

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

API 47 - 051 - 01811 County Marshall District Sandhill  
Quad Valley Grove Pad Name SHL 22 Field/Pool Name NA  
Farm name Consol Mining Co. (CONSOL) Well Number SHL 22 EHS  
Operator (as registered with the OOG) Noble Energy, Inc.  
Address 1000 Noble Energy Drive City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 44290590.179 Easting 536133.198  
Landing Point of Curve Northing 4428812.827 Easting 535201.734  
Bottom Hole Northing 4426563.652 Easting 536838.665

Elevation (ft) 1322 GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine

Mud Type(s) and Additive(s)  
Synthetic Oil Based

Date permit issued 02/25/2015 Date drilling commenced 03/08/2015 Date drilling ceased 08/08/2015  
Date completion activities began 01/24/2017 Date completion activities ceased 02/19/2017  
Verbal plugging (Y/N) N Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 210 Open mine(s) (Y/N) depths none  
Salt water depth(s) ft None noted for Offsets Void(s) encountered (Y/N) depths none  
Coal depth(s) ft no coal Cavern(s) encountered (Y/N) depths none  
Is coal being mined in area (Y/N) N

**APPROVED**

NAME: Jim Unlueben

DATE: 5/2/17

Reviewed by:

[Signature]

**05/26/2017**

**RECEIVED**  
**Office of Oil and Gas**

**APR 07 2017**

**WV Department of Environmental Protection**

API 47-051 - 01811 Farm name Consol Mining Co. (CONSOL) Well number SHL 22 EHS

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	36	30	40				
Surface	17 1/2	13 3/8	1208.1	N	J-55 54.5#		Y
Coal							
Intermediate 1	12 3/8	9 5/8	3230.6	N	HCK-55 36#		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4	5 1/2	17,311.0	N	P-110 IC 20#		Y
Tubing							
Packer type and depth set							

Comment Details Water String -Casing Size 20, Depth, 396.0 New Grade wt/ft J-55 94#

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Class A	527	15.6	1.20	107.0	0	8
Coal							
Intermediate 1	Class A	1084	15.6	1.20	231.0	0	8
Intermediate 2	Class A	1187	15.6	1.18	250.0	0	8
Intermediate 3							
Production	25/75 POZ:A	3643	14.5	1.32	853.9	28.3	8
Tubing							

Drillers TD (ft) 17,323 Loggers TD (ft) 17,298  
 Deepest formation penetrated Marcellus Plug back to (ft) Not a Pilot Hole  
 Plug back procedure Not a Pilot Hole

Kick off depth (ft) 5,837

Check all wireline logs run  caliper  density  deviated/directional  induction  
 neutron  resistivity  gamma ray  temperature  sonic

Well cored  Yes  No  Conventional  Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Conductor - No centralizers used. Water String 4 Bow Spring Centralizers used. Fresh Water?  
 Surface - 10 bow spring centralizers used, one every third joint Intermediate - 45 Centr Centralizers and 16 bow spring centralizers on every third joint from KOP to 100' from surface.  
 Production - 289 Centrex Centralizers - rigid bow spring every third joint from KOP to TOC, rigid bow spring every joint to KOP.

