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**west virginia** department of environmental protection

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

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

July 14, 2015

**WELL WORK PERMIT**  
**Secondary Recovery Well**

This permit, API Well Number: 47-4303497, issued to HG ENERGY, LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days 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: EMMA GRIFFITH 145  
Farm Name: BRUMFIELD, JOSHUA D.  
**API Well Number: 47-4303497**  
**Permit Type: Secondary Recovery Well**  
Date Issued: 07/14/2015

**Promoting a healthy environment.**

**07/17/2015**

## PERMIT CONDITIONS

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

### CONDITIONS

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1. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code §22-6-20, which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
2. Pursuant to 35 CSR 4-19.1.a, at the request of the surface owner all water wells or springs within 1000 feet of the proposed well that are actually utilized for human consumption, domestic animals or other general use shall be sampled and analyzed.
3. Pursuant to 35 CSR 4-19.1.c, if the operator is unable to sample and analyze any water well or spring with one thousand (1,000) feet of the permitted well location, the Office of Oil and Gas requires the operator to sample, at a minimum, one water well or spring located between one thousand (1,000) feet and two thousand (2,000) feet of the permitted well location.
4. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
5. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
6. During the surface casing and cementing process, in the event cement does not return to the surface, or any other casing string that is permitted to circulate cement to the surface and does not return to the surface, the oil and gas inspector shall be notified within twenty-four (24) hours
7. Well work activities shall not constitute a hazard to the safety of persons.
8. 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](mailto:DEPOOGNotify@wv.gov) within 30 days of commencement of drilling.



FORM WW-3 (B)  
1/12



1) Date: 05/08/2015  
2) Operator's Well No. Emma Griffith 145  
3) API Well No.: 47 - Lincoln - s  
State County Permit  
4) UIC Permit No. UIC2R04301AP

STATE OF WEST VIRGINIA  
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION  
FOR THE DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

5) WELL TYPE: Liquid Injection  / Gas Injection (not storage)  / Waste Disposal   
6) LOCATION: Elevation: 800' Watershed: Straight & Bear Fork  
District: Duval County Lincoln Quadrangle Griffithsville 7.5'  
7) WELL OPERATOR: HG Energy, LLC 8) DESIGNATED AGENT Diane White  
Address 5260 Dupont Road Address 5260 Dupont Road  
Parkersburg, WV 26101 Parkersburg, WV 26101  
9) OIL & GAS INSPECTOR TO BE NOTIFIED 10) DRILLING CONTRACTOR  
Name Ralph Triplett Name To Be Determined Upon Approval of Permit  
Address 5539 McClellan Hwy Address \_\_\_\_\_  
Branchland, WV 25506

11) PROPOSED WELL WORK Drill  / Drill deeper  / Redrill  / Stimulate   
Plug off old formation  / Perforate new formation  Convert   
Other physical change in well (specify) \_\_\_\_\_

12) GEOLOGIC TARGET FORMATION Berea Depth 2745 Feet (top) to 2762 Feet (bottom)

13) Estimated Depth of Completed Well, (or actual depth of existing well): 2984 TMD Feet

14) Approximate water strata depths: Fresh 190 Feet Salt 1040 Feet

15) Approximate coal seam depths: 230

16) Is coal being mined in the area? Yes  No

17) Virgin reservoir pressure in target formation 1250 psig Source Estimated

18) Estimated reservoir fracture pressure 2650 psig (BHFP)

19) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour 25 BBL Bottom hole pressure 2400 psi

20) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES Fresh water, produced  
water, bactericides and other chemicals as needed to maintain water quality and improve oil recovery.

21) FILTERS (IF ANY) Cartridge filters and/or coal bed filters

22) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL \_\_\_\_\_

23) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS					FOOTAGE INTERVALS		CEMENT FILL-UP OR SACKS (CU. FT.)	PACKERS
	Size	Grade	Weight per ft.	New	Used	For Drilling	Left In Well		
Conductor									Kinds <u>RDT 05/11/15</u>
Fresh Water	7"	LS	17#	X		340'	340'	CTS	
Coal									
Intermediate									2.375" x 4.5"
Production	4 1/2"	J-55	10.5#	X		2934'	2934'	150 sks	Depths set
Tubing	2 3/8"	J-55	4.6#	X		2545'	2545'		2400'
Liners									Perforations
									Top Bottom

24) APPLICANT'S OPERATING RIGHTS were acquired from Emma Griffith et al  
by deed \_\_\_\_\_ / lease X / other contract \_\_\_\_\_ / dated 08/07/908 3/05/1907 of record in the  
Lincoln County Clerk's office in lease Book 39 Page 462

Received  
Office of Oil & Gas

MAY 15 2015

07/17/2015





WW-2B1  
(5-12)

Well No. Emma Griffith 145

West Virginia Department of Environmental Protection  
Office of Oil and Gas

NOTICE TO SURFACE OWNERS

The well operator named below is preparing to file for a permit from the state to drill a new well. Before a well work permit can be filed with the Chief of the Office of Oil and Gas, the well operator is required to have given notice of the right to request water well or spring analytical testing. This notice shall be given to the owners or occupants of land which have a water well or spring being utilized for human consumption, domestic animals, or other general use and which is located within 1000 feet of the proposed well site.

With this form, the operator is giving you notice of your right to request analytical testing. The operator is required to sample and analyze the water wells or springs of all owners or occupants who request it. Therefore, if you wish to have your water well or spring tested, contact the operator named below.

All sampling shall be completed prior to drilling. Within thirty (30) days of the receipt of such sample analyses the operator shall submit the results to the Chief of the Office of Oil and Gas and to the owners or occupants who may have requested them.

Be advised, you have the right to sample and analyze any water supply at your own expense.

Listed below is the laboratory chosen by operator to perform analysis, and contactor chosen to collect sample.

