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

March 12, 2015

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-9502218, issued to NOBLE ENERGY, INC., 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: SHR 31 GHS
Farm Name: SECKMAN, ALLEN W. ET AL
API Well Number: 47-9502218
Permit Type: Horizontal 6A Well
Date Issued: 03/12/2015

Promoting a healthy environment.

API Number: 9502218

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). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.

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.

WW-6B
(9/13)

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

1) Well Operator: Noble Energy, Inc. ■

494501907	095-Tyler	Mc Elroy	Shirley
Operator ID	County	District	Quadrangle

2) Operator's Well Number: SHR 31 GHS Well Pad Name: SHR 31

3) Farm Name/Surface Owner: Allen Seckman ■ Public Road Access: County Rt. 58

4) Elevation, current ground: 1111' Elevation, proposed post-construction: 1090'

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

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Burkett 6621 -6655' / 34' Thick / 4392 psi Marcellus 6675 - 6739' / 64' Thick / 4448 psi

8) Proposed Total Vertical Depth: 6,729'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 15985'

11) Proposed Horizontal Leg Length: 8978'

12) Approximate Fresh Water Strata Depths: 637'

13) Method to Determine Fresh Water Depths: nearest offset wells

14) Approximate Saltwater Depths: 1932'

15) Approximate Coal Seam Depths: None

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

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: NA
Depth: _____
Seam: _____
Owner: _____

WW-6B
(9/13)

18) **CASING AND TUBING PROGRAM**

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"	New	LS	94	40' minimum or to the next component formation, but no deeper than 1st freshwater	40' minimum or to the next component formation, but no deeper than 1st freshwater	Fill/Soil to surface
Fresh Water	13 3/8"	New	J-55	54.5	737' should we encounter formation issues set string into next component formation but not deeper than elevation.	737' should we encounter formation issues set string into next component formation but not deeper than elevation.	CTS 30% excess Yield =1.18
Coal							
Intermediate	9 5/8"	New	K-55	36.0	2534' or 250' below the fifth sand	2534' or 250' below the fifth sand	CTS 20% excess Yield = 1.19
Production	5 1/2"	New	P-110	20.0	15985'	15985'	10% excess Yield = 1.27 TOC=200' above 9.625" shoe
Tubing							
Liners							

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438	2730	Stabilize to surface with fill/soil	to surface
Fresh Water	13 3/8"	17.5"	0.380	2730	Type 1	30% excess Yield = 1.18
Coal						
Intermediate	9 5/8"	12 3/8"	.352	3520	Class A	20% excess Yield = 1.19 to surface
Production	5 1/2"	8.75" - 8.5"	.361	12,640	Class A	10% excess Yield = 1.27 TOC=200' above 9.625" shoe
Tubing						
Liners						

MDG
11/6/14

PACKERS

Kind:				
Sizes:				
Depths Set:				

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

Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6729 feet. Drill Horizontal leg - stimulate and be capable of producing from the Burkett to the Marcellus Formation. Fresh Water String -Should we encounter formation issues, set string in next component formation, but not deeper than elevation. 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 multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. our maximum pressure is not to exceed 10,000 lbs. Please refer to attached list.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 41.57

22) Area to be disturbed for well pad only, less access road (acres): 12.30

23) Describe centralizer placement for each casing string:

Conductor - No centralizers used. Fresh Water/Surface - Bow spring centralizers on first two joints then every third joint to 100' from surface. Intermediate - Bow Springs centralizers every third joint to 100' from Surface. Production - Rigid bow springs every third joint from KOP to TOC, rigid bow springs every joint to KOP.

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

See attached sheets - Conductor - fill/soil to surface. Fresh Water - 15.6 ppg Type 1 cement +2% CaCl (CA-100), 0.25# lost circ. (CLC-CPF), 30%excess yield =1.18. Intermediate- 15.6 ppg Class A +0.4% Ret, 0.15% Disp, 0.2% Anti Foam, 0.125# sk Lost circ. 20% Excess Yield =1.19 To Surface. Production - 14.8 ppg Class A 25:75:0 System +2.6% cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% fiction reducer 10% excess Yield =1.27 TOC >= 200' above 9.625" shoe. See attached approved variance from WV DEP.