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_



## Perforations SHL 22 EHS

API	Well Name	Date	Top (ftKB)	Btm (ftKB)	Com	Entered Shot Total	Est Hole Dia (in)
47-051-01811	SHL-22E-HS	2/19/2017	8,070.00	8,221.00	STAGE #45	44	0.52
47-051-01811	SHL-22E-HS	2/19/2017	8,258.00	8,409.00	STAGE #44	44	0.52
47-051-01811	SHL-22E-HS	2/19/2017	8,446.00	8,597.00	STAGE #43	44	0.52
47-051-01811	SHL-22E-HS	2/18/2017	8,632.00	8,785.00	STAGE #42	44	0.52
47-051-01811	SHL-22E-HS	2/18/2017	8,822.00	8,973.00	STAGE #41	44	0.52
47-051-01811	SHL-22E-HS	2/17/2017	9,013.00	9,161.00	STAGE #40	44	0.52
47-051-01811	SHL-22E-HS	2/17/2017	9,198.00	9,349.00	STAGE #39	44	0.52
47-051-01811	SHL-22E-HS	2/16/2017	9,391.00	9,537.00	STAGE #38	44	0.52
47-051-01811	SHL-22E-HS	2/16/2017	9,574.00	9,721.00	STAGE #37	44	0.52
47-051-01811	SHL-22E-HS	2/15/2017	9,762.00	9,913.00	STAGE #36	44	0.52
47-051-01811	SHL-22E-HS	2/15/2017	9,950.00	10,095.00	STAGE #35	44	0.52
47-051-01811	SHL-22E-HS	2/14/2017	10,143.00	10,273.00	STAGE #34	44	0.52
47-051-01811	SHL-22E-HS	2/14/2017	10,306.00	10,348.00	STAGE #33B	31	0.52
47-051-01811	SHL-22E-HS	2/13/2017	10,366.00	10,517.00	STAGE #33A	44	0.52
47-051-01811	SHL-22E-HS	2/13/2017	10,554.00	10,711.00	STAGE #32	44	0.52
47-051-01811	SHL-22E-HS	2/12/2017	10,750.00	10,884.00	STAGE #31	44	0.52
47-051-01811	SHL-22E-HS	2/12/2017	10,924.00	11,046.00	STAGE #30	44	0.52
47-051-01811	SHL-22E-HS	2/12/2017	11,089.00	11,285.00	STAGE #29	44	0.52
47-051-01811	SHL-22E-HS	2/11/2017	11,263.00	11,305.00	STAGE #28B	31	0.52
47-051-01811	SHL-22E-HS	2/11/2017	11,323.00	11,477.00	STAGE #28A	44	0.52
47-051-01811	SHL-22E-HS	2/10/2017	11,514.00	11,667.00	STAGE #27	44	0.52
47-051-01811	SHL-22E-HS	2/10/2017	11,706.00	11,859.00	STAGE #26	44	0.52
47-051-01811	SHL-22E-HS	2/8/2017	11,901.00	12,051.00	STAGE #25	44	0.52
47-051-01811	SHL-22E-HS	2/6/2017	12,282.00	12,433.00	STAGE #23	44	0.52
					STAGE #22C		
47-051-01811	SHL-22E-HS	2/5/2017	12,471.00	12,625.00		44	0.52
47-051-01811	SHL-22E-HS	2/5/2017	12,662.00	12,704.00	STAGE #22B	31	0.52
47-051-01811	SHL-22E-HS	2/5/2017	12,722.00	12,878.00	STAGE #22A	44	0.52
47-051-01811	SHL-22E-HS	2/4/2017	12,916.00	13,071.00	STAGE #21	44	0.52
47-051-01811	SHL-22E-HS	2/2/2017	13,110.00	13,265.00	STAGE #20	51	0.52
47-051-01811	SHL-22E-HS	2/1/2017	13,304.00	13,459.00	STAGE #19	51	0.52
47-051-01811	SHL-22E-HS	2/1/2017	13,503.00	13,653.00	STAGE #18	51	0.52
47-051-01811	SHL-22E-HS	1/31/2017	13,692.00	13,848.00	STAGE #17		
47-051-01811	SHL-22E-HS	1/31/2017	13,885.00	14,041.00	STAGE #16	51	
47-051-01811	SHL-22E-HS	1/31/2017	14,079.00	14,235.00	STAGE #15	51	
47-051-01811	SHL-22E-HS	1/31/2017	14,275.00	14,428.00	STAGE #14	51	
47-051-01811	SHL-22E-HS	1/30/2017	14,467.00	14,622.00	STAGE #13	51	
47-051-01811	SHL-22E-HS	1/30/2017	14,661.00	14,778.00	STAGE #12C		
47-051-01811	SHL-22E-HS	1/29/2017	14,795.00	14,837.00	STAGE #12B		
47-051-01811	SHL-22E-HS	1/29/2017	14,855.00	15,005.00	STAGE #12	50	
47-051-01811	SHL-22E-HS	1/28/2017	15,049.00	15,204.00	STAGE #11	50	
47-051-01811	SHL-22E-HS	1/28/2017	15,242.00	15,398.00	STAGE #10	50	1
47-051-01811	SHL-22E-HS	1/28/2017	15,436.00	15,587.00	STAGE #9	50	
47-051-01811	SHL-22E-HS	1/27/2017	15,628.00	15,785.00	STAGE #8		
47-051-01811	SHL-22E-HS	1/27/2017	15,824.00	15,973.00	STAGE #7		0.52
47-051-01811	SHL-22E-HS	1/26/2017	16,012.00	16,054.00	STAGE #6B		
47-051-01811	SHL-22E-HS	1/26/2017	16,072.00	16,229.00	STAGE #6		0.52
47-051-01811	SHL-22E-HS	1/26/2017	16,267.00	16,421.00	STAGE #5		
47-051-01811	SHL-22E-HS	1/25/2017	16,463.00	16,622.00	STAGE #4		
47-051-01811	SHL-22E-HS	1/25/2017	16,645.00	16,804.00	STAGE #3		
47-051-01811	SHL-22E-HS	1/25/2017	16,827.00	16,981.00	STAGE #2		
47-051-01811	SHL-22E-HS	1/24/2017	17,009.00	17,168.00	STAGE #1		