Certified Laboratory Name Sturm Environmental Labs  
Sampling Contractor Sturm Environmental Labs

Well Operator HG Energy, LLC  
Address 5260 Dupont Road  
Parkersburg, WV 26101  
Telephone 304-420-1119

FOR OPERATOR'S USE ONLY: Below, or on an attached page, list those persons which were given this notice. Place an asterisk beside the one(s) that contacted you and requested sampling and analyses. If there were no requests made, indicate by underling which one you have selected to sample and analyze. If there are no water wells or springs within 1000 feet of the proposed site, the Chief may require the operator to test wells up to 2000 feet from the proposed site.

- Sec Attached Sheet -

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Office of Oil & Gas  
MAY 15 2015

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West Virginia Department of Environmental Protection  
Office of Oil and Gas

## NOTICE TO SURFACE OWNERS

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FOR OPERATOR'S USE ONLY: Below, or on an attached page, list those persons which were given this notice. Place an asterisk beside the one(s) that contacted you and requested sampling and analyses. If there were no requests made, indicate by underlining which one you have selected to sample and analyze. If there are no water wells or springs within 1000 feet of the proposed site please indicate such.

**Surface Owners Identified With Water Sources to be Sampled and Tested:**

- |  |   |
|--|---|
| * Joshua Brumfield<br>31 Vandalia Drive<br>Yawkey, WV 25573            | * Arthur & Romaline White<br>7564 Plum Orchard Road<br>Munith, MI 49259 |
| * Ruth Jones Smith<br>59 Bear Fork Road<br>Yawkey, WV 25573            | * David Lawson<br>1 First American Way<br>Westlake, TX 76262            |
| * Linda Owsley<br>PO Box 246<br>Griffithsville, WV 25521               | * Venita Gail Hager<br>38 Bear Fork Road<br>Yawkey, WV 25573            |
| * Fred Adkins<br>P. O. Box 96<br>Griffithsville, WV 25521              | * Harvey Kelley<br>P. O. Box 189<br>Griffithsville, WV 25521            |
| * Therman Caudill<br>4946 Straight Fork Road<br>Yawkey, WV 25573       | * Ralph Tudor<br>204 Jarvis Ridge Road<br>Griffithsville, WV 25521      |
| * Sarah Fletcher<br>1940 Allens Fork Road<br>Charleston, WV 25320      | * Franklin Kilburn<br>4933 Straight Fork Road<br>Yawkey, WV 25573       |
| * Timothy Antill<br>4925 Straight Fork Road<br>Yawkey, WV 25573        | * Jackie Stowers<br>4818 Midway Road<br>Yawkey, WV 25573                |
| * David Pauley<br>P. O. Box 198<br>Griffithsville, WV 25521            | * Lorena Dunlap<br>P. O. Box 227<br>Griffithsville, WV 25521            |
| * Deanna Miller<br>4975 Straight Fork Road<br>Griffithsville, WV 25521 |   |

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MAY 15 2015

07/17/2015



43034975

WW-9  
Rev. 5/10

Page 462 of \_\_\_\_\_  
API Number 47 - \_\_\_\_\_  
Operator's Well No. Emma Griffith 145

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

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM  
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name HG Energy, LLC OP Code 494497948

Watershed Straight & Bear Fork Quadrangle Griffithville 7.5'

Elevation 800' County Lincoln District Duval

Description of anticipated Pit Waste: Fluids accumulated while drilling the subject well

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

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number \_\_\_\_\_ )
- Reuse (at API Number \_\_\_\_\_ )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain \_\_\_\_\_ )

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air, Fresh Water  
-If oil based, what type? Synthetic, petroleum, etc. NA

Additives to be used? Water, Soap, KCl

Will closed loop system be used? No

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

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 Diane White

Company Official (Typed Name) Diane White

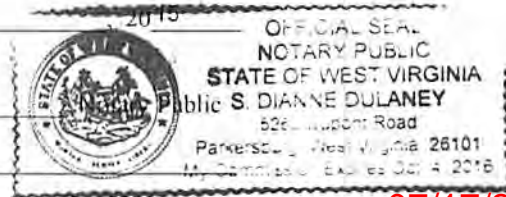
Company Official Title Agent

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Office of Oil & Gas  
MAY 15 2015

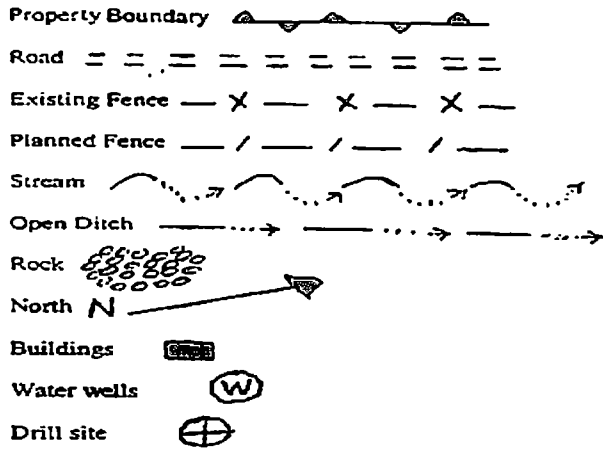
Subscribed and sworn before me this 8th day of May