25) Proposed borehole conditioning procedures:

Conductor - The hole is drilled w/ air and casing is run in air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Fresh Water/Surface -The hole is drilled w/air and casing is run in air. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement. Intermediate - Once surface casing is set and cemented Intermediate hole is drilled either on air or SOBM and filled w/ KCl water once filled w/ KCl water once drilled to TD. The well is conditioned with KCl circulation prior to running casing. Once casing is at setting depth, the well is circulated a minimum of one hole volume prior to pumping cement. Production - The hole is drilled with synthetic oil base mud and once at TD the hole is circulated at maximum allowable drilling pump rate for at least 6X bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.

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*Note: Attach additional sheets as needed.

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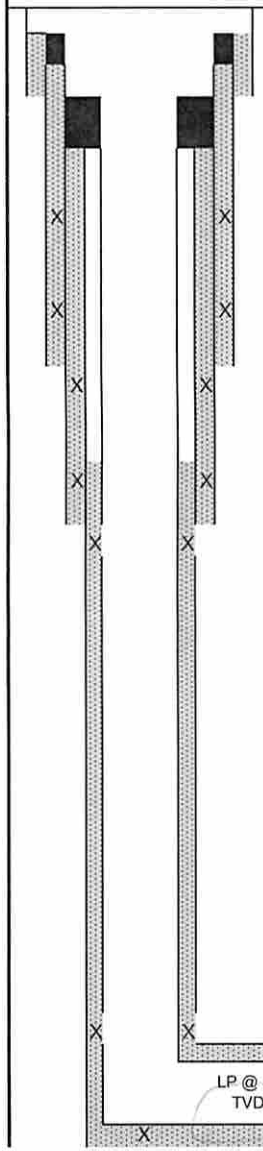
Fresh Water Protetcion String:		Cement Additives	
Allied Material Name	**Additive (Material) Type**	**Additive (Material) Description**	**CAS #**
CCAC (Class A Common)	Base Cement	Grey powder	65997-15-1
CA-100	Accelerator	White, flake	10043-52-4 7447-40-7 7732-18-5 7647-14-5
CLC-CPF (Cellophane Flakes)	Lost Circulation Aid	White and colored flake	Non-Hazardous

DRILLING WELL PLAN

SHR-31G-HS (Burkett / Marcellus HZ)
Burkett / Marcellus Shale Horizontal
Tyler County, WV

		SHR-31G SHL (Lat/Long)	(337825.71N, 1626530.47E) (NAD27)
Ground Elevation	1091'	SHR-31G LP (Lat/Long)	(337020.55N, 1625859.99E) (NAD27)
Azm	210°	SHR-31G BHL (Lat/Long)	(328581.34N, 1628931.61E) (NAD27)