05/26/2017

Well Header

API: 47-051-01811

Well Name: SHL-22E-HS

WR-35 - Stimulation Information Per Stage

Int Des	Start Date	Slurry Rate	P Treat Avg	P Breakdov	ISIP (psi)	Propanant Deliver (lb)	Vol Slurry Total (gal)
STG #1 INJ TEST	1/24/2017						43,339.80
STG #1	1/24/2017	81.1	7,590.00	5,986.00	3,910.00	596,223.00	772,657.20
STG #2	1/25/2017	84.2	7,839.00	6,245.00	4,218.00	539,811.00	839,777.40
STG #3	1/25/2017	87.1	7,999.00	6,092.00	4,012.00	600,362.00	799,995.00
STG #4	1/25/2017	88.8	8,049.00	5,874.00	4,452.00	603,622.00	754,509.00
STG #5	1/26/2017	85.4	8,298.00	6,260.00	4,614.00	500,491.00	842,843.40
STG #6A	1/26/2017	76.2	8,094.00	6,429.00	4,534.00	174,506.00	442,331.40
STG #6B	1/27/2017	86.1	7,928.00	6,112.00	4,869.00	433,844.00	494,008.20
STG #7	1/27/2017	83.5	7,857.00	6,726.00	5,042.00	539,586.00	725,226.60
STG #8	1/28/2017	86	7,766.00	6,216.00	4,868.00	570,360.00	528,402.00
STG #9	1/28/2017	87.7	7,865.00	6,577.00	4,683.00	616,241.00	574,345.80
STG #10	1/28/2017	91.2	7,837.00	5,735.00	4,761.00	602,215.00	586,609.80
STG #11	1/29/2017	85.2	7,776.00	5,903.00	4,272.00	558,976.00	621,549.60
STG #12A	1/29/2017	65.3	8,231.00	8,648.00		191,795.00	462,121.80
STG #12B	1/29/2017	65.9	8,375.00	6,344.00	5,565.00	74,212.00	296,759.40
STG #12B INJ TEST	1/30/2017	44.8	6,136.00		5,537.00		48,270.60
STG #12C	1/30/2017	86.8	7,807.00	5,775.00	4,483.00	582,508.00	716,251.20
STG #13	1/30/2017	74.9	7,482.00	6,047.00	4,167.00	633,259.00	649,887.00
STG #14	1/31/2017	79.1	7,297.00	6,266.00	3,645.00	601,579.00	744,109.80
STG #15	1/31/2017	87.9	7,807.00	6,566.00	4,415.00	582,585.00	601,284.60
STG #16	1/31/2017	92.5	7,728.00	6,042.00	4,345.00	598,214.00	755,970.60
STG #17	1/31/2017	92.6	7,802.00	5,552.00	4,873.00	540,579.00	651,575.40
STG #18	2/1/2017	87.2	7,418.00	6,086.00	4,402.00	601,206.00	567,903.00
STG #19	2/1/2017	79.7	7,901.00	6,356.00	4,178.00	600,924.00	820,247.40
STG #20	2/3/2017	86.5	7,519.00	5,410.00	4,847.00	600,126.00	597,689.40
STG #21	2/4/2017	86.7	7,543.00	5,986.00	4,355.00	602,296.00	584,186.40
STG #22A	2/5/2017	52.5	8,499.00	6,525.00	6,479.00	6,153.00	115,672.20
STG #22B	2/5/2017	40.7	8,147.00	7,286.00	6,387.00	10,315.00	135,605.40
STG #22C	2/6/2017	85.4	6,742.00	6,015.00	3,394.00	845,573.00	871,164.00
STG #23	2/7/2017	84.5	7,479.00	6,288.00	3,918.00	491,123.00	749,061.60
STG #24	2/8/2017	86.7	7,311.00	6,383.00	4,017.00	600,261.00	657,904.80
STG #25	2/9/2017	78.3	6,989.00	6,292.00	3,858.00	526,660.00	614,880.00
STG #26	2/10/2017	92.2	7,404.00	5,646.00	3,734.00	645,791.00	599,789.40