S. Dianne Dulaney

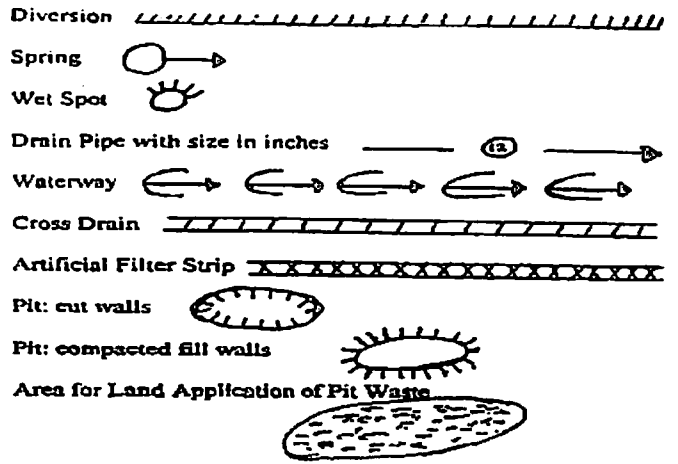
My commission expires 10/4/16



07/17/2015



LEGEND



Proposed Revegetation Treatment: Acres Disturbed 1.0 acres Prevegetation pH \_\_\_\_\_

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Mulch Straw 1 Tons/acre

Seed Mixtures

Seed Type	Area I	lbs/acre
Tall Fescue		40
Ladino Clover		5

Seed Type	Area II	lbs/acre
Tall Fescue		40
Ladino Clover		5

**\*\*Sediment Control should be in place at all times\*\***

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Rogel D. Tripp

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Office of Oil & Gas  
MAY 15 2015

