISTING GAS LINE
EXISTING WATERLINE
ORANGE SAFETY FENCE
SEEP
SPRING
SOIL PIT
PROPOSED WELL
TOE BENCH
WELL PAD/UNDERDRAIN FLOW
TEST BORE
FLOW ARROW
GENERAL NOTES FOR WV
1. CONTRACTOR TO RELOCATE OVERHEAD/UNDERGROUND UTILITY LINES, AS REQUIRED FOR CLEARANCE.
2. SEE DETAILS ON SHEET #47 #64 & #65 FOR TOE/BONDING BENCH, DETAIL SHEET #46 FOR SSF
3. ALL DISTURBED AREAS INCLUDING TOPSOIL PILES TO BE SEEDED AND MULCHED SEE DETAIL SHEET #45
4. CONTRACTOR TO CHIP ALL BRUSH AND UNMARKETABLE TIMBER AND STUMPS.
5. CHIP PILES AND TIMBER PILES TO BE REMOVED FROM SITE BY CONTRACTOR PRIOR TO CONSTRUCTION
6. BOUNDARIES AS SHOWN TAKEN FROM DEEDS, TAX MAPS, AND FIELD LOCATIONS. A FULL BOUNDARY SURVEY IS NOT EXPRESSED NOR IMPLIED.
7. CONTRACTOR RESPONSIBLE FOR ALL TRAFFIC CONTROL.
8. UTILITIES SHOWN ARE BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED ON FIELD LOCATIONS AND MARKINGS. LOCATIONS ARE APPROXIMATE.
9. ALL UTILITIES TO BE RELOCATED INSIDE OF PROJECT BOUNDARY.
10. ALL TOPSOIL PILES DESIGN AT A 2:1 SLOPE FOR TEMPORARY STORAGE. SLOPES TO BE RE-SPREAD WITH TOPSOIL. MATERIAL SHOULD COME FROM ALL TOPSOIL PILES AND PILES NEED TO BE RE-SHAPED AT
SCALE BAR: 1"=50'
0' 50' 100' 150'
WV DIVISION OF NATURAL RESOURCES TAX MAP & PARCEL 5-25-19 186.5 ACRES
STATE OF WV PUBLIC LD CORP. DEPT OF COMM. LBR. & ENVIR. DNR TAX MAP & PARCEL 5-26-7 100 ACRES
TOE BENCH OUTLET DRAIN DAYLIGHTS
EXISTING WELL 47-103-01918 TO BE PLUGGED AND MONUMENTED PER WVDEP REQUIREMENTS
TOPSOIL PILE #5 (6,600 C.Y.) 2:1 SLOPE MAX HEIGHT: 10'
TOPSOIL PILE #4 (7,250 C.Y.) 2:1SLOPE MAX HEIGHT: 6'
CATCH BASINS AND UNDER DRAIN WELL PAD SHALL NOT DISCHARGE THROUGH CONTAINMENT BERM OR PAD UNTIL ALL DRILLING ACTIVITIES ARE COMPLETE AND WELL PAD WATER IS TESTED TO WV DEP'S SATISFACTION
CENTER OF WELL PAD (NAD 83) LAT: 39.479812° LONG: 80.690231°
CATCH BASIN TOP: 1364.32 INVERT: 1364.04 SEE SHEET #34
UNDER DRAIN HP INVERT 1359.92
CONTAINMENT BERM SEE SHEET #34
CATCH BASIN TOP: 1369.30 INVERT: 1366.25 SEE SHEET #34
UNDER DRAIN HP INVERT 1363.92
DISCHARGE CHANNEL #1 SEE SHEET #46
WELL PAD V CHANNEL SEE SHEET #46
ROADSIDE CHANNEL #1 SEE SHEET #46
MOUNTABLE BERM SEE SHEET #38
WETLAND #1 (0.05 ACRES)
WETLAND #2 (1.38 ACRES)
WETLAND #3 (0.08 ACRES)
INTERMITTENT STREAM #1
INTERMITTENT STREAM #2
INTERMITTENT STREAM #3
INTERMITTENT STREAM #4
INTERMITTENT STREAM #5
INTERMITTENT STREAM #6
INTERMITTENT STREAM #7
INTERMITTENT STREAM #8
INTERMITTENT STREAM #9
INTERMITTENT STREAM #10
INTERMITTENT STREAM #11
INTERMITTENT STREAM #12
SPRING #1
SPRING #2
SPRING #3
SEEP #1
SEEP #2
SEEP #3
SEEP #4
SEEP #5
SEEP #6
SEEP #7
SEEP #8
SEEP #9
SEEP #10
SEEP #11
SEEP #12
SEEP #13
SEEP #14
SEEP #15
STATE OF WV PUBLIC LD CORP. DEPT OF COMM. LBR. & ENVIR. DNR TAX MAP & PARCEL 5-26-7 100 ACRES

Wetland Waiver - Exhibit "A" Page 2

LEGEND
- SUPER SILT FENCE (SSF)
- 32" COMPOST FILTER SOCK (CFS)
- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- PROPOSED 2' CONTOURS
- PROPOSED 10' CONTOURS
- PROJECT BOUNDARY (50.7 ACRES)
- TREE LINE
- PROPERTY LINE
- EXISTING ROAD
- WATERCOURSE
- EXISTING ELECTRIC LINE
- EXISTING UTILITY POLE
- EXISTING GUY WIRE
- EXISTING GAS LINE
- EXISTING WATERLINE
- ORANGE SAFETY FENCE
- SEEP
- SPRING
- SOIL PIT
- PROPOSED WELL
- TOE BENCH
- WELL PAD UNDERDRAIN FLOW
- TEST BORE
- FLOW ARROW

N

SCALE BAR: 1"=50'

0' 50' 100' 150'

GENERAL NOTES FOR WV:
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5. CHIP PILES AND TIMBER PILES TO BE REMOVED FROM SITE BY CONTRACTOR PRIOR TO CONSTRUCTION.
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10. ALL TOPSOIL PILES DESIGN AT A 2:1 SLOPE FOR TEMPORARY STORAGE. SLOPES TO BE RE-SPREAD WITH TOPSOIL. MATERIAL SHOULD COME FROM ALL TOPSOIL PILES AND PILES NEED TO BE RE-SHAPED AT 2.5:1 SLOPE.

EARTHWORK SUMMARY ESTIMATED MATERIAL (BANK CY)	
DESCRIPTION	QUANTITY (CY)
ACCESS ROAD CUT (EXCLUDES TOPSOIL)	4,700
ACCESS ROAD FILL (EXCLUDES TOPSOIL)	3,500
HOGE WELL PAD CUT (EXCLUDES TOPSOIL)	63,600
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TOPSOIL	
EST. TOPSOIL STOCKPILED (18" AVG.)	27,100
EST. TOPSOIL SWELL FACTOR (20%)	5,420
PLACING STOCKPILED TOPSOIL (4")	3,200
EXCESS TOPSOIL STOCKPILED	29,320

REVISIONS		
NO.	DATE	DESCRIPTION
1	7-23-15	CORRECTS PER WVDEP

BOORD, BENCHEK and ASSOC., INC.
Engineering, Surveying, Construction, and Mining Services
Southpointe, PA 15317 Phone: 724-746-1055

E&S CONTROL AND SITE PLAN

THIS DOCUMENT WAS PREPARED BY:
BOORD, BENCHEK AND ASSOC., INC.
FOR: AMERICAN ENERGY MARCELLUS, LLC.

SHEET #25

DATE:
MAY 2015

HOGE GRN WZ WELL PAD

GREEN & McELROY DISTRICTS, WETZEL & TYLER COUNTIES, WV

STATE OF WEST VIRGINIA
18144
PROFESSIONAL ENGINEER

47 10303124

WW-6B
(10/14)

API NO. 47- _____ - _____
OPERATOR WELL NO. Hoge S GRN WZ 2H
Well Pad Name: Hoge GRN WZ

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

1) Well Operator:	American Energy-Marcellus	494510050	Wetzel	Green	Center Point
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: Hoge S GRN WZ 2H Well Pad Name: Hoge GRN WZ

3) Farm Name/Surface Owner: WV DNR Public Lands Corp Public Road Access: CR 13/8

4) Elevation, current ground: 1380' Elevation, proposed post-construction: 1372.40'

5) Well Type (a) Gas X Oil X Underground Storage _____
Other _____
(b)If Gas Shallow X Deep _____
Horizontal X

6) Existing Pad: Yes or No No

DMH 7-15-15

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Marcellus, Approximate TVD 7342', approximate thickness 50', +/- 4600 psi

8) Proposed Total Vertical Depth: 7342'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 13500'

11) Proposed Horizontal Leg Length: 5600'

12) Approximate Fresh Water Strata Depths: 472'

13) Method to Determine Fresh Water Depths: Based on drilling history in nearby wells

14) Approximate Saltwater Depths: 970'

15) Approximate Coal Seam Depths: 1162'

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

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

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

RECEIVED
Office of Oil and Gas
JUL 17 2015
WV Department of
Environmental Protection

API NO. 47-_____-_____
OPERATOR WELL NO. Hoge S GRN WZ 2H
Well Pad Name: Hoge GRN WZ

18) **CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	J-55	94#	100'	100'	330, CTS
Fresh Water	13-3/8"	New	J-55	54.5#	600'	600'	320, CTS
Coal							
Intermediate	9-5/8"	New	J-55	40#	3490'	3490'	1650, CTS
Production	5-1/2"	New	P-110	20#	13500'	13500'	4375
Tubing	2-7/8"	New	N-80	4.7#			
Liners							

DMH
7-15-15

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438	2110	50	Class A	1.2
Fresh Water	13-3/8"	17-1/2"	0.38	2740	600	Class A	1.2
Coal							
Intermediate	9-5/8"	12-1/4"	0.395	3950	1500	Premium H/50-50 Poz H	Tail 1.27, Lead 1.51
Production	5-1/2"	8-3/4"	0.361	12640	5000	Premium H/50-50 Poz H	Tail 1.27, Lead 1.51
Tubing	2-7/8"	4.778"	0.19	11100			
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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API NO. 47-_____-_____
OPERATOR WELL NO. Hoge S GRN WZ 2H
Well Pad Name: Hoge GRN WZ

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

The well will be spud using a conductor rig. It will drill down 100' per the casing program. It will set 20" casing and circulate cement back to surface. The conductor rig will move off location, a rig capable of drilling to TD will move on and finish drilling the well. We will drill on air with a tri-cone bit to 600' and set freshwater casing. We will then continue drilling vertically and setting casing per the attached casing program to TD.

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

We plan to hydraulically fracture/stimulate the well utilizing the "slickwater" frac technique. We will plug and perforate through cased hole and frac with an anticipated max pressure that will not exceed 10,000 psi.

DMH
7-15-15

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 50.7

22) Area to be disturbed for well pad only, less access road (acres): 13.6

23) Describe centralizer placement for each casing string:

Conductor: N/A
Surface: Centralizer every 3 joints or 120'
Intermediate: Centralizer every 3 joints or 120'
Production: Run 1 spiral centralizer every 120' from the first 5.5" long joint to the top of the curve
Run 1 spiral centralizer every 200' from the top of the curve to surface

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

Conductor: Class A Cement (see attachment for complete description)
Surface: Class A Cement (see attachment for complete description)
Intermediate: Premium H/50-50 Poz H Cement (see attachment for complete description)
Productions: Premium H/50-50 Poz H Cement (see attachment for complete description)

25) Proposed borehole conditioning procedures:

The wellbore will be properly circulated at TD of each section until as much of the residual drill cuttings have been removed from the wellbore as possible, residual drilling gas has been circulated out and until the mud and wellbore are both constant and stable. Mud properties will be adjusted if needed. Hole cleaning times may vary from well to well, hole section to hole section.