STG #27	2/11/2017	88	7,091.00	5,762.00	4,173.00	669,076.00	681,408.00
STG #28A	2/11/2017	82.3	7,082.00	5,875.00	4,698.00	444,131.00	852,608.40
STG #28B	2/12/2017	85.4	7,136.00		4,631.00	269,276.00	356,697.60
STG #29	2/12/2017	95.1	7,414.00	6,356.00	4,708.00	598,472.00	674,940.00
STG #30	2/12/2017	88.5	7,531.00	5,865.00	4,367.00	506,109.00	670,542.60
STG #31	2/13/2017	87	7,399.00	6,258.00	4,268.00	600,633.00	640,088.40
STG #32	2/13/2017	95.8	7,576.00	6,083.00	4,163.00	546,762.00	706,339.20
STG #33A	2/14/2017	94.2	7,349.00	5,135.00	4,461.00	249,481.00	459,362.40
STG #33B	2/14/2017	94.1	6,796.00	5,067.00	4,113.00	651,504.00	687,283.80
STG #34	2/14/2017	98.2	7,200.00	5,645.00	3,418.00	613,023.00	592,137.00
STG #35	2/15/2017	95.3	6,927.00	5,458.00	4,976.00	612,948.00	523,849.20
STG #36	2/15/2017	97.7	6,984.00	5,530.00	4,704.00	706,049.00	536,768.40
STG #37	2/16/2017	96.3	7,274.00	6,200.00	4,736.00	649,557.00	598,017.00
STG #38	2/17/2017	84.5	6,720.00	5,826.00	4,730.00	602,965.00	553,917.00
STG #39	2/17/2017	95.3	7,343.00	5,631.00	4,519.00	565,718.00	497,393.40
STG #40	2/18/2017	84.9	7,005.00	5,289.00	3,661.00	637,186.00	616,261.80
STG #41	2/18/2017	84.4	6,913.00	5,676.00	4,065.00	600,151.00	593,649.00
STG #42	2/18/2017	98.3	7,195.00	5,314.00	5,314.00	604,265.00	574,585.20
STG #43	2/19/2017	97.8	7,205.00	5,956.00	4,749.00	668,404.00	524,319.60
STG #44	2/19/2017	88.4	7,157.00	6,273.00	4,599.00	601,110.00	613,162.20
STG #45	2/19/2017	84.6	6,768.00	5,859.00	4,342.00	621,342.00	516,755.40

API 47- 051 - 01811 Farm name Consol Mining Co. (CONSOL) Well number SHL 22 DHS

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6,605</u>	<u>TVD</u>	<u>17,323</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface \_\_\_\_\_ psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs

OPEN FLOW Gas 4488 mcfpd Oil 73 bpd NGL 349 bpd Water 589 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
	SEE ATTACHED FORMATION SHEET				See attached sheet

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company  
Address 5400 D Big Tyler Road City Charleston State WV Zip 25313

Logging Company \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Cementing Company Schlumberger  
Address 4600 J Barry Court, Suite 200 City Canonsburg State PA Zip 15317

Stimulating Company Halliburton Energy Services  
Address 121 Champion Way, Suite 110 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Regina A Logue Telephone 724-820-3559  
Signature Regina A Logue Title Regulatory Analyst Date 3/29/17

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry



## SHL 22 EHS

Formations	Top	Base
Shale	0	782
Pittsburgh Coal	782	792
Shale and Sandstone	792	1253
Gas Sand	1253	1282
Shale	1282	1383
1st Salt Sand	1383	1464
Shale	1464	1570
2nd Salt Sand	1570	1584
Shale	1584	1616
3rd Salt Sand	1616	1634
Shale	1634	1663
Maxton Sand	1663	1794
Shale	1794	1850
Big Lime	1850	1968
Big Injun	1968	2095
Price	2095	2449
Murrysville	2449	2457
Shale	2457	2731
Gordon	2731	2738
Shale	2738	2839
Fifth Sand	2839	2866
Shale	2866	3266
Speechley Sand	3266	3290
Shale	3290	4174
Warren Sand	4174	4188
Shale	4188	5095
Java Shale	5095	5165
Pipe Creek Shale	5165	5209
Angola Shale	5209	5835
Rhinestreet	5835	6249
Cashaqua	6249	6341
Middlesex	6341	6378
West River	6378	6419
Burkett	6419	6452
Tully Limestone	6452	6480
Hamilton	6480	6594
Marcellus	6594	6645
Onondaga	6645	



**Hydraulic Fracturing Fluid Product Component Information Disclosure**

Fracture Date	2017-02-19
State	West Virginia
County	Marshall
API Number	4705101811
Operator Name	NOBLE ENERGY
Well Name and Number	SHL 22 E
Longitude	-80.561
Latitude	39.99577
Long/Lat Projection	
Indian/Federal	none
Production Type	Gas
True Vertical Depth (TVD)	6,605
Total Water Volume (gall)	31,016,276

