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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Monday, June 24, 2019  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

AMERICAN PETROLEUM PARTNERS OPERATING, LLC  
4600 J. BARRY COURT SUITE 310

CANONSBURG, PA 15317

Re: Permit Modification Approval for HARRENHAL-8UH  
47-051-02090-00-00

**Lateral Extension to 23,409' TMD**

AMERICAN PETROLEUM PARTNERS OPERATING, LLC

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

If there are any questions, please feel free to contact me at (304) 926- 0450.

A blue ink signature of James A. Martin, written in a cursive style, is positioned above the name and title.

James A. Martin  
Chief

Operator's Well Number: HARRENHAL-8UH  
Farm Name: APP MINERALS LLC  
U.S. WELL NUMBER: 47-051-02090-00-00  
Horizontal 6A New Drill  
Date Modification Issued: June 24, 2019

Promoting a healthy environment.



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west virginia department of environmental protection

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Oil and Gas Conservation Commission  
601 57<sup>th</sup> Street SE, Charleston, WV 25304  
304-926-0499 Ext 1274

Barry K. Lay, Chairman  
dep.wv.gov

May 1, 2019

Department of Environmental Protection  
Office of Oil and Gas  
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-051-02090

COMPANY: American Petroleum Partners Operating, LLC

FARM: APP Minerals, LLC

Harrenhal-8UH

COUNTY: Marshall

DISTRICT: Webster

QUAD: Moundsville/Majorsville

The deep well review of the application for the above company is **Approved to drill to the Trenton for Point Pleasant completion. Pooling Docket No. 275-259**

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Comments to Notice of Deviation filed? yes
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: 47-051-02091, 47-051-02137, 47-051-02136, 47-051-02178, 47-051-02179, 47-051-02180, 47-051-02134, 47-051-02106, 47-051-02118
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Susan Rose  
Administrator

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

1) Well Operator: American Petroleum Partners 494521257 Marshall Webster   
Operator ID County District Quadrangle

2) Operator's Well Number: Harrenhal-8UH Well Pad Name: Dire Wolf-Harrenhal

3) Farm Name/Surface Owner: App Minerals, LLC Public Road Access: McCreary's Ridge Road (CR 7)

4) Elevation, current ground: 1134.2' Elevation, proposed post-construction: 1125'

5) Well Type (a) Gas  Oil  Underground Storage

Other \_\_\_\_\_

(b) If Gas Shallow \_\_\_\_\_ Deep

Horizontal

*Handwritten signature and date: 12/19/18*

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Point Pleasant Formation 11,395' / 130' thick 10,141 or .89 psi per foot / Utica Formation 11,042' 150' thick / 10,000 psi or .89 psi per foot.

8) Proposed Total Vertical Depth: 11,595' pilot hole into the Trenton-Plug back, land and TD lateral in Point Pleasant.

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 23,409'

11) Proposed Horizontal Leg Length: 11,554'

12) Approximate Fresh Water Strata Depths: 162'

13) Method to Determine Fresh Water Depths: Nearest offset well

14) Approximate Saltwater Depths: Na

15) Approximate Coal Seam Depths: 455', 655'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated. drilling in pillar - Mine maps attached.

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

(a) If Yes, provide Mine Info: Name: The Ohio County Mine-Murray American Energy and Consolidation Coal Company  
Depth: 455', 655'  
Seam: Pittsburgh #8  
Owner: Murray American Energy & Consolidation Coal Company

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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	30"	New	LS	81.3#	60'	60'	CTS
Fresh Water	20"	New	J-55	94#	705'	705'	CTS15 6ppg to surf 521 sx w/30% OH ex
Coal	13 3/8"	New	J-55	54.5#	2,158'	2,158'	CTS15 2ppg to surf 556 sx w/30% OH Ex
Intermediate	9 5/8"	New	HCP-110	43.5#	9,542'	9,542'	CTS15 4ppg to surf 936 sx w/30% OH ex
Production	5 1/2"	New	HCP-110	23#	23,409'	23,409'	14.8ppg TOC >=200' above 9.625 shoe
Tubing	2 7/8"	New	J-55	6.5#	11,400	11,400'	CTS
Liners							

*ju*  
*12/12/18*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"		300		Type 1	Lead yield 2.38 Tail 521 sx Yield 1.18
Fresh Water	20"	24"	.438	2,110	400	Class A	Lead yield 2.38 Tail 556 sx Yield 1.27
Coal	13 3/8"	17.5"	.380	2,730	688	Class A	Lead Yield 2.38 Tail 556 sx Yield 1.27
Intermediate	9 5/8"	12.375"-12.25"	.395	7,870	3,166	Class A	Lead Yield 1.28 Tail 936 sx Yield 1.28
Production	5 1/2"	8.5"	.361	14,360	11,000	Class H	Lead Yield 1.27 Tail 4714 sx Yield 1.27
Tubing	2 7/8"	5.14"	.217	10,570	8,000		
Liners							

**PACKERS**

Kind:				
Sizes:				
Depths Set:				

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*on*  
*12/19/18*

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

Drill the vertical depth (Pilot Hole) into the Trenton at an estimated Total vertical depth of approximately 11,595', plug back above the Point Pleasant by placing two 800' cement plugs to KOP. Drill and land well in the Point Pleasant to drill horizontal leg and TD in the same Point Pleasant formation. Should we encounter a unanticipated void we will install a minimum of 20' of casing below the void but not more than 100' below the void, set a basket and grout to surface.

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

The stimulation will be in multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slick-water fracturing technique will be utilized on each stage using sand, water, and chemicals. Our maximum pressure is not to exceed 10,000 lbs.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.6 acres

22) Area to be disturbed for well pad only, less access road (acres): 8.3 acres

23) Describe centralizer placement for each casing string:

Conductor- No centralizers used. Freshwater/Surface- Bow Spring centralizers every 3 joints to 100' from surface. 1st Intermediate - Bow Spring centralizers every 3 joints to 100' from surface. 2nd Intermediate - Bow Spring centralizers every 3 joints to 100' from surface. Production - Rigid bow springs every third joint from KOP to TOC. Rigid every joint to KOP.

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

Type 1 to Surface. Surface/Freshwater - 15.6 Class A +2% CaCl, 30% OH Excess Yield =1.18. 1st Intermediate - 15.6 ppg Class A +2% CaCl, 0.25 Lost Circ. 30% Yield =1.27. 2nd Intermediate- 2 Stage cement job with 15.4 ppg Class A lead + additives (antisetling, antifoam, fluid loss retarder, salt, viscosifer) & 15.4 Class A tail with additives (antisetling, antifoam, fluid loss retarder, salt, dispersant or 12.0 Class A lead + additives (+/-5% dispersant, 10% light weight additive, 75% fluid loss additive, and 1.15% fluid loss additive, Yield=1.28) 15.4 ppg Class A Tail + additives (+/- fluid loss additive, & .5% light weight additive, Yield 1.28), 0.125#/SK lost circ 30% excess to Surface. Production- 12.5ppg Class H Lead +additives and 14.8 ppg Class H Tail + additives (antifoam, antisetling, extender,dispersant) 15%excess TOC>=200' above 9.625" shoe.

25) Proposed borehole conditioning procedures:

Conductor - The hole is drilled w/ air and casing is run on air. Apart from insuring hole is clean via air circulation at TD, there are no other conditioning procedures. Freshwater/Surface- The hole is drilled w/air or Freshwater based mud and casing is run on air. Once casing is at setting depth, fill with KCl water circulate a minimum of one hole volume prior to pumping cement. First Intermediate- Drilled on Air. Once casing is at a setting depth, circulate a minimum of one hole volume prior to pumping cement. Second Intermediate - Drilled on air. Fill with salt saturated water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement. Production- drilled on +/- 14.8ppg SOBM. Once at TD, circulate at max allowable pump rate for at least 30 mins up. Once on bottom with casing, circulate minimum of one hole volume prior to pumping cement.

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\*Note: Attach additional sheets as needed.



**DRILLING WELL PLAN**

**Harrenhal-8UH  
Utica Horizontal  
Marshall Co, WV**

**Horizontal Well Plan with Cemented Long String Completion**

HOLE	RIG	CASING	GEOLOGY	Top TVD	MD	MUD	CEMENT	DIRECTIONAL	LOGS	BITS	COMMENTS
36"	Conductor Rig	30" 81.3# LS				AIR	To Surface	N/A	N/A		Stabilize surface fill/soil
			<b>Conductor</b>	60	60						
24"	Top-Hole	20" 94# J-55 BTC	Sewickley Coal	455		AIR	15.6ppg to surface 521sx w/ 30% OH excess	20" Air Hammer Totco at TD	CBL Log Cased hole NPHI, GR at Pilot TD in Pilot Well only	Carbide hammer bit	Protect fresh groundwater
			Pittsburgh Coal	655							
			Surf. Casing	705	705						
17.5"	Top-Hole	13-3/8" 54.5# J-55 BTC	Big Lime	1734		AIR	15.2ppg to surface 556sx w/ 30% OH excess	Center Rock 15" Air Hammer Gyro above Coal, (Mine Approval) Totco at TD		Hammer bit w/ diamond gage Test casing to 800psi	
			Greenbrier Group	1808							
			Big Injun	1858							
			<b>Int. Casing</b>	2158	2158						
12.375" 12.25"	Horizontal Rig	9-5/8" 43.5# P-110IC BTC	Tully LS	6216		AIR	15.4ppg to surface 936sx w/ 30% OH excess	12" Air Hammer Totco every 400ft	MWD surveys Mud Logger - 90 ft samples	Hammer bit w/ full face diamond Test casing to 1000psi	PU cleanout assembly, dress plug, displace to 13.0ppg SOBM, PU Curve BHA, time drill / KO cement plug. Expect Seepage in curve
			Hamilton	6245							
			Cherry Valley	6354							
			Marcellus Shale	6356							
			Onondaga Ls	6390							
			Oriskany Sandstone	6619							
			Salina Group	7203							
			Vermon Shale	7958							
			Lockport Dolomite	8175							
			Clinton Group	8890							
			Medina Group	8962							
			Queenston Shale	9142							
<b>Int. Casing</b>	9542	9542									
8.5" Curve/Lateral	Horizontal Rig	5-1/2" 23# P110ICY TSH Wedge 563	Utica Shale	11042		+/- 14.5 ppg SOB	14.8ppg TOC >= 200' Above 9.625 shoe 4492sx w/ 15% OH excess	6.75" PDM & MWD 2.38" ADJ Bend (10" Build DLS)	MWD Surveys Mud Logger - 30 ft samples (Curve) 90 ft samples (Lateral)	PDC 5 - 25 WOB 100 - 120 RPM 450 - 500 GPM	Geosteering
			Point Pleasant Formation	11395							
			Curve LP								
			TARGET								
			<b>Production Casing</b>								
8.5 Hole - Cemented Long String 5-1/2" 23# P110ICY TSH Wedge 563											
8.5" Pilot	HZT Rig	Isolation/ Sidetrack Cement Plugs	Trenton Limestone			+/- 14.5 ppg SOB	17.5ppg Class H from TD to 200' above KOP (2) 800' balanced plugs w/ 2.375" tubing	8" Air Hammer Totco every 400ft	OH logs, as directed by APP Operations Dir. Surveys TD to shoe	Hammer bit w/ full face diamond	
			Pilot Hole TD	11595							
Lateral Targets	Landing Point						11554 ft Lateral Length				Total Depth 11395 TVD 23409 TD
			89.5 Inc	145 Az				89.5 Inc	145 Az		