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*Note: Attach additional sheets as needed.

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Cement Additives for WW-6B

20" conductor: **15.6 ppg Class A + 3% CC + 0.25 lb/sk celloflake**

13-3/8" Surface: **15.6 ppg Class A + 3% CC + 0.25 lb/sk celloflake**

9-5/8" Intermediate: **15.3 ppg Class H + 5%KCL + 0.6% C-12 + 0.4% C-41P + 0.1% C-51 + 0.125 lb/sk celloflake**

5-1/2" Production: **Lead - 50/50 poz H 14.2 ppg + 0.5 %FL 17 +5% Gyp + 0.1%C41P + 0.15% C51 + 0.1% C20 Tail - Class H 15.6 ppg Acid Soluble --- 50% CaCO3 + 0.75% Fl 17 + 0.1% C41P + 0.15%C45 +3pps gilsonite + 0.2% C20**

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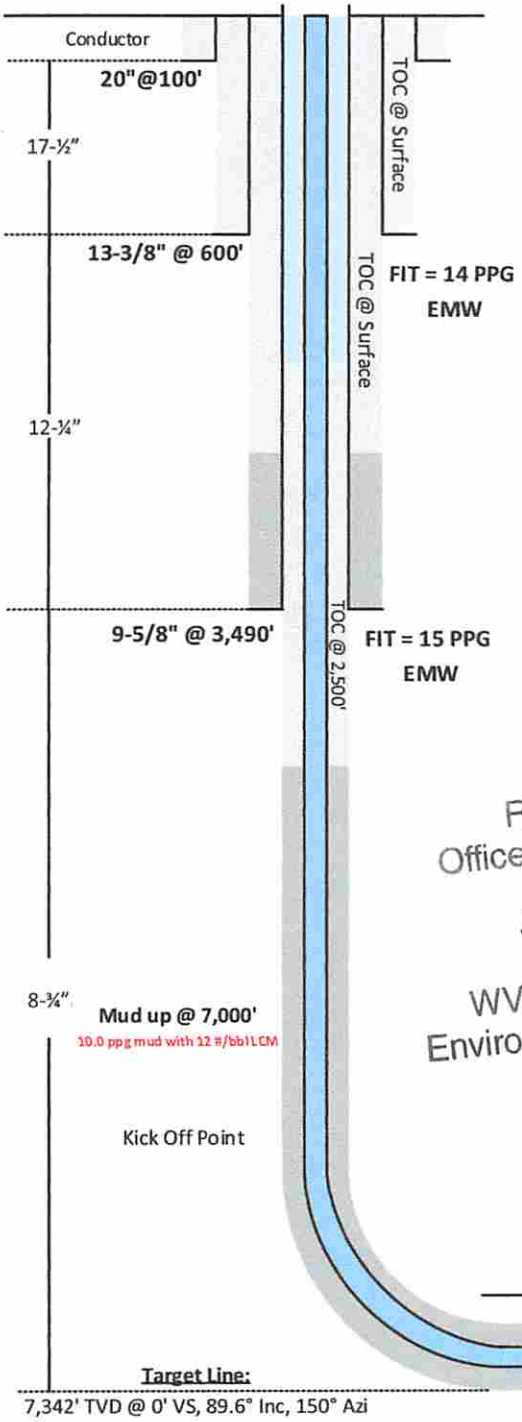
10 5 0 3 1 2 4

AMERICAN ENERGY APPALACHIA

Hoge S GRN WZ 2H

County, State: Wetzel, West Virginia	Township: Grant	Location:	Formation: Marcellus
Coordinates: NAD 27	SHL Lat/Long: 39.479706 N, 80.696547 W	RKB / Elevation:	AFE DC/CWC:
	BHL Lat/Long:		USDW: 472' / Property #:
Rig:	Target Line: 7,342' TVD @ 0' VS, 89.6 Inc, 150 Azi		AFE #:



Casing Design

Interval	Hole size (in)	Size (in)	Weight #/ft	Grade	Conn.	Collapse (PSI)	Burst (PSI)	Depth (ft)	Cost $/ft
Conductor	26"	20"	-	-	-	-	-	100	-
Surface	17-1/2"	13-3/8"	54.5	J-55	BTC	1,130	2,740	600	36
Intermediate	12-1/4"	9-5/8"	36	J-55	LTC	2,020	3,520	3,490	22
Production	8-3/4"	5-1/2"	20	P-110	ULT-DQX	11,110	12,640	13,500	22

Cement Design

Interval	Slurry	Weight	Ft^3	Yeild	Excess	Cement Top
Conducor	Tail	15.6 ppg	330	1.20 cuft/sk	50%	Surface
Surface	Tail	15.6 ppg	320	1.20 cuft/sk	50%	Surface
Intermediate	Lead	13.5 ppg	250	1.51 cuft/sk	30%	Surface
	Tail	15.3 ppg	1150	1.27 cuft/sk		700
Production	Lead	13.5 ppg	1000	1.51 cuft/sk	10%	2500
	Tail	15.3 ppg	1300	1.27 cuft/sk		6300

Geological Information

Formation	TVD	Sub Sea
Freshwater	472	900'
Saltwater	970	402'
Pittsburgh Coal	1162	210'
Big Injun	2447	-1,075'
Big Injun Base	2647	-1,275'
Berea	3019	-1,647'
Gordon	3225	-1,853'
Gordon Base	3291	-1,919'
Middlesex	7052	-5,680'
Geneseo	7190	-5,818'
Tully	7218	-5,846'
Hamilton	7241	-5,869'
Marcellus	7312	-5,940'
Purcell	7327	-5,955'
Lower Marcellus	7329	-5,957'
Basal Marcellus	7340	-5,968'
Onondaga	7362	-5,990'

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Drilling Fluids Information

AIR INTERVALS

Interval	Depth (MD)	Rate (cfm)	Water (bbl/hr)	Foamer (gal/hr)
Surface	0'-600'	>5000	50-60	1/2-3/4
Intermediate	600'-3490'	>5000	50-60	1/2-3/4
Vert/Nudge	3,490'-6,919'	>5000	40-60	3/4-1

SYNTHETIC OIL BASED MUD INTERVAL

Interval	Depth (MD)	Weight (#/gal)	Viscosity (sec/qt)	HTHP (ml/30min)	PV (cps)	YP (#/100 ft^2)	6 RPM	WPS ppm	OWR % by vol
Curve	6,919'-7,519'	10.5-13.5	50-60	4-6	18-24	10-12	8-9	150K-180K	75:25-70:30
Lateral	7,519'-13,500'	13.5-13.7	50-60	4-6	18-24	10-12	8-9		

WW-9
(9/13)

API Number 47 - _____ - _____
Operator's Well No. Hoge S GRN WZ 2H

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name American Energy - Marcellus, LLC OP Code 4945100500

Watershed (HUC 10) Fishing Creek Quadrangle Center Point

Elevation 1380' County Wetzel District Green

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

Will a pit be used? Yes ☐ No ☑

If so, please describe anticipated pit waste: Closed loop system no pits will be used

Will a synthetic liner be used in the pit? Yes ☐ No ☑ If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

_____ Land Application
■ Underground Injection (UIC Permit Number see attached sheet titled UIC Wells and Landfills) DMH 7-15-15
■ Reuse (at API Number next anticipated well)
■ Off Site Disposal (Supply form WW-9 for disposal location)
_____ Other (Explain _____

Will closed loop system be used? If so, describe: yes; see attached sheet titled Closed loop typical description

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air, Freswater mist, and Synthetic based oil

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

Additives to be used in drilling medium? see attached sheet titled drilling additives

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

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

-Landfill or offsite name/permit number? see attached sheet titled UIC Wells and Landfills

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 _____

Company Official (Typed Name) American Energy - Marcellus, LLC

Company Official Title Regulatory Technician

Subscribed and sworn before me this 10 day of July, 20 15

_____ Notary Public

My commission expires 1/23/18

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UIC WELLS and Landfills

Disposal Location	Type	Permit No.
Wetzel County Landfill –	Landfill	SWF-1021/WV010985
Short Creek Landfill –	Landfill	SWP-1034/WV0109517
Brooke County –	Landfill	SWF-1013/WV0109029
Kemble -	UIC Well	34-119-2-8780-00-00
Elkhead-	UIC Well	34-157-2-5511-00-00
Kent Injection Well	UIC Well	34-119-2-7350-00-00
Moran Well	UIC Well	34-089-2-4412-00-00

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Closed Loop Typical Description

A series of storage tanks that separate liquids and solids along with screen shakers, hydro cyclones, centrifuges and collection equipment (e.g., vacuum trucks, shale barges) may be on site. The wastes created are minimizes and transfer red off-site for disposal.

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UIC WELLS and Landfills

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Moran Well	UIC Well	34-089-2-4412-00-00

Closed Loop Typical Description

A series of storage tanks that separate liquids and solids along with screen shakers, hydro cyclones, centrifuges and collection equipment (e.g., vacuum trucks, shale barges) may be on site. The wastes created are minimizes and transfer red off-site for disposal.

Drilling Additives

Air mist system additives are commonly; Drilling Foam, Drilling Soap, and occasionally Shale Stabilizer (KCl).

Synthetic Oil Based Additives

The base oil is the main ingredient, and it will run approx. 70% of the fluid volume, water will make up about 25%, the remaining 5% by volume will include a mixture of the following:

ANCO Gel

Cottonseed Hulls	Base Oil	Anco Thunder Plug
D294	Anco Mud Mod	Calcium Carbonate M
Anco Bar	Anco Mul OW	Cedar Fiber
Clayton	Anco Mul P	LCF Blend
Lime	Anco Mul S	Walnut Shell Med
Calcium Chloride	Anco Mul Thin	Anco Drill A
Anco Trol		

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Form WW-9

Operator's Well No. Hoge S GRN WZ 2H

American Energy - Marcellus, LLC

Proposed Revegetation Treatment: Acres Disturbed _____ Prevegetation pH _____

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch minimum of 2-3 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
See attached		See attached	

Attach:
Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [signature]

Comments: _____

Title: Oil + Gas Inspector Date: 7-15-15

Field Reviewed? (✓) Yes ( ) No

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Temporary and Permanent Seed Mix

250 lbs. /acre

Mix Details

Medium red clover	4%
Alsike clover	4%
Birds foot trefoil	5%
Forage tall fescue	45%
Forage perineal rye	20%
Annual rye	11%
Winter wheat	10%

Straw

Winter – 3 ton per acre

Summer – 2 ton per acre

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Hoge N GRN WZ 1H, 3H, 5H, 7H & 9H

Hoge S GRN WZ 2H, 4H, 6H, 8H & 10H Site Safety Plan

AMERICAN ENERGY
MARCELLUS

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WEST VIRGINIA REGISTERED WATER WELL LOGS*

PROP ID	PARCEL #	ORIGINAL OWNER	LATITUDE	LONGITUDE	ADDRESS
3	05-25-11	Yellow Hawk Sportsman Club	39.483321	-80.700162	1522 Main St. Wellsburg, WV 26070
4	05-25-07	Richard Helmbrod	39.485383	-80.597558	P.O. Box 25 Clarington, OH 43915

PROPERTY ID	PARCEL NO.	PROPERTY DATA OWNER	OWNER ADDRESS
1	05 2600070000	STATE WV OF PUBLIC LD CORP & DEPT OF COMM LBR & EN	PINE FRK
2	05 2650170000	WEST VIRGINIA DIVISION OF & NATURAL RESOURCES	PINE FRK
3	05 2500310000	YELLOW HAWK SPORTSMAN CLB INC	ROUTE 5 & 7
4	05 2500070000	RICHARD HELMBRECHT	ROUTE 5 & 7
5	05 2600060000	WV STATE OF COMMERCE DEPT OF & OF NATL RESOURCES DI	ROUTE 5 & 7
6	05 2600140000	STATE OF WV PUBLIC LD CORP & DEPT OF COMM LBR & EN	ROUTE 5 & 7
7	05 2650130000	COASTAL LUMBER COMPANY	ROUTE 5 & 7
8	5003930003000000000	WILLIAM EARL THOMPSON	3 ROUTE 23 DOCK LOCUST FORK WV
9	5003930004000000000	RUSSELL PAUL & CAROL SYNCZYSZYN	3 ROUTE 23 DOCK WALNUT FORK WV 26430