**Hydraulic Fracturing Fluid Composition:**

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Ingredient Mass lbs	Comments	Company	First Name	Last Name	Email	Phone
Fresh Water	Operator	Base Fluid	Water	7732-18-5	100.00%	90.13496%	258674874	Density = 8.340					
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive	Listed Below	Listed Below			0	NA					
FR-78	Halliburton	Friction Reducer	Listed Below	Listed Below			0	NA					
FR-A12	Halliburton	Additive	Listed Below	Listed Below			0	NA					
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Listed Below	Listed Below			0	NA					
HYDROCHLORIC ACID	Halliburton	Solvent	Listed Below	Listed Below			0	NA					
OILPERM A	Halliburton	Non-ionic Surfactant	Listed Below	Listed Below			0	NA					
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant	Listed Below	Listed Below			0	NA					
SAND-PREMIUM WHITE-30/50, BULK	Halliburton	Proppant	Listed Below	Listed Below			0	NA					
<b>MPS and Non-MPS Ingredients are listed below in green.</b>													
Ingredients	Listed Above	Listed Above	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00001%	24						
			Acetic acid	64-19-7	60.00%	0.00147%	4221						
			Acetic anhydride	108-24-7	100.00%	0.00245%	7034						
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00%	0.00382%	10953						
			Amide	Proprietary		5.00%	10953	Denise Tuck, Halliburton, 3000 N. Sain Houston Pkwy E., Houston, TX 77032, 281-871-6226	Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Ammonium chloride	12125-02-9	1.00%	0.00076%	2191						
			Crystalline silica, quartz	14808-60-7	100.00%	9.45012%	27694504						
			Ethanol	64-17-5	60.00%	0.00049%	1419						
			Ethoxylated alcohols	Proprietary	30.00%	0.00012%	350		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Fatty acid ester	Proprietary	1.00%	0.00076%	2191		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Fatty acids, tall oil	Proprietary	30.00%	0.00012%	350		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Glycerine	56-81-5	5.00%	0.00114%	3286						
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.00025%	710						
			Hydrochloric acid	7647-01-0	60.00%	0.06721%	192881						
			Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.02290%	65716						
			Inorganic salt	Proprietary	5.00%	0.00382%	10953		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Methanol	67-56-1	60.00%	0.00024%	659						
			Naphthalene	91-20-3	5.00%	0.00004%	119						
			Olefins	Proprietary	5.00%	0.00005%	142		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Oxalkylated phenolic resin	Proprietary	30.00%	0.00033%	947		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226

