



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

January 28, 2014

WELL WORK PERMIT
Secondary Recovery Well

This permit, API Well Number: 47-3305809, 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: M.J. RATHBONE NO. 150
Farm Name: NARDELLA, MICHAEL & MARIA
API Well Number: 47-3305809
Permit Type: Secondary Recovery Well
Date Issued: 01/28/2014

Promoting a healthy environment.

PERMIT CONDITIONS

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

CONDITIONS

1. 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 within one thousand (1,000) feet of the permitted well location, the Office of Oil and Gas requires the operator to sample, at a minimum, one water well or spring located between one thousand (1,000) feet and two thousand (2,000) feet of the permitted well location.
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.

33058095

WW-3B
10/07



1) Date December 15, 2013
2) Operator's Well No. M. J. Rathbone No. 150
3) API Well No. 47 - 033 -
State County Permit
4) UIC Permit No. UIC2R03301AP

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 X Gas Injection (not storage) Waste Disposal
- 6) LOCATION: Elevation 1176' Watershed Ten Mile Creek
District Tenmile 09 County Harrison 33 Quadrangle Salem 7.5' 596
- 7) WELL OPERATOR: HG Energy, LLC 494497948
5260 Dupont Road
Parkersburg, WV 26101
- 8) DESIGNATED AGENT: Mike Kirsch
5260 Dupont Road
Parkersburg, WV 26101
- 9) OIL & GAS INSPECTOR TO BE NOTIFIED: Name Sam Ward
Address P. O. Box 2327
Buckhannon, WV 26201
- 10) DRILLING CONTRACTOR: Name
Address
- 11) PROPOSED WELL WORK: Drill X Drill Deeper Redrill Stimulate X
Plug Off Old Formation Perforate New Formation Convert
Other Physical Change in Well (specify)
- 12) Geological target formation Fifth Sand Depth 2,967 Ft. (Top) to 2,977 Ft. (Bottom)
- 13) Estimated depth of completed well (or actual depth of existing well) 3120' TMD Ft.
- 14) Approximate water strata depths: Fresh 170 Ft. Salt 1,290 Ft.
- 15) Approximate coal seam depths: 585 Ft.
- 16) Is coal being mined in the area? Yes X No
- 17) Virgin reservoir pressure in target formation: 1,250 psig. Source Estimated
- 18) Estimated reservoir fracture pressure: 2,650 psig.
- 19) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour 25 BBL Bottom Hole Pressure 2,400 psi
- 20) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES and other chemicals as needed to maintain water quality and improve oil recovery. Fresh water, produced water, bactericides
- 21) FILTERS (IF ANY) Cartridge filters and/or coal bed filters
- 22) SPECIFICATION FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

SDW
12/23/2013
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23) CASING AND TUBING PROGRAM

| CASING OR TUBING TYPE | SPECIFICATIONS | | | | | FOOTAGE INTERVALS | | CEMENT FILLUP OR SACKS (CU. FT.) | PACKERS |
|-----------------------|----------------|-------|--------|-----|------|-------------------|--------------|----------------------------------|---------------|
| | Size | Grade | Weight | New | Used | For Drilling | Left in Well | | |
| Conductor | | | | | | | | | Kinds |
| Fresh Water | 7" | L.S. | 17# | X | | 660' | 660' | Cement to Surface | Tension |
| Coal | | | | | | | | | Sizes |
| Intermediate | | | | | | | | | 2.375" x 4.5" |
| Production | 4 1/2" | J-55 | 10.5# | X | | 3120' | 3325' | 150 sacks | Depths Set |
| Tubing | 2 3/8" | J-55 | 4.6 # | X | | 2920' | 2920' | | 2820' |
| Liners | | | | | | | | | Perforations |
| | | | | | | | | | Top Bottom |

24) APPLICANTS OPERATING RIGHTS were acquired from J. W. Johnson
by Deed Lease X Other Contract Dated October 16, 1919
Harrison County Clerk's Office in Book 304 at Page 221

RECEIVED
Office of Oil and Gas
JAN 03 2014

WV Department of Environmental Protection

33058095

7012 3050 0000 050E 2102

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|--|----------------|
| Postage | \$ 1.52 |
| Certified Fee | 3.10 |
| Return Receipt Fee (Endorsement Required) | 2.55 |
| Restricted Delivery Fee (Endorsement Required) | |
| Total Postage & Fees | \$ 7.17 |

