



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. Huffinan, Cabinet Secretary
www.dep.wv.gov

November 20, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-5101767, 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: SHL 22 HHS
Farm Name: CONSOL MINING CO.
API Well Number: 47-5101767
Permit Type: Horizontal 6A Well
Date Issued: 11/20/2014

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.

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

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648

1) Well Operator: Noble Energy, Inc. 494501907 051 - Marshall Sandhill Valley Grove
Operator ID County District Quadrangle

2) Operator's Well Number: SHL 22 HHS Well Pad Name: SHL 22

3) Farm Name/Surface Owner: Noble Energy, Inc. Public Road Access: Staniford Hill Road County Rte 9

4) Elevation, current ground: 1322' Elevation, proposed post-construction: 1321.50'

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):
Marcellus 6641' / 6690' Thick 49' / 4415 psi

8) Proposed Total Vertical Depth: 6680'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14,533'

11) Proposed Horizontal Leg Length: 7,159'

12) Approximate Fresh Water Strata Depths: 210'

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

14) Approximate Saltwater Depths: None

15) Approximate Coal Seam Depths: 770' - 780' Pittsburgh Coal Seam Existing Perimeter Barrier/ Proposed Interior Barrier

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

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(a) If Yes, provide Mine Info: Name: Shoemaker Mine

Depth: 770'-780'

Seam: Pittsburgh No. 8

Owner: Consolidation Coal Company (Murray American Energy Inc.)

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WV Dept. of Environmental Protection

18)

CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill-up (Cu. Ft.)</u>
Conductor	30"	New	LS	117#	40'	40'	GTS
Fresh Water	20"	New	J-55	94#	360'	360'	CTS 30% excess Yield = 1.18
Coal	13 3/8"	New	J-55	54.5#	880'	880'	CTS 30% excess Yield = 1.18
Intermediate	9 5/8"	New	J-55	36.0#	3139'	3139'	CTS 20% excess Yield = 1.19
Production	5 1/2"	New	P-110	20.0#	14,533'	14,533'	10% excess Yield = 1.27 TOC=200' above 9.625" shoe
Tubing							
Liners							

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	36"	0.375		Stabilize to surface with fill/soil	to surface
Fresh Water	20"	26"	0.438	2730	Type 1	30% excess Yield = 1.18
Coal	13 3/8"	17.5	0.380	2730	Type 1	30% Excess Yield = 1.18
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						

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7/24/14

PACKERS

Kind:				
Sizes:				
Depths Set:				Received

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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 6,680 feet. Drill Horizontal leg - stimulate and be capable of producing from the Benson to the Marcellus 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 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): 21.01

22) Area to be disturbed for well pad only, less access road (acres): 10.102

23) Describe centralizer placement for each casing string:

Conductor - No centralizers used. Fresh Water/Surface - centralized every three joints to surface. Coal - Bow Spring 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 - GTS. Fresh Water - 15.6 ppg Type 1 cement with flake and +2% CaCl, 0.25# lost circ., 30% excess yield = 1.18. Coal-15.6 ppg Type 1 +2% CaCl, 0.25# Lost Circ 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. Coal and 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 SOBMM 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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Randy C. Huffman, Cabinet Secretary
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October 31, 2013

Schlumberger
Attn: Daniel L. Sikorski
4600 J Barry Court
Suite 200
Canonsburg, PA 15317

RE: Cement Variance Request

Dear Sir:

This agency has approved a variance request for the cement blend listed below to be used on surface and coal protection casing only. The variance cannot be used without an oil and gas operator requesting its use on a permit application and approved by this agency:

- 2% Accelerator (S001)
- 0.2% Antifoam (D046)
- 0.125 lb/sk Polyester Flake (D0130)

If you have any questions regarding this matter feel free to contact me at 304-926-0499, ext. 1653.

Sincerely,

James Peterson
Environmental Resources Analyst

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WV Dept. of Environmental Protection



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**BEFORE THE OFFICE OF OIL AND GAS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF WEST VIRGINIA**

IN THE MATTER OF A VARIANCE FROM) ORDER NO. 2013-78
REGULATION 35 CSR § 4-11.4/11.5/14.1)
AND 35 CSR § 8-9.2.h. 4/5/6/8 OF THE)
THE OPERATIONAL)
REGULATIONS OF CEMENTING OIL)
AND GAS WELLS)

REPORT OF THE OFFICE

Schlumberger requests approval of a different cement blend for use in cementing surface and coal protection casing of oil and gas wells.