WELLBORE DIAGRAM



HOLE	CASING	GEOLOGY	TOP	BASE	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS
24	20" 94#	Conductor	40	40	AIR	To Surface	N/A	Ensure the hole is clean at TD.	Stabilize surface fill/soil. Conductor casing = 0.438" wall thickness Burst=2730psi
17 1/2	13-3/8" 54.5# J-55 BTC	Int. Casing	737	737	AIR	15.6 ppg Type 1 + 2% CaCl, 0.25# Lost Circ 30% Excess Yield = 1.18	Bow Spring on first 2 joints then every third joint to 100' form surface	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Intermediate casing = 0.380" wall thickness Burst=2730 psi
12 3/8	9-5/8" 36# HCK-55 LTC	Big Lime	2209	2280	AIR	15.6ppg Class A +0.4% Ret, 0.15% Disp, 0.2% AntiFoam, 0.125#/sk Lost Circ 20% Excess Yield=1.19 To Surface	Bow spring centralizers every third joint to 100' feet from surface.	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Casing to be ran 250' below the 5th Sand. Intermediate casing = 0.352" wall thickness Burst=3520 psi
		Big Injun	2280	2334					
		Price Formation	2334						
		Weir	2487	2591					
		Int. Casing	2534	2534					
8.75" Vertical	5-1/2" 20# HCP-110 TXP BTC	Berea	2678	2686	8.0ppg - 9.0ppg SOBM	14.8ppg Class A 25:75:0 System +2.6% Cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% friction reducer 10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every third joint from KOP to TOC	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
		Top Devonian Shale	2686						
		Gordon	3104	3123					
		Warren Sand	3597	3643					
		Lower Huron	3995		12.0ppg-12.5ppg SOBM		Rigid Bow Spring every joint to KOP		
8.75" Curve		Benson	5165	5209					
		Alexander	5409	5467					
		Cashaqua	6408	6519					
		Middlesex	6519	6553					
		West River	6553	6621					
		Burkett	6621	6655					
		Tully Limestone	6655	6658					
		Hamilton	6658	6675					
8.75" - 8.5" Lateral		Marcellus	6675	6739	12.0ppg-12.5ppg SOBM				
		TD	15985	(6645 / 6729)					
		Onondaga	6739	6746					

LP @ (6645 / 6729)' TVD / 7450' MD

8.75 / 8.5 Hole - Cemented Long String
5-1/2" 20# HCP-110 TXP BTC

+/-8978' ft Lateral

TD @ +/-(6645 / 6729)' TVD
+/-15985' MD

X=centralizers

WW-9
(9/13)

API Number 47 - 095 - _____
Operator's Well No. SHR 31 GHS

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Noble Energy, Inc. OP Code 494501907

Watershed (HUC 10) huc-10 Mc Elroy Creek Quadrangle Shirley

Elevation 1111' County 095-Tyler District Mc Elroy

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-no utilization of a pit

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)
- ■ Reuse (at API Number at 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

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air/water based mud through intermediate string then SOBM

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

Additives to be used in drilling medium? Please see attached sheet

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

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

-Landfill or offsite name/permit number? please see attached sheet

---

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) Kim Ward/Dee Swiger

Company Official Title Regulatory Analyst

Official Seal
Notary Public
State of West Virginia
Dolores J Swiger
235 Cottage Avenue
Weston WV 26452
My Comm. Exp. 9-19-23

Subscribed and sworn before me this 10 day of Nov., 20 14

_____ Notary Public

My commission expires 09/19/2023

Form WW-9

Operator's Well No. SHR 31 GHS

Noble Energy, Inc.

Proposed Revegetation Treatment: Acres Disturbed 41.57 Prevegetation pH 6.0

Lime 2-3 Tons/acre or to correct to pH _____

Fertilizer type 10-20-20 or equal

Fertilizer amount 500 lbs/acre

Mulch Hay or Straw at 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Tall Fescue	40	Tall Fescue	40
Ladino Clover	5	Ladino Clover	5

**alternative seed mixtures are shown on the Site Design.

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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: Michael Dolf

Comments: Pre seed and mulch all cut area, maintain all E & S during operation.

Title: Oil and Gas Inspector Date: 11/6/14

Field Reviewed? (✓) Yes ( ) No

Cuttings Disposal/Site Water

Cuttings –Haul off Company:

Eap Industries, Inc. DOT # 0876278
1575 Smith Two State Rd. Atlasburg, PA 15004
1-888-294-5227

Waste Management
200 Rangos Lane
Washington, PA 15301
724-222-3272

Environmental Coordination Services & Recycling (ECS&R)
3237 US Highway 19
Cochranton, PA 16314
814-425-7773

Disposal Locations:

Apex Environnemental, LLC Permit # 06-08438
11 County Road 78
Amsterdam, OH 43903
740-543-4389

Westmoreland Waste, LLC Permit # 100277
111 Conner Lane
Belle Vernon, PA 15012
724-929-7694