Comments: \_\_\_\_\_

Title: District Inspector

Date: May 15, 2015

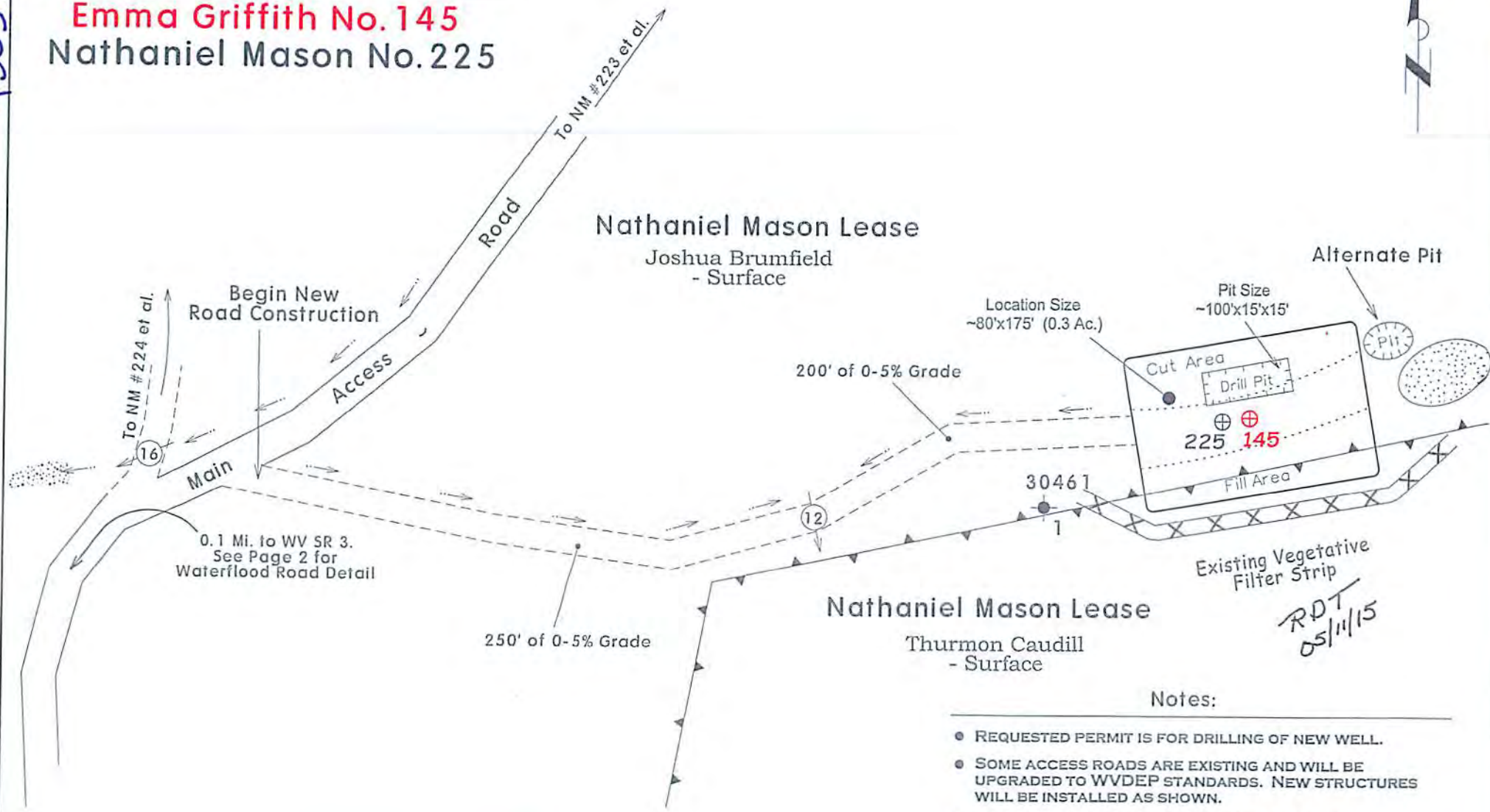
Field Reviewed?  Yes  No



43034975

# Reclamation Plan For:

## Emma Griffith No. 145 Nathaniel Mason No. 225



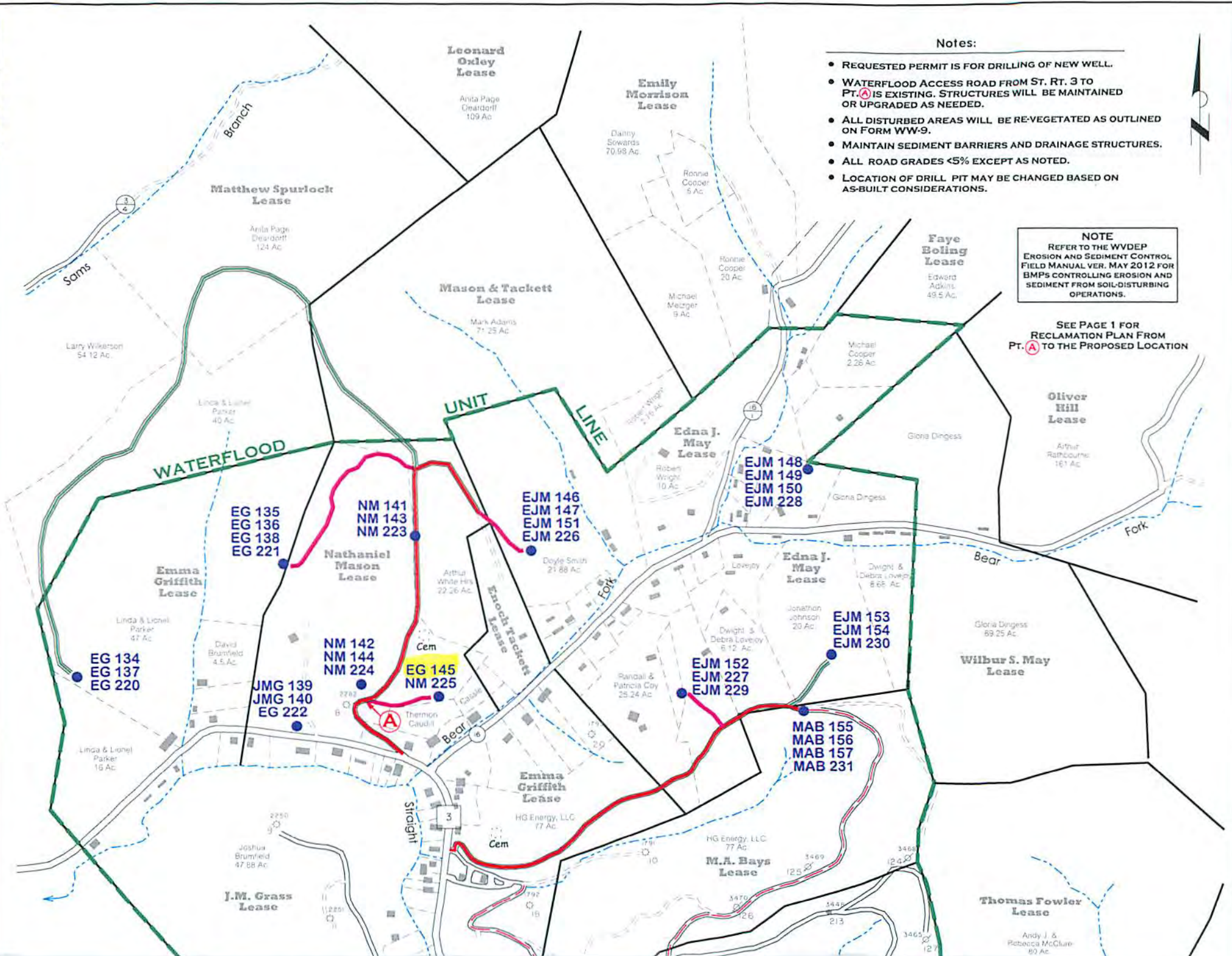
**NOTE**  
 REFER TO THE WVDEP  
 EROSION AND SEDIMENT CONTROL  
 FIELD MANUAL VER. MAY 2012 FOR  
 BMPs CONTROLLING EROSION AND  
 SEDIMENT FROM SOIL-DISTURBING  
 OPERATIONS.

### Notes:

- REQUESTED PERMIT IS FOR DRILLING OF NEW WELL.
- SOME ACCESS ROADS ARE EXISTING AND WILL BE UPGRADED TO WVDEP STANDARDS. NEW STRUCTURES WILL BE INSTALLED AS SHOWN.
- STOCKPILE TOPSOIL FOR RE-DRESSING LOCATION DURING RECLAMATION
- ALL DISTURBED AREAS WILL BE RE-VEGETATED AS OUTLINED ON FORM WW-9.
- MAINTAIN SEDIMENT BARRIERS AND DRAINAGE STRUCTURES.
- ALL ROAD GRADES <5% EXCEPT AS NOTED.
- LOCATION OF DRILL PIT MAY BE CHANGED BASED ON AS-BUILT CONSIDERATIONS.
- STACK BRUSH BELOW DISTURBED AREAS FOR SEDIMENTATION CONTROL.
- DRAWING NOT TO SCALE.