Postmark Here
 PARKERSBURG, WV
 DEC 9 2013
 USPS

MJR 150

Sent To: Wolf Run Mining Company ✓
 Street, Apt. No.; or PO Box No.: 2708 Cranberry Square
 City, State, ZIP+4: Morgantown WV 26505

PS Form 3800, August 2006 See Reverse for Instructions

4579 995E 2000 050E 2102

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OFFICIAL USE

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| Postage | \$ 1.52 |
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| Restricted Delivery Fee (Endorsement Required) | |
| Total Postage & Fees | \$ 7.17 |

Postmark Here
 PARKERSBURG, WV
 DEC 9 2013
 USPS

MJR 150

Sent To: ^{Midram} Michael & Lori Nardella ✓
 Street, Apt. No.; or PO Box No.: 309 John Street
 City, State, ZIP+4: Clarksburg WV 26301

PS Form 3800, August 2006 See Reverse for Instructions

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 Office of Oil & Gas
 JAN 0
 WV
 Enviro

WW-2B1

Well No. M. J. Rathbone No. 150

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.

If no water well or spring is located within 1000 feet, the Chief may require the operator to sample and analyze water from a water well or spring within 2000 feet of the proposed well site.

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

The laboratory used by the operator to analyze the samples will be approved by the Chief. The operator named below has decided to use the following laboratory to analyze the water samples:

X Contractor Name Sturm Environmental Services
 Well operator's private laboratory

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 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.

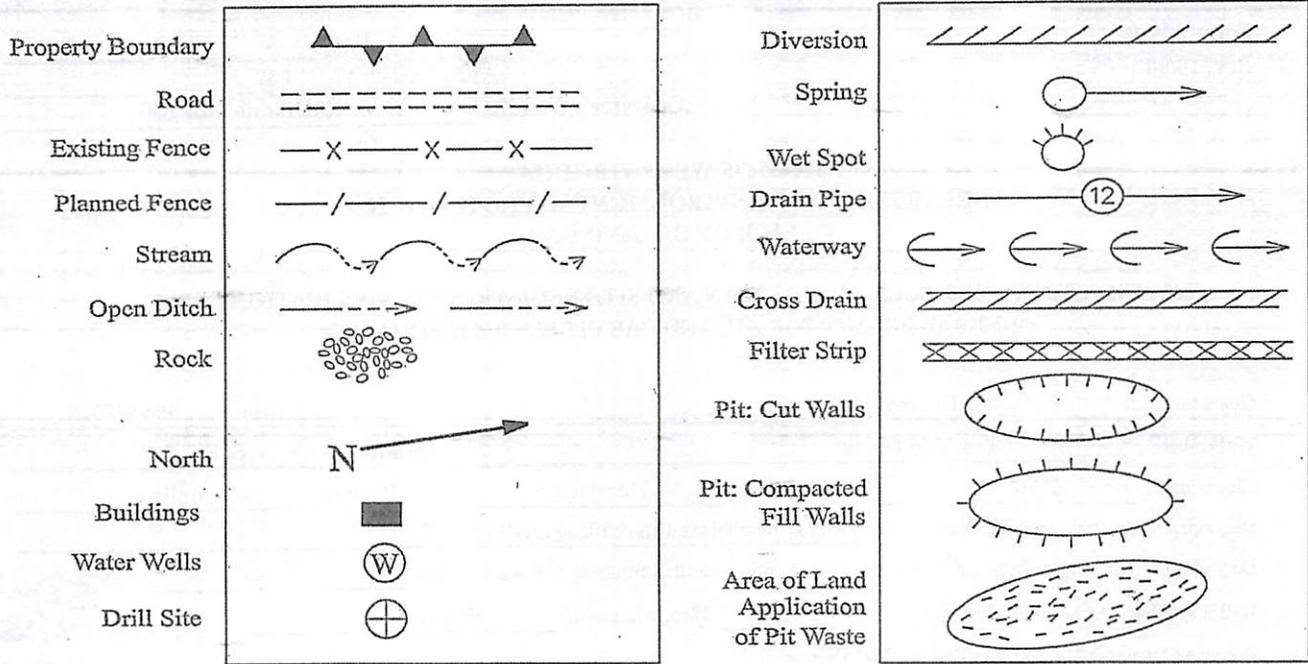
No known Water Supply Sources are located within 2000' of proposed well but many water sources have been tested in conjunction with this Wolf Summit drilling program

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Office of Oil and Gas

JAN 03 2011

WV Department of
Environmental Protection

Legend



Area I
 Proposed Revegetation Treatment: Acres Disturbed Approx. 1.0 Ac. Prevegetation pH

Area II
 Approx. 1.0 Ac.