Sycamore Landfill Inc. Permit #R30-079001 05-2010
4301 Sycamore Ridge Road
Hurricane, WV 25526
304-562-2611

Max Environnemental Technologies, Inc. facility Permit # PAD004835146 / 301071
233 Max Lane
Yukon, PA 25968
724-722-3500

Max Environnemental Technologies, Inc. Facility Permit # PAD05087072 / 301359
200 Max Drive
Bulger, PA 15019
724-796-1571

Waste Management Kelly Run Permit # 100663
1901 Park Side Drive
Elizabeth, PA 15037

Waste Management South Hills (Arnoni) Permit # 100592
3100 Hill Road
Library, PA 15129 724-348-7013

Waste Management Arden Permit # 100172
200 Rangos Lane
Washington, PA 15301
724-222-3272

Waste Management Meadowfill Permit # 1032
1488 Dawson Drive
Bridgeport, WV 26330

Brooke County Landfill Permit # SWF-103-97 / WV 0109029
Rd 2 Box 410
Colliers, WV 26035
304-748-0014

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Wetzel County Landfill Permit # SWF-1021-97 / WV 0109185
Rt 1 Box 156A
New Martinsville, WV 26035
304-455-3800

Energy Solutions, LLC Permit # UT 2300249
423 West 300 South
Suite 200
Salt Lake City, UT 84101

Energy Solutions Services, Inc. Permit # R-73006-L24
1560 Bear Creek Road
Oak Ridge, TN 37830

Water Haul off Companies:

Dynamic Structures, Clear Creek DOT # 720485
3790 State Route 7
New Waterford, OH 44445
330-892-0164

Disposal Locations:

Solidification
Waste Management, Arden Landfill Permit # 100172
200 Rangos Lane
Washington, PA 15301
724-225-1589

Solidification/Incineration
Soil Remediation, Inc. Permit # 02-20753
6065 Arrel-Smith Road
Lowelville, OH 44436
330-536-6825

Adams #1
Permit # 34-031-2-7177
23986 Airport Road
Coshocton, OH 43812
740-575-4484

Adams #2
Permit # 34-031-2-7178
740-575-4484

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Site Safety Plan

Noble Energy, Inc.

SHR 31 Well Pad

GHS

November 2014: Version 1

For Submission to
West Virginia Department of Environmental Protection,
Office of Oil and Gas

Noble Energy, Inc.
Appalachia Offices
333 Technology Drive, Suite 116
Canonsburg, PA 15317-9504