43034975



**Notes:**

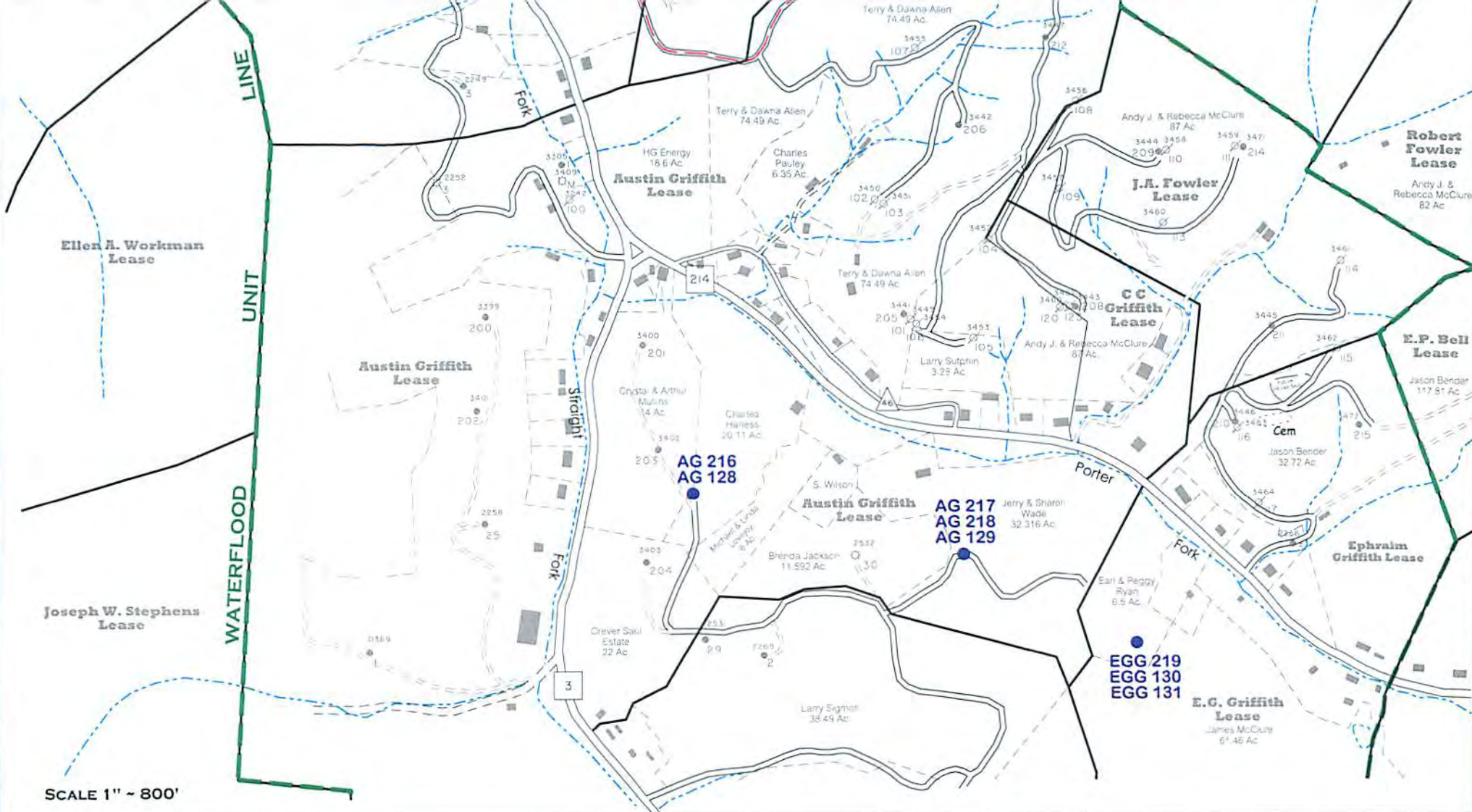
- REQUESTED PERMIT IS FOR DRILLING OF NEW WELL.
- WATERFLOOD ACCESS ROAD FROM ST. RT. 3 TO PT. (A) IS EXISTING. STRUCTURES WILL BE MAINTAINED OR UPGRADED AS NEEDED.
- ALL DISTURBED AREAS WILL BE RE-VEGETATED AS OUTLINED ON FORM WW-9.
- MAINTAIN SEDIMENT BARRIERS AND DRAINAGE STRUCTURES.
- ALL ROAD GRADES <5% EXCEPT AS NOTED.
- LOCATION OF DRILL PIT MAY BE CHANGED BASED ON AS-BUILT CONSIDERATIONS.

**NOTE**  
 REFER TO THE WVDEP  
 EROSION AND SEDIMENT CONTROL  
 FIELD MANUAL VER. MAY 2012 FOR  
 BMPs CONTROLLING EROSION AND  
 SEDIMENT FROM SOIL-DISTURBING  
 OPERATIONS.

SEE PAGE 1 FOR  
 RECLAMATION PLAN FROM  
 PT. (A) TO THE PROPOSED LOCATION







## GRIFFTHSVILLE WATERFLOOD






Lincoln County, W.Va.