Lime 2 Tons/Acre or Correct to pH 6.5
 Fertilizer (10-20-20 or Equivalent) 500 Lbs./Acre (500 lbs. Minimum)
 Mulch Straw 2 Tons/Acre

SEED MIXTURES

| <u>Area I (Location)</u> | |
|--------------------------|-----------|
| Seed Type | Lbs./Ac. |
| Tall Fescue | <u>40</u> |
| Ladino Clover | <u>5</u> |
| | |
| | |

| <u>Area II (Road)</u> | |
|-----------------------|-----------|
| Seed Type | Lbs./Ac. |
| Tall Fescue | <u>40</u> |
| Ladino Clover | <u>5</u> |
| | |
| | |

Received
 JAN 23 2014

Attach:
 Drawing(s) of road, location, pit and proposed area for land application
 Photocopied section of involved 7.5' topographic sheet.

Office of Oil and Gas
 Wyoming Dept. of Environmental Protection

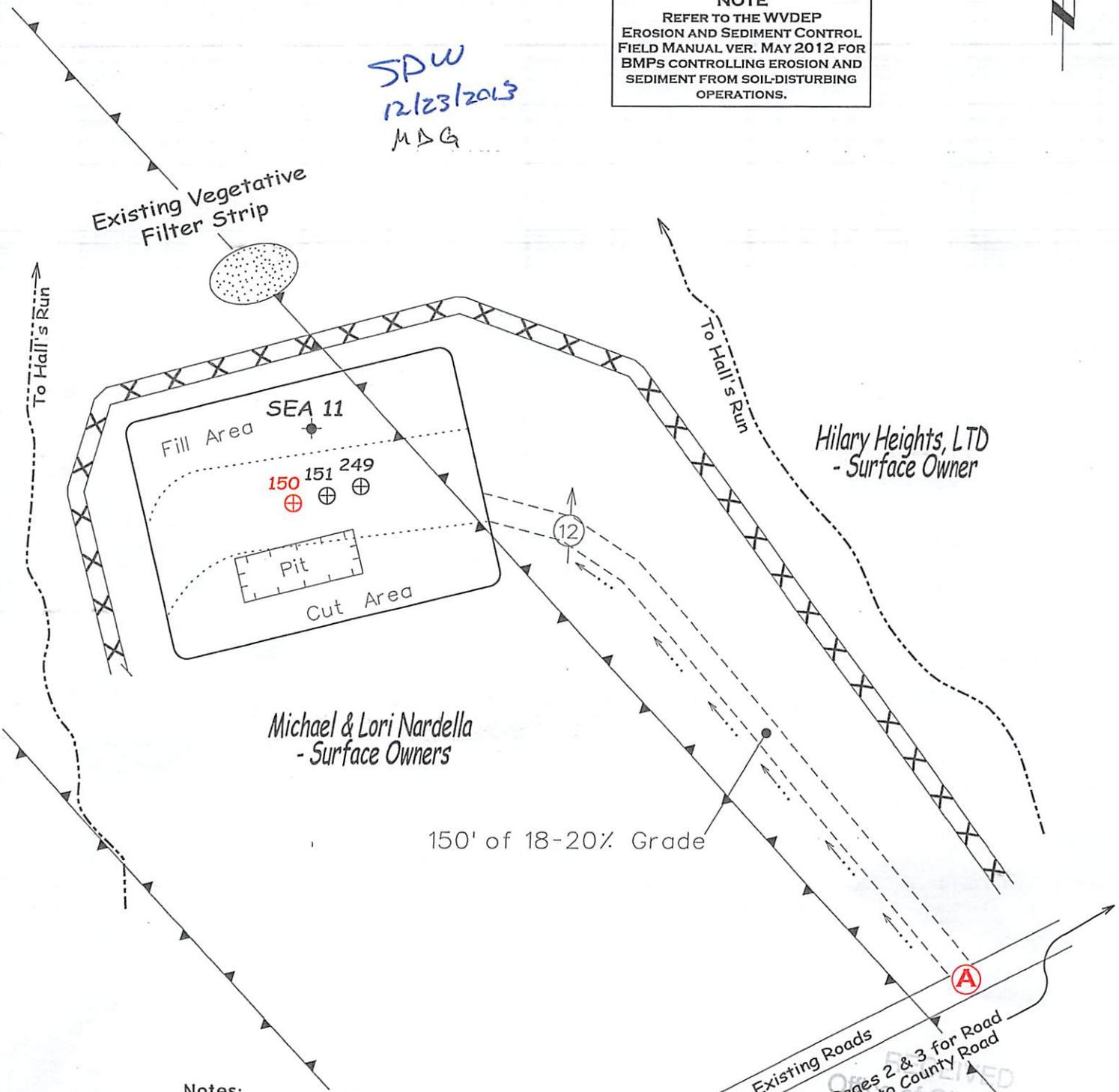
Plan approved by: Sue D. Warratt
 Comments: Pre-seed/mulch all disturbed areas as soon as reasonably possible per WVDOP ETS Manual. Upgrade ETS as necessary
 Title: Oil & Gas Inspector Date: 12/23/2013