05/26/2017



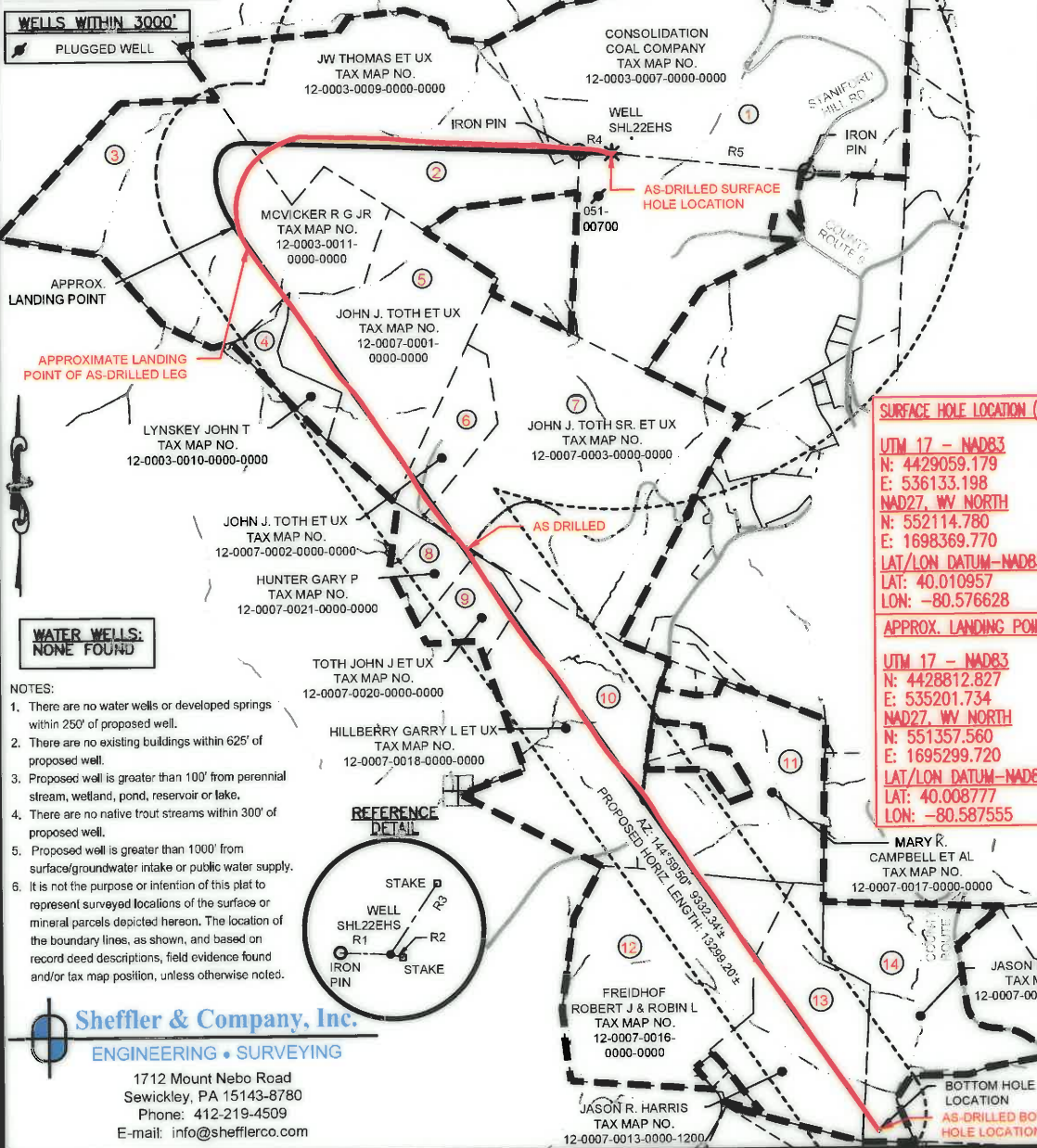


Well is located on topo map 11,188 feet south of Latitude: 40° 02' 30"

# AS-DRILLED PLAT

LINE	BEARING	DISTANCE
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R3	S33°48'54"W	474.46'
R4	S87°32'32"E	279.72'
R5	N84°06'42"W	1644.56'

LEGEND	
	TOPO MAP POINT
	WELL
	WATER SOURCE
	LEASED NUMBER
	BASED ON
	ATTACHED WVA#1
	ALL ARE POINTS UNLESS OTHERWISE NOTED
	MINERAL TRACT BOUNDARY
	PARCEL LINES
	PROPOSED
	HORIZONTAL WELL
	WELL REFERENCE
	STREAM
	CENTERLINE
	ROAD
	AS-DRILLED HORIZONTAL WELL



SURFACE HOLE LOCATION (SHL)	
UTM 17 - NAD83	N: 4429058.693
	E: 536133.639
NAD27, WV NORTH	N: 552113.161
	E: 1698371.190
LAT/LON DATUM-NAD83	LAT: 40.010953
	LOX: -80.576623
APPROX. LANDING POINT	
UTM 17 - NAD83	N: 4428364.829
	E: 535168.167
NAD27, WV NORTH	N: 551530.050
	E: 1695192.430
LAT/LON DATUM-NAD83	LAT: 40.009247
	LOX: -80.587945
BOTTOM HOLE LOCATION	
UTM 17 - NAD83	N: 4426563.253
	E: 536838.003
NAD27, WV NORTH	N: 543885.615
	E: 1700545.535
LAT/LON DATUM-NAD83	LAT: 39.988439
	LOX: -80.568511

SURFACE HOLE LOCATION (SHL)	
UTM 17 - NAD83	N: 4429059.179
	E: 536133.198
NAD27, WV NORTH	N: 552114.780
	E: 1698369.770
LAT/LON DATUM-NAD83	LAT: 40.010957
	LOX: -80.576628
APPROX. LANDING POINT	
UTM 17 - NAD83	N: 4428812.827
	E: 535201.734
NAD27, WV NORTH	N: 551357.560
	E: 1695299.720
LAT/LON DATUM-NAD83	LAT: 40.008777
	LOX: -80.587555

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**Sheffler & Company, Inc.**  
 ENGINEERING • SURVEYING  
 1712 Mount Nebo Road  
 Sewickley, PA 15143-8780  
 Phone: 412-219-4509  
 E-mail: info@shefflerco.com

FILE #: SHL 22 EHS  
 DRAWING #: SHL 22 EHS  
 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: *[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

DATE: MARCH 13, 2017  
 OPERATOR'S WELL #: SHL 22 EHS - AS DRILLED  
 API WELL # 47 051 01811  
 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  
 WELL OPERATOR: NOBLE ENERGY, INC.  
 Address: 1000 NOBLE ENERGY DRIVE, CANONSBURG, PA 15317  
 City CANONSBURG State PA Zip Code 15317

ESTIMATED DEPTH: TVD: 6,680 ± TMD: 17,654 ±  
 DESIGNATED AGENT: STEVEN M. GREEN  
 Address: 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590  
 City CHARLESTON State WV Zip Code 25301

05/26/2017

Well is located on topo map 9,796 feet west of Longitude: 80° 32' 30"