### RECLAMATION PLAN SHOWING ROAD SYSTEMS TO BE USED FOR 2015 DRILLING PROGRAM (NORTH)

### NOTES

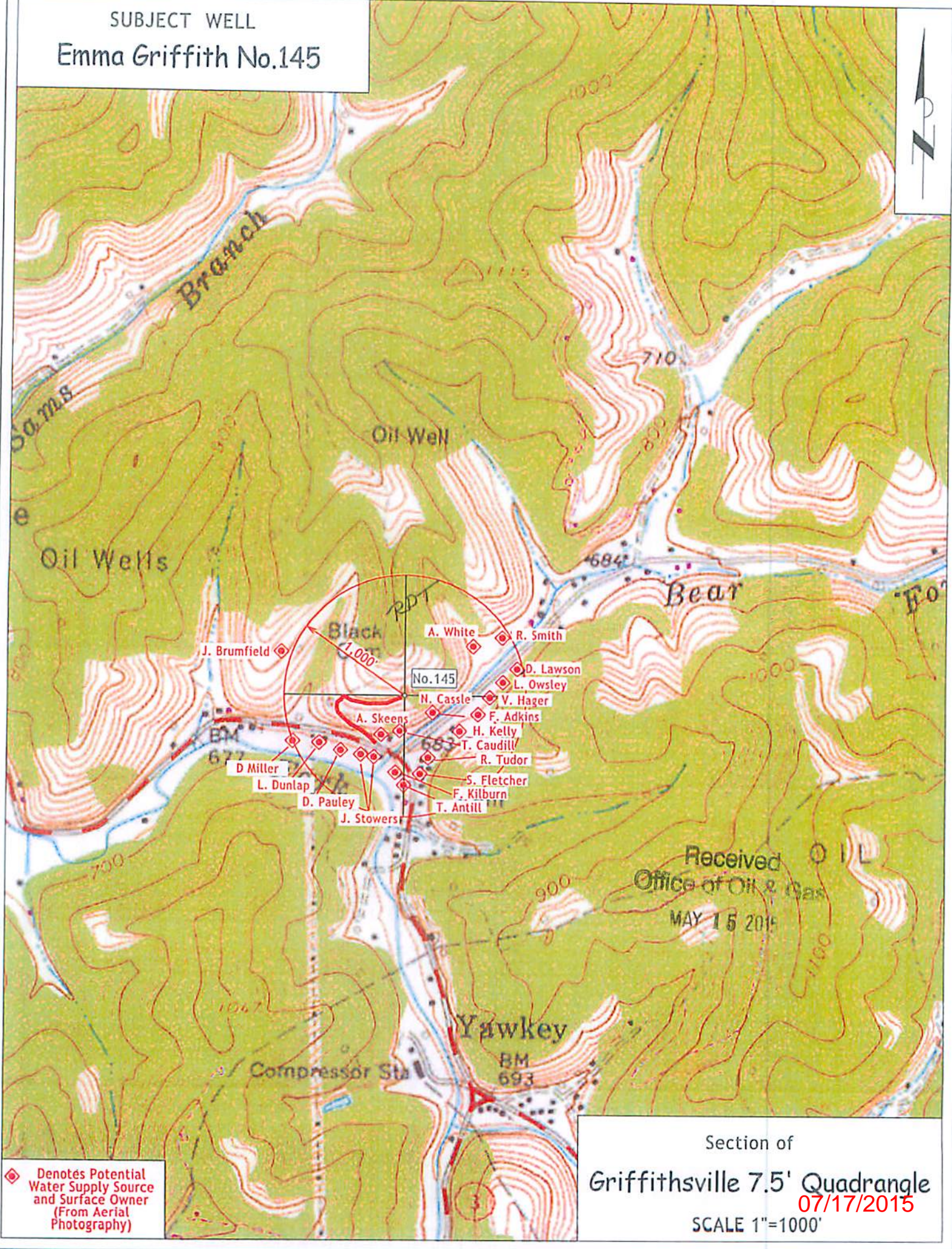
1. REFER TO THE WVDEP EROSION AND SEDIMENTATION CONTROL MANUAL (VER. MAY 20, 2013) FOR BMP'S CONTROLLING EROSION AND SEDIMENTATION FROM ALL SOIL-DISTURBING OPERATIONS.
2. SEE PAGE ONE OF RECLAMATION PLAN FOR DETAILS OF NEW ROAD CONSTRUCTION AND ROAD UPGRADES FROM POINT (A) TO DRILL SITE LOCATION.
3. EXISTING WATERFLOOD ACCESS ROADS WILL BE MAINTAINED IN PRESENT CONDITION. THESE ROADS WERE CONSTRUCTED UNDER CONDITIONS SET FORTH IN VARIOUS DRILLING PERMITS ISSUED BY WVDEP-OOG PRIOR TO 2015 (AS SHOWN). SEE PERMITS ON FILE FOR MORE DETAIL.

### LEGEND

-  EXISTING WATERFLOOD ROADS TO BE USED.
-  OTHER EXISTING MAIN WATERFLOOD ROADS (POSSIBLE ACCESS).
-  EXISTING LEASE OR FARM ROADS TO BE UPGRADED.
-  NEW ROADS TO BE CONSTRUCTED.
-  AG 216
-  POTENTIAL WATER SUPPLY SOURCE TO BE SAMPLED (LOC. APPROX.)



SUBJECT WELL  
Emma Griffith No.145



- J. Brumfield
- A. White
- R. Smith
- D. Lawson
- L. Owsley
- N. Cassle
- V. Hager
- F. Adkins
- H. Kelly
- T. Caudill
- R. Tudor
- S. Fletcher
- F. Kilburn
- T. Antill
- A. Skeens
- D. Miller
- L. Dunlap
- D. Pauley
- J. Stowers

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MAY 15 2015

◆ Denotes Potential Water Supply Source and Surface Owner (From Aerial Photography)

Section of  
Griffithsville 7.5' Quadrangle  
07/17/2015  
SCALE 1"=1000'



(BOT. HL: LON:-81°57'57.1") LON: -81°58'03.4"

2670'

LAT:38°15'00"

5885'

LAT:38°14'01.8"

(BOTTOM HOLE: LAT:38°13'59.5")

- 1 - Well ties and Latitude and Longitude were measured by DGPS (Sub-meter Mapping Grade). Bearings are referenced to UTM Grid North (Zone 17 North - NAD 1927).
- 2 - Surface owners and adjoining information obtained from the Lincoln County Assessor's tax records.
- 3 - No Title Opinion was provided to the Surveyor during this survey. This survey is subject to a complete Title Opinion.