Michael Goff
11/6/14

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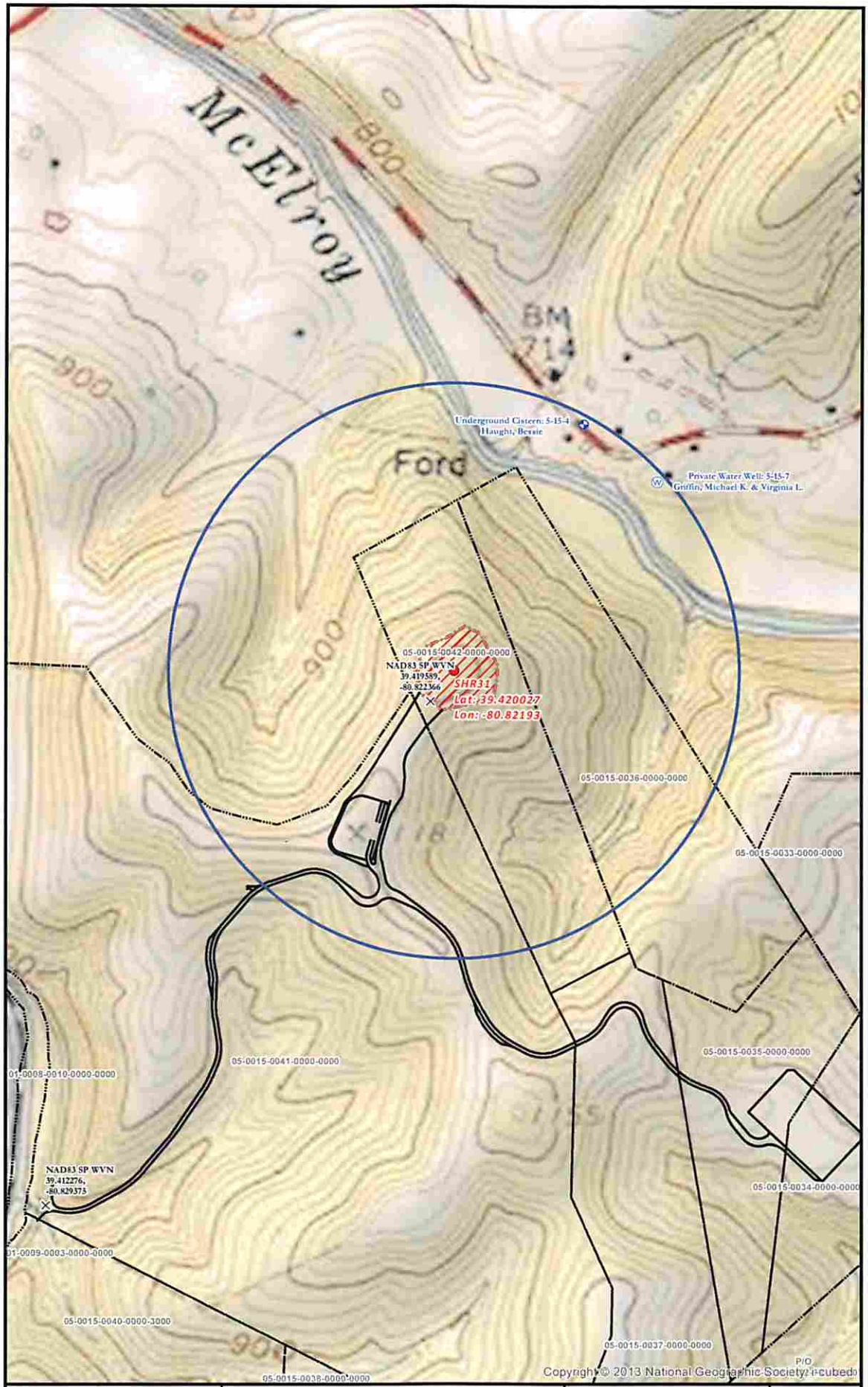

SHR 31 SITE SAFETY PLAN

- WATER WELL PURVEYORS -

0 300 600 1,200 Feet

1 Inch = 600 Feet

Well Pad
Cistern
Water Well
Intersection
Access Road
1500' Water Wells Buffer
Well Pad Boundary
Surface Parcels (Resolved)