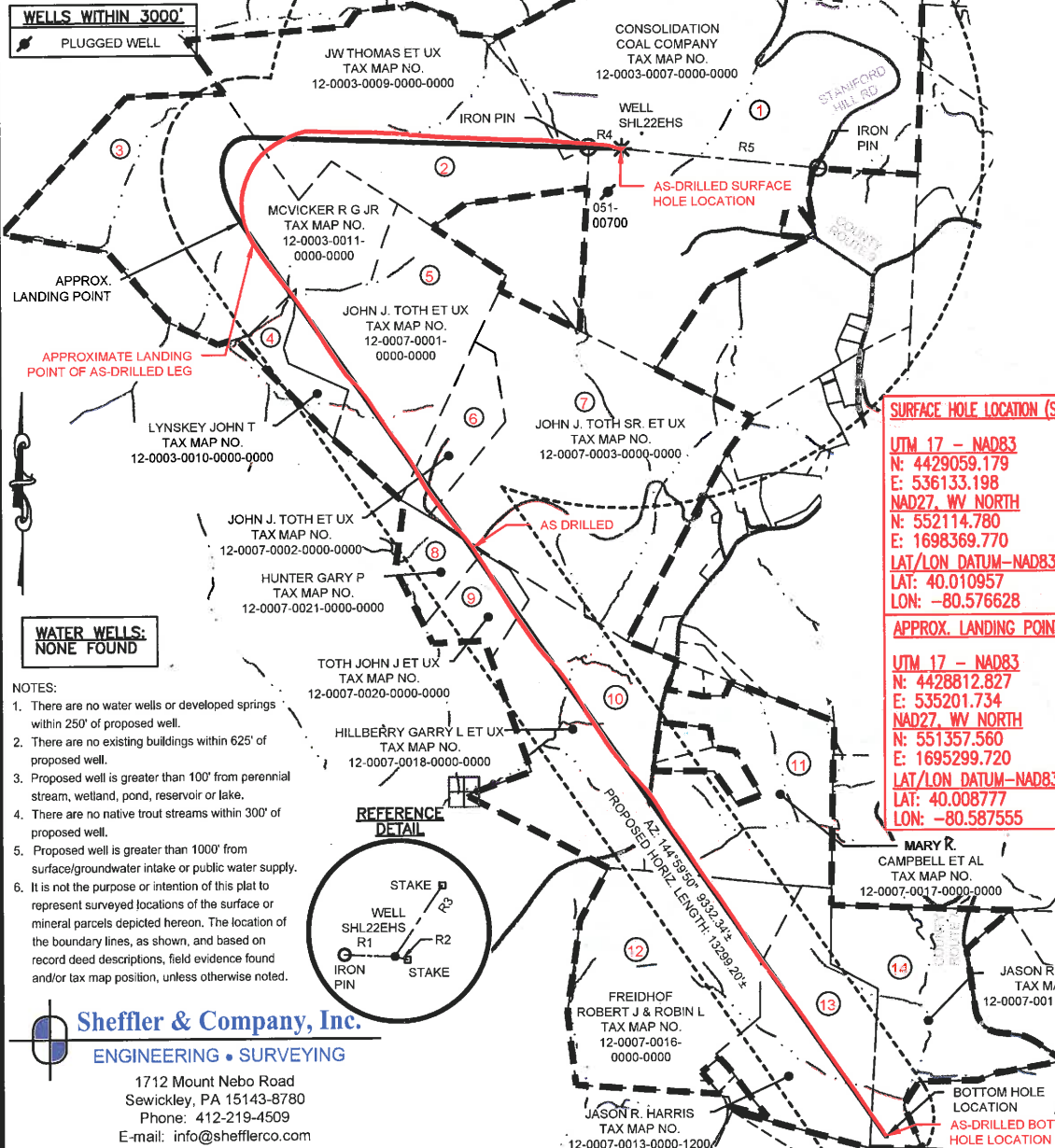


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NAD27, WV NORTH	N: 552113.161
	E: 1698371.190
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UTM 17 - NAD83	N: 4428864.829
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	E: 536838.003
NAD27, WV NORTH	N: 543885.615
	E: 1700545.535
LAT/LON DATUM-NAD83	LAT: 39.988439
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BOTTOM HOLE LOCATION	
UTM 17 - NAD83	N: 4426563.652
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NAD27, WV NORTH	N: 543886.890
	E: 1700547.730
LAT/LON DATUM-NAD83	LAT: 39.988443
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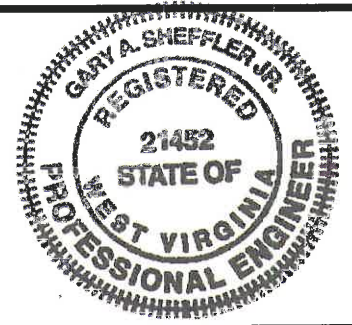
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DRAWING #: SHL 22 EHS  
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City CANONSBURG State PA Zip Code 15317