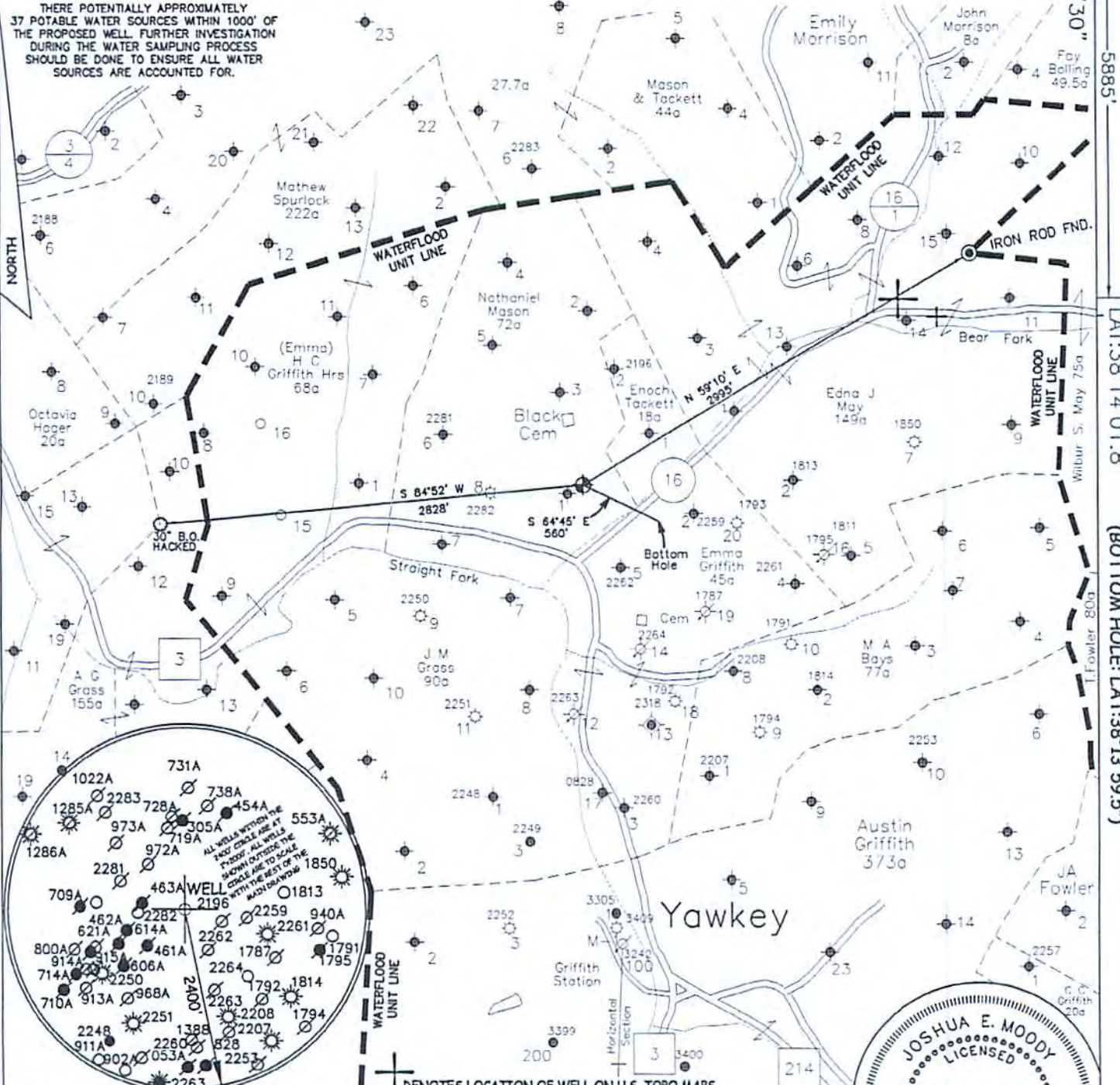
SURVEY NOTES

UTM Coordinates (Zone 17N-NAD 1983)	
Surface	N-4,232,213m. E-415,328m.
Bottom Hole	N-4,232,141m. E-415,482m.

LOCATION REFERENCES	
MAGNETIC BEARING	
S 72° E 102.0'	38' W.O.
S 22° W 81.2'	7' R.O.

### MAP OF H.G. ENERGY, LLC -WATERFLOOD UNIT- EMMA GRIFFITH 145

THERE POTENTIALLY APPROXIMATELY 37 POTABLE WATER SOURCES WITHIN 1000' OF THE PROPOSED WELL. FURTHER INVESTIGATION DURING THE WATER SAMPLING PROCESS SHOULD BE DONE TO ENSURE ALL WATER SOURCES ARE ACCOUNTED FOR.



JOB # 14-023  
DRAWING # 15HG LC FOLDER  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY 1/200  
PROVEN SOURCE OF ELEV. 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 PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
MOODY LAND SURVEYING, LLC  
ST. MARYS, WV 26170



JOSHUA E. MOODY, P.S. 2020  
DATE 3/10/15  
OPERATOR'S WELL EMMA GRIFFITH # 145

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OFFICE OF OIL AND GAS

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  HORIZONTAL   
(IF "GAS") PRODUCTION  STORAGE  DEEP  SHALLOW   
LOCATION: ELEVATION 800' WATERSHED STRAIGHT & BEAR FORK DISTRICT DUVAL COUNTY LINCOLN QUADRANGLE GRIFFITHSVILLE 7.5'  
API WELL # 47 - 43 - 03417 S  
STATE COUNTY PERMIT

SURFACE OWNER JOSHUA D. BRUMFIELD ACREAGE 42.72 ACRES +/-  
OIL & GAS ROYALTY OWNER HG ENERGY, LLC ET AL LEASE ACREAGE 113 ACRES +/-  
PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION   
OTHER PHYSICAL CHANGE IN WELL (SPECIFY) WELL WILL BE DRILLED DIRECTIONALLY (S 64°45' E 560')  
PLUG & ABANDON  CLEAN OUT & REPLUG   
TARGET FORMATION BERA ESTIMATED DEPTH TVD=2,455' MD=2,984'  
WELL OPERATOR H.G. ENERGY, LLC DESIGNATED AGENT D. WHITE  
ADDRESS 5260 DuPONT ROAD ADDRESS 5260 DuPONT ROAD  
PARKERSBURG, WV 26101 PARKERSBURG, WV 26101



(BOT. HL: LON:-81°57'57.1") LON:-81°58'03.4"

2670'

LAT:38°15'00"

LON:81°57'30"

5885'

LAT:38°14'01.8"

(BOTTOM HOLE: LAT:38°13'59.5")

805'

**SURVEY NOTES**

1 - Well ties and Latitude and Longitude were measured by DGPS (Sub-meter Mapping Grade). Bearings are referenced to UTM Grid North (Zone 17 North - NAD 1927).