Projection: NAD 1927 StatePlane West Virginia North FIPS 4701
Units: Foot US

****Disclaimer: All data is licensed for use by Noble Energy Inc. use only.****

noble energy

Date: 11/5/2014

Author: ChristopherGlover

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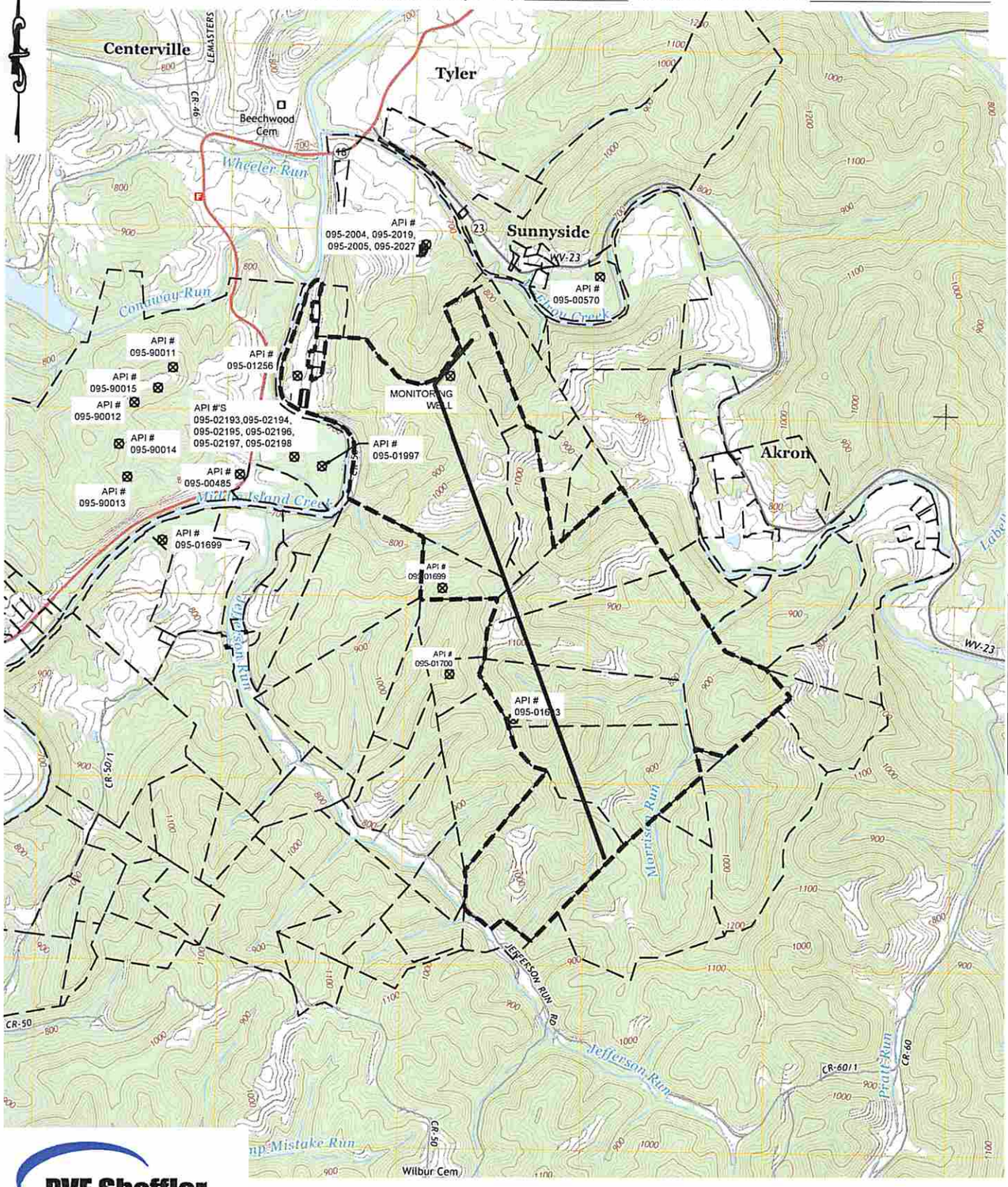
Document Path: G:\Canonsburg\GIS\Projects\District_30\Appalachia\MxDs\EHSR\Permitting\Shirley\SHR31\SSP\D30_PA_WV_6_SHR31_Water_Wells.mxd

Well is located on topo map 13,791 feet south of Latitude: 39° 27' 30"

Well is located on topo map 8,539 feet west of Longitude: 80° 47' 30"



PVE Sheffler

Waterfront Corporate Park III, Suite 101
2000 Georgetowne Drive
Sewickley, PA 15143-8992
Phone: 724-444-1100

0 2500' 5000'

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

DATE: OCTOBER 30, 2014 REV NOVEMBER 4, 2014

OPERATOR'S WELL #: SHR 31 GHS

API WELL # 47 095 0221 8 HGA
STATE COUNTY PERMIT

Well Type: ☐ Oil ☐ Waste Disposal ☒ Production ☐ Deep

☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: McELROY CREEK ELEVATION: 1,111.0'