*Handwritten signature and date: 12/19/18*

*Handwritten vertical text: 51-02090 MOD*

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SHL is located on topo map 2,182 feet south of Latitude: 39° 57' 30"  
 BHL is located on topo map 11,601 feet south of Latitude: 39° 57' 30"

**Sheffler & Company, Inc.**  
 ENGINEERING • SURVEYING

1712 Mount Nebo Road Phone: 412-219-4509  
 Sewickley, PA 15143 Email: Info@shefflerCo.com

SHL +

**TOTAL UNIT**  
 470.9 ACRES

**REFERENCE DETAIL**



**NOTES**

- There are no water wells or developed springs within 250' of proposed well
- There are no existing buildings within 625' of proposed well
- Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake
- There are no native trout streams within 300' of proposed well
- Proposed well is greater than 1000' from surface/groundwater intake or public water supply
- It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted herein. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted
- Mineral and Surface parcel lines are the same.



**LEGEND**

- TOPO MAP POINT
- PROPOSED WELL
- PRIVATE WATER WELL
- SPRING LOCATION
- LEASED NUMBER BASED ON ATTACHED WWSA1
- ALL ARE POINTS UNLESS OTHERWISE NOTED
- MINERAL TRACT BOUNDARY
- UNIT BOUNDARY
- PARCEL LINES
- PROPOSED HORIZONTAL WELL
- WELL REFERENCE
- STREAM/POND/WATERWAY
- ROAD
- FORCE POOLED PARCEL

**WELLS WITHIN 3000'**  
 SIX (6) WELLS WITHIN 3000'

**MONUMENT REFERENCE TABLE**

LINE NO.	BEARING	DISTANCE
R1	S1°59'50"W	387.81'
R2	N77°06'10"E	269.02'
R3	N47°41'26"W	542.19'
R4	N77°06'10"E	269.02'
R5	N77°09'53"W	1283.74'

**SURFACE HOLE LOCATION (SHL)**

UTM 17 - NAD83 N: 4422532.261(m) E: 531356.922(m)
NAD27 W.W. NORTH N: 530958.940(ft) E: 1682338.823(ft)
LAT/LON - NAD83 LAT: N39.9523428 LON: W80.6329051

**APPROXIMATE LANDING POINT**

UTM 17 - NAD83 N: 4422555.638(m) E: 531494.664(m)
NAD27 W.W. NORTH N: 531028.084(ft) E: 1682792.092(ft)
LAT/LON - NAD83 LAT: N39.9525483 LON: W80.6312915

**BOTTOM HOLE LOCATION (BHL)**

UTM 17 - NAD83 N: 4419671.820(m) E: 533513.940(m)
NAD27 W.W. NORTH N: 521453.845(ft) E: 1689260.043(ft)
LAT/LON - NAD83 LAT: N39.9264884(d) LON: W80.6078006(d)

FILE # HARRENHAL-8UH

DRAWING # HARRENHAL-8UH-R7.DWG

SCALE 1"=2500'

MINIMUM DEGREE OF ACCURACY: 1/2500

PROVEN SOURCE OF ELEVATION USGS MONUMENT JX0742: 1343.3'

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: *[Signature]*  
 R.P.E.: 21452 L.L.S.: P.S. NO.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25304

Well Type:  Oil  Waste Disposal  Production  Deep  Gas  Liquid Injection  Storage  Shallow

WATERSHED WHEELING CREEK - UPPER OHIO RIVER ELEVATION 1,134.2'  
 COUNTY/DISTRICT MARSHALL / WEBSTER QUADRANGLE MOUNDSVILLE, WV

SURFACE OWNER(1) APP MINERALS LLC ACREAGE(1) 183.31 SURFACE OWNER(2) ERIC G. DAILEY & NORMA C. PAYNE ACREAGE(2) 39.39  
 OIL & GAS ROYALTY OWNERS(1) APP MINERALS LLC ACREAGE(1) 183.31  
 OIL & GAS ROYALTY OWNERS(2) ERIC G. DAILEY & NORMA C. PAYNE ACREAGE(2) 39.39

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

TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,395' ± TMD: 23,408' ±  
 WELL OPERATOR: AMERICAN PETROLEUM PARTNERS OPERATING, LLC DESIGNATED AGENT STEVEN GREEN  
 Address: 4600 J. BARRY COURT, SUITE 310 Address: 300 SUMMERS ST, SUITE 1000  
 City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

SHL is located on topo map 2,216 feet west of Longitude: 80° 37' 30"  
 BHL is located on topo map 6,862 feet west of Longitude: 80° 35' 00"

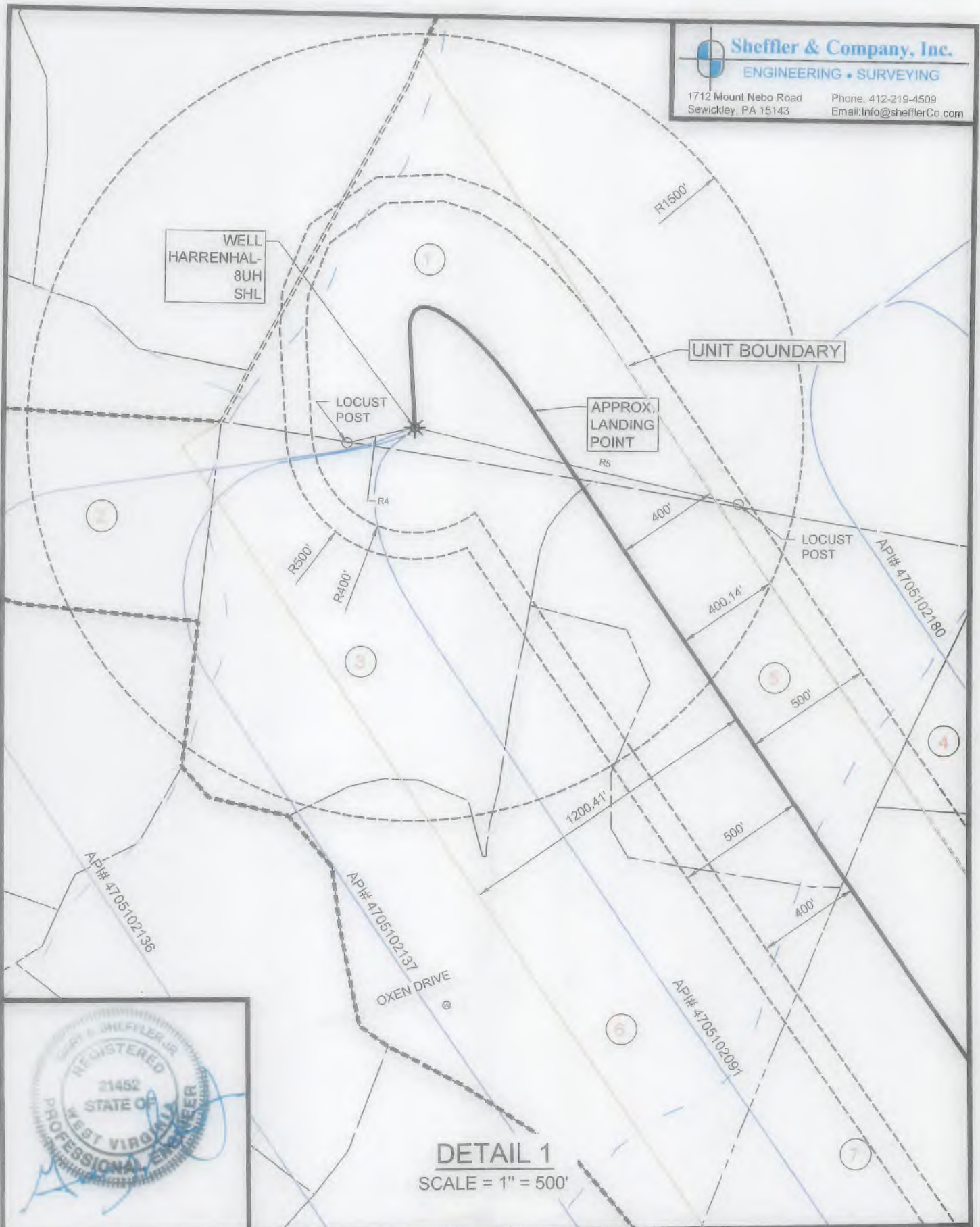
H6A MOD  
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WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25304



DATE: December 18, 2018 - REV - April 30, 2019

OPERATOR'S WELL #: HARRENHAL-8UH

API WELL #	<u>47</u>	<u>051</u>	<u>02090</u>
	STATE	COUNTY	PERMIT

HGA MOD

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: WHEELING CREEK - UPPER OHIO RIVER ELEVATION 1,134.2'

COUNTY/DISTRICT: MARSHALL / WEBSTER QUADRANGLE MOUNDSVILLE, WV

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TARGET FORMATION POINT PLEASANT

