

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

RECEIVED  
Office of Oil and Gas

DEC 06 2021

API 47 - 061 - 01843 County Monongalia District Clay WV Department of Environmental Protection  
Quad Blacksville, WV Pad Name Lemley Field/Pool Name \_\_\_\_\_  
Farm name Clarence W. Jr. & Charlotte E. Lemley Well Number 5H  
Operator (as registered with the OOG) Northeast Natural Energy LLC  
Address 707 Virginia St. E., Suite 1200 City Charleston State WV Zip 25301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4391580.2 Easting 573982.0  
Landing Point of Curve Northing 4391649.4 Easting 573980.7  
Bottom Hole Northing 4394039.4 Easting 572110.0

Elevation (ft) 1,539' 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 BASED MUD FOR HORIZONTAL SECTION; BIO-BASE 365, CALCIUM CHLORIDE POWDER, G-Seal Plus, HRP, Lime, M-I WATE (BARITE), M-I-X II MEDIUM,  
MEGADRIL P SYSTEM, MEGADRIL P SYSTEM RENTAL, MEGAMUL, SAFE-CARB 250, VERSATHIN HF, VERSAWET, VG-PLUS, VINSEAL MEDIUM, WALNUT NUT PLUG MEDIUM

Date permit issued 5/31/2019 Date drilling commenced 1/8/2021 Date drilling ceased 3/20/2021  
Date completion activities began 5/31/2021 Date completion activities ceased 6/13/2021  
Verbal plugging (Y/N) NA 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 440', 1,060' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 2,140' Void(s) encountered (Y/N) depths Y, 1,075'  
Coal depth(s) ft 500', 630', 740', 1,060' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
  
01/21/2022

API 47-061 - 01843 Farm name Clarence W. Jr. & Charlotte E. Lemley Well number 5H

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	30"	24"	52"	N		NA	Y
Surface	22"	18-5/8"	1,147'	N	87.5	NA	Y, 3 bbl
Coal	17-1/2"	13-3/8"	1,513'	N	54.4	NA	Y, 14 bbl
Intermediate 1	12-1/4"	9-5/8"	2,554'	N	36	NA	Y, 18 bbl
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	18,622'	N	20	NA	Y
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

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	4500 psi ready mix	36				CTS	48
Surface	Class A	1,300	15.6	1.18	1,532	CTS	8
Coal	Class A	899	15.6	1.18	1,061	CTS	8
Intermediate 1	Class A	856	15.6	1.18	1,010	CTS	8
Intermediate 2							
Intermediate 3							
Production	50:50 Poz	3,385	14.5	1.16	3,916	2,042	48
Tubing							

Drillers TD (ft) 18,660' Loggers TD (ft) 18,630'  
 Deepest formation penetrated Marcellus Plug back to (ft) NA  
 Plug back procedure NA

Kick off depth (ft) 7,107'

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 \_\_\_\_\_

Surface: Bow spring centralizers every 3rd joint or approximately 120'  
 Intermediate: Bow spring centralizers every 3rd joint or approximately 120'  
 Production: Rigid body centralizers placed at a minimum of every other joint (-80') from TD to surface

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 \_\_\_\_\_

API 47- 061 - 01843 Farm name Clarence W. Jr. & Charlotte E. Lemley Well number 5H

**PERFORATION RECORD**

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	See Attached				

Please insert additional pages as applicable.

**STIMULATION INFORMATION PER STAGE**

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
	See	Attached						

Please insert additional pages as applicable.

API 47- 061 - 01843 Farm name Clarence W. Jr. & Charlotte E. Lemley Well number 5H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>8,401</u> TVD	<u>18,660</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 2839 psi Bottom Hole 4466 psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 2859 mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ bpd  
GAS MEASURED BY  Estimated  Orifice  Pilot

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

Please insert additional pages as applicable.