Field Reviewed? (X) Yes () No

Reclamation Plan For: M.J. Rathbone No. 150

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

SPW
12/23/2013
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Notes:

- REQUESTED PERMIT IS FOR DRILLING OF NEW WELL.
- ACCESS ROADS FROM COUNTY ROAD TO PT. (A) ARE EXISTING. ROADS WILL BE UPGRADED TO WVDEP STANDARDS AND STRUCTURES INSTALLED AS SHOWN ON ACCOMPANYING PAGES.
- 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.
- DRAWING NOT TO SCALE.

See Pages 2 & 3 for Road
Details to County Road

JAN 03 2014

WV Department of
Environmental Protection

Reclamation Plan For: M.J. Rathbone No. 150 Showing Road System to County Road

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

SDW
12/23/2013
MDG

- LEGEND**
-  EXISTING WATERFLOOD ROADS
 -  EXISTING LEASE OR FARM ROADS TO BE UPGRADED.
 -  NEW ROADS TO BE CONSTRUCTED

MJ Rathbone Lease
Hilary Heights, LTD
- Surface Owner

Stacy & Lori Bokey
- Surface Owner

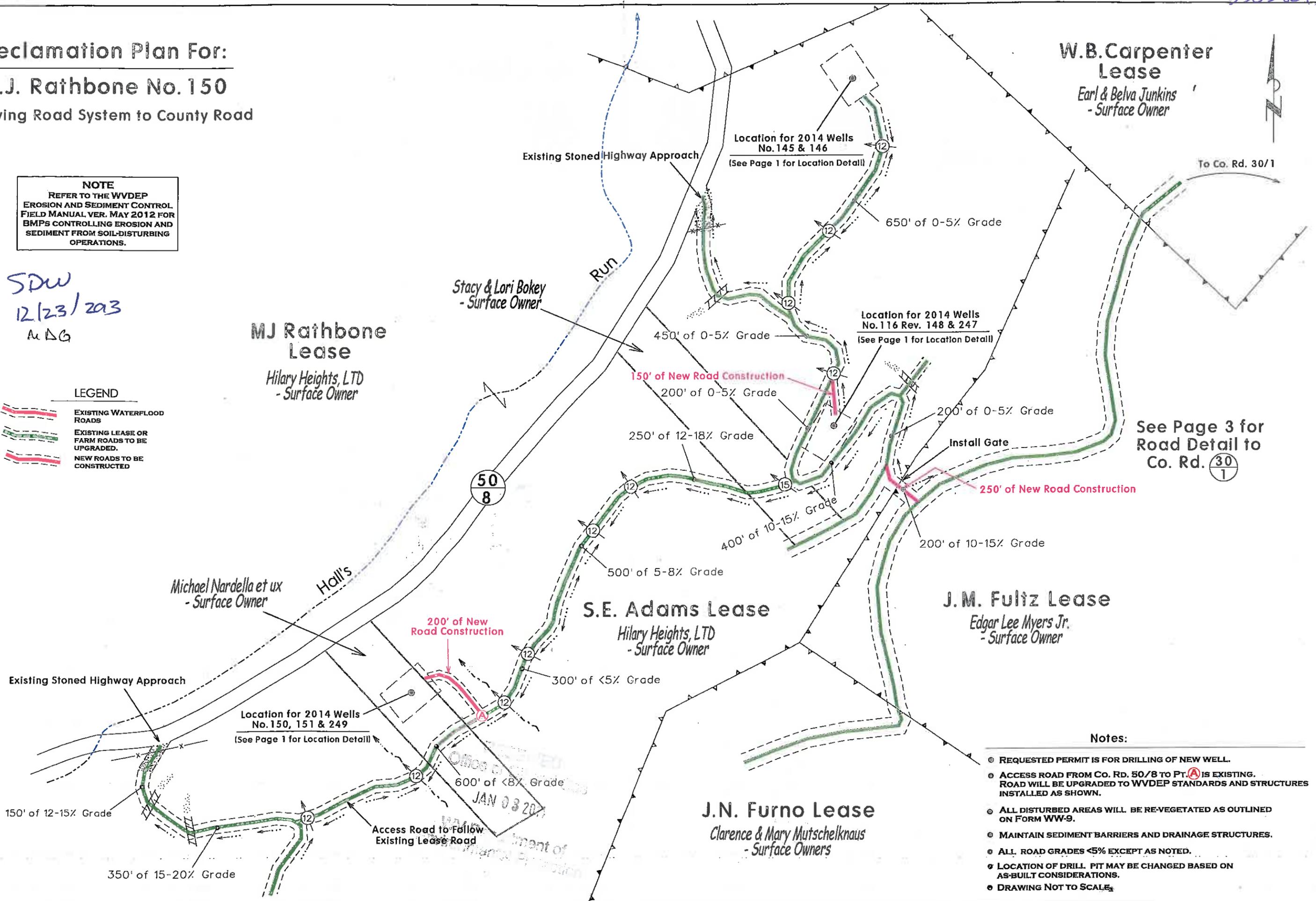
W.B. Carpenter Lease
Earl & Belva Jenkins
- Surface Owner