ESTIMATED DEPTH: TVD: 11,395' ± TMD: 23,409' ±

WELL OPERATOR: AMERICAN PETROLEUM PARTNERS OPERATING, LLC

DESIGNATED AGENT: STEVEN GREEN

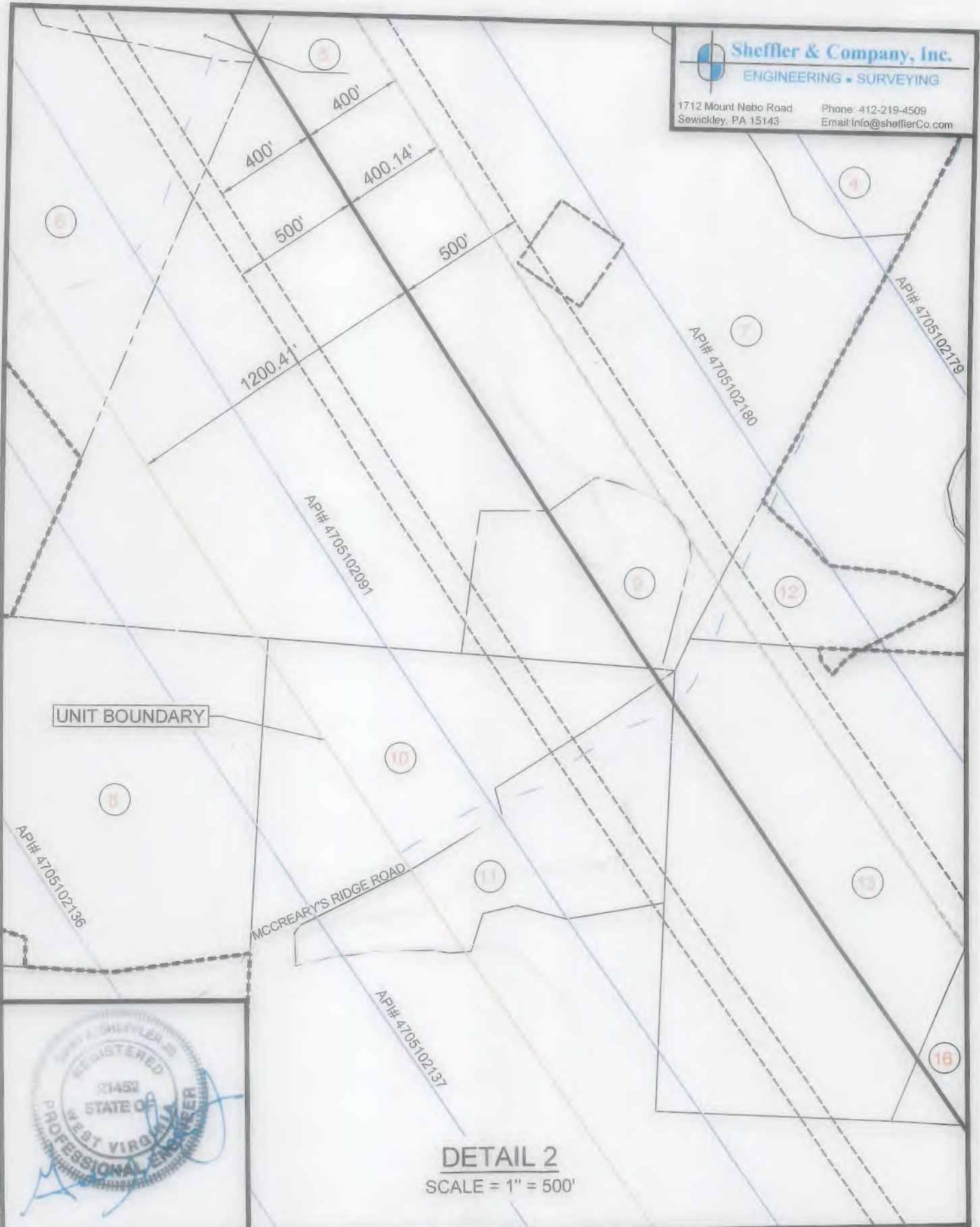
Address: 4600 J. BARRY COURT, SUITE 310

Address: 300 SUMMERS ST, SUITE 1000

City CANONSBURG State PA Zip Code 15317

City CHARLESTON State WV Zip Code 25301





UNIT BOUNDARY

**DETAIL 2**  
SCALE = 1" = 500'



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25304



DATE: December 18, 2018 - REV - April 30, 2019

OPERATOR'S WELL #: HARRENHAL-8UH

API WELL #	<u>47</u>	<u>051</u>	<u>02090</u>
	STATE	COUNTY	PERMIT

*H/A MOD*

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED WHEELING CREEK - UPPER OHIO RIVER ELEVATION: 1,134.2'

COUNTY/DISTRICT: MARSHALL / WEBSTER QUADRANGLE: MOUNDSVILLE, WV

SURFACE OWNER(1) APP MINERALS LLC ACREAGE(1) 183.31 SURFACE OWNER(2) ERIC G. DAILEY & NORMA C. PAYNE ACREAGE(2) 39.39

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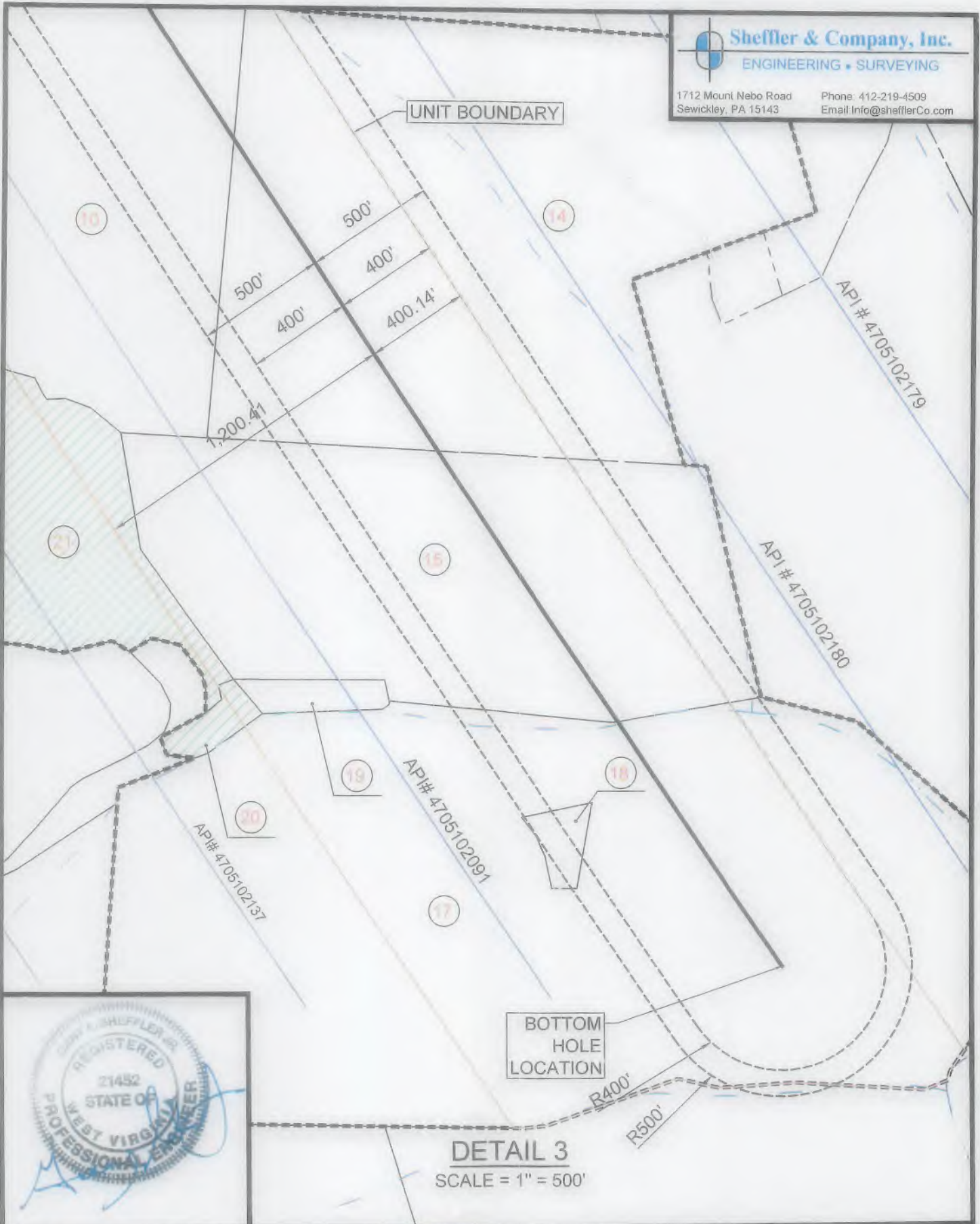
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WELL OPERATOR: AMERICAN PETROLEUM PARTNERS OPERATING, LLC DESIGNATED AGENT: STEVEN GREEN

Address: 4600 J. BARRY COURT, SUITE 310 Address: 300 SUMMERS ST, SUITE 1000

City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

UNIT BOUNDARY



BOTTOM HOLE LOCATION

**DETAIL 3**  
SCALE = 1" = 500'

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

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

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: WHEELING CREEK - UPPER OHIO RIVER ELEVATION: 1,134.2'  
COUNTY/DISTRICT: MARSHALL / WEBSTER QUADRANGLE: MOUNDSVILLE, WV  
SURFACE OWNER(1): APP MINERALS LLC ACREAGE(1) 183.31 SURFACE OWNER(2): ERIC G. DAILEY & NORMA C. PAYNE ACREAGE(2) 39.39  
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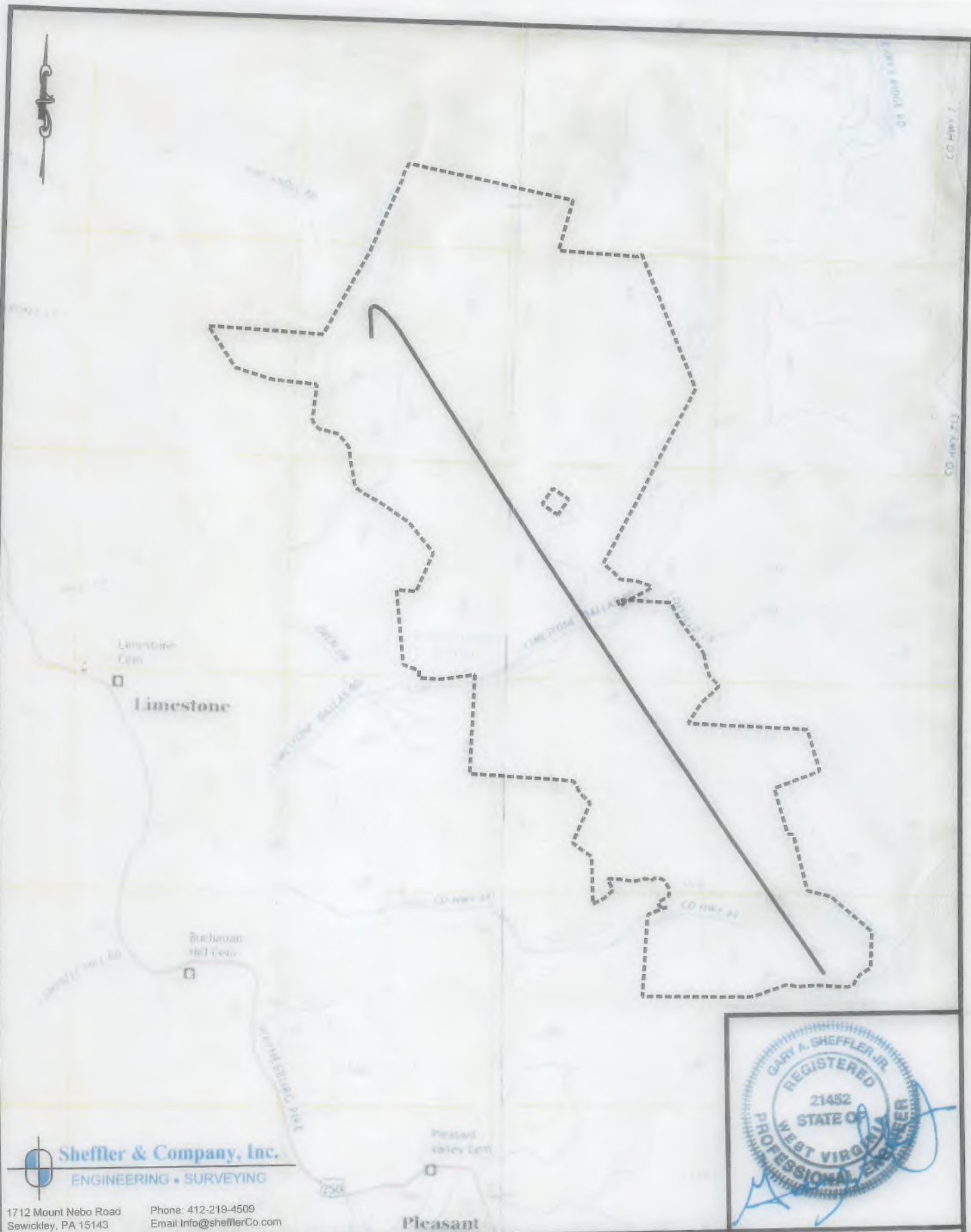
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TARGET FORMATION: POINT PLEASANT ESTIMATED DEPTH: TVD: 11,395' ± TMD: 23,409' ±  
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DATE: December 18, 2018 - REV - April 30, 2019