Drilling Contractor Patterson UTI  
Address 4000 Town Center Blvd, Suite 240 City Canonsburg State PA Zip 15317

Logging Company Baker Hughes  
Address 837 Phillippi Pike City Clarksburg State WV Zip 26301

Cementing Company Lightening Energy Services  
Address 104 Heliport Loop Road City Bridgeport State WV Zip 26330

Stimulating Company US Well Services  
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Hollie Medley Telephone 304-212-0422  
Signature Hollie Medley Title Regulatory Manager Date 11/23/21

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

### Lemley 5H Stimulation Summary

Stage Number	Report Date	ISIP (psi)	Breakdown Pressure (psi)	Avg Treating Pressure (psi)	Avg Treating Rate (BPM)	Pad Volume (bbbls)
1	5/31/2021	5,484	8,326	9,447	88	312
2	6/1/2021	6,333	6,777	9,651	88	100
3	6/1/2021	5,644	6,736	9,571	86	100
4	6/1/2021	6,319	6,824	9,609	87	125
5	6/2/2021	6,344	6,989	9,580	85	28
6	6/2/2021	6,361	6,513	9,495	89	28
7	6/3/2021	6,278	6,904	9,344	85	26
8	6/3/2021	6,057	6,705	9,445	88	50
9	6/3/2021	5,941	7,219	9,502	88	50
10	6/4/2021	5,162	7,738	9,466	89	56
11	6/4/2021	6,616	6,881	9,472	90	66
12	6/4/2021	6,450	7,846	9,529	89	30
13	6/5/2021	6,218	8,143	9,370	90	42
14	6/5/2021	6,054	7,429	9,179	88	102
15	6/5/2021	6,016	6,885	9,286	90	30
16	6/5/2021	5,228	7,538	9,466	90	23
17	6/6/2021	6,214	7,338	9,215	90	394
18	6/6/2021	5,089	6,906	9,095	90	73
19	6/6/2021	6,014	6,541	8,982	89	13
20	6/7/2021	5,213	7,230	9,021	90	24
21	6/7/2021	5,169	6,958	9,251	90	50
22	6/7/2021	6,128	6,722	9,185	90	49
23	6/7/2021	9,256	6,906	9,042	90	17
24	6/8/2021	5,931	7,156	8,904	90	16
25	6/8/2021	4,954	7,725	9,032	89	21
26	6/8/2021	5,058	7,122	9,038	90	56
27	6/8/2021	6,388	6,794	8,783	90	51
28	6/9/2021	6,223	7,911	8,638	90	19
29	6/9/2021	6,002	8,102	8,939	90	18
30	6/9/2021	6,122	6,679	8,748	90	50
31	6/9/2021	5,564	6,601	8,546	90	50
32	6/9/2021	5,944	7,823	8,668	90	21
33	6/10/2021	5,610	8,086	8,358	90	47
34	6/10/2021	5,914	6,707	9,207	73	30
35	6/10/2021	5,728	7,085	8,491	90	32
36	6/10/2021	6,061	7,524	8,535	90	13
37	6/11/2021	6,067	6,259	8,338	90	14
38	6/11/2021	5,900	5,352	8,475	90	15
39	6/11/2021	5,975	5,932	8,385	90	50
40	6/11/2021	6,175	6,804	8,220	90	10
41	6/11/2021	6,129	7,282	8,396	89	13
42	6/12/2021	5,851	6,960	8,162	90	12
43	6/12/2021	5,813	7,277	8,153	90	11
44	6/12/2021	5,849	7,437	8,424	90	157
45	6/12/2021	5,156	6,235	7,688	90	18
46	6/13/2021	5,696	6,940	7,725	90	38
47	6/13/2021	5,961	6,753	7,734	90	10
48	6/13/2021	5,607	6,411	7,667	91	5
49	6/14/2021	5,884	7,091	7,599	91	6

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## Lemley 5H Perforation Summary