Michael Nardella et ux
- Surface Owner

S.E. Adams Lease
Hilary Heights, LTD
- Surface Owner

J.M. Fuliz Lease
Edgar Lee Myers Jr.
- Surface Owner

J.N. Furno Lease
Clarence & Mary Mutschelknaus
- Surface Owners

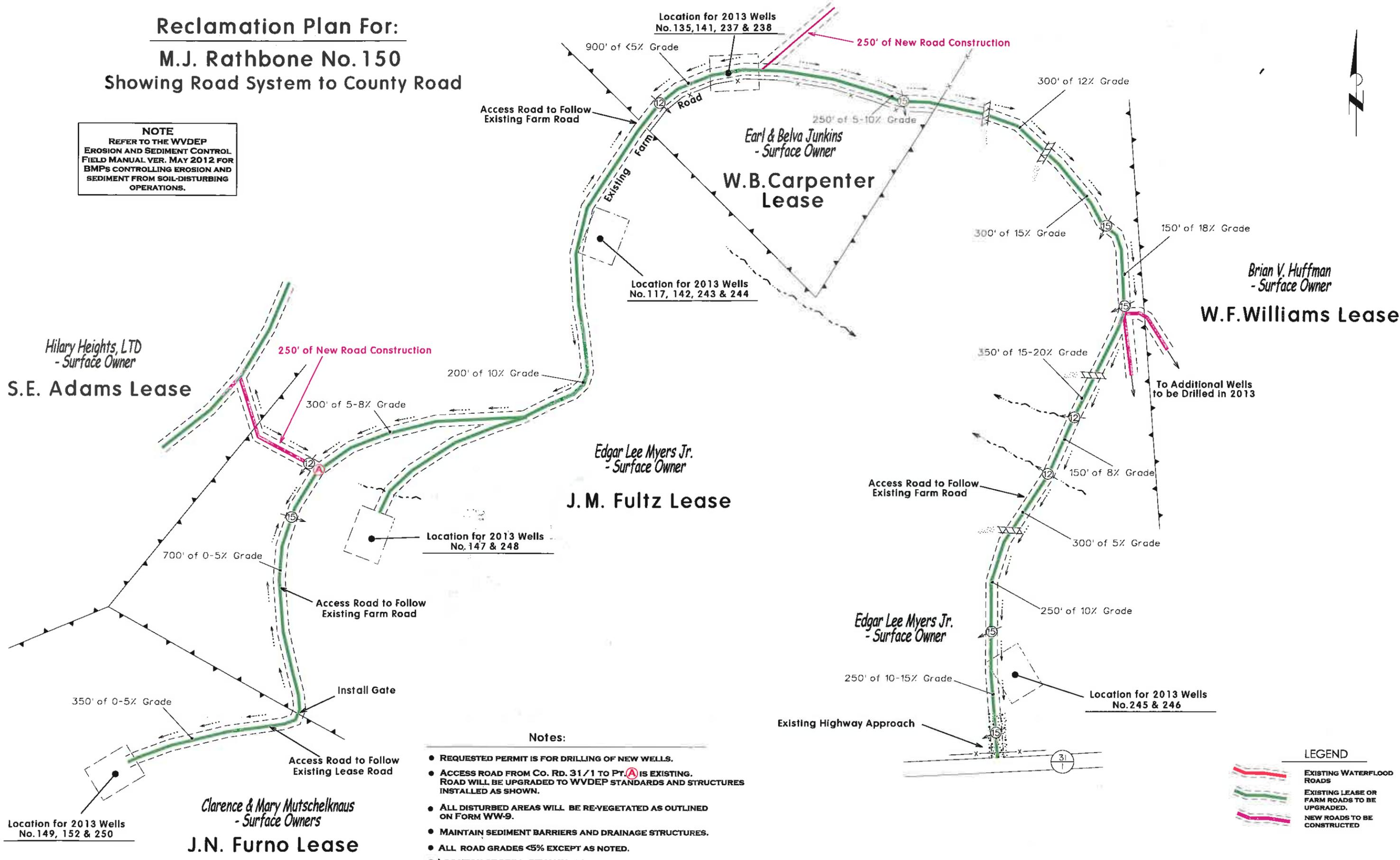


See Page 3 for
Road Detail to
Co. Rd. $\frac{30}{1}$

- Notes:**
- REQUESTED PERMIT IS FOR DRILLING OF NEW WELL.