FINDINGS OF FACT

- 1.) Schlumberger proposes the following cement blend:
- 2% Accelerator (S001)
 - 0.2% Antifoam (D046)
 - 0.125 lb/sk Polyester Flake (D130)
- 2.) Schlumberger laboratory testing results indicate that the blend listed in Fact No.1 will achieve a 500 psi compressive strength within 5 hours, 22 minutes and a 1200 psi compressive strength within 10 hours, 29 minutes.

Promoting a healthy environment.

11/21/2014

CONCLUSIONS OF LAW

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Pursuant to Articles 6 and 6A, Chapter 22 of the Code of West Virginia, the Office of Oil and Gas has jurisdiction over the subject matter embraced in said notice, and the persons interested therein, and jurisdiction to promulgate the hereinafter prescribed Order.

Pursuant to 35 CSR § 4-11.5 and 35 CSR § 8-9.2.h.8 the Chief of the Office of Oil and Gas may approve different cement blends upon the well operator providing satisfactory proof that different cement types are adequate.

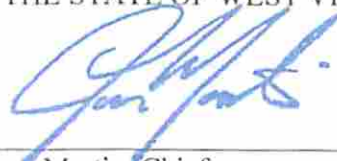
ORDER

It is ordered that Schlumberger may use the cement blend listed in Findings of Fact No.1 for the cementing of surface and coal protection casing of oil and gas wells in the State as may be requested by oil and gas operators. The waiting time on the cement blend shall be 8 hours. The cement blend shall be mixed in strict accordance with the specifications for each blend and weight measurements made on-site to assure the cement slurries meet the minimum weight specifications. A sample shall be collected and, if after 8 hours the cement is not set up, additional time will be required. Schlumberger shall keep a record of cement blend jobs in which the cement blend approved under this order is to be used and made available to the Office of Oil and Gas upon request.

Dated this, the 31st day of October, 2013.

IN THE NAME OF THE STATE OF WEST VIRGINIA

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



James Martin, Chief
Office of Oil and Gas

11/21/2014

Schlumberger

East Division Technology Center

Laboratory Cement Test Report- 15.6 PPG SURFACE**Weston District Laboratory**

Fluid No : WES13-364P3	Client : NOBLE	Location / Rig : N/A	Signatures
Date : Oct-06-2013	Well Name : WEST VIRGINIA	Field : N/A	Mclaughlin

Job Type	SURFACE	Depth	700.0 ft	TVD	700.0 ft
BHST	63 degF	BHCT	78 degF	BHP	494 psi
Starting Temp.	80 degF	Time to Temp.	00:09 hr:mn	Heating Rate	-0.22 degF/min
Starting Pressure	179 psi	Time to Pressure	00:09 hr:mn	Schedule	9.2-1

Composition

Slurry Density	16.60 lb/gal	Yield	1.20 ft ³ /sk	Mix Fluid	5.252 gal/sk
Solid Vol. Fraction	41.4 %	Porosity	58.6 %	Slurry type	Conventional

Code	Concentration	Sack Reference	Component	Blend Density	Lot Number
D801 - API A		94 lb of BLEND	Blend	197.27 lb/ft ³	08-13-13/6-20
Fresh water	5.252 gal/sk		Base Fluid		

S001	2.000 %BWOC		Accelerator		364AJ1632
D046	0.200 %BWOC		Antifoam		TU3G0700A0
D130	0.125 lb/sk		Lost circ		BULK

Rheology

Geometry: R1B1F1.0

S/N 10-1287-003

Temperature	78 degF		
(rpm)	Up (deg)	Down (deg)	Average (deg)
300	63.0	63.0	63.0
200	58.0	57.0	58.5
100	48.0	48.0	47.5
60	41.0	46.0	43.5
30	33.0	43.0	38.0
6	20.6	27.7	24.2
3	16.6	20.5	18.5
10 sec Gel	23 deg - 24.55 lb/100R2		
10 min Gel	53 deg - 56.57 lb/100R2		
Rheo. computed	Viscosity : 26.792 cP Yield Point : 38.21 lb/100R2		