Stage Number	Report Date	Cluster 5 Bottom TD	Cluster 1 Top TD	Total Shots
1	5/31/2021	18,512	0	40
2	6/1/2021	18,312	18,469	40
3	6/1/2021	18,114	18,271	40
4	6/1/2021	17,916	18,073	40
5	6/2/2021	17,718	17,874	40
6	6/2/2021	17,520	17,676	40
7	6/3/2021	17,322	17,498	40
8	6/3/2021	17,124	17,280	40
9	6/3/2021	16,926	17,082	40
10	6/4/2021	16,727	16,884	40
11	6/4/2021	16,529	16,686	40
12	6/4/2021	16,331	16,488	40
13	6/5/2021	16,133	16,290	40
14	6/5/2021	15,935	16,112	40
15	6/5/2021	15,737	15,894	40
16	6/5/2021	15,539	15,695	40
17	6/6/2021	15,341	15,497	40
18	6/6/2021	15,143	15,299	40
19	6/6/2021	14,945	15,101	40
20	6/7/2021	14,747	14,903	40
21	6/7/2021	14,549	14,705	40
22	6/7/2021	14,350	14,507	40
23	6/7/2021	14,152	14,309	40
24	6/8/2021	13,954	14,111	40
25	6/8/2021	13,756	13,913	40
26	6/8/2021	13,558	13,715	40
27	6/8/2021	13,360	13,516	40
28	6/9/2021	13,162	13,318	40
29	6/9/2021	12,964	13,120	40
30	6/9/2021	12,766	12,922	40
31	6/9/2021	12,568	12,724	40
32	6/9/2021	12,370	12,526	40
33	6/10/2021	12,171	12,328	40
34	6/10/2021	11,973	12,130	40
35	6/10/2021	11,775	11,932	40
36	6/10/2021	11,577	11,734	40
37	6/11/2021	11,379	11,536	40
38	6/11/2021	11,181	11,337	40
39	6/11/2021	10,983	11,139	40
40	6/11/2021	10,785	10,941	40
41	6/11/2021	10,587	10,743	40
42	6/12/2021	10,389	10,545	40
43	6/12/2021	10,191	10,347	40
44	6/12/2021	9,992	10,149	40
45	6/12/2021	9,794	9,951	40
46	6/13/2021	9,596	9,753	40
47	6/13/2021	9,398	9,555	40
48	6/13/2021	9,200	9,357	40
49	6/14/2021	9,002	9,158	40

01/21/2022

Lemley Completion lithology			
Lithology/Formation	Top Depth in FT TVD	Bottom Depth in FT TVD	Describe rock type and record quantity and type of fluid (freshwater, brine, oil, gas, H2S, etc)
Sand/silt	0	180	Sand/silt
silt/red shale	180	390	silt/red shale
siltstone/sandstone/limestone	390	440	siltstone/sandstone/limestone
limestone/siltstone/sandstone	440	500	limestone/siltstone/sandstone
coal	500	510	coal
siltstone/limestone/shale	510	630	siltstone/limestone/shale
coal	630	640	coal
siltstone/sandstone	640	740	siltstone/sandstone
coal	740	750	coal
sandstone/siltstone/limestone	750	1060	sandstone/siltstone/limestone
coal-Pittsburgh	1060	1070	coal-Pittsburgh
sandstone/limestone	1070	1190	sandstone/limestone
red shale/siltstone	1190	1480	red shale/siltstone
Limestone/siltstone	1480	1730	Limestone/siltstone
sandstone	1730	1860	sandstone
sandstone/siltstone/red shale	1860	2050	sandstone/siltstone/red shale
siltstone/sandstone	2050	2110	siltstone/sandstone
sandstone	2110	2140	sandstone
sandstone/siltstone/red shale	2140	2300	sandstone/siltstone/red shale
Big Lime	2300	2420	Big Lime
Big Injun Sandstone	2420	2520	Big Injun Sandstone
siltstone/sandstone	2520	2810	siltstone/sandstone
Berea Sandstone	2810	2820	Berea Sandstone
Upper Devonian Sands/silts	2820	3350	Upper Devonian Sands/silts
shale/siltstone	3350	7514	shale/siltstone
Middlesex shale/silt	7514	7737	Middlesex shale/silt
Burkett shale	7737	7918	Burkett shale
Geneseo shale	7918	7969	Geneseo shale
Tully Limestone	7969	8044	Tully Limestone
Hamilton shale	8044	8129	Hamilton shale
Marcellus shale	8129	TD	Marcellus shale