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Wetzel Well Location WV
PEU Surface Location
Hoge Road and Pad 3 NAD27
Hoge Road and Pad 5 NAD27
AEM Testing Radius (2000')
Wetzel County Parcel Line
Tyler County Parcel Line
WV County Lines
Streams
100 Year Flood Zones

200 0 200 400 Feet

WATER SAMPLING FIELD MAP

HOGE WELL PAD

WETZEL/TYLER COUNTY, WV

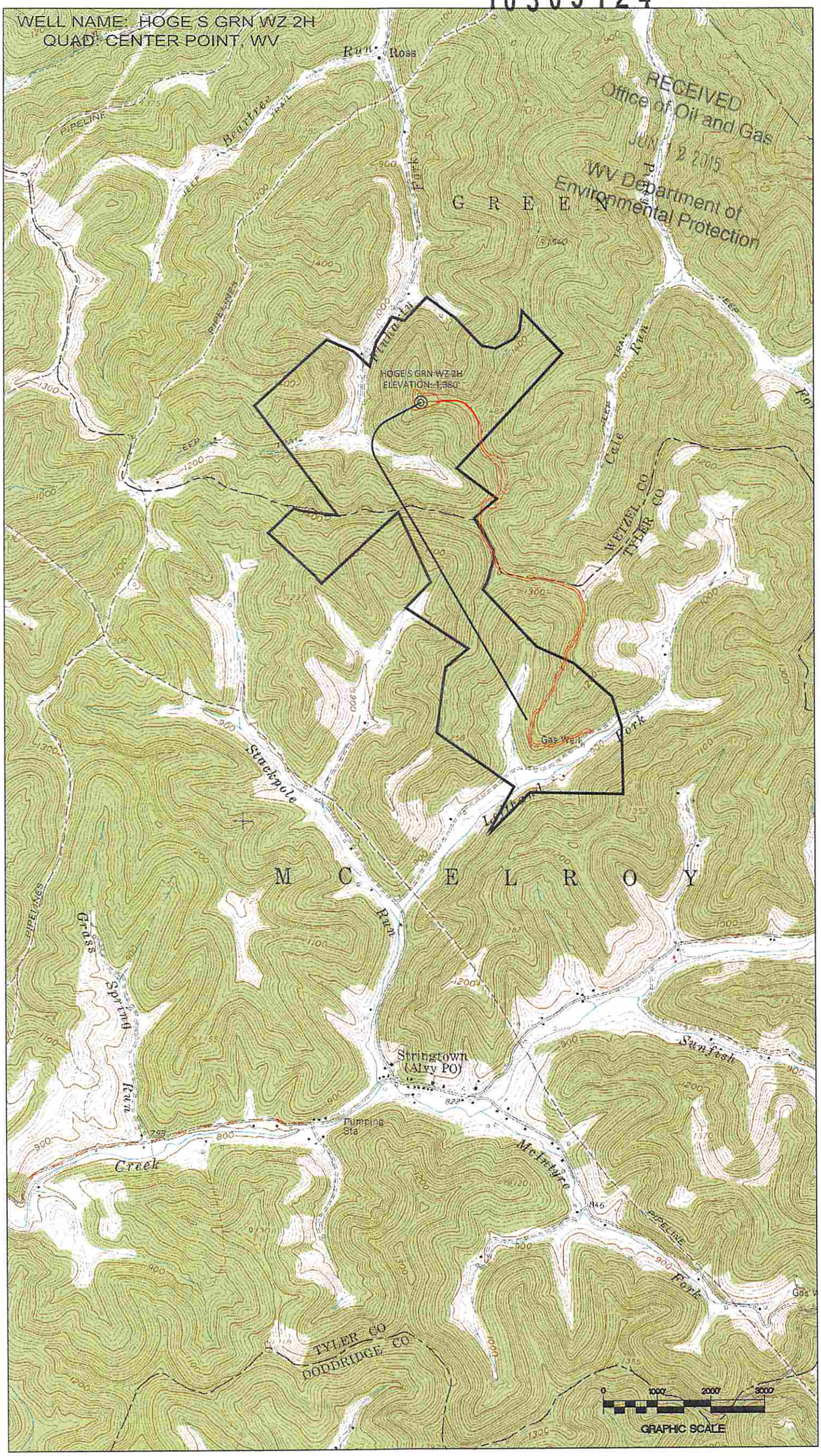
AMERICAN ENERGY MARCELLUS

REVISIONS		
NO.	DATE	DESCRIPTION
	060615	ADD PAD AND ROAD

ceso
CREATION TO COMPLETION
www.cesoinc.com
Engineering - Architecture - Survey - Construction Mgt - Environmental

ISSUE: EXHIBIT
DATE: 04.03.2015
JOB NO.: 751346
DRAWN: CHD
SHEET NO.: 1

10303124


WELL NAME: HOGE S GRN WZ 2H
QUAD: CENTER POINT, WV
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HOGE S GRN WZ 2H
ELEVATION: 1,380'
G R E E N
M C E L R O Y
Stringtown
(Alvy PO)
Pumping
Sta
Gas Well
Ross
Run
Beartree
Stackpole
Run
Grass
Spring
Run
Creek
McIntyre
Sunfish
Fork
Cale
Run
WETZEL CO
TYLER CO
TYLER CO
DODDRIDGE CO
PIPELINE
JEEP
TRAIL
0
1000'
2000'
3000'
GRAPHIC SCALE

SURFACE HOLE DEC. LONG: 80.696547
SURVEYED LONG: 80° 41' 47.6"

8,440

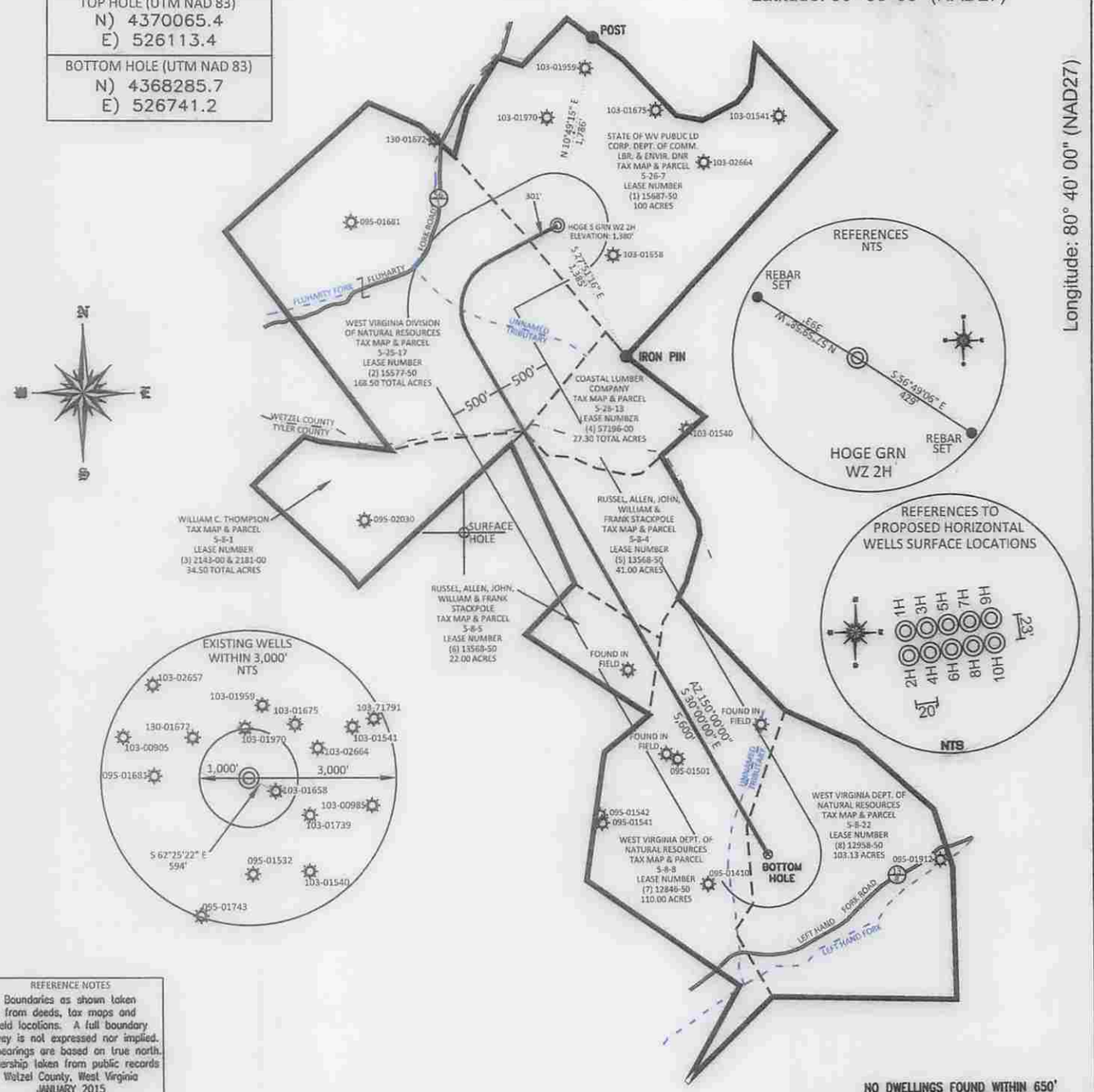
Latitude: 39° 30' 00" (NAD27)

Longitude: 80° 40' 00" (NAD27)

7,390'

SURFACE HOLE DEC: LAT: 39.479706
SURVEYED LAT: 39° 28' 46.9"

TOP HOLE (UTM NAD 83)
N) 4370065.4
E) 526113.4
BOTTOM HOLE (UTM NAD 83)
N) 4368285.7
E) 526741.2



REFERENCE NOTES
Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records Wetzel County, West Virginia JANUARY 2015 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS Drafted by: E.A.M.

NO DWELLINGS FOUND WITHIN 650' OF THE CENTER OF THE WELL PAD
NO WATER WELLS FOUND WITHIN 250' OF THE CENTER OF WELL PAD

FILE #: AE004
DRAWING #: 2512
SCALE: PLAT - 1" = 1400' TICK MARK - 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

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

Signed: _____

L.L.S. #2124 : Ernest J. Benchek III

ERNEST J. BENCHEK III LICENSED No. 2124 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

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

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: MAY 19, 2015

OPERATOR'S WELL #: HOGE S GRN WZ 2H

API WELL #: 47 (STATE) 103 (COUNTY) 03124H6A (PERMIT)

Well Type: ☐ Oil ☐ Waste Diposal ☐ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: FISHING CREEK
ELEVATION: 1,380'=Current 1,372.40'=Proposed
COUNTY/DISTRICT: WETZEL / GREEN
QUADRANGLE: CENTER POINT, WV
SURFACE OWNER: STATE OF WV PUBLIC LD CORP. DEPT. OF COMM. LBR & ENVIR. DNR
ACREAGE: 100.00 +/-
OIL & GAS ROYALTY OWNER: STATE OF WV PUBLIC LD CORP. DEPT. OF COMM. LBR & ENVIR. DNR
ACREAGE: 606.43 +/-
LEASE NUMBERS:

DRILL ☒ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒
PLUG OFF FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON ☐
CLEAN OUT & REPLUG ☐ OTHER CHANGE ☐ (SPECIFY):

TARGET FORMATION: MARCELLUS
ESTIMATED DEPTH: TVD: 7,342' TMD: 13,500'
WELL OPERATOR: American Energy - Marcellus LLC
DESIGNATED AGENT: Eric B. Gillespie
ADDRESS: 3501 NW 63rd Street
ADDRESS: 103 Taryn Lane
CITY: Oklahoma City STATE: OK ZIP CODE: 73116
CITY: Cross Lanes STATE: WV ZIP CODE: 25313

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JUN 12 2015

WV Department of
Environmental Protection

10 3 03 124

WW-6A1
(5/13)

Operator's Well No. Hoge S GRN WZ 2H

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

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

(1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;

(2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Please 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: American Energy - Marcellus, LLC
By:
Its: Regulatory Technician

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JUN 12 2018
WV Department of
Environmental Protection

WW-6A1

Operator's Well No. HOGE 5 GRN WZ 2H

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-
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(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:

American Energy - Marcellus, LLC is one of the current lessees of the leases identified herein. Listed below each lease is the applicable chain of title by which American Energy - Marcellus, LLC was vested with title thereto. Please note, throughout the chain of title, various mergers and name changes occurred between the referenced companies. In several instances, no documentation was filed in the county records evidencing such a merger or name change. In those cases, we've directed your attention to the records of the West Virginia Secretary of State, where said documentation can be found.