OPERATOR'S WELL #: HARRENHAL-8UH  
API WELL # 47 051 02090  
STATE COUNTY PERMIT

MOB



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1712 Mount Nebo Road  
Sewickley, PA 15143  
Phone: 412-219-4509  
Email: Info@shefflerCo.com



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WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
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DATE: December 18, 2018 - REV - April 30, 2019

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API WELL #	47	051	02090
	STATE	COUNTY	PERMIT

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: WHEELING CREEK - UPPER OHIO RIVER ELEVATION: 1,134.2'

COUNTY/DISTRICT: MARSHALL / WEBSTER QUADRANGLE: MOUNDSVILLE, WV

SURFACE OWNER(1): APP MINERALS LLC ACREAGE(1) 183.31 SURFACE OWNER(2): ERIC G. DAILEY & NORMA C. PAYNE ACREAGE(2) 39.39

OIL & GAS ROYALTY OWNERS(1): APP MINERALS LLC ACREAGE(1) 183.31

OIL & GAS ROYALTY OWNERS(2): ERIC G. DAILEY & NORMA C. PAYNE ACREAGE(2) 39.39

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

TARGET FORMATION: POINT PLEASANT ESTIMATED DEPTH: TVD: 11,395' ± TMD: 23,409' ±

WELL OPERATOR: AMERICAN PETROLEUM PARTNERS OPERATING, LLC DESIGNATED AGENT: STEVEN GREEN

Address: 4600 J. BARRY COURT, SUITE 310 Address: 300 SUMMERS ST, SUITE 1000

City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

TAX MAP NO.  
15-0002-0016-0000-0000  
ASSESSED ACREAGE: 183.31 ACRES

SURFACE OWNERS:  
APP MINERALS LLC

MINERAL OWNERS:  
APP MINERALS LLC

TAX MAP NO.  
P/O 14-0005-0027-0000-0000  
ASSESSED ACREAGE: 76.00 ACRES

SURFACE OWNERS:  
RICHARD A. SMITH

MINERAL OWNERS:  
RICHARD A. SMITH

TAX MAP NO.  
15-0002-0017-0004-0000  
ASSESSED ACREAGE: 39.39 ACRES

SURFACE OWNERS:  
ERIC G. DAILEY & NORMA C. PAYNE

MINERAL OWNERS:  
ERIC G. DAILEY & NORMA C. PAYNE

TAX MAP NO.  
15-0002-0015-0000-0000  
ASSESSED ACREAGE: 171.32 ACRES

SURFACE OWNERS:  
HARRY B. SNYDER  
AND ELIZABETH JANE SNYDER,  
TRUSTEES OF THE SNYDER FAMILY TRUST,  
DATED DECEMBER 17, 2014

MINERAL OWNERS:  
HARRY B. SNYDER AND ELIZABETH JANE SNYDER,  
TRUSTEES OF THE SNYDER FAMILY  
TRUST DATED DECEMBER 17, 2014

TAX MAP NO.  
15-0002-0017-0003-0000  
ASSESSED ACREAGE: 41.85 ACRES

SURFACE OWNERS:  
DOVE, WILLIAM E., ET AL

MINERAL OWNERS:  
RESOURCE MINERALS HEADWATER I, LP

TAX MAP NO.  
15-0002-0017-0001-0000  
ASSESSED ACREAGE: 57.18 ACRES

SURFACE OWNERS:  
ECO-VRINDABAN INC.

MINERAL OWNERS:  
RESOURCE MINERALS HEADWATER I, LP

TAX MAP NO.  
15-0002-0014-0000-0000  
ASSESSED ACREAGE: 126.12 ACRES

SURFACE OWNERS:  
HARRY B. SNYDER AND  
ELIZABETH JANE SNYDER,  
TRUSTEES OF THE SNYDER FAMILY TRUST,  
DATED DECEMBER 17, 2014

MINERAL OWNERS:  
HARRY B. SNYDER AND ELIZABETH JANE SNYDER,  
TRUSTEES OF THE SNYDER FAMILY TRUST DATED DECEMBER 17, 2014

TAX MAP NO.  
15-0007-0004-0000-0000  
ASSESSED ACREAGE: 35.59 ACRES

SURFACE OWNERS:  
KEITH A. & ROBIN S. LOGSDON

MINERAL OWNERS:  
KEITH A. LOGSDON AND ROBIN S. LOGSDON

TAX MAP NO.  
15-0002-0014-0001-0000  
ASSESSED ACREAGE: 11.48 ACRES

SURFACE OWNERS:  
KAREN & CHARLES P. HESS

MINERAL OWNERS:  
CHARLES P. HESS AND KAREN SNYDER HESS

TAX MAP NO.  
15-0007-0019-0000-0000  
ASSESSED ACREAGE: 135.05 ACRES

SURFACE OWNERS:  
GEETA

MINERAL OWNERS:  
ECO-VRINDABAN INC.

TAX MAP NO.  
15-0007-0019-0001-0000  
ASSESSED ACREAGE: 15.47 ACRES

SURFACE OWNERS:  
ISKCON NEW MATHURA VRINDABAN, INC.

MINERAL OWNERS:  
ISKCON NEW VRINDABAN, INC.

TAX MAP NO.  
15-0002-0013-0002-0000  
ASSESSED ACREAGE: 6.76 ACRES

SURFACE OWNERS:  
NATASHA C. PARSONS

MINERAL OWNERS:  
DONALD HERBERT PARSONS  
DONNA GASSAWAY IAMS  
KENNETH ROBERT PARSONS  
RESOURCE MINERALS HEADWATER I, LP  
RICHARD MCKIMMIE AND BERNICE MCKIMMIE,  
TRUSTEES OF THE MCKIMMIE FAMILY TRUST,  
DATED JANUARY 9, 2015  
TEDDY HOWARD PARSONS

TAX MAP NO.  
15-0007-0021-0000-0000  
ASSESSED ACREAGE: 59.80 ACRES

SURFACE OWNERS:  
THOMAS MERLIN RIEDMAN, ET UX.

MINERL OWNERS:  
GARY W. STROPE AND RICKEE JO STROPE,  
TRUSTEES OF THE STROPE FAMILY TRUST  
DATED MARCH 29, 2017

TAX MAP NO.  
15-0007-0027-0000-0000  
ASSESSED ACREAGE: 76.34 ACRES

SURFACE OWNERS:  
COFFIELD, WILLIAM E., ET UX.,  
AS JOINT TENANTS WITH RIGHT OF SURVIVORSHIP

MINERAL OWNERS:  
WILLIAM E. & BRENDA K. COFFIELD

(+) DENOTES LOCATION OF  
WELL ON UNITED STATES  
TOPOGRAPHIC MAPS  
WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25304



DATE: December 18, 2018 - REV - April 30, 2019

OPERATOR'S WELL #: HARRENHAL-8UH

API WELL # 47 051 02090 MOD  
STATE COUNTY PERMIT

Well Type:  Oil  Waste Disposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: WHEELING CREEK - UPPER OHIO RIVER ELEVATION: 1,134.2'

COUNTY/DISTRICT: MARSHALL / WEBSTER QUADRANGLE: MOUNDSVILLE, WV

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PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON  
CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY)

TARGET FORMATION: POINT PLEASANT

ESTIMATED DEPTH: TVD: 11,395' ± TMD: 23,409' ±

WELL OPERATOR: AMERICAN PETROLEUM PARTNERS OPERATING, LLC

DESIGNATED AGENT: STEVEN GREEN

Address: 4600 J. BARRY COURT, SUITE 310

Address: 300 SUMMERS ST, SUITE 1000

City CANONSBURG State PA Zip Code 15317

City CHARLESTON State WV Zip Code 25301

TAX MAP NO.  
15-0007-0028-0000-0000  
ASSESSED ACREAGE: 46.06 ACRES

SURFACE OWNERS:  
WILLIAM E. & BRENDA K. COFFIELD

MINERAL OWNERS:  
WILLIAM E. COFFIELD AND BRENDA K. COFFIELD

TAX MAP NO.  
15-0007-0022-0000-0000  
ASSESSED ACREAGE: 48.77 ACRES

SURFACE OWNERS:  
BOCK, THOMAS A., ET UX.

MINERAL OWNERS:  
DAVID S. CAIN  
BRENT E. CAIN  
HERMAN D. LANTZ  
THOMAS A. & PAMELA L. BOCK  
THOMAS D. CAIN

TAX MAP NO.  
15-0007-0029-0000-0000  
ASSESSED ACREAGE: 114.91 ACRES

SURFACE OWNERS:  
FRIED, GABRIEL B.

MINERAL OWNERS:  
FRIED, GABRIEL B.

TAX MAP NO.  
15-0007-0029-0001-0000  
ASSESSED ACREAGE: 1.13 ACRES

SURFACE OWNERS:  
FRIED, GABRIEL B.

MINERAL OWNERS:  
FRIED, GABRIEL B.

TAX MAP NO.  
15-0007-0028-0001-0000  
ASSESSED ACREAGE: 1.86 ACRES

SURFACE OWNERS:  
DETAMORE, JASON A.