UCA Compressive Strength

S/N 501R

Time	CS
05:22 hr:mn	500 psi
10:29 hr:mn	1200 psi

Free Fluid

1.0 mL/250mL in 2 hrs
At 78 degF and 0 deg incl
Sedimentation : None

Comments

General Comment :

Note: This is a pilot test. Field may differ after testing. Please read field report carefully and compare to pilot report and load out. Contact the laboratory with any questions or concerns.

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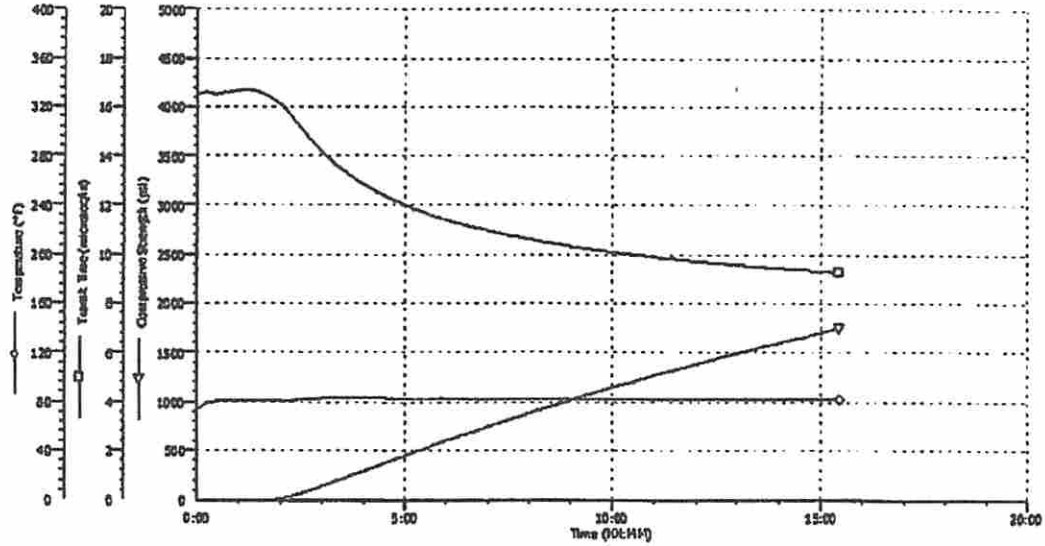


UCA Graph

Wes13-38493-1 Above West Virginia Surface
10/43/013 4:23:02 PM
10/62/013 8:34:31 AM
15.8 ppg
Compressive strength type B (more than 14 b/gal)

NORLE WY
Customer: NORLE
D501 API A
2% 0001 + 0.2% COA S+0 128 pps 0130
Surface
01 RUGHSDIR

0-MCTD* P
0-MST3 P
50 psi @ 2:23:00
50 psi @ 8:23:00
Current CD: 1743 psi



SCHLUMBERGER
Western Well Services Laboratory

Test File Name: Wes13-38493-1 Above West Virginia Surface
Printed: 10/6/2013 12:33:32 PM

Page 1

AWS Cement Additives- Noble Energy

	Product Name	Product Use	Chemical Name	CAS Number
Surface & Intermediate	Calcium Chloride Flake	Cement Accelerator	Calcium Chloride	10043-52-4
			Potassium Chloride	7447-40-7
			Water	7732-18-5
Sodium Chloride			7647-14-5	
	C-41L	De-foamer	Methyl Alcohol	67-56-1
			Tributyl Phosphate	126-73-8
	Pol-E-Flake	LCM	Polyester	Non-Hazardous

Spacer	Bentonite Gel	Viscosifier	Crystalline Silica, Quartz	14808-60-7
	Baro-Seal	LCM	Mixture	Non-Hazardous
	Pol-E-Flake	LCM	Polyester	Non-Hazardous