Tax Map & Parcel	Fee/Lease No.	Lessor/Assignor	Lessee/Assignee	Royalty/Instrument	Book/Page
05-26-07	15687-50	**M. H. Penick and C. C. Penick**	**South Penn Oil Company**	**1/8**	**47/214**
		South Penn Oil Company	South Penn Natural Gas Company	Assignment	33A/455
		South Penn Natural Gas Company	South Penn Oil Company	Assignment	215/478
		South Penn Oil Company	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil United, Inc.	Assignment	246/491
		Pennzoil United, Inc.	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil Products Company	Assn. & Supp. Assn.	319/397 & 322/577
		Pennzoil Products Company	Pennzoil Exploration and Production Company	Assignment	363/384
		Pennzoil Exploration and Production Company	PennzEnergy Exploration and Production, L.L.C.	Cert. of Merger	12/177
		PennzEnergy Exploration and Production, L.L.C.	Devon Energy Production Company, L.P.	Cert. of Merger	12/278
		Devon Energy Production Company, L.P.	East Resources, Inc.	Assignment	370/580
		East Resources, Inc.	HG Energy, LLC	Assignment	118A/253
		East Resources, Inc. and HG Energy, LLC	American Energy - Marcellus, LLC	Assignment	153A/238
05-25-17	15577-50	**William Fluharty and Martha Fluharty, his wife**	**S. A. Smith**	**1/8**	**47/60**
		S. A. Smith	South Penn Oil Company	Assignment	47/92
		South Penn Oil Company	South Penn Natural Gas Company	Assignment	33A/455
		South Penn Natural Gas Company	South Penn Oil Company	Assignment	215/478
		South Penn Oil Company	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil United, Inc.	Assignment	246/491
		Pennzoil United, Inc.	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil Products Company	Assn. & Supp. Assn.	319/397 & 322/577
		Pennzoil Products Company	Pennzoil Exploration and Production Company	Assignment	363/384
		Pennzoil Exploration and Production Company	PennzEnergy Exploration and Production, L.L.C.	Cert. of Merger	12/177
		PennzEnergy Exploration and Production, L.L.C.	Devon Energy Production Company, L.P.	Cert. of Merger	12/278
		Devon Energy Production Company, L.P.	East Resources, Inc.	Assignment	370/580
		East Resources, Inc.	HG Energy, LLC	Assignment	118A/253
		East Resources, Inc. and HG Energy, LLC	American Energy - Marcellus, LLC	Assignment	153A/238
05-08-01	2143-00 & 2181-00	**W. V. Hoge, executor of the Isaac Hoge Estate**	**Uriah Stackpole**	**Fee Interest**	**18/599**
	2143-00	Uriah Stackpole and A. B. Stackpole, his wife	South Penn Oil Company	Deed	28/211
	2181-00	Uriah Stackpole and A. B. Stackpole, his wife	L. R. Loomis	Deed	30/205
	2181-00	L. R. Loomis and Belle Loomis, his wife	South Penn Oil Company	Deed	35/269
	2143-00 & 2181-00	South Penn Oil Company	South Penn Natural Gas Company	Deed	114/1
		South Penn Natural Gas Company	South Penn Oil Company	Deed	151/516
		South Penn Oil Company	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil United, Inc.	Deed	178/221
		Pennzoil United, Inc.	Pennzoil Company	Affidavit of Name Change	219/171
		Pennzoil Company	Pennzoil Products Company	Deed	265/258 & 269/417
		Pennzoil Products Company	Pennzoil Exploration and Production Company	Assignment	325/178
		Pennzoil Exploration and Production Company	PennzEnergy Exploration and Production, L.L.C.	Cert. of Merger	8/516
		PennzEnergy Exploration and Production, L.L.C.	Devon Energy Production Company, L.P.	Cert. of Merger	8/576
		Devon Energy Production Company, L.P.	East Resources, Inc.	Deed	332/146
		East Resources, Inc.	HG Energy, LLC	Deed	379/410
		East Resources, Inc. and HG Energy, LLC	American Energy - Marcellus, LLC	Deed	451/475
05-26-13	57196-00	**Kermit McIntyre et al**	**Pennzoil Company**	**1/8**	**67A/87**
		Pennzoil Company	Pennzoil Products Company	Assn. & Supp. Assn.	319/397 & 322/577
		Pennzoil Products Company	Pennzoil Exploration and Production Company	Assignment	363/384
		Pennzoil Exploration and Production Company	PennzEnergy Exploration and Production, L.L.C.	Cert. of Merger	12/177
		PennzEnergy Exploration and Production, L.L.C.	Devon Energy Production Company, L.P.	Cert. of Merger	12/278
		Devon Energy Production Company, L.P.	East Resources, Inc.	Assignment	370/580
		East Resources, Inc.	HG Energy, LLC	Assignment	118A/253
		East Resources, Inc. and HG Energy, LLC	American Energy - Marcellus, LLC	Assignment	153A/238
05-08-04	13568-50	**James H. Dawson and M. A. Dawson, husband and wife**	**W. R. McIntyre**	**1/8**	**23/526**
		W. R. McIntyre	South Penn Oil Company	Assignment	23/563
		South Penn Oil Company	South Penn Natural Gas Company	Assignment	114/16
		South Penn Natural Gas Company	South Penn Oil Company	Assignment	151/516
		South Penn Oil Company	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil United, Inc.	Assignment	178/221
		Pennzoil United, Inc.	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil Products Company	Assn. & Supp. Assn.	265/258 & 269/417
		Pennzoil Products Company	Pennzoil Exploration and Production Company	Assignment	325/178
		Pennzoil Exploration and Production Company	PennzEnergy Exploration and Production, L.L.C.	Cert. of Merger	8/516
		PennzEnergy Exploration and Production, L.L.C.	Devon Energy Production Company, L.P.	Cert. of Merger	8/576
		Devon Energy Production Company, L.P.	East Resources, Inc.	Assignment	332/146
		East Resources, Inc.	HG Energy, LLC	Assignment	379/480
		East Resources, Inc. and HG Energy, LLC	American Energy - Marcellus, LLC	Assignment	451/404
05-08-05	13568-50	**James H. Dawson and M. A. Dawson, husband and wife**	**W. R. McIntyre**	**1/8**	**23/526**
		W. R. McIntyre	South Penn Oil Company	Assignment	23/563
		South Penn Oil Company	South Penn Natural Gas Company	Assignment	114/16
		South Penn Natural Gas Company	South Penn Oil Company	Assignment	151/516
		South Penn Oil Company	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil United, Inc.	Assignment	178/221
		Pennzoil United, Inc.	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil Products Company	Assn. & Supp. Assn.	265/258 & 269/417
		Pennzoil Products Company	Pennzoil Exploration and Production Company	Assignment	325/178
		Pennzoil Exploration and Production Company	PennzEnergy Exploration and Production, L.L.C.	Cert. of Merger	8/516
		PennzEnergy Exploration and Production, L.L.C.	Devon Energy Production Company, L.P.	Cert. of Merger	8/576
		Devon Energy Production Company, L.P.	East Resources, Inc.	Assignment	332/146
		East Resources, Inc.	HG Energy, LLC	Assignment	379/480
		East Resources, Inc. and HG Energy, LLC	American Energy - Marcellus, LLC	Assignment	451/404
05-08-08	12846-50	**Jasper Lemasters and Mary Lemasters, his wife**	**South Penn Oil Company**	**1/8**	**23/8**
		South Penn Oil Company	South Penn Natural Gas Company	Assignment	114/16
		South Penn Natural Gas Company	South Penn Oil Company	Assignment	151/516
		South Penn Oil Company	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil United, Inc.	Assignment	178/221
		Pennzoil United, Inc.	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil Products Company	Assn. & Supp. Assn.	265/258 & 269/417
		Pennzoil Products Company	Pennzoil Exploration and Production Company	Assignment	325/178
		Pennzoil Exploration and Production Company	PennzEnergy Exploration and Production, L.L.C.	Cert. of Merger	8/516
		PennzEnergy Exploration and Production, L.L.C.	Devon Energy Production Company, L.P.	Cert. of Merger	8/576
		Devon Energy Production Company, L.P.	East Resources, Inc.	Assignment	332/146
		East Resources, Inc.	HG Energy, LLC	Assignment	379/480
		East Resources, Inc. and HG Energy, LLC	American Energy - Marcellus, LLC	Assignment	451/404
05-08-22	12958-50	**A. D. Lemasters and Mary Lemasters, husband and wife**	**South Penn Oil Company**	**1/8**	**23/100**
		South Penn Oil Company	South Penn Natural Gas Company	Assignment	114/16
		South Penn Natural Gas Company	South Penn Oil Company	Assignment	151/516
		South Penn Oil Company	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil United, Inc.	Assignment	178/221
		Pennzoil United, Inc.	Pennzoil Company	Cert. of Name Change	WV Sec. of State records
		Pennzoil Company	Pennzoil Products Company	Assn. & Supp. Assn.	265/258 & 269/417

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		Pennzoil Products Company	Pennzoil Exploration and Production Company	Assignment	325/178
		Pennzoil Exploration and Production Company	PennzEnergy Exploration and Production, L.L.C.	Cert. of Merger	8/516
		PennzEnergy Exploration and Production, L.L.C.	Devon Energy Production Company, L.P.	Cert. of Merger	8/576
		Devon Energy Production Company, L.P.	East Resources, Inc.	Assignment	332/146
		East Resources, Inc.	HG Energy, LLC	Assignment	379/480
		East Resources, Inc. and HG Energy, LLC	American Energy - Marcellus, LLC	Assignment	451/404

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AMERICAN ENERGY
UTICA

March 31, 2015

West Virginia Department of Environmental Protect
Chief, Office of Oil & Gas
Attn: Mr. James Martin
601 57th Street
Charleston, West Virginia 25304

Re: Application for a Permit to Drill
Hoge S GRN WZ 2H

Dear Mr. Martin,

American Energy – Marcellus, LLC has the right to drill, extract and produce the minerals from any roads crossed by the proposed laterals for the Hoge S GRN WZ 2H well by virtue of the lease identified on page WW-6A1 of the accompanying permit application.

No action on your part is required. If you have any questions or concerns, please feel free to contact me.