MINERAL OWNERS:  
JASON A. DETAMORE

TAX MAP NO.  
15-0007-0017-0012-0000  
ASSESSED ACREAGE: 1.13 ACRES

SURFACE OWNERS:  
DETAMORE, JASON A.

MINERAL OWNERS:  
ALEXIA SPRINGER  
ANNE C. CLARRY  
BARBARA JERMSTAD  
BRIAN C. CLARRY  
DAVID G. & LEIGH W. PRICE  
DAVID P., JR. & KELLY M. MINESINGER  
DONALD L. HALL AND W. SUSAN HALL, BY STACY  
LYNN ROBERTS, ACTING AS TRUSTEE  
ELIZABETH J. HARREL  
JAMES ALAN & LONI M. HALL  
JOHN C. & SUSAN G. MINESINGER  
DAVID ROSS HEIRS  
LISA MARIE CLARRY  
MARY M. & LARRY G. GILES  
ROGER H. & PATRICIA ANN HALL  
SCOTT A. & JAN CLARRY  
STEPHANIE C. VOSS  
JASON A. DETAMORE

TAX MAP NO.  
15-0007-0017-0014-0000  
ASSESSED ACREAGE: 28.03 ACRES

SURFACE OWNERS:  
PRINS, SHIRLEY A.

MINERAL OWNERS:  
ALEXIA SPRINGER  
ANNE C. CLARRY  
BARBARA JERMSTAD  
BRIAN C. CLARRY  
DAVID G. & LEIGH W. PRICE  
DAVID P., JR. & KELLY M. MINESINGER  
DAVID ROSS HEIRS  
DONALD L. HALL AND W. SUSAN HALL, BY STACY  
LYNN ROBERTS, ACTING AS TRUSTEE  
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JOHN C. & SUSAN G. MINESINGER  
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ROGER H. & PATRICIA ANN HALL  
SCOTT A. & JAN CLARRY  
SHIRLEY A. PRINS  
STEPHANIE C. VOSS

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DATE: December 18, 2018 - REV - April 30, 2019

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WELL OPERATOR: AMERICAN PETROLEUM PARTNERS OPERATING, LLC

DESIGNATED AGENT: STEVEN GREEN

Address: 4600 J. BARRY COURT, SUITE 310

Address: 300 SUMMERS ST, SUITE 1000

City: CANONSBURG State: PA Zip Code: 15317

City: CHARLESTON State: WV Zip Code: 25301

~~51-0290~~  
51-02096 MOD

WW-6A1  
(5/13)

Operator's Well No. Harrenhal-8UH

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

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
----------------------	-----------------------	-----------------------	---------	-----------

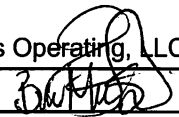
See attached sheet

**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 Petroleum Partners Operating, LLC  
 By: Braulio Silva   
 Its: Vice President-Drilling

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Page 1 of \_\_\_\_\_

### Harrenhal E-8UH Wellbore Tracts

Map #	Lease #	Lessor	Current Lessee	Royalty	Recording	Parcel
1 ✓	WV-MAR-1192	APP Minerals LLC	American Petroleum Partners Operating, LLC	Not less than 1/8	984-392	15-2-209
3 ✓	WV-MAR-0133	Eric G. Dailey and Norma C. Payne	American Petroleum Partners Operating, LLC	Not less than 1/8	976-477	15-2-17.4
5 ✓	WV-MAR-0035	Resource Minerals Headwater I, LP	American Petroleum Partners Operating, LLC	Not less than 1/8	930-446	15-2-17.3
7 ✓	WV-MAR-0688	Harry B. Snyder and Elizabeth Jane Snyder, Trustees of the Snyder Family Trust dated December 17, 2014	American Petroleum Partners Operating, LLC	Not Less than 1/8th	741-88	15-2-14
9 ✓	WV-MAR-0704	Karen Snyder Hess and Charles P. Hess	American Petroleum Partners Operating, LLC	Not less than 1/8	691-555	15-2-14.1
10 ✓	WV-MAR-0073	Eco-Vrindaban Inc.	American Petroleum Partners Operating, LLC	Not less than 1/8	827-144	15-7-19
11 ✓	WV-MAR-0080	ISKCON New Vrindaban, Inc.	American Petroleum Partners Operating, LLC	Not less than 1/8	827-480	15-7-19.1
13 ✓	WV-MAR-0700	Gary W. Strobe and Rickee J. Strobe, Trustees of the Strobe Family Trust dated March 29, 2017	American Petroleum Partners Operating, LLC	Not less than 1/8	748-248	15-7-21
14 ✓	WV-MAR-0728	William E. Coffield and Brenda K. Coffield	American Petroleum Partners Operating, LLC	Not less than 1/8	866-115	15-7-27
15 ✓	WV-MAR-1164	William E. Coffield and Brenda K. Coffield	American Petroleum Partners Operating, LLC	Not Less than 1/8th	866-104	15-7-28
16 ✓	WV-MAR-1245	David S. Cain	American Petroleum Partners Operating, LLC	Not less than 1/8	905-21	15-7-22
16	WV-MAR-1244	Brent E. Cain	American Petroleum Partners Operating, LLC	Not less than 1/8	905-19	15-7-22
16	WV-MAR-1582	Herman D. Lantz	American Petroleum Partners Operating, LLC	Not less than 1/8	962-509	15-7-22

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 Environmental Protection

51-0209015

16	WV-MAR-1142	Thomas A. Bock and Pamela Lee Bock	American Petroleum Partners Operating, LLC	Not less than 1/8	905-25	15-7-22
16	WV-MAR-1246	Thomas D. Cain	American Petroleum Partners Operating, LLC	Not less than 1/8	905-23	15-7-22
17	WV-MAR-0042	Gabriel B. Fried	American Petroleum Partners Operating, LLC	Not less than 1/8	823-576	15-7-29

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Environmental Protection

MJD

51-6-2019



SI 02090 MAR

Harrenhal E-8UH 400' Buffer Tracts

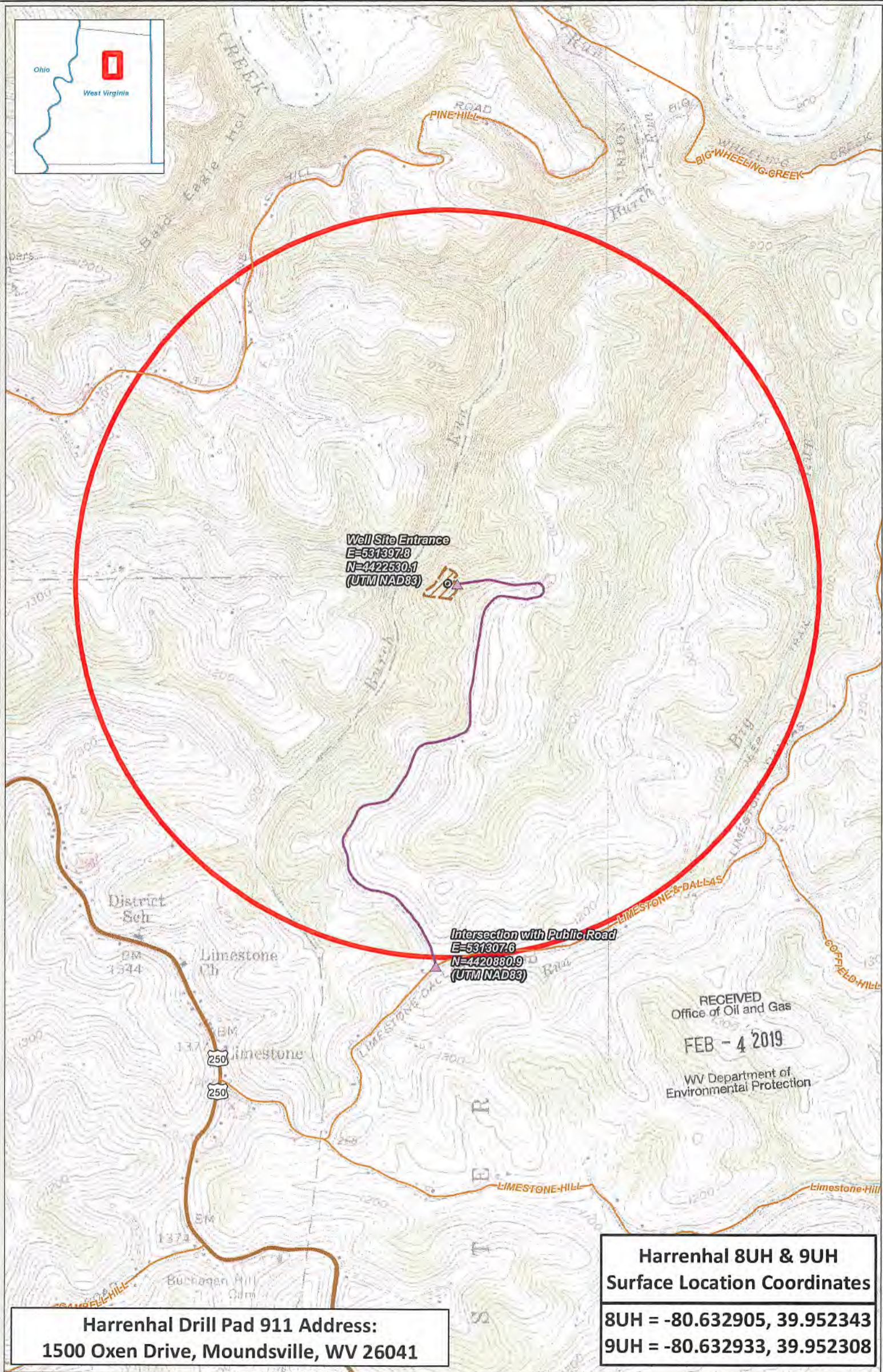
Map #	Lease #	Lessor	Current Lessee	Royalty	Recording Information	Parcel
1	WV-MAR-1192	APP Minerals LLC	American Petroleum Partners Operating, LLC	Not less than 1/8	984-392	15-2-16
3	WV-MAR-0133	Eric G. Dailey and Norma C. Payne	American Petroleum Partners Operating, LLC	Not less than 1/8	976-477	15-2-17.4
4	WV-MAR-0688	Harry B. Snyder and Elizabeth Jane Snyder, Trustees of the Snyder Family Trust dated December 17, 2014	American Petroleum Partners Operating, LLC	Not less than 1/8	741-88	15-2-15
5	WV-MAR-0035	Resource Minerals Headwater I, LP	American Petroleum Partners Operating, LLC	Not less than 1/8	930-446	15-2-17.3
6	WV-MAR-0035	Resource Minerals Headwater I, LP	American Petroleum Partners Operating, LLC	Not less than 1/8	930-446	15-2-17.1
7	WV-MAR-0688	Harry B. Snyder and Elizabeth Jane Snyder, Trustees of the Snyder Family Trust dated December 17, 2014	American Petroleum Partners Operating, LLC	Not less than 1/8	741-88	15-2-14
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10	WV-MAR-0073	Eco-Vrindaban Inc.	American Petroleum Partners Operating, LLC	Not less than 1/8	827-144	15-7-19
11	WV-MAR-0080	ISKCON New Vrindaban, Inc.	American Petroleum Partners Operating, LLC	Not less than 1/8	827-480	15-7-19.1
12	WV-MAR-0119	Donald Herbert Parsons	American Petroleum Partners Operating, LLC	Not less than 1/8	832-614	15-2-13.2
12	WV-MAR-0121	Donna Gassaway Iams	American Petroleum Partners Operating, LLC	Not less than 1/8	833-239	15-2-13.2
12	WV-MAR-0117	Kenneth Robert Parsons	American Petroleum Partners Operating, LLC	Not less than 1/8	832-616	15-2-13.2