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Kick Off Plug	Product Name	Product's Purpose	Chemical Ingredients	CAS Number
	DCP-AC2	Accelerator	Calcium Oxide	1305-78-8
	DCP-FR2	Friction Reducer	No hazardous components.	N/A
	DCP-RT1	Retarder	No hazardous components.	N/A
	SPACER			
	Dynaflush 2W	Viscosity	No hazardous components.	N/A
	DCP-GL1	Suspension Agent	Welan Gum	96949-22-3
	DAP-401	Mutual Solvent	Ethoxylated alcohols Alkoxylated terpene Polyethylene glycol	Trade Secret Trade Secret 25322-68-3

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WV Dept. of Environmental Protection

	Product Name	Product's Purpose	Chemical Ingredients	CAS Number
Production Cement	DCP-EX1	Extender	Sodium metasilicate, anhydrous	6834-92-0
	DCP-EX2	Extender	Silicon dioxide	69012-64-2
			Iron Oxide	1309-37-1
			Silicon Carbide	409-21-2
			Aluminum Oxide	1344-28-1
			Calcium Oxide	1305-78-8
			Magnesium Oxide	1309-48-4
			Silicon dioxide	14808-60-7
	DCP-FL1	Fluid Loss Agent	No hazardous components.	N/A
	DCP-FR2	Friction Reducer	No hazardous components.	N/A
	DCP-RT3	Retarder	No hazardous components.	N/A
	SPACER			
Dynaflush 2W	Viscosity	No hazardous components.	N/A	
DCP-GL1	Suspension Agent	Welan Gum	96949-22-3	
DAP-401	Mutual Solvent	Ethoxylated alcohols	Trade Secret	
		Alkoxyated terpene	Trade Secret	
		Polyethylene glycol	25322-68-3	
Barite	Weighting Agent	Inorganic barium salt	7727-43-7	

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DRILLING WELL PLAN
SHL-22H-HS (Marcellus HZ)
Macellus Shale Horizontal
Marshall County, WV

Ground Elevation		1322'		SHL-22H SHL (Lat/Long)				(552154.2N, 1698414.95E) (NAD27)			
Azim		145°		SHL-22H LP (Lat/Long)				(553082.03N, 1699233.04E) (NAD27)			
WELLBORE DIAGRAM		145°		SHL-22H BHL (Lat/Long)				(547217.76N, 1703339.38E) (NAD27)			
HOLE	CASING	GEOLOGY	MD	TVD	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS		
36	30" 117#	Conductor	40	40	AIR	To Surface	N/A	Ensure the hole is clean at TD.	Stabilize surface fill/soil. Conductor casing = 0.375" wall thickness		
26	20" 94#	Fresh Water Casing	360	360	AIR	15.6 ppg Type 1 + 2% CaCl, 0.25# Lost Circ 30% Excess Yield = 1.18	Centralized every 3 joints to 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.	Surface casing = 0.438" wall thickness Burst=2730 psi		
17 1/2	13-3/8" 54.5# J-55 BTC	Pittsburgh Coal	770	780	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# J-55 LTC	Coal Protection Casing	880	880	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 Lime	1636	1829							
8.75" Vertical	5-1/2" 20# HCP-110 TXP BTC	Big Injun	1829	2178	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	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		
		5th Sand Base	2867	2889							
8.75" Curve	5-1/2" 20# HCP-110 TXP BTC	Int. Casing	3139	3139	12.0ppg-12.5ppg SOBM	10% Excess Yield=1.27 TOC >= 200' above 9.625" shoe	Rigid Bow Spring every joint to KOP				
		Warren Sand	4173	4188							
8.75" - 8.5" Lateral	5-1/2" 20# HCP-110 TXP BTC	Java	5039	5123	12.0ppg-12.5ppg SOBM						
		Angola	5223	5856							
		Rhinestreet	5856	6286							
		Cashaqua	6286	6384							
		Middlesex	6384	6417							
		West River	6417	6474							
		Burkett	6474	6498							
		Tully Limestone	6498	6525							
		Hamilton	6525	6641							
		Marcellus	6641	6690							
		TD	14533	6680							
		Onondaga	6690	6700							

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LP @ 6680' TVD / 7374' MD

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

+/-7159' ft Lateral

TD @ +/-6680' TVD
 +/-14533' MD

X=centralizers

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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) Wheeling Creek (undefined) Quadrangle Valley Grove

Elevation 1322' County 051 - Marshall District Sandhill

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 _____)
- 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 SOB

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

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

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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

Office of Oil and Gas
WV Dept. of Environmental Protection

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.