 - ACCESS ROAD FROM Co. Rd. 50/8 TO PT. A IS EXISTING. ROAD WILL BE UPGRADED TO WVDEP STANDARDS AND STRUCTURES INSTALLED AS SHOWN.
 - 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.
 - DRAWING NOT TO SCALE.

Reclamation Plan For: M.J. Rathbone No. 150 Showing Road System to County Road

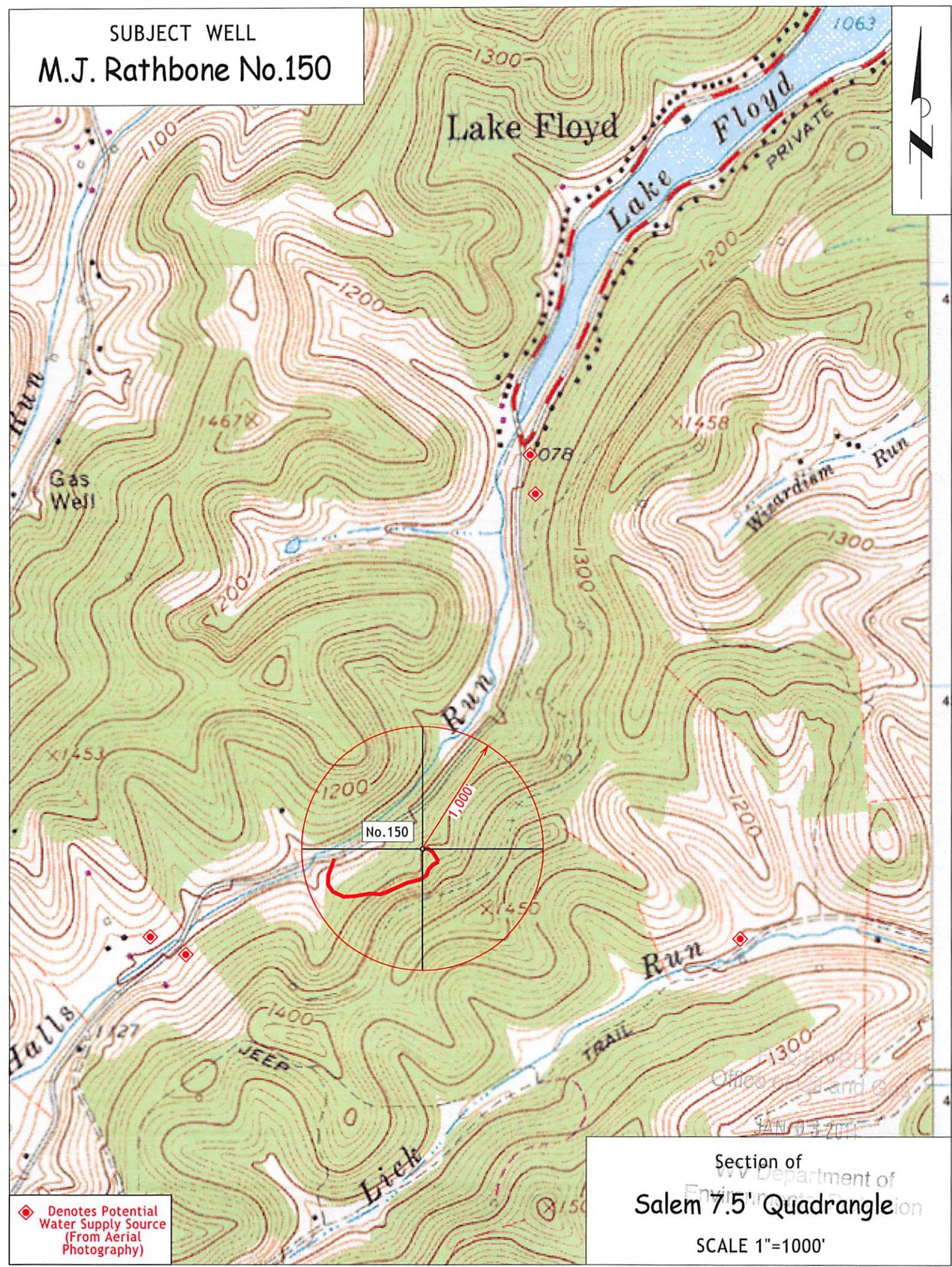
NOTE
REFER TO THE WVDEP
EROSION AND SEDIMENT CONTROL
FIELD MANUAL VER. MAY 2012 FOR
BMPs CONTROLLING EROSION AND
SEDIMENT FROM SOIL-DISTURBING
OPERATIONS.