Best Regards,

Ariel Bravo
Regulatory Technician
ariel.bravo@aep-lp.com
Cell 405-403-4803
Office 405-607-5529

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

Date of Notice Certification: 06/02/2015

API No. 47- 10303124
Operator's Well No. Hoge S GRN WZ 2H
Well Pad Name: Hoge GRN WZ

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

State:	West Virginia	UTM NAD 83	Easting:	526113.4
County:	Wetzel		Northing:	4370065.4
District:	Green	Public Road Access:		County Route 13/8
Quadrangle:	Center Point	Generally used farm name:		
Watershed:	Fishing Creek			

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

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

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

WW-6AC
(1/12)

10303124

Certification of Notice is hereby given:

THEREFORE, I Ariel Bravo, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	American Energy - Marcellus, LLC	Address:	301 NW 63rd, Suite 600
By:	Ariel Bravo		Oklahoma City, OK 73105
Its:	Regulatory Technician	Facsimile:	405-607-5868
Telephone:	405-607-5529	Email:	ariel.bravo@aep-lp.com

NOTARIAL SEAL
AMBER D. CLOCK
NOTARY
14000742
EXP. 01/23/18
PUBLIC
STATE OF OKLAHOMA

Subscribed and sworn before me this 6 day of April, 2015.

Notary Public

My Commission Expires 01/23/2018

Oil and Gas Privacy Notice:

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

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WW-6A
(9-13)

API NO. 47- 10303124
OPERATOR WELL NO. Hoge S GRZ WZ 2H
Well Pad Name: Hoge GRN WZ

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

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

Date of Notice: 06/02/2015 **Date Permit Application Filed:** 6/2/15

Notice of:

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

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

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

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

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

☑ SURFACE OWNER(s)
Name: Please see attached
Address: _____
_____
Name: _____
Address: _____
_____

☐ SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____
_____
Name: _____
Address: _____
_____

☐ SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____
_____

☑ COAL OWNER OR LESSEE
Name: Please see attached.
Address: _____
_____

☐ COAL OPERATOR
Name: _____
Address: _____
_____

☑ SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: Please see attached.
Address: _____
_____

☐ OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____
_____

*Please attach additional forms if necessary

WW-6A
(8-13)

API NO. 47- 10 3 03 1 2 4
OPERATOR WELL NO. Hoge S GRN WZ 2H
Well Pad Name: Hoge GRN WZ

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

WW-6A
(8-13)

API NO. 47-103-03124
OPERATOR WELL NO. Hoge S GRN WZ 2H
Well Pad Name: Hoge GRN WZ

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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10303124

WW-6A
(8-13)

API NO. 47-_____-_____
OPERATOR WELL NO. Hoge S GRN WZ 2H
Well Pad Name: Hoge GRN WZ

Notice is hereby given by:

Well Operator: American Energy - Marcellus, LLC
Address: 301 NW 63rd, Suite 600
Oklahoma City, OK 73116
Telephone: 405-607-5529
Email: ariel.bravo@aep-lp.com
Facsimile: 405-607-5868

Oil and Gas Privacy Notice:

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

AMBER KOLLOCK NOTARY # 14000742 EXP. 01/23/18 PUBLIC STATE OF OKLAHOMA

Subscribed and sworn before me this 6 day of April, 2015.

Notary Public

My Commission Expires 01/23/2018

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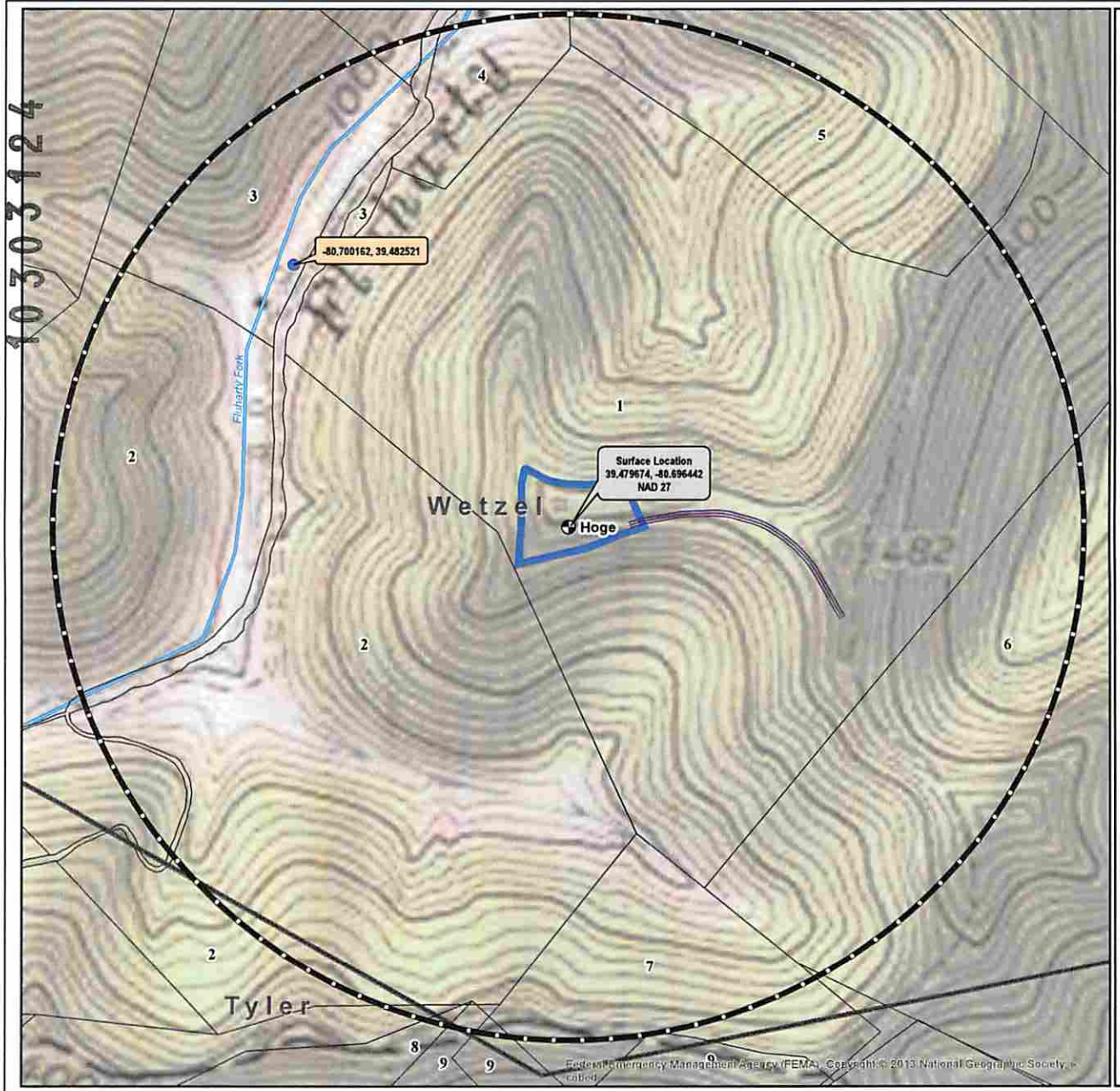

WEST VIRGINIA REGISTERED WATER WELL LOGS*					
PROP ID	PARCEL #	ORIGINAL OWNER	LATITUDE	LONGITUDE	ADDRESS
3	05-25-11	Yellow House Sportsman Club	39.482521	-80.700162	1522 Main St. Wellsburg, WV 26070
4	05-25-07	Richard Heimbrod	39.485363	-80.597558	P.O. Box 25 Clarington, OH 43915

PROPERY DATA			
PROPERTY ID	PARCEL NO.	OWNER	OWNER ADDRESS
1	05 2600070000	STATE WV OF PUBLIC LD CORP & DEPT OF COMM LBR & EN	PINE FRK
2	05 2500170000	WEST VIRGINIA DIVISION OF & NATURAL RESOURCES	PINE FRK
3	05 2500110000	YELLOW HOUSE SPORTSMAN CLB INC	ROUTE 56/1
4	05 2500070000	RICHARD HEIMBROD	ROUTE 56/1
5	05 2600060000	WV STATE OF COMMERCE BUREAU & OF NATL RESOURCES DI	ROUTE 56/1
6	05 2600140000	STATE OF WV PUBLIC LD CORP & DEPT OF COMM LBR & EN	ROUTE 56/1
7	05 2600130000	COASTAL LUMBER COMPANY	ROUTE 56/1
8	50008000100000000	WILLIAM CARL THOMPSON	3 ROUTE 13 OVER JACKSONBURG, WV
9	50008000400003000	RUSSELL PAUL & CAROL STACKPOLE	WALNUT FORK RT 13-3 JACKSONBURG, WV

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N
W E
S

- Water Well Location WV
- AEU Surface Location
- Hoge Road and Pad 3 NAD27
- Hoge Road and Pad 5 NAD27
- AEM Testing Radius (2000')
- Wetzel County Parcel Line
- Tyler County Parcel Line
- WV County Lines
- Streams
- 100 Year Flood Zones

200 0 200 400
Feet

REVISIONS		
NO.	DATE	DESCRIPTION
	050515	ADD PAD AND ROAD

AMERICAN ENERGY MARCELLUS

WATER SAMPLING FIELD MAP

HOGE WELL PAD

WETZEL/TYLER COUNTY, WV

cesq
CREATION TO COMPLETION
www.cesoinc.com
Engineering · Architecture · Survey · Construction Mgt · Environmental

ISSUE: EXHIBIT
DATE: 04.03.2015
JOB NO.: 751346
DRAWN: CHD
SHEET NO. 1

10303124

10303124

Hoge GRN WZ , Hoge S GRN WZ 24

WW-6A Notice of Application
Hoge N MCY TY 1H. 3H, 5H, 7H and 9H
Hoge S MCY TY 2H, 4H, 6H, 8H and 10H

Surface Ownership				
Name	**Address**	**City**	**ST**	**ZIP**
Coastal Lumber Company Coast Forest Resources Co.	PO Box 709	Buckhannon	WV	26201
James & Betty McCoy	HC 62 BOX 80C	Jacksonburg	WV	26377
State of WV Public Land Corp. Dept. Of Comm. LBR. & Envir. DNR	Capitol Complex, Bldg. 6, Room 525	Charleston	WV	25301
WV Dept. of Natural Resources Commerce Division	Capitol Complex, Bldg. 6, Room 525	Charleston	WV	25301

Coal Ownership				
Name	**Address**	**City**	**ST**	**ZIP**
Helen M. Dallison	28907 Shortline Hwy	Folsom	WV	26348
The State of West Virginia, Public Land Corporation, for the use and benefit of the Department of Commerce, Labor and Enviromnental Resources, Division of Natural Resources	Capitol Comlpex, Bldg 6, Room 525	Charleston	WV	25301

Water Ownership				
Name	**Address**	**City**	**ST**	**ZIP**
Richard Heimbrod	PO Box 25	Clarington	OH	43915
Russel, Paul & Carol Stackpole	PO Box 423 Dodd St	Middlebourne	WV	26149
Coastal Forest Resources	PO Box 709	Buckhannon	WV	26201
Willaim Carl Thompson	3412 S. Weymouth Road	Medina	OH	44256
WV Division of Natural Resources	324 4th Ave	S. Charleston	WV	25303
Yellow House Sportsman Club	1522 Main St	Wellsburg	WV	26070

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WW-6A3
(1/12)

Operator Well No. Hoge S GRN WZ 2H

10303124

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY

Notice Time Requirement: Notice shall be provided at least **SEVEN (7)** days but no more than **FORTY-FIVE (45)** days prior to entry

Date of Notice: 3/5/2015 **Date of Planned Entry:** 3/16/2015

Delivery method pursuant to West Virginia Code § 22-6A-10a

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

☒ SURFACE OWNER(s)
Name: Please see attached.
Address:

Name:
Address:

Name:
Address:

☒ COAL OWNER OR LESSEE
Name: Please see attached.
Address:

☒ MINERAL OWNER(s)
Name: Please see attached.
Address:

*please attach additional forms if necessary

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Notice is hereby given:
Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State:	West Virginia	Approx. Latitude & Longitude:	N 4370061.8/E 526107.2
County:	Wetzel	Public Road Access:	CR 13/8
District:	Green	Watershed:	Fishing Creek
Quadrangle:	Center Point	Generally used farm name:	

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator:	American Energy - Marcellus, LLC	Address:	301 NW 63rd, Suite 600
Telephone:	405-607-5529		Oklahoma City, OK 73116
Email:	ariel.bravo@aep-lp.com	Facsimile:	405-607-5868

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

10303124

WW-6A3 Notice of Entry for Plat Survey Ownership List
Hoge N MCY TY 1H. 3H, 5H, 7H and 9H
Hoge S MCY TY 2H, 4H, 6H, 8H and 10H

Surface Ownership

Name	Address	City	ST	ZIP
Coastal Lumber Company Coast Forest Resources Co.	P.O. BOX 709	Buckhannon	WV	26201
James & Betty McCoy	HC 62 BOX 80C	Jacksonburg	WV	26377
State of WV Public Land Corp. Dept. Of Comm. LBR. & Envir. DNR	Capitol Complex, Bldg. 6, Room 525	Charleston	WV	25301
WV Dept. of Natural Resources Commerce Division	Capitol Complex, Bldg. 6, Room 525	Charleston	WV	25301

Coal Ownership

Name	Address	City	ST	ZIP
Helen M. Dallison	28907 Shortline Hwy	Folsom	WV	26348
The State of West Virginia, Public Land Corporation, for the use and benefit of the Department of Commerce, Labor and Enviromnental Resources, Division of Natural Resources	Capitol Comlpex, Bldg 6, Room 525	Charleston	WV	25301

Mineral Ownership

Name	Address	City	ST	ZIP
Brian M. Weigle	4789 Middle Island Rd.	Middlesbourne	WV	26149
Donald L. McCoy	1290 Left Hand Fork Rd HC 62 Box 80B	Jacksonburg	WV	26377
Douglas Broome	P.O. Box 186	Glenville	WV	26351
Ed Broome, Inc.	4622 WV HWY 5 E	GLENVILLE	WV	26351
Garnet Gas Corporation	P.O. Box 133 444 Richardsonville Rd	Creston	WV	26141
George Lee Lemasters c/o Kathy Wegle Seago	1018 Frew Dr.	Middlesbourne	WV	26149
Grace Stackpole	RT #1 Box 358	Middlesbourne	WV	26149
Helen M. Dallison	28907 Shortline Hwy	Folsom	WV	26348
John S. Knight	1688 Hillside Terrace	Akron	OH	44305
Kathy Ann Seago	1018 Frew Dr.	Middlesbourne	WV	26149
Linda Coen	PO Box 392	Beech Bottom	WV	26030
Mark and Melinda Talkington	1210 Lefthand Fork Road	Jacksonburg	WV	26377
Mary F. Mutschelknaus	P.O. Box 351	Salem	WV	26426
Richard Heimbrod	PO Box 25	Clarington	OH	43915
Ridgewood Development, LLC	955 Bull Creek Rd.	Waverly	WV	26184
Russell P. Stackpole	PO BOX 423 422 Dodd Street	Middlesbourne	WV	26149
Sandra Brown	7688 S. Union Road	Miamisburg	OH	45342
Steven C. Weigle, II	6473 Middle Island Rd	Middlesbourne	WV	26149
The State of West Virginia, Public Land Corporation, for the use and benefit of the Department of Commerce, Labor and Enviromnental Resources, Division of Natural Resources	Capitol Comlpex, Bldg 6, Room 525	Charleston	WV	25301
Waco Oil & Gas Co., Inc.	P.O. Box 397	Glenville	WV	26351
William M. Stackpole	1819 Maxwell AVE	Parkersburg	WV	26101
William Russell Lemasters c/o Kathy Weigle Seago	1018 Frew Dr.	Middlesbourne	WV	26149
Yellow House Sportsman Club	1522 Main Street	Wellsburg	WV	26070

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WW-6A5
(1/12)

Operator Well No. Hoge S GRN WZ 2H

1030124

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

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Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**
Date of Notice: 06/02/2015 **Date Permit Application Filed:** 6/2/15

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

☒ CERTIFIED MAIL RETURN RECEIPT REQUESTED ☐ HAND DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Please see attached.
Address:

Name:
Address:

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

State: West Virginia
County: Wetzel
District: Green
Quadrangle: Center Point
Watershed: Fishing Creek

UTM NAD 83 Easting: 526107.2
Northing: 4370061.8
Public Road Access: CR 13/8
Generally used farm name:

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

Well Operator: American Energy - Marcellus
Telephone: 405-607-5529
Email: ariel.bravo@aep-lp.com

Address: 301 NW 63rd, Suite 600
Oklahoma City, OK 73116
Facsimile: 405-607-5868

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

10 3 0 3 1 2 4

WW-6A5 Notice of Planned Operations
Hoge N MCY TY 1H. 3H, 5H, 7H and 9H
Hoge S MCY TY 2H, 4H, 6H, 8H and 10H

Surface Ownership				
Name	**Address**	**City**	**ST**	**ZIP**
Coastal Lumber Company Coast Forest Resources Co.	P.O. BOX 979	Buckhannon	WV	26201
James & Betty McCoy	HC 62 BOX 80C	Jacksonburg	WV	26377
State of WV Public Land Corp. Dept. Of Comm. LBR. & Envir. DNR	Capitol Complex, Bldg. 6, Room 525	Charleston	WV	25301
WV Dept. of Natural Resources Commerce Division	Capitol Complex, Bldg. 6, Room 525	Charleston	WV	25301

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Earl Ray Tomblin
Governor

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

February 17, 2015

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

Subject: DOH Permit for the site Hoge South (503) Pad, Tyler County

Hoge S GRN WZ 2H	Hoge S GRN WZ 4H	Hoge S GRN WZ 6H
Hoge S GRN WZ 8H	Hoge S GRN WZ 10H	

Dear Mr. Martin,

This well site will be accessed from a DOH permit 06-2014-0834 which has been applied for by American Energy – Marcellus, LLC for access to the State Road. The well site is located off of Tyler County Route 13/8.

This operator has signed a Statewide Oil and Gas Road Maintenance Bonding Agreement and provided the required bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton

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

Cc: Eric Bruckman
American Energy - Marcellus, LLC.
CH, OM, D-6
File

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****CELLS WITH BLUE BACKGROUND ARE THE ONLY CELLS TO BE EDITED****

Fracture Start Date/Time:	
Fracture End Date/Time:	
State:	WV
County:	Wetzel
API Number:	
Operator Number:	
Well Name:	Hoge GRN WZ
Federal Well:	No
Longitude:	
Latitude:	
Long/Lat Projection:	NAD27
True Vertical Depth (TVD):	
Total Clean Fluid Volume* (gal):	8,553,174

FracFocus Chemical Disclosure Registry

(e.g. XX-XXX-XXXXX-0000)

anga America's Natural Gas Alliance

Additive	Specific Gravity	Additive Quantity	Mass (lbs)	
Water	1.00	8,553,174	71,376,237	gal
Sand (Proppant)	2.65	8,135,700	8,135,700	lb
Hydrochloric Acid (15%)	1.07	43,500	388,418	gal
Hydrochloric Acid (7.5%)	1.04	0	0	gal
PROHIB II	0.97	44	356	gal
FRA 407	1.05	9,505	83,523	gal
BIO CLEAR 2000	1.24	0	0	gal
PRO SCALE CLEAR 112	1.19	0	0	gal
PRO FLO 102 M	0.94	3,695	28,985	gal
PRO GEL 4.0L	1.02	6,716	57,166	gal
PRO BREAKER 4	1.26	30	312	gal
BXL-10C	1.27	0	0	gal
PRO DRB-LT	1.81	0	0	gal
BUFFER 1	2.13	0	0	lb
POLY BREAK	1.20	0	0	gal
				gal
				gal
				gal
				gal
			Total Slurry Mass (Lbs)	
			80,070,697	

Ingredients Section:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Mass per Component (LBS)	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Company 1	Carrier/Base Fluid	Water	7732-18-5	100.00%	71,376,237	89.14152%	
Sand (Proppant)	PSC	Proppant	Silica Substrate		100.00%	8,135,700	10.16065%	
Hydrochloric Acid (15%)	Producers Service Corp.	Acidizing	Hydrochloric Acid	7647-01-0	10.00%	38,842	0.04851%	
PROHIB II	Producers Service Corp.	Inhibitor	Dimethylcocoamine, bis(chloroethyl) ether, diquaternar	68607-28-3	40.00%	142	0.00018%	
			2-Butoxyethanol	111-76-2	20.00%	71	0.00009%	
			Ethylene Glycol	107-21-1	20.00%	71	0.00009%	
			Methyl Alcohol	67-56-1	20.00%	71	0.00009%	
			Nonyl Phenol Ethoxylate, Branched	127087-87-0	15.00%	53	0.00007%	
			Propargyl Alcohol	107-19-7	15.00%	53	0.00007%	
			Coco alkyldimethylamines	61788-93-0	2.50%	9	0.00001%	
			Water	7732-18-5	Proprietary	#VALUE!	#VALUE!	
FRA 407	Producers Service Corp.	Friction Reducer	Petroleum Distillates	64742-47-8	40.00%	33,409	0.04172%	
			Polyacrylamide salt	Proprietary	30.00%	25,057	0.03129%	
			Sodium Chloride	7647-14-5	5.00%	4,176	0.00522%	
			Ammonium Chloride	12125-02-9	5.00%	4,176	0.00522%	
			Ethoxylate Alcohol	Proprietary	5.00%	4,176	0.00522%	
			Tall oil	Proprietary	2.00%	1,670	0.00209%	
			Proprietary Ingredient	Proprietary	1.00%	835	0.00104%	
			Water	7732-18-5	Proprietary	#VALUE!	#VALUE!	
PRO FLO 102 M	Producers Service Corp.	Surfactant	Methyl Alcohol	67-56-1	60.00%	17,391	0.02172%	
			N-dodecyl-2-pyrrolidone	2687-96-9	5.00%	1,449	0.00181%	
			Water	7732-18-5	Proprietary	#VALUE!	#VALUE!	
			Ethoxylate Alcohol	Proprietary	Proprietary	#VALUE!	#VALUE!	
PRO BREAKER 4	Producers Service Corp.	Breaker	Ethylene Glycol	107-21-1	40.00%	125	0.00016%	
			Sucrose	57-50-1	40.00%	125	0.00016%	
			Polyether Polyol	9003-11-6	1.00%	3	0.00000%	
			Sodium Bicarbonate	144-55-8	1.00%	3	0.00000%	
			Hexamethylenetetramine	100-97-0	1.00%	3	0.00000%	
			Proprietary Ingredient	Proprietary	1.00%	3	0.00000%	
			Proprietary Ingredient	Proprietary	1.00%	3	0.00000%	
			Proprietary Ingredient	Proprietary	1.00%	3	0.00000%	
			Water	7732-18-5	Proprietary	#VALUE!	#VALUE!	
PRO GEL 4.0L	Producers Service Corp.	Gelling Agent	Distillates (Petroleum), hydrotreated light	64742-47-8	65.00%	37,158	0.04641%	
			Nonylphenol, Ethoxylate	9016-45-9	5.00%	2,858	0.00357%	
			Guar Gum	9000-30-0	50.00%	28,583	0.03570%	
			Nonionic Surfactant	60828-78-6	5.00%	2,858	0.00357%	

*Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

10303124

WZ WELL PAD
LROY DISTRICTS,
ER COUNTIES, WV
Y 2015

INDEX
E SHEET
UTE/PREVAILING WIND
AYOUT OVERVIEW
ITROL LAYOUT
SITE PLAN OVERVIEW
OL AND SITE PLAN
ONS AND PROFILES C-C', AND
D'
AD & ACCESS ROAD #1 & #2
FILES
ROAD CROSS-SECTIONS
#1 CROSS-SECTIONS
2 CROSS-SECTIONS
AIL SHEETS
PLAN OVERVIEW
MATION PLAN
CROSS-SECTIONS
SITE FEATURES
& VOLUME PLAN
Y SUMMARY

D AREA: 50.7 AC.
ISTURBED AREA: 32.5 AC.
URBED AREA: 3.5 AC.
URBED AREA: 1.1 AC.
ED AREA: 13.6 AC.