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51-02090 Mod

12	WV-MAR-0032	Resource Minerals Headwater I, LP	American Petroleum Partners Operating, LLC	Not less than 1/8	822-200	15-2-13.2
12	WV-MAR-0118	Richard McKimmie and Bernice McKimmie, Trustees of the McKimmie Family Trust, dated January 9, 2015	American Petroleum Partners Operating, LLC	Not less than 1/8	832-618	15-2-13.2
12	WV-MAR-0116	Teddy Howard Parsons	American Petroleum Partners Operating, LLC	Not less than 1/8	832-620	15-2-13.2
13	WV-MAR-0700	Gary W. Strope and Rickee J. Strope, Trustees of the Strope Family Trust dated March 29, 2017	American Petroleum Partners Operating, LLC	Not less than 1/8	748-248	15-7-21
14	WV-MAR-0728	William E. Coffield and Brenda K. Coffield	American Petroleum Partners Operating, LLC	Not less than 1/8	866-115	15-7-27
15	WV-MAR-1164	William E. Coffield and Brenda K. Coffield	American Petroleum Partners Operating, LLC	Not less than 1/8	866-104	15-7-28
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16	WV-MAR-1582	Herman D. Lantz	American Petroleum Partners Operating, LLC	Not less than 1/8	962-509	15-7-22
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16	WV-MAR-1246	Thomas D. Cain	American Petroleum Partners Operating, LLC	Not less than 1/8	905-23	15-7-22
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18	WV-MAR-0042	Gabriel B. Fried	American Petroleum Partners Operating, LLC	Not less than 1/8	825-576	15-7-29.1



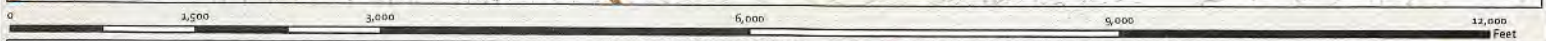
Well Site Entrance  
 E=531397.8  
 N=4422530.1  
 (UTM NAD83)

Intersection with Public Road  
 E=531307.6  
 N=4420880.9  
 (UTM NAD83)

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 WV Department of  
 Environmental Protection

**Harrenhal 8UH & 9UH  
 Surface Location Coordinates**  
 8UH = -80.632905, 39.952343  
 9UH = -80.632933, 39.952308

**Harrenhal Drill Pad 911 Address:  
 1500 Oxen Drive, Moundsville, WV 26041**



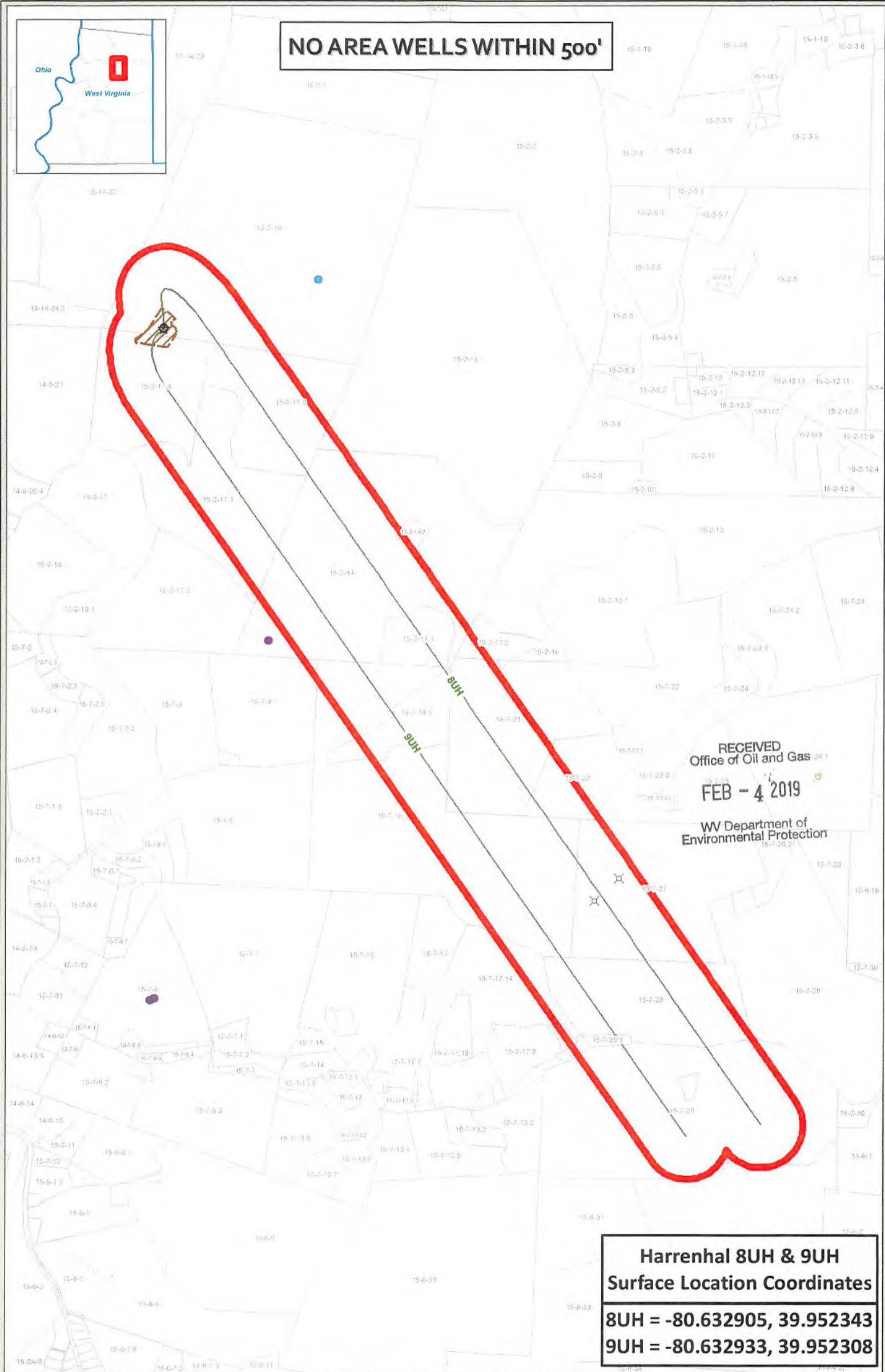
**Harrenhal 8UH & 9UH - Well Site**

Marshall County	Coordinate System: NAD 1983 UTM Zone 17N Projection: Transverse Mercator Datum: North American 1983 Linear Units: Meter	Map Scale Units: 1:18,000 1 inch = 1,500 feet	Map Author: JKS Map Date: 12/19/2018
-----------------	--	---	---

- Well SHL
- Well Pad
- 1 mile Buffer
- Access Rd Intersection
- Access Road
- US Route
- Local Road



**NO AREA WELLS WITHIN 500'**



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Environmental Protection

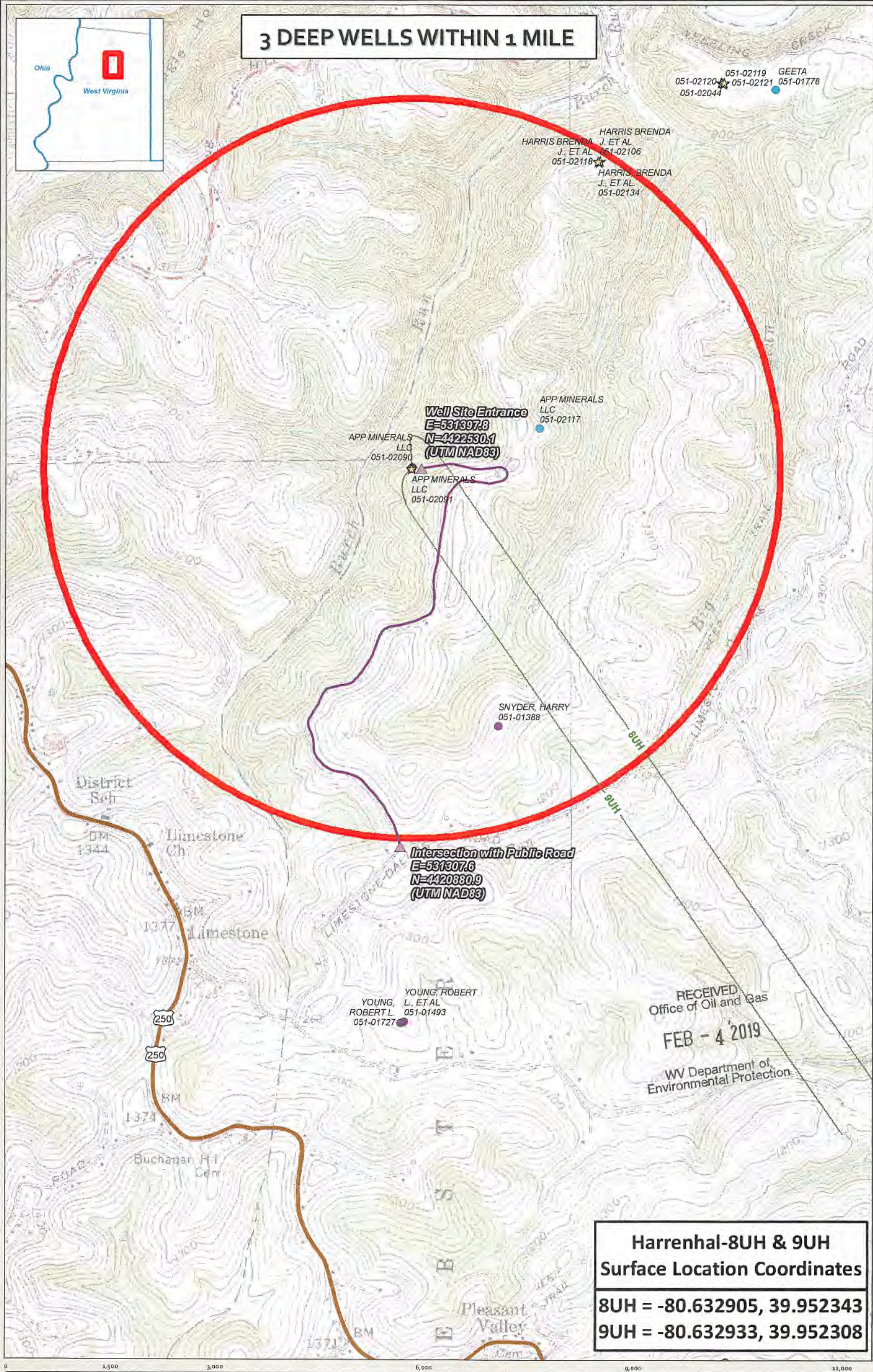
**Harrenhal 8UH & 9UH  
Surface Location Coordinates**  
8UH = -80.632905, 39.952343  
9UH = -80.632933, 39.952308