Ticket #: 0

Remit to:  
 Lightning Energy Services  
 104 Heliport Loop Road  
 Bridgeport, WV 26330

Job Times				
Date:	On Loc: 01/10/21	Job Start: 01/10/21	Job End: 01/15/21	Off Loc: 01/15/21
Time:	2:00AM	3:00AM		

Customer and Well Information					
Customer: NORTHEAST		Well Name:		Well #: 5H	Well Type: GAS
County:	State: WV	AFE #/API #:		PO #/Permit #:	Well Class:
Field:		Lease: LEMLEY		Rig Name/# : DECKER #8	
Wellbore Information					
Bit Size (Inches): 22	Well MD (ft):	Well TVD (ft): 1170	BHST (F°):	BHCT (F°):	Deviation (°):
Drilling Fluid Type:	Drilling Fluid Density (ppg):		Packer Depth (ft):	Treating Down:	
Previous Casing/Liner					
Size (Inches): 24	Weight (lb/ft):	Thread:	Grade:	Total Footage (ft): 40	
Casing/Liner/Tubing					
Size (Inches): 18 5/8	Weight (lb/ft): 87.5	Thread: BT	Grade:	Total Footage (ft): 1147	
Job					
Job Type: SURFACE		Connection to Well: PLUG CONTAINER		Top Plug: YES	
Lift Pressure (PSI): 313	Max Annulus Pressure (PSI):		Mix Water Temp (F°): 60	Bottom Plug: No	
Casing/Tubing Secured : YES		Pipe Rotated: No	Cement Return to Surface (bbl):	Top Job (bbl): 273	
Pipe Reciprocated : No	Circulation Lost:	Job Completed: yes	TOP JOB CEMENT TO SURFACE		





Event Summary					
Activity Description (Job Marker)	Dens PPG	Press PSI	Rate bpm	Total bbl	Time
ON LOCATION	0.00	0.00	0.00		
PSI TEST	0.00	1500.00	0.00		6:17AM
WATER SPACER	0.00		6.00	340.00	
GEL SPACER	0.00		6.00	25.00	
CEMENT	15.60		5.50	45.00	
START DISPLACEMENT	0.00		5.00	338.00	
BUMP PLUG	0.00				
OFF LOCATION	0.00	0.00	0.00		

**Notes**  
 PUMP 340 BBL H2O 25 GEL 45 BBL CEMENT 338 BBL DISP BUMP PLUG FLOATS HELD TOP JOB 273 BBL CEMENT  
 1300 SKS CLASS A CEMENT TO SURFACE END JOB

Customer or Authorized Representative:	Service Supervisor:
	DANNY GUM
X	X



Ticket #: 0

Remit to:  
 Lightning Energy Services  
 104 Heliport Loop Road  
 Bridgeport, WV 26330

Job Times				
Date:	On Loc:	Job Start:	Job End:	Off Loc:
	01/16/21			01/16/21
Time:	8:00AM	10:35AM	1:09PM	

Customer and Well Information					
Customer: NORTHEAST		Well Name:		Well #: 5H	Well Type: GAS
County:	State: WV	AFE #/API #:		PO #/Permit #:	Well Class:
Field:		Lease: LEMLEY		Rig Name/# : DECKER #8	
Wellbore Information					
Bit Size (Inches): 17 1/2	Well MD (ft):	Well TVD (ft): 1513	BHST (F°):	BHCT (F°):	Deviation (°):
Drilling Fluid Type:	Drilling Fluid Density (ppg):		Packer Depth (ft):	Treating Down:	
Previous Casing/Liner					
Size (Inches): 18	Weight (lb/ft): 87 1/2	Thread:	Grade:	Total Footage (ft): 1170	
Casing/Liner/Tubing					
Size (Inches): 13 3/8	Weight (lb/ft): 54.5	Thread: BT	Grade:	Total Footage (ft): 1513	
Job					
Job Type: SURFACE		Connection to Well: PLUG CONTAINER			Top Plug: YES
Lift Pressure (PSI): 545	Max Annulus Pressure (PSI):		Mix Water Temp (F°): 60	Bottom Plug: No	
Casing/Tubing Secured : YES		Pipe Rotated: No	Cement Return to Surface (bbl): 14	Top Job (bbl):	
Pipe Reciprocated : No	Circulation Lost: NO	Job Completed: yes			