COUNTY/DISTRICT: TYLER / McELROY QUADRANGLE: SHIRELY, W. VA

SURFACE OWNER: ALLEN W. SECKMAN, ET AL. ACREAGE: 31.81

OIL & GAS ROYALTY OWNER: HEIRS OF J.M. BAKER, ET AL. ACREAGE: 31.81

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: BURKETT ESTIMATED DEPTH: TVD: 6,645' ± TMD: 15,985'±

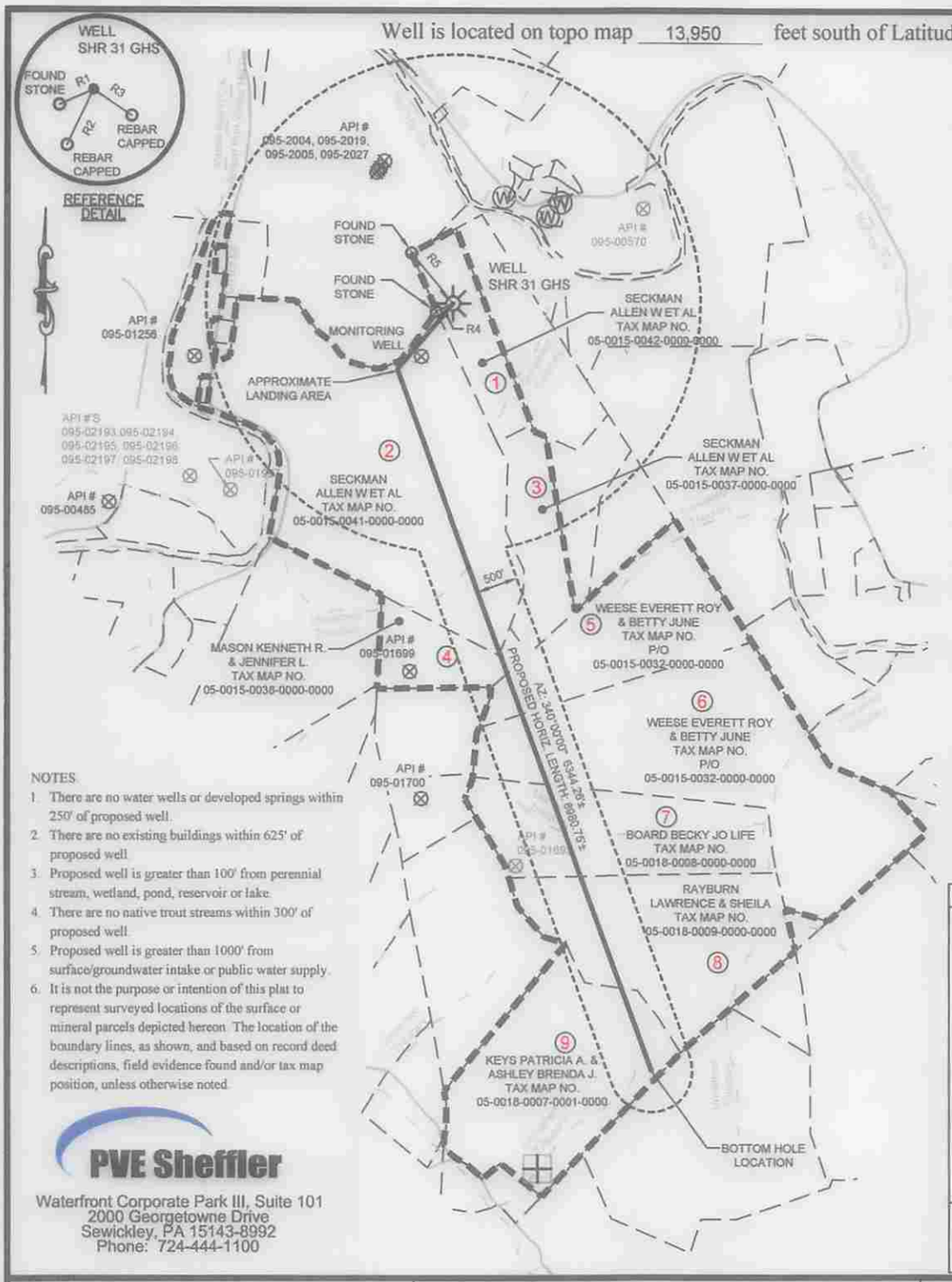
WELL OPERATOR: NOBLE ENERGY, INC. DESIGNATED AGENT: STEVEN M. GREEN

Address: 333 TECHNOLOGY DRIVE, SUITE 116 Address: 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590