CREAGE

	PARCEL #	ACRES
SION	5-8-22	2.3
SION	5-8-8	0.4
SION	5-8-9	4.4
	5-25-17	2.4
	5-8-10.1	0.6
	5-26-13	1.2
R. DNR	5-26-14	1.4
R. DNR	5-26-7	19.8
R. DNR	5-26-2	0.5
R. DNR	5-26-1	3.3
DIV.	5-26-6	0.03
	5-23-37	0.5
	5-23-33	0.8
	5-23-38	0.7
	5-23-32	0.3
	5-23-26	3.4
	5-23-25.1	0.3
	5-23-21.1	0.2
	5-23-23	0.1
	5-23-12	0.51
	5-23-18	1.1
	5-23-8	2.9

BEEN
CTICES
EROSION AND
CTION
DETAILS &
MENT
SHEETS.

PLANS PREPARED BY:

BOORD BENCHEK & ASSOCIATES, INC.

ENGINEERING,SURVEYING, CONSTRUCTION AND MINING SERVICES
SOUTHPOINTE, PA 15317 PHONE: 724-746-1055

RECEIVED
Office of Oil and Gas

JUL 17 2015

WV Department of
Environmental Protection

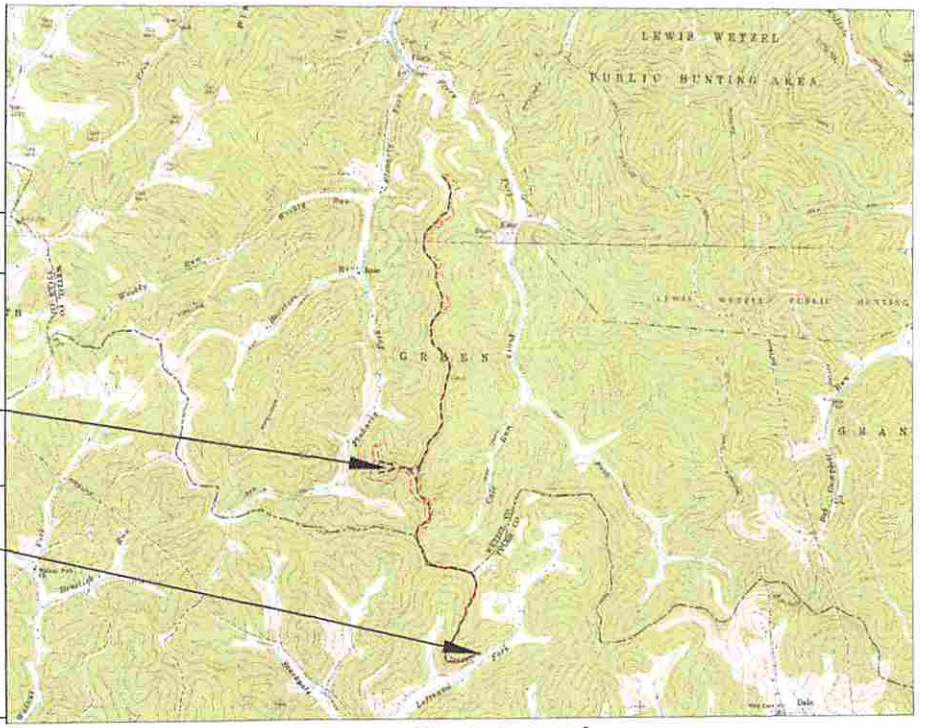
ANDREW BENCHEK
P.E.

5-29-15

COORDINATES

CENTER OF WELLS
(NAD 83)
LAT: 39.479837°
LONG: 80.696237°
(NAD 27)
LAT: 39.479755°
LONG: 80.696413°

SITE ENTRANCE
(NAD 83)
LAT: 39.463195°
LONG: 80.684883°
(NAD 27)
LAT: 39.463112°
LONG: 80.685060°



1"=3000'

0' 3000' 6000' 9000'

SHEET #1

SHEET
1
OF
70

UNTIES, WV

DMH
7-15-15

HOGE GRN WZ WELL PAD
GREEN & McELROY DISTRICTS,
WETZEL & TYLER COUNTIES, WV
MAY 2015

WEST VIRGINIA 811

TWO WORKING DAYS PRIOR TO EXCAVATION, THE CONTRACTOR MUST CONTACT THE WV ONE CALL SYSTEM, INC., 1-800-245-4848
TICKET NUMBER: 1503002460

OWNER

AMERICAN ENERGY MARCELLUS

AMERICAN ENERGY MARCELLUS, LLC
1000 UTICA WAY
CAMBRIDGE, OH 43725

APPROVED
WVDEP OOG
7/24/2015

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2-3. EVACUATION ROUTE/PREVAILING WIND
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5-18. E&S CONTROL LAYOUT
19. E&S CONTROL AND SITE PLAN OVERVIEW
20-32. E&S CONTROL AND SITE PLAN
34. WELL PAD CROSS-SECTIONS AND PROFILES C-C', AND D-D'
35-38. PRIMARY ACCESS ROAD & ACCESS ROAD #1 & #2 PROFILES
39-42. PRIMARY ACCESS ROAD CROSS-SECTIONS
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49. RECLAMATION PLAN OVERVIEW
50-63. RECLAMATION PLAN
64-65. TEST BORE CROSS-SECTIONS
66-67. EXISTING SITE FEATURES
68-69. GRADING & VOLUME PLAN
70. QUANTITY SUMMARY

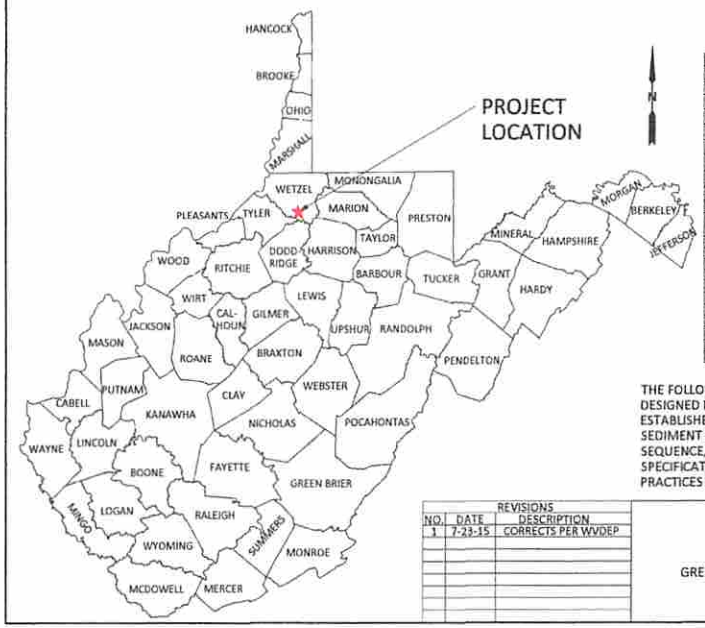
TOTAL DISTURBED AREA: 50.7 AC.
PRIMARY ACCESS ROAD DISTURBED AREA: 32.5 AC.
ACCESS ROAD #1 DISTURBED AREA: 3.5 AC.
ACCESS ROAD #2 DISTURBED AREA: 1.1 AC.
WELL PAD DISTURBED AREA: 13.6 AC.

PLANS PREPARED BY:

BOORD BENCHEK & ASSOCIATES, INC.
ENGINEERING,SURVEYING, CONSTRUCTION AND MINING SERVICES
SOUTHPOINTE, PA 15317 PHONE: 724-746-1055

5-29-15

ANDREW BENCHEK
P.E.



PROJECT LOCATION

PROPERTY OWNER PROJECT BOUNDARY ACREAGE

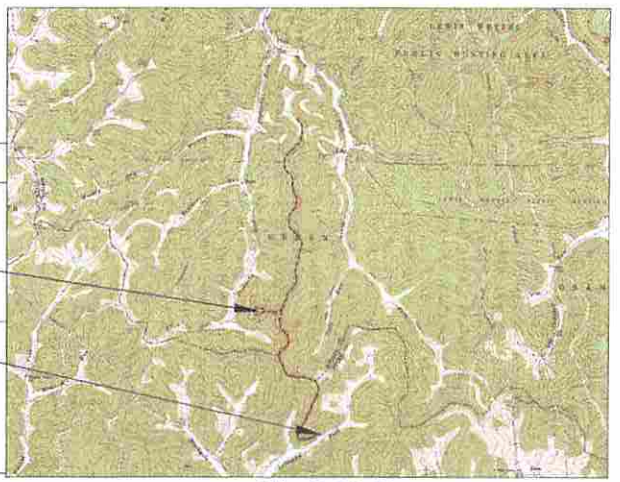
PROPERTY OWNER	PARCEL #	ACRES
WV DEPARTMENT OF NATURAL RESOURCES COMMERCE DIVISION	5-8-22	2.3
WV DEPARTMENT OF NATURAL RESOURCES COMMERCE DIVISION	5-8-8	0.4
WV DEPARTMENT OF NATURAL RESOURCES COMMERCE DIVISION	5-8-9	4.4
WV DEPARTMENT OF NATURAL RESOURCES	5-25-17	2.4
JAMES & BETTY MCCOY	5-8-10.1	0.6
COASTAL FOREST RESOURCES	5-26-13	1.2
STATE OF WV PUBLIC LD CORP. DEPT. OF COMM. LBR & ENVIR. DNR	5-26-14	1.4
STATE OF WV PUBLIC LD CORP. DEPT. OF COMM. LBR & ENVIR. DNR	5-26-7	19.8
STATE OF WV PUBLIC LD CORP. DEPT. OF COMM. LBR & ENVIR. DNR	5-26-2	0.5
STATE OF WV PUBLIC LD CORP. DEPT. OF COMM. LBR & ENVIR. DNR	5-26-1	3.3
WV STATE OF COMMERCE BUREAU OF NATURAL RESOURCES DIV. PUBLIC	5-26-6	0.03
DALLISON LUMBER	5-23-37	0.5
J.S. BOOTH ESTATE	5-23-33	0.8
J.S. BOOTH ESTATE	5-23-38	0.7
JOHN S. KNIGHT	5-23-32	0.3
THEODORE J. & PAULA ADAMEROVICH	5-23-26	3.4
HG ENERGY LLC	5-23-25.1	0.3
HG ENERGY LLC	5-23-21.1	0.7
WILLIAM B. & SARAH E. BASSETT	5-23-23	0.1
TAMMY A. & DARLENE MORRIS	5-23-12	0.51
CLINTON & KAREN S. HARRIS	5-23-18	1.1
LLOYD J. & BETTY PRINE	5-23-8	2.9

IN ACCORDANCE WITH WV 35 CSR 8
THE FOLLOWING EROSION & SEDIMENT CONTROL PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES ESTABLISHED BY THE CHIEF AND PROVIDED IN THE OFFICE'S EROSION AND SEDIMENT CONTROL FIELD MANUAL. A GENERAL CONSTRUCTION SEQUENCE, DESCRIPTION OF STABILIZATION METHODS, AND DETAILS & SPECIFICATIONS FOR EROSION & SEDIMENT BEST MANAGEMENT PRACTICES HAVE BEEN INCLUDED IN THE PROVIDED DETAIL SHEETS.