**Harrenhal 8UH & 9UH - All Area Wells**  
Marshall County  
West Virginia  
Coordinate System: Coordinate System: NAD 1983 UTM Zone 17N  
Projection: Transverse Mercator  
Datum: North American 1983  
Linear Units: Meter  
Map Scale Units: 1:15,000  
1 inch = 1,250 feet  
Map Author: JKS  
Map Date: 2/23/2018

- Well SHL
- Laterals
- Well Pad
- Parcels
- Other
- Abandoned Well
- Active Well
- Marcellus Permit
- Marcellus Well
- Permit / Future Use
- Plugged
- Shut-in
- Utica Permit
- Utica Well



**3 DEEP WELLS WITHIN 1 MILE**



051-02120  
051-02044

051-02119  
051-02121

GEETA  
051-01778

HARRIS BRENDA  
J. ET AL  
051-02106  
051-02116

HARRIS BRENDA  
J. ET AL  
051-02134

**Well Site Entrance**  
E=531397.8  
N=4422530.1  
(UTM NAD83)

APP MINERALS  
LLC  
051-02090

APP MINERALS  
LLC  
051-02117

APP MINERALS  
LLC  
051-02091

SNYDER, HARRY  
051-01388

**Intersection with Public Road**  
E=531307.6  
N=4420880.9  
(UTM NAD83)

YOUNG, ROBERT  
L. ET AL  
051-01493  
051-01727

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WV Department of  
Environmental Protection

**Harrenhal-8UH & 9UH  
Surface Location Coordinates**

**8UH = -80.632905, 39.952343**

**9UH = -80.632933, 39.952308**

**Harrenhal-8UH & 9UH - Deep Wells 1 Mile**

Marshall County  
West Virginia

Coordinate System: Coordinate System: NAD 1983 UTM Zone 17N  
Projection: Transverse Mercator  
Datum: North American 1983  
Linear Units: Meter

Map Scale Units: 1:18,000  
1 inch = 1,500 feet

Map Author: JKS  
Map Date: 12/19/2018

- ⊙ Well SHL
- Marcellus Permit
- ☆ Utica Permit
- Laterals
- Marcellus Well
- ☆ Utica Well
- ⊖ 1 mile buffer

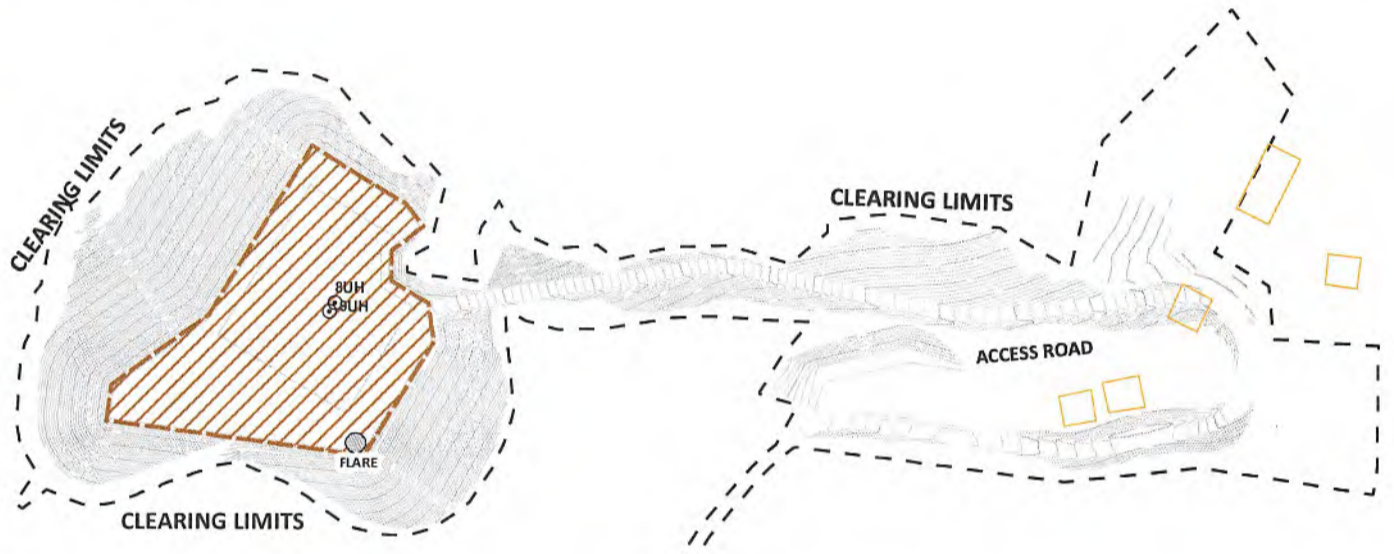






Prevailing Wind →

Prevailing Wind →



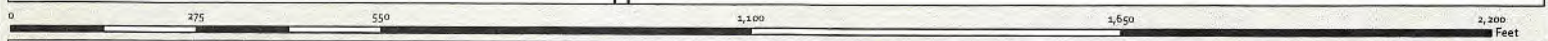
Prevailing Wind →

Prevailing Wind →

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Prevailing Wind →

**Harrenhal 8UH & 9UH  
Surface Location Coordinates**  
8UH = -80.632905, 39.952343  
9UH = -80.632933, 39.952308



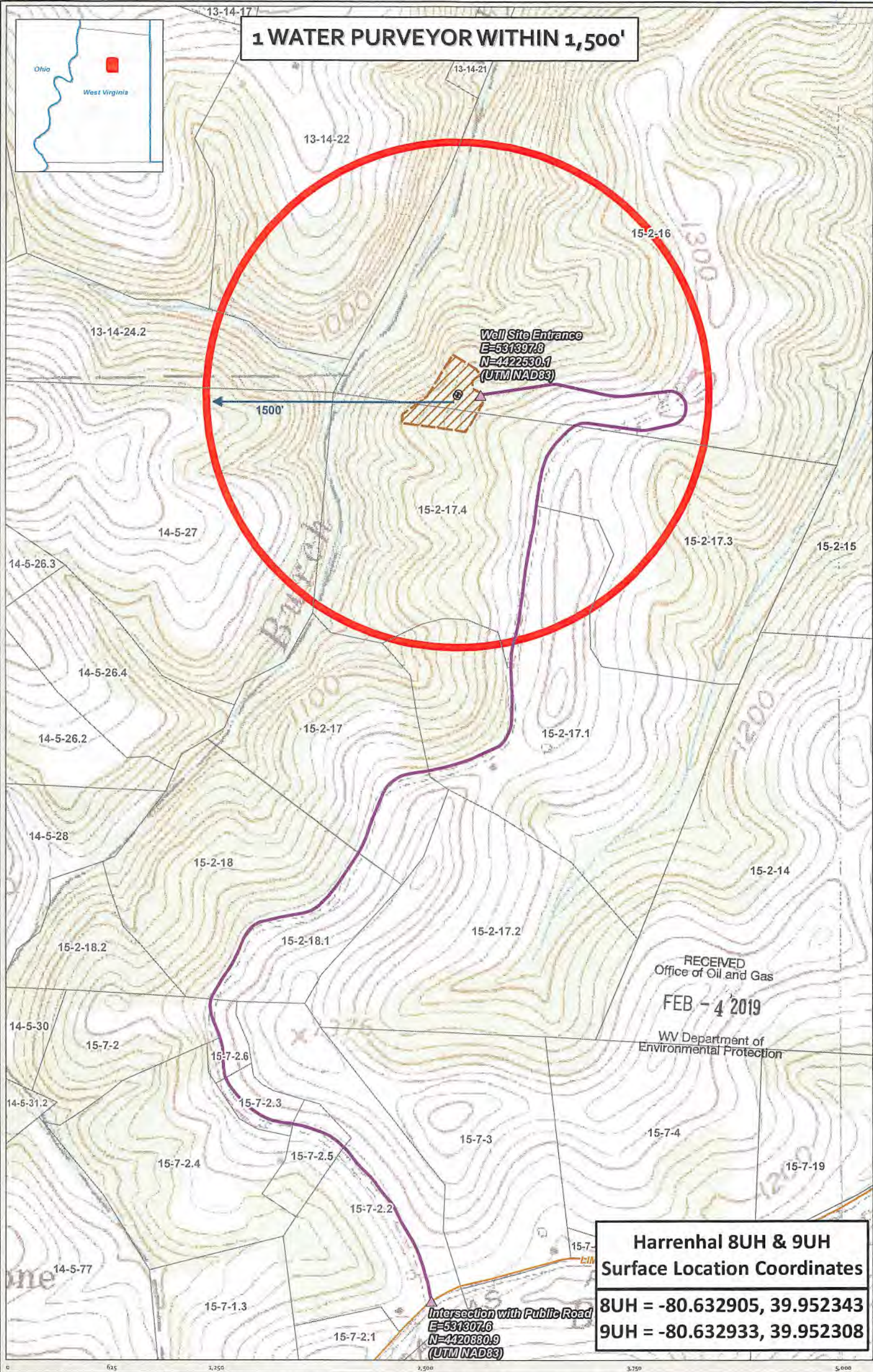
**Harrenhal 8UH & 9UH - Plan View**

Marshall County	Coordinate System: NAD 1983 UTM Zone 17N Projection: Transverse Mercator Datum: North American 1983 Linear Units: Meter	Map Scale Units: 1:3,200 1 inch = 275 Feet	Map Author: JKS Map Date: 12/19/2018
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- Well SHL
- Well Pad
- State Route
- Building



# 1 WATER PURVEYOR WITHIN 1,500'



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**Harrenhal 8UH & 9UH  
Surface Location Coordinates**  
8UH = -80.632905, 39.952343  
9UH = -80.632933, 39.952308

## Harrenhal 8UH & 9UH - Water Source

Marshall County  
West Virginia

Coordinate System: Coordinate System: NAD 1983 UTM Zone 18N  
Projection: Transverse Mercator  
Datum: North American 1983  
Linear Units: Meter