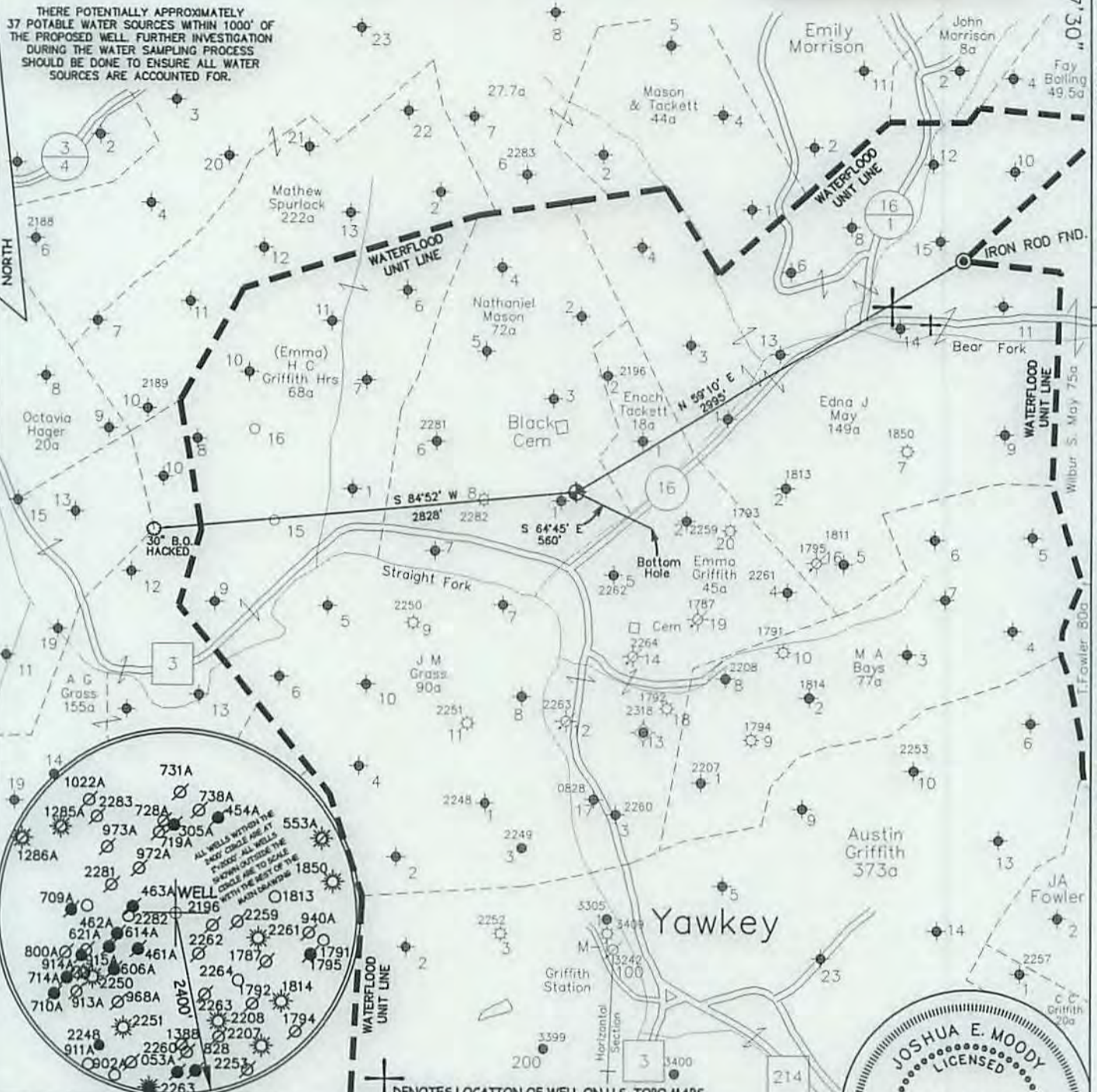
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Bottom Hole	N-4,232,141m. E-415,482m.

LOCATION REFERENCES	
MAGNETIC BEARING	
5 72° E 102.0'	38° W.O.
5 22° W 81.2'	7° R.O.

**MAP OF  
H.G. ENERGY, LLC  
-WATERFLOOD UNIT-  
EMMA GRIFFITH 145**



JOB # 14-023  
DRAWING # 15HG LC FOLDER  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY 1/200  
PROVEN SOURCE OF ELEV. MAPPING GRADE GPS

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**WEST VIRGINIA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION,  
OFFICE OF OIL AND GAS**

**MOODY LAND SURVEYING, LLC  
ST. MARYS, WV 26170**



JOSHUA E. MOODY, P.S. 2020  
DATE 3/10/15  
OPERATOR'S WELL  
EMMA GRIFFITH # 145

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  HORIZONTAL   
(IF "GAS") PRODUCTION  STORAGE  DEEP  SHALLOW   
LOCATION: ELEVATION 800' WATERSHED STRAIGHT & BEAR FORK API WELL # 47 - 043 - 03497S  
DISTRICT DUVAL COUNTY LINCOLN STATE COUNTY PERMIT

QUADRANGLE GRIFFITHSVILLE 7.5'  
SURFACE OWNER JOSHUA D. BRUMFIELD ACREAGE 42.72 ACRES +/-  
OIL & GAS ROYALTY OWNER HG ENERGY, LLC ET AL LEASE ACREAGE 113 ACRES +/-  
PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR  
STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION   
OTHER PHYSICAL CHANGE IN WELL (SPECIFY) WELL WILL BE DRILLED DIRECTIONALLY (S 64°45' E 560')  
PLUG & ABANDON  CLEAN OUT & REPLUG   
TARGET FORMATION BEREA ESTIMATED DEPTH TVD=2,455' MD=2,984'  
WELL OPERATOR H.G. ENERGY, LLC DESIGNATED AGENT D. WHITE  
ADDRESS 5260 DuPONT ROAD ADDRESS 5260 DuPONT ROAD  
PARKERSBURG, WV 26101 PARKERSBURG, WV 26101

07/17/2015