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

Well is located on topo map 13,950 feet south of Latitude: 39° 27' 30"

Well is located on topo map 8,529 feet west of Longitude: 80° 47' 30"



SURFACE HOLE LOCATION (SHL)

UTM 17 – NAD83
N: 4363408.677
E: 515335.729
NAD27, WV NORTH
N: 337825.705
E: 1626530.472
LAT/LON DATUM–NAD83
LAT: 39.420067
LON: –80.821838

APPROX. LANDING POINT

UTM 17 – NAD83
N: 4363159.968
E: 515135.559
NAD27, WV NORTH
N: 337020.548
E: 1625859.991
LAT/LON DATUM–NAD83
LAT: 39.417829
LON: –80.824169

BOTTOM HOLE LOCATION

UTM 17 – NAD83
N: 4360604.577
E: 516114.240
NAD27, WV NORTH
N: 328581.345
E: 1628931.609
LAT/LON DATUM–NAD83
LAT: 39.394786
LON: –80.812861

LINE TABLE

LINE	BEARING	DISTANCE
R1	N66°04'28"E	228.63'
R2	N25°38'01"E	369.77'
R3	N56°02'55"W	281.46'
R4	N66°04'28"E	226.63'
R5	S39°45'28"E	792.94'

NOTES

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

LEGEND

- TOPO MAP POINT
- PROPOSED WELL
- WATER SOURCE
- LEASED NUMBER BASED ON ATTACHED WW6A1
- ALL ARE POINTS UNLESS OTHERWISE NOTED
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- PROPOSED HORIZONTAL WELL
- WELL REFERENCE
- STREAM/ WATERWAY
- ROAD

WELLS WITHIN 3000'

- EXISTING GAS WELL
- RECORD GAS WELL

PVE Sheffler
Waterfront Corporate Park III, Suite 101
2000 Georgetowne Drive
Sewickley, PA 15143-8992
Phone: 724-444-1100

FILE #: SHR 31 GHS

DRAWING #: SHR 31 GHS

SCALE: 1"=2000'

MINIMUM DEGREE OF ACCURACY: 1/2500

PROVEN SOURCE OF ELEVATION: USGS MONUMENT A 142: 724.61'

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: Charles Douglas Davidson

R.P.E.: _____ L.L.S.: P.S. NO. 819

CHARLES DOUGLAS DAVIDSON LICENSED No. 819 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: OCTOBER 30, 2014 REV DECEMBER 2, 2014

OPERATOR'S WELL #: SHR 31 GHS

API WELL # 47 (STATE) 095 (COUNTY) 02218 (PERMIT) 1/6A

Well Type: ☐ Oil ☐ Waste Disposal ☒ Production ☐ Deep

☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: McELROY CREEK

ELEVATION: 1,111.0'

COUNTY/DISTRICT: TYLER / McELROY

QUADRANGLE: SHIRELY, W. VA

SURFACE OWNER: ALLEN W. SECKMAN, ET AL.

ACREAGE: 31.81

OIL & GAS ROYALTY OWNER: HEIRS OF J.M. BAKER, ET AL.

ACREAGE: 31.81

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: BURKETT / MARCELLUS

ESTIMATED DEPTH: TVD: 6,729' ± TMD: 15,985'±

WELL OPERATOR: NOBLE ENERGY, INC.

DESIGNATED AGENT: STEVEN M. GREEN

Address: 333 TECHNOLOGY DRIVE, SUITE 116

Address: 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590

City CANONSBURG State PA Zip Code 15317

City CHARLESTON State WV Zip Code 25301