DATE: MARCH 13, 2017  
OPERATOR'S WELL #: SHL 22 EHS - AS DRILLED  
API WELL # 47 051 01811  
STATE COUNTY PERMIT

ELEVATION: 1322'  
QUADRANGLE: VALLEY GROVE, W. VA.  
ACREAGE: 170.55  
ACREAGE: 170.55

ESTIMATED DEPTH: TVD: 6,680 ± TMD: 17,654 ±  
DESIGNATED AGENT: STEVEN M. GREEN  
Address: 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590  
City CHARLESTON State WV Zip Code 25301

05/26/2017

Well is located on topo map 9,796 feet west of Longitude: 80° 32' 30"

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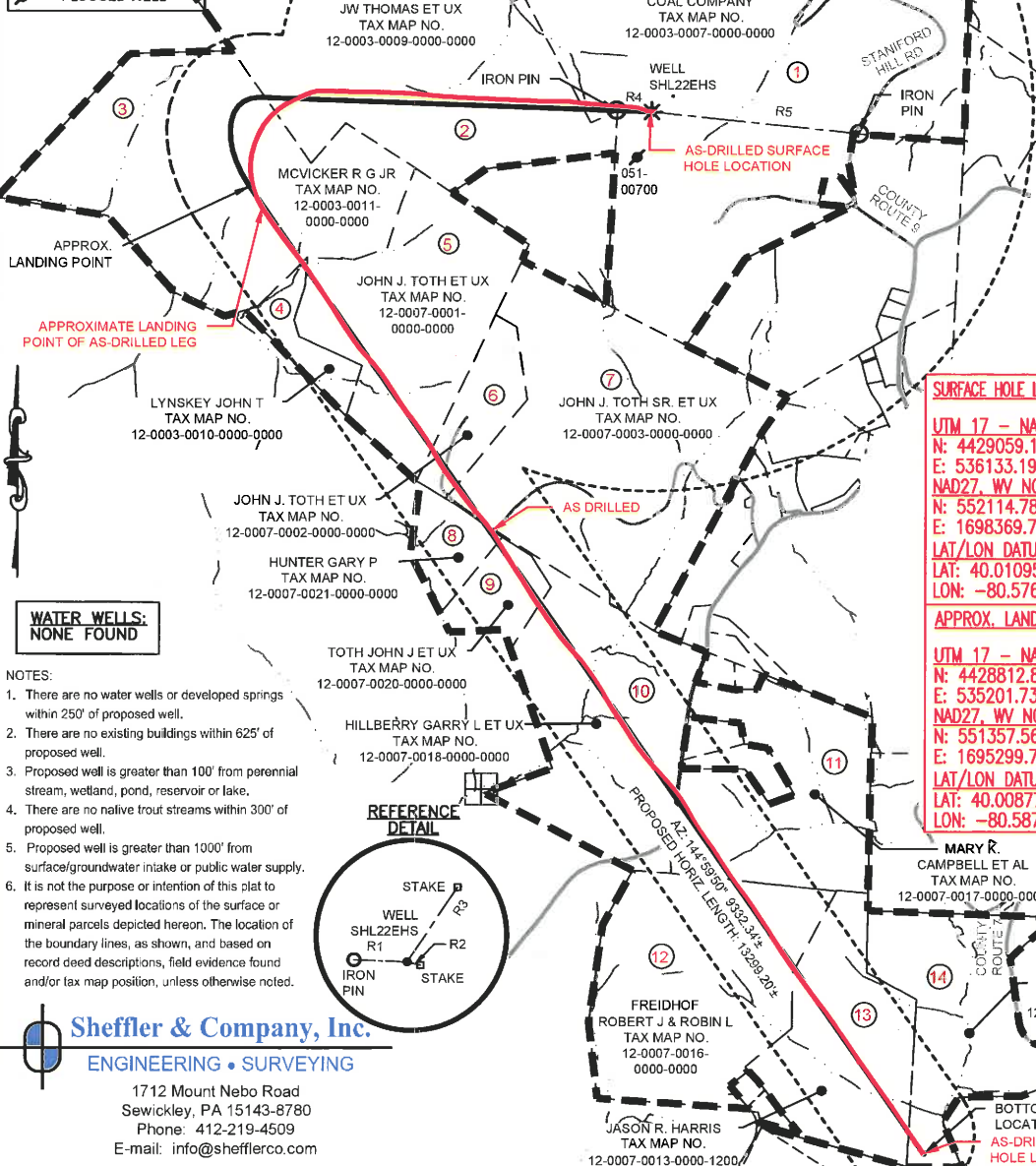
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**WELLS WITHIN 3000'**

PLUGGED WELL

**LEGEND**

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- LEASED NUMBER
- BASED ON
- ATTACHED WW6A1
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- UNLESS
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