- Notes:**
- REQUESTED PERMIT IS FOR DRILLING OF NEW WELLS.
 - ACCESS ROAD FROM Co. Rd. 31/1 TO PT. A IS EXISTING. ROAD WILL BE UPGRADED TO WVDEP STANDARDS AND STRUCTURES INSTALLED AS SHOWN.
 - ALL DISTURBED AREAS WILL BE RE-VEGETATED AS OUTLINED ON FORM WW-9.
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 - DRAWING NOT TO SCALE.



SUBJECT WELL
M.J. Rathbone No.150



◆ Denotes Potential Water Supply Source (From Aerial Photography)

Section of
WV Department of
Engineering and
Salem 7.5' Quadrangle
SCALE 1"=1000'

Office of
SAL 03 2011

(BOT. HL: LON:-80°30'58.3")

LON:-80°30'53.5"

4205

SURVEY NOTES

1 - Well ties and Latitude and Longitude were measured by Topcon Hiper 6A survey grade GPS. Bearings are referenced to UTM Grid North (Zone 17 North - NAD 1927).

2 - Surface owners, adjoiners information, Lease names, & line mapping obtained from HGE GIS system.

3 - No Title Opinion was provided to the Surveyor during this survey. This survey is subject to a complete title Opinion.

| UTM Coordinates (Zone 17N-NAD 1983) | |
|--|------------------------------|
| Surface | N-4,346,827m. E-541,865m. |
| Bottom Hole | N-4,346,965m. E-541,750m. |

| LOCATION REFERENCES | |
|--|----------|
| UTM 27 | |
| N 01°57' E 44.5' | EX: WELL |
| S 55°55' E 104.3' 16" | POPLAR |
| Brg. Direction is prop. well to the ref. | |