COORDINATES

CENTER OF WELLS
(NAD 83)
LAT: 39.479837°
LONG: 80.696237°
(NAD 27)
LAT: 39.479755°
LONG: 80.696413°

SITE ENTRANCE
(NAD 83)
LAT: 39.463195°
LONG: 80.684883°
(NAD 27)
LAT: 39.463112°
LONG: 80.685060°



1"=3000'

0' 3000' 6000' 9000'

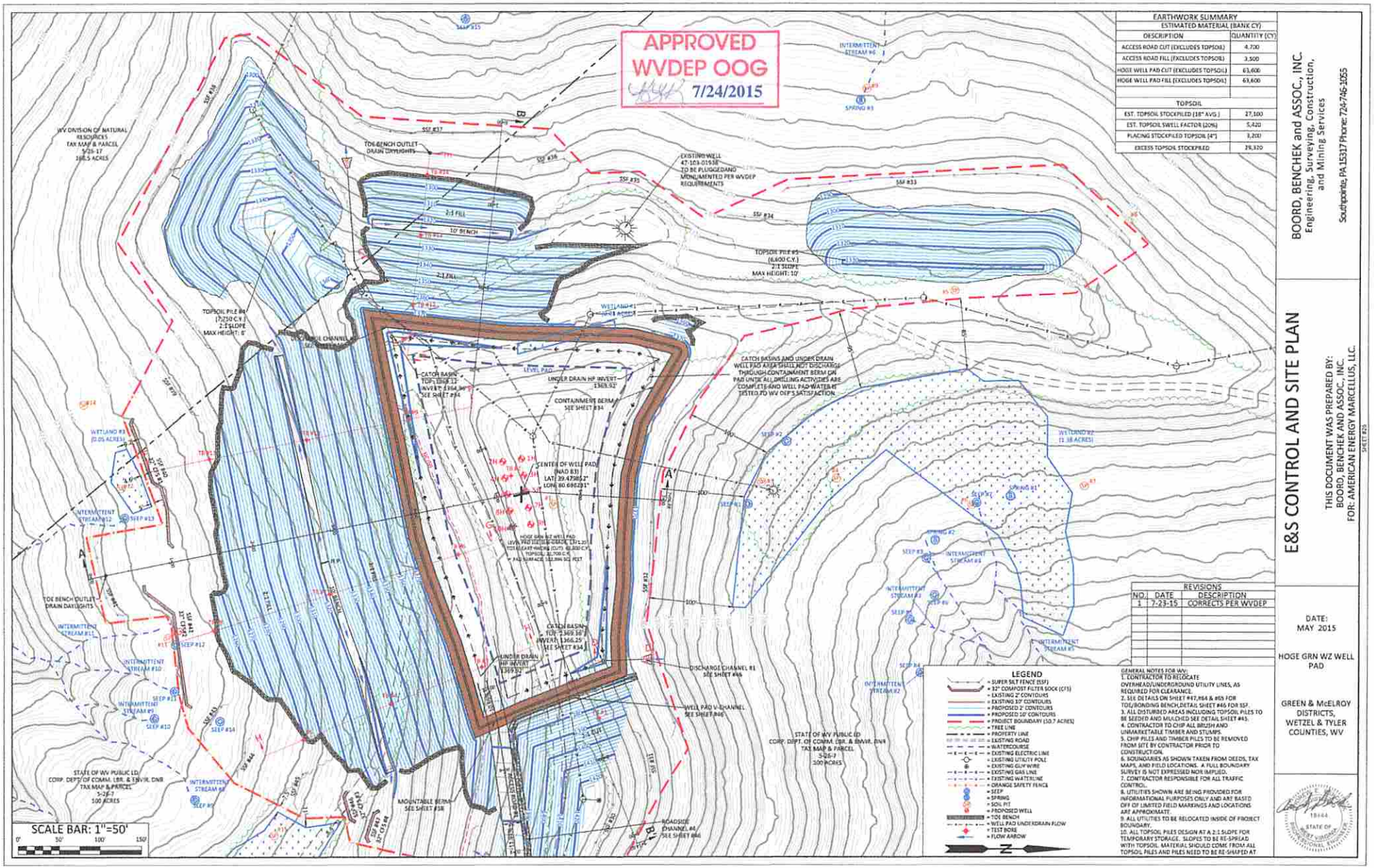
REVISIONS

NO.	DATE	DESCRIPTION
1	7-23-15	CORRECTS PER WVDEP

TITLE SHEET

HOGE GRN WZ WELL PAD
GREEN & McELROY DISTRICT, WETZEL & TYLER COUNTIES, WV

SHEET
1
OF
70


APPROVED
WVDEP OOG
7/24/2015
EARTHWORK SUMMARY
ESTIMATED MATERIAL (BANK CY)
DESCRIPTION | QUANTITY (CY)
ACCESS ROAD CUT (EXCLUDES TOPSOIL) | 4,700
ACCESS ROAD FILL (EXCLUDES TOPSOIL) | 3,500
HOGE WELL PAD CUT (EXCLUDES TOPSOIL) | 63,600
HOGE WELL PAD FILL (EXCLUDES TOPSOIL) | 63,600
TOPSOIL
EST. TOPSOIL STOCKPILED (18" AVG.) | 27,100
EST. TOPSOIL SWELL FACTOR (20%) | 5,420
PLACING STOCKPILED TOPSOIL (4") | 3,200
EXCESS TOPSOIL STOCKPILED | 29,320
BOORD, BENCHEK and ASSOC., INC.
Engineering, Surveying, Construction, and Mining Services
Southpointe, PA 15317 Phone: 724-746-1055
E&S CONTROL AND SITE PLAN
THIS DOCUMENT WAS PREPARED BY: BOORD, BENCHEK AND ASSOC., INC.
FOR: AMERICAN ENERGY MARCELLUS, LLC.
SHEET #25
REVISIONS
NO. | DATE | DESCRIPTION
1 | 7-23-15 | CORRECTS PER WVDEP
DATE: MAY 2015
HOGE GRN WZ WELL PAD
GREEN & McELROY DISTRICTS, WETZEL & TYLER COUNTIES, WV
LEGEND
GENERAL NOTES FOR WV:
SCALE BAR: 1"=50'
0' 50' 100' 150'
WV DIVISION OF NATURAL RESOURCES TAX MAP & PARCEL 5-28-17 168.5 ACRES
STATE OF WV PUBLIC LD CORP. DEPT. OF COMM. LBR. & ENVIR. DNR TAX MAP & PARCEL 5-28-7 100 ACRES
TOE BENCH OUTLET DRAIN DAYLIGHTS
EXISTING WELL 47-103-01936 TO BE PLUGGED AND MONUMENTED PER WVDEP REQUIREMENTS
TOPSOIL PILE #3 (6,600 C.Y.) 2:1 SLOPE MAX HEIGHT: 10'
TOPSOIL PILE #4 (7,250 C.Y.) 2:1 SLOPE MAX HEIGHT: 8'
CATCH BASIN TOP: 1369.33 INVERT: 1364.36 SEE SHEET #34
UNDER DRAIN HP INVERT 1369.92'
CONTAINMENT BERM SEE SHEET #34
CATCH BASINS AND UNDER DRAIN WELL PAD AREA SHALL NOT DISCHARGE THROUGH CONTAINMENT BERM ON PAD UNTIL ALL DRILLING ACTIVITIES ARE COMPLETE AND WELL PAD WATER IS TESTED TO WV DEP'S SATISFACTION
CENTER OF WELL PAD (NAD 83) LAT: 39.473852° LONG: 80.695291°
HOGE GRN WZ WELL PAD LEVEL PAD SIZE (SUB-GRADE): 1,871.25' TOE SLOPE KEY-HOOKS (CUT): 63,600 C.Y. TOPSOIL: 31,700 C.Y. ± PAD SUB-ACRE: 182,896 SQ. FEET
CATCH BASIN 2 TOP: 1369.16 INVERT: 1366.25 SEE SHEET #34
UNDER DRAIN HP INVERT 1369.92'
DISCHARGE CHANNEL #1 SEE SHEET #46
WELL PAD V-CHANNEL SEE SHEET #46
ROADSIDE CHANNEL #4 SEE SHEET #46
MOUNTABLE BERM SEE SHEET #38
DISCHARGE CHANNEL SEE SHEET #46
WETLAND #1 (0.08 ACRES)
WETLAND #2 (1.38 ACRES)
WETLAND #3 (0.05 ACRES)
SPRING #1
SPRING #2
SPRING #3
SEEP #1
SEEP #2
SEEP #3
SEEP #4
SEEP #5
SEEP #6
SEEP #7
SEEP #8
SEEP #9
SEEP #10
SEEP #11
SEEP #12
SEEP #13
SEEP #14
INTERMITTENT STREAM #1
INTERMITTENT STREAM #2
INTERMITTENT STREAM #3
INTERMITTENT STREAM #4
INTERMITTENT STREAM #5
INTERMITTENT STREAM #6
INTERMITTENT STREAM #7
INTERMITTENT STREAM #8
INTERMITTENT STREAM #9
INTERMITTENT STREAM #10
INTERMITTENT STREAM #11
INTERMITTENT STREAM #12
SUPER SILT FENCE (SSF)
32" COMPOST FILTER SOCK (CFS)
EXISTING 2' CONTOURS
EXISTING 10' CONTOURS
PROPOSED 2' CONTOURS
PROPOSED 10' CONTOURS
PROJECT BOUNDARY (50.7 ACRES)
TREE LINE
PROPERTY LINE
EXISTING ROAD
WATERCOURSE
EXISTING ELECTRIC LINE
EXISTING UTILITY POLE
EXISTING GUY WIRE
EXISTING GAS LINE
EXISTING WATERLINE
ORANGE SAFETY FENCE
SEEP
SPRING
SOIL PIT
PROPOSED WELL
TOE BENCH
WELL PAD UNDERDRAIN FLOW
TEST BORE
FLOW ARROW
1. CONTRACTOR TO RELOCATE OVERHEAD/UNDERGROUND UTILITY LINES, AS REQUIRED FOR CLEARANCE.
2. SEE DETAILS ON SHEET #47,#64 & #65 FOR TOE/BONDING BENCH,DETAIL SHEET #46 FOR SSF.
3. ALL DISTURBED AREAS INCLUDING TOPSOIL PILES TO BE SEEDED AND MULCHED SEE DETAIL SHEET #43.
4. CONTRACTOR TO CHIP ALL BRUSH AND UNMARKETABLE TIMBER AND STUMPS.
5. CHIP PILES AND TIMBER PILES TO BE REMOVED FROM SITE BY CONTRACTOR PRIOR TO CONSTRUCTION.
6. BOUNDARIES AS SHOWN TAKEN FROM DEEDS, TAX MAPS, AND FIELD LOCATIONS. A FULL BOUNDARY SURVEY IS NOT EXPRESSED NOR IMPLIED.
7. CONTRACTOR RESPONSIBLE FOR ALL TRAFFIC CONTROL.
8. UTILITIES SHOWN ARE BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED OFF OF LIMITED FIELD MARKINGS AND LOCATIONS ARE APPROXIMATE.
9. ALL UTILITIES TO BE RELOCATED INSIDE OF PROJECT BOUNDARY.
10. ALL TOPSOIL PILES DESIGN AT A 2:1 SLOPE FOR TEMPORARY STORAGE. SLOPES TO BE RE-SPREAD WITH TOPSOIL. MATERIAL SHOULD COME FROM ALL TOPSOIL PILES AND PILES NEED TO BE RE-SHAPED AT
STATE OF WV