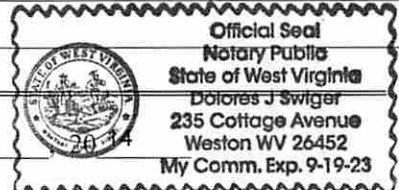
Company Official Signature [Signature]

Company Official (Typed Name) Kim Ward / Dee Swiger

Company Official Title Regulatory Analyst III

Subscribed and sworn before me this 28 day of July

[Signature]



Notary Public

11/21/2014

My commission expires 09/19/2023

Noble Energy, Inc.

Proposed Revegetation Treatment: Acres Disturbed 21.01 Prevegetation pH 6.0

Lime 2-3 Tons/acre or to correct to pH _____
10-20-20 or equal

Fertilizer type _____

Fertilizer amount 500 lbs/acre

Mulch Hay or Straw at 2 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5

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

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: James Wehner

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

Received

AUG 7 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

Title: Oil and Gas Inspector

Date: 7/24/14

Field Reviewed? () Yes () No

11/21/2014

Cuttings Disposal/Site Water

4705101767

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
Cochranon, 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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Office of Oil and Gas
WV Dept. of Environmental Protection

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

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

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AUG 7 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

11/21/2014



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Site Safety Plan

Noble Energy, Inc.

SHL 22 Well Pad

HHS

July 2014: Version 1

JW
7/24/14

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

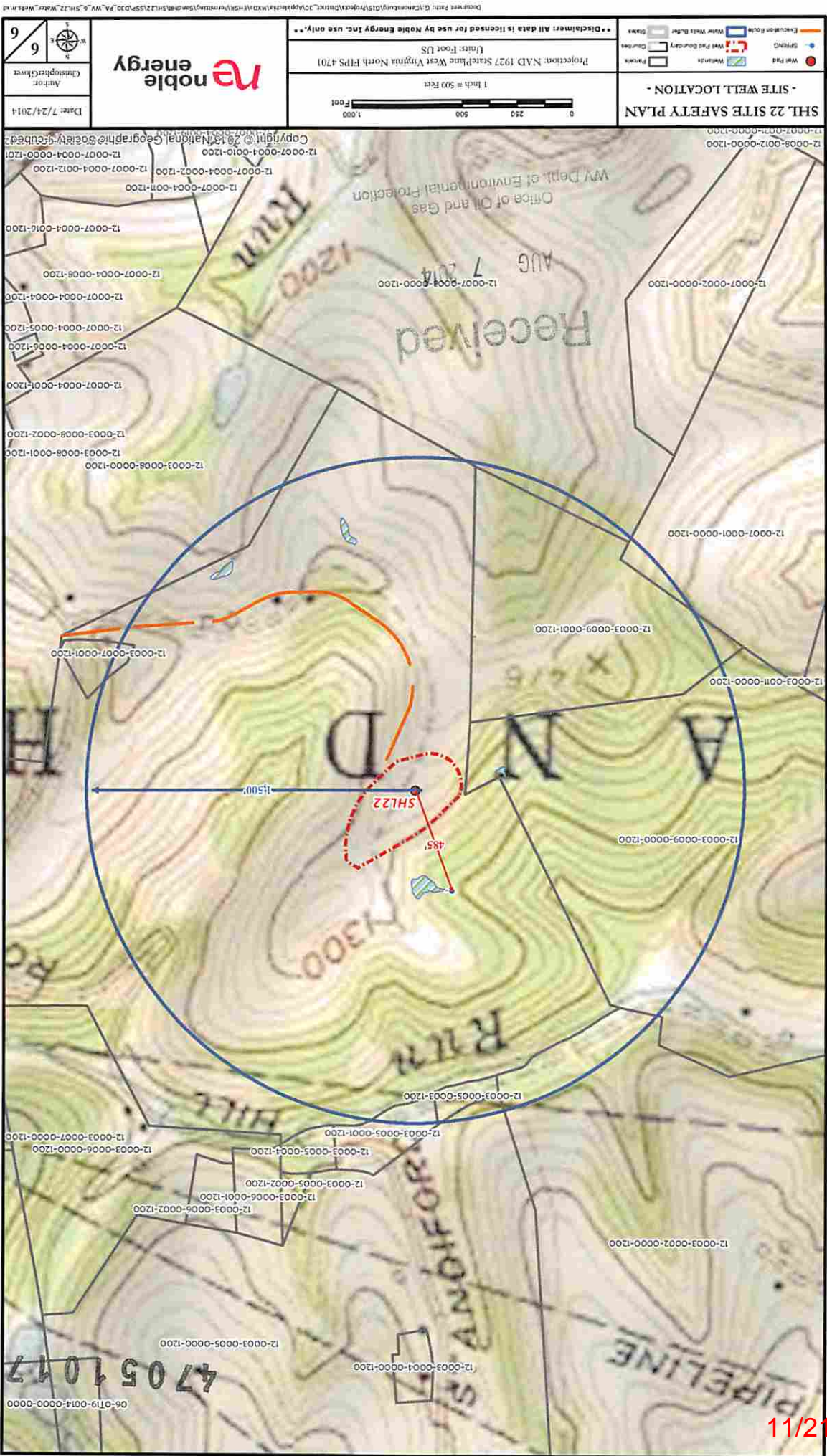
Noble Energy, Inc.
Appalachia Offices
333 Technology Drive, Suite 116
Canonsburg, PA 15317-9504