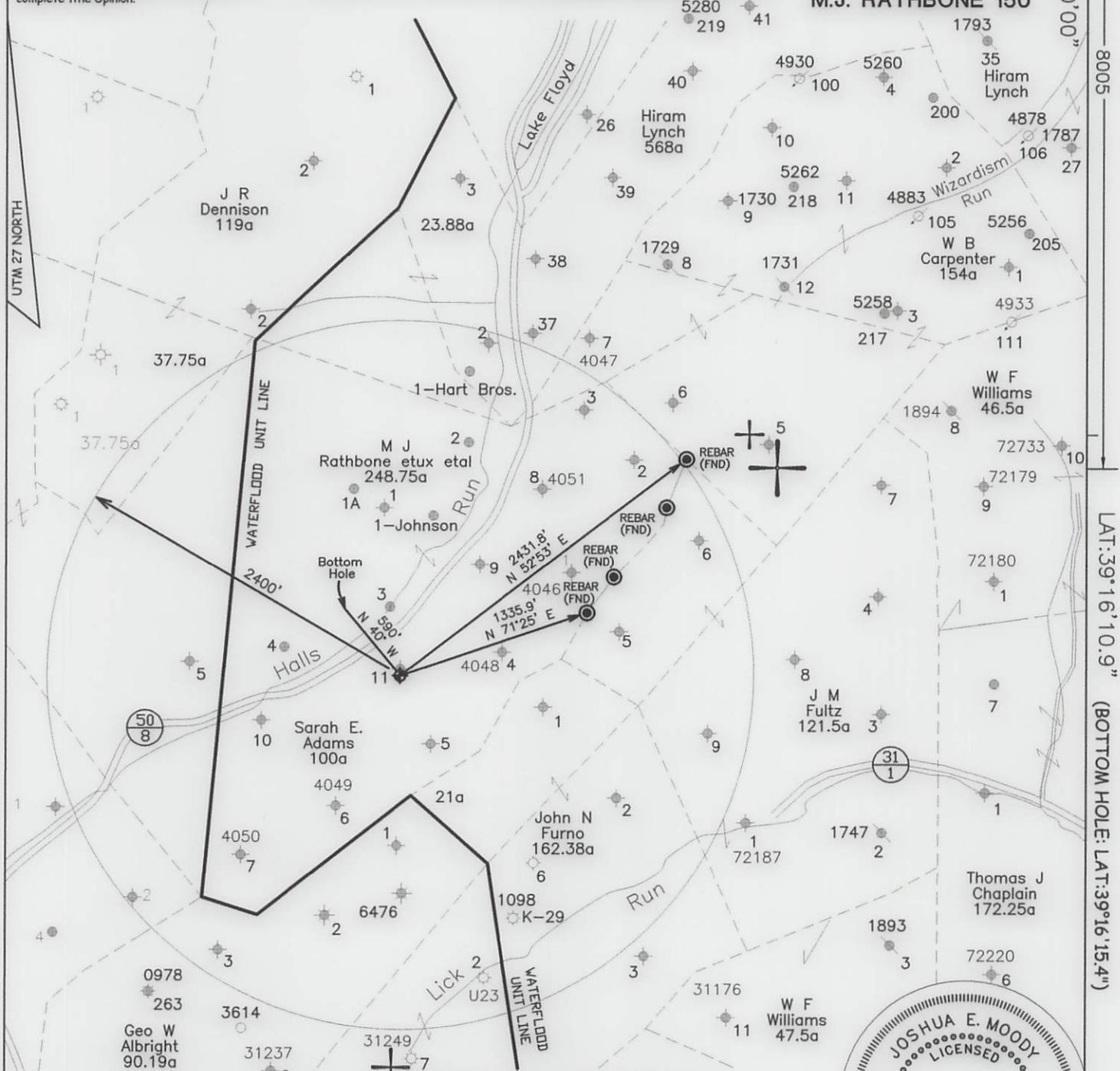
LAT: 39°17'30"
MAP OF
H.G. ENERGY, LLC
-WATERFLOOD UNIT-
M.J. RATHBONE 150

LON: 80°30'00"

8005

LAT:39°16'10.9"

(BOTTOM HOLE: LAT:39°16'15.4")



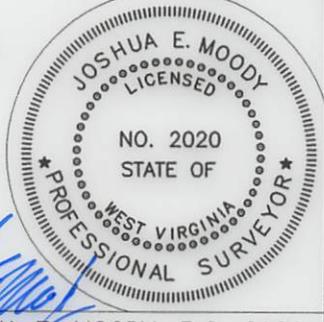
⊕ DENOTES LOCATION OF WELL ON U.S. TOPO MAPS.

JOB # 13-014
 DRAWING # 13LAKEFLOYD FOLDER
 SCALE 1" = 1500'
 MINIMUM DEGREE OF ACCURACY 1/2500
 PROVEN SOURCE OF ELEV. BENCH MARK H-80

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 9/17/13
 OPERATOR'S WELL
 M.J. RATHBONE # 150

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 1176' WATERSHED TEN MILE CREEK API WELL # 05809S
 DISTRICT TEN MILE COUNTY HARRISON STATE 47 COUNTY 033 PERMIT 05809S
 QUADRANGLE SALEM 7.5'

SURFACE OWNER MICHAEL & MARIAM NARDELLA ACREAGE 2.577 ACRES +/-
 OIL & GAS ROYALTY OWNER HILARY HTS. LTD., et al LEASE ACREAGE 148 ACRES +/-
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION
 OTHER PHYSICAL CHANGE IN WELL (SPECIFY) WILL BE DRILLED DIRECTIONALLY (N 40° W 590')
 PLUG & ABANDON CLEAN OUT & REPLUG
 TARGET FORMATION 5TH SAND ESTIMATED DEPTH MD= 3,120'
 WELL OPERATOR H.G. ENERGY, LLC DESIGNATED AGENT MIKE KIRSCH
 ADDRESS 5260 DuPONT ROAD ADDRESS 5260 DuPONT ROAD
PARKERSBURG, WV 26101 PARKERSBURG, WV 26101

COUNTY NAME PERMIT