Map Scale Units:  
1:7,500  
1 inch = 625 feet

Map Author: JKS  
Map Date: 12/19/2018

- Well SHL
- Well Pad
- Access Rd Intersection
- Access Road
- Parcels
- Water Well
- 1,500' Buffer





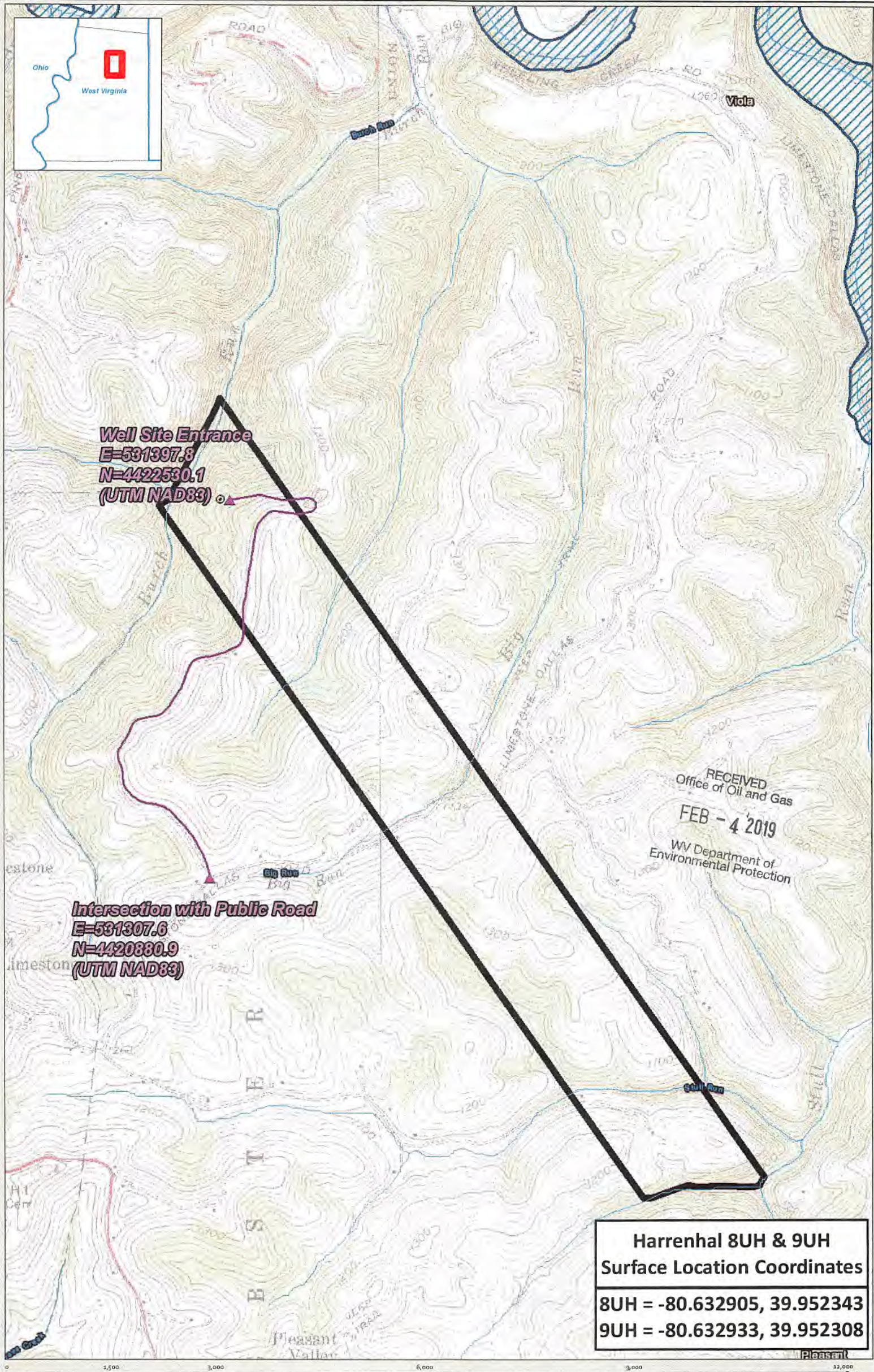


**Harrenhal 8UH & 9UH  
Surface Location Coordinates**

**8UH = -80.632905, 39.952343**

**9UH = -80.632933, 39.952308**

<h3>Harrenhal 8UH &amp; 9UH - Site Evacuation Plan</h3>					<p><b>SITE EVACUATION ROUTE DIRECTIONS</b> Harrenhal Well Pad</p> <p>Exit the Pad Site heading East and then South via the Access Road. Travel 1.68 Miles along Access Road to Intersection of Oxen Drive (Access Road) and McCreary's Ridge Rd.</p>	
Marshall County West Virginia	Coordinate System: NAD 1983 UTM Zone 18N Projection: Transverse Mercator Datum: North American 1983 Linear Units: Meter	Map Scale Units: 1:18,000 1 inch = 1,500 feet	Map Author: JKS Map Date: 12/10/2018			



**Well Site Entrance**  
**E=531397.8**  
**N=4422530.1**  
**(UTM NAD83)**

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**Intersection with Public Road**  
**E=531307.6**  
**N=4420880.9**  
**(UTM NAD83)**

**Harrenhal 8UH & 9UH**  
**Surface Location Coordinates**  
**8UH = -80.632905, 39.952343**  
**9UH = -80.632933, 39.952308**

**Harrenhal 8UH & 9UH - Floodplain**

Marshall County  
 West Virginia

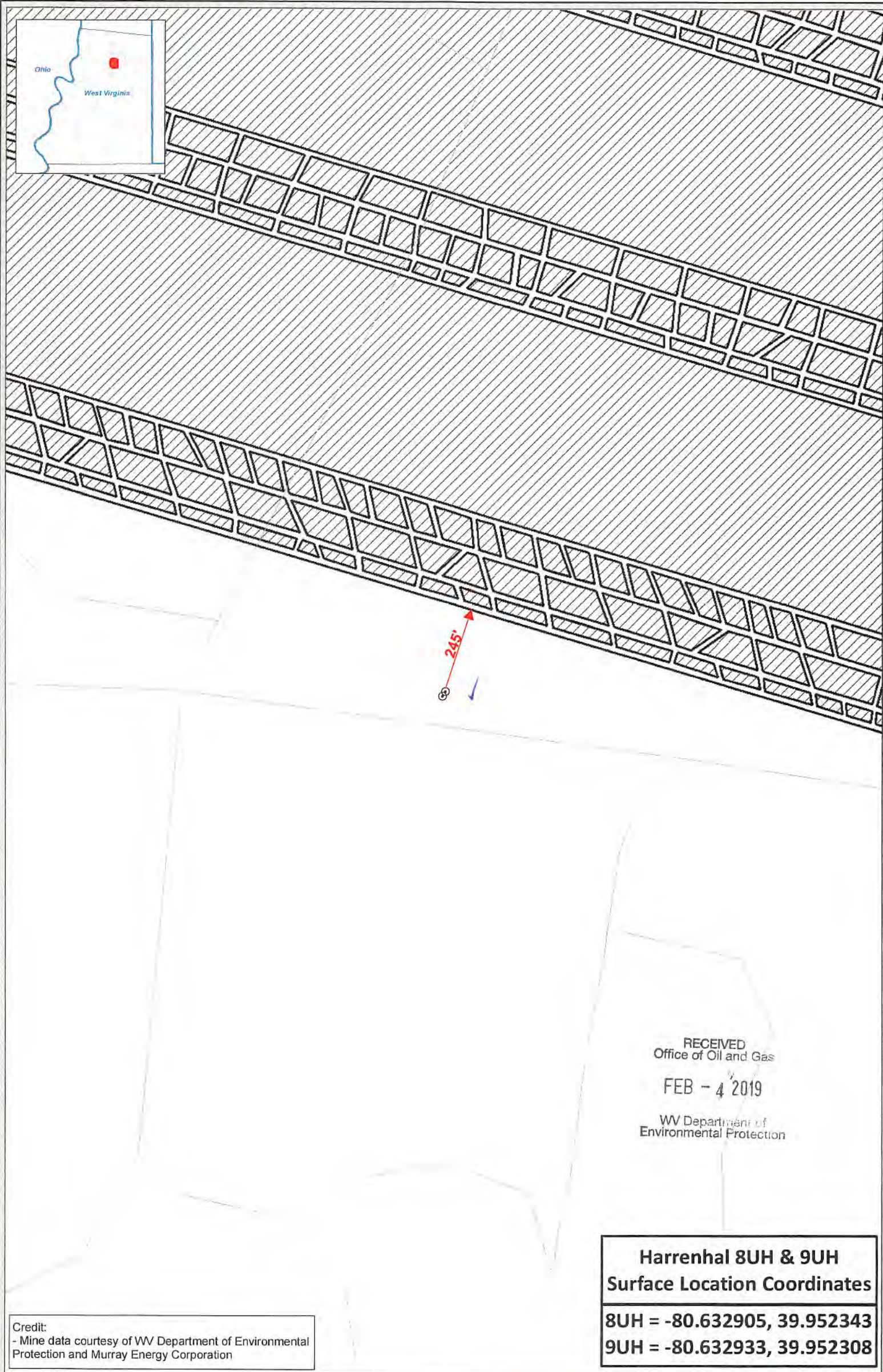
Coordinate System: Coordinate System: NAD 83 UTM Zone 17N  
 Projection: Transverse Mercator  
 Datum: North American 1983  
 Linear Units: Meter

Map Scale Units: 1:18,000  
 1 inch = 1,500 feet

Map Author: JKS  
 Map Date: 12/19/2018

- Well SHL
- Access Rd Intersection
- Streams
- Unit
- Access Road
- Floodplain

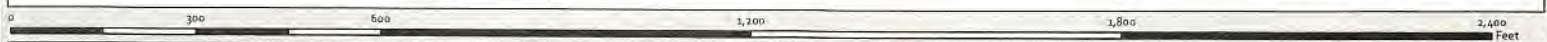




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WV Department of  
Environmental Protection

**Harrenhal 8UH & 9UH  
Surface Location Coordinates**  
8UH = -80.632905, 39.952343  
9UH = -80.632933, 39.952308

Credit:  
- Mine data courtesy of WV Department of Environmental Protection and Murray Energy Corporation



**Harrenhal 8UH & 9UH - Coal Areas**

Marshall County West Virginia	Coordinate System: Coordinate System: NAD 1983 UTM Zone 17N Projection: Transverse Mercator Datum: North American 1983 Linear Units: Meter	Map Scale Units: 1:3,600 1 inch = 300 feet	Map Author: iKS Map Date: 12/19/2018
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- ⊙ Well SHL
- ➔ Approximate Well to Coal length
- ▨ Coal Pillars