Received

AUG 7 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

11/21/2014



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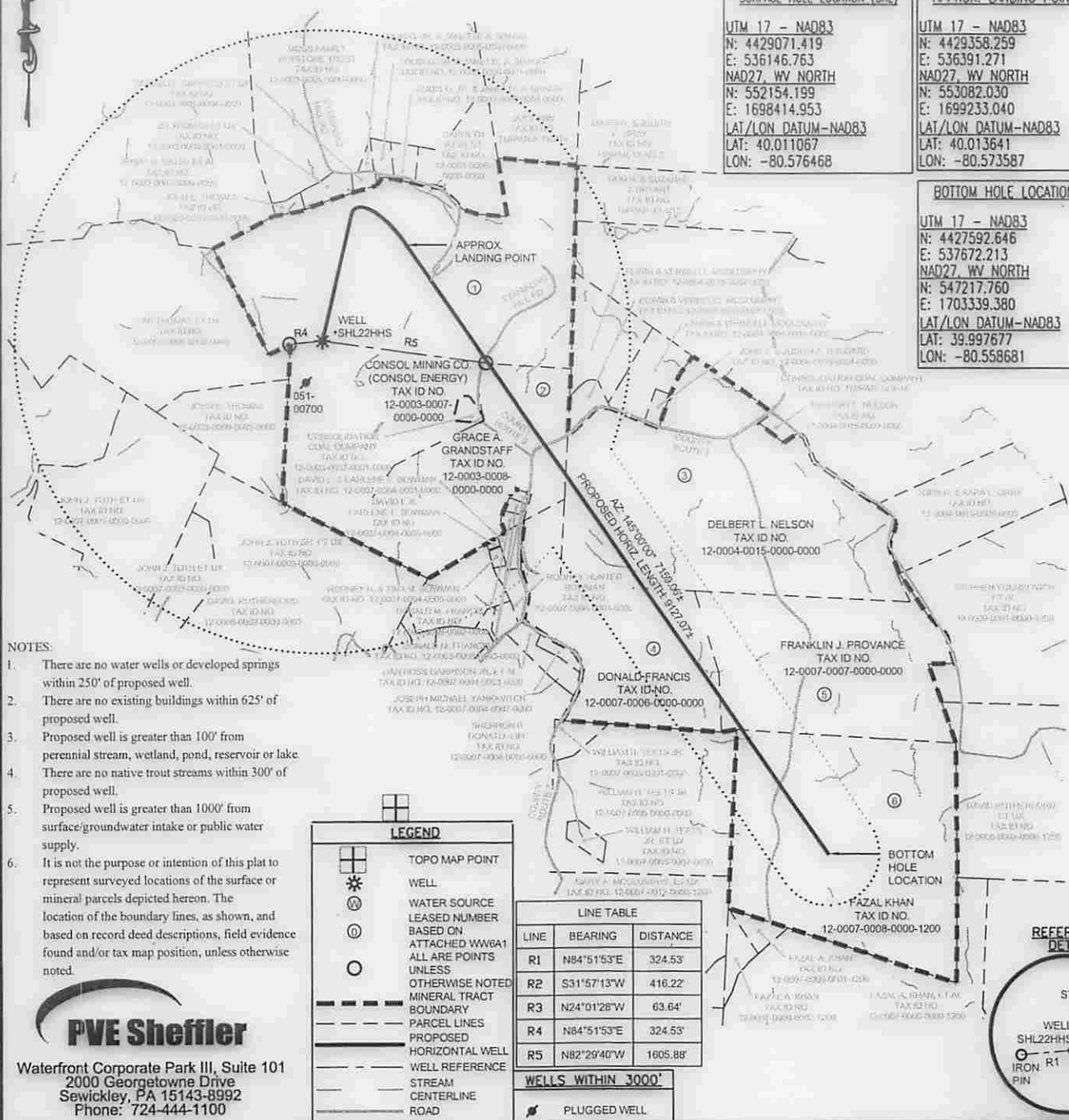
11/21/2014