Event Summary					
Activity Description (Job Marker)	Dens PPG	Press PSI	Rate bpm	Total bbl	Time
ON LOCATION	0.00	0.00	0.00		
PSI TEST	0.00	1500.00	0.00		10:35PM
WATER SPACER	0.00		6.00	208.00	
GEL SPACER	0.00		6.00	25.00	
CEMENT	15.60		5.50	189.00	
START DISPLACEMENT	0.00		5.00	226.00	
BUMP PLUG	0.00				1:09PM
OFF LOCATION	0.00	0.00	0.00		

**Notes**  
 PUMP 208 H2O 25 GEL 10 H2O 189 BBL CEMENT DISP 226 BBL BUMP PLUG FLOATS HELD 14 BBL CEMENT BACK TO SURFACE

Customer or Authorized Representative:	Service Supervisor:
	DANNY GUM
X	X



<b>Ticket #:</b> 0
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Remit to:  
 Lightning Energy Services  
 104 Heliport Loop Road  
 Bridgeport, WV 26330

Job Times				
Date:	On Loc: 01/18/21	Job Start: 01/18/21	Job End:	Off Loc: 01/18/21
Time:	2:00pm	4:00PM	6:22PM	8:00PM

Customer and Well Information					
Customer: NORTHEAST		Well Name:		Well #: 5H	Well Type: GAS
County:	State: WV	AFE #/API #:		PO #/Permit #:	Well Class:
Field:		Lease: LEMLEY		Rig Name/# : DECKER #8	
Wellbore Information					
Bit Size (Inches): 12 3/8	Well MD (ft):	Well TVD (ft): 2600	BHST (F°):	BHCT (F°):	Deviation (°):
Drilling Fluid Type:	Drilling Fluid Density (ppg):	Packer Depth (ft):		Treating Down:	
Previous Casing/Liner					
Size (Inches): 13	Weight (lb/ft): 54 1/2	Thread:	Grade:	Total Footage (ft): 1513	
Casing/Liner/Tubing					
Size (Inches): 9 5/8	Weight (lb/ft): 36	Thread: BT	Grade:	Total Footage (ft): 2554	
Job					
Job Type: SURFACE		Connection to Well: PLUG CONTAINER			Top Plug: YES
Lift Pressure (PSI): 1292	Max Annulus Pressure (PSI):		Mix Water Temp (F°): 60	Bottom Plug: No	
Casing/Tubing Secured : YES		Pipe Rotated: No	Cement Return to Surface (bbl): 18	Top Job (bbl):	
Pipe Reciprocated : No	Circulation Lost: NO	Job Completed: yes			

01/21/2022



Event Summary					
Activity Description (Job Marker)	Dens PPG	Press PSI	Rate bpm	Total bbl	Time
ON LOCATION	0.00	0.00	0.00		2:00pm
PSI TEST	0.00	1500.00	0.00		4:00PM
WATER SPACER	0.00		6.00	175.00	
GEL SPACER	0.00		6.00	25.00	
CEMENT	15.60		5.50	180.00	
START DISPLACEMENT	0.00		5.00	194.00	
BUMP PLUG	0.00				6:04PM
OFF LOCATION	0.00	0.00	0.00		

Notes
PUMP 175 H2O 25 GEL 10 H2O 180BBL CEMENT DISP 194 BBL BUMP PLUG FLOATS HELD 18 BBL CEMENT BACK TO SURFACE DOT TEST 1305 FOR 15 MIN END JOB

Customer or Authorized Representative:	Service Supervisor:
	DANNY GUM
X	X

Cement Job Log



Customer:	NORTHEAST NATURAL ENERGY LLC	Date:	20-Mar-21	Serv. Supervisor:	Drew Forsythe
Cust. Rep.:	Josh	Ticket #:	BPA-2103-0038	Serv. Center:	Black Lick - 1571
Well Name:	Lemley 5H	API Well #:	47-061-01843	County:	Monongalia