Well is located on topo map 11.163

feet south of Latitude: 40° 02' 30"

Well is located on topo map 9.810

feet west of Longitude: 80° 32' 30"



SURFACE HOLE LOCATION (SHL)
 UTM 17 - NAD83
 N: 4429071.419
 E: 536146.763
 NAD27, WV NORTH
 N: 552154.199
 E: 1698414.953
 LAT/LON DATUM-NAD83
 LAT: 40.011067
 LON: -80.576468

APPROX. LANDING POINT
 UTM 17 - NAD83
 N: 4429358.259
 E: 536391.271
 NAD27, WV NORTH
 N: 553082.030
 E: 1699233.040
 LAT/LON DATUM-NAD83
 LAT: 40.013641
 LON: -80.573587

BOTTOM HOLE LOCATION
 UTM 17 - NAD83
 N: 4427592.646
 E: 537672.213
 NAD27, WV NORTH
 N: 547217.760
 E: 1703339.380
 LAT/LON DATUM-NAD83
 LAT: 39.997677
 LON: -80.558681

- 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 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
- WELL
- WATER SOURCE
- LEASED NUMBER BASED ON ATTACHED WVA61 ALL ARE POINTS UNLESS OTHERWISE NOTED
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- PROPOSED
- HORIZONTAL WELL
- WELL REFERENCE
- STREAM
- CENTERLINE
- ROAD

LINE TABLE

LINE	BEARING	DISTANCE
R1	N84°51'53"E	324.53'
R2	S31°57'13"W	416.22'
R3	N24°01'28"W	63.64'
R4	N84°51'53"E	324.53'
R5	N82°29'40"W	1805.88'

WELLS WITHIN 3000'

PLUGGED WELL



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

FILE #: SHL 22 HHS
 DRAWING #: SHL 22 HHS
 SCALE: 1"=1500'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT WILSON KNOB 1462.02

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 Robert Davidson*
 R.P.E.: _____ L.L.S.: P.S. NO. 819



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



DATE: JULY 15, 2014 REV. JULY 21, 2014
 OPERATOR'S WELL #: SHL 22 HHS
 API WELL # 47 051 01767464
 STATE COUNTY PERMIT

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

WATERSHED: WHEELING CREEK ELEVATION: 1322'
 COUNTY/DISTRICT: MARSHALL / SAND HILL QUADRANGLE: VALLEY GROVE, W. VA.
 SURFACE OWNER: CONSOL MINING CO. (CONSOL ENERGY) ACREAGE: 170.55
 OIL & GAS ROYALTY OWNER: CNX GAS COMPANY, LLC, ET AL. ACREAGE: 170.55

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: MARCELLUS ESTIMATED DEPTH: TVD: 6,680'± TMD: 14,533'±
 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 CANNONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

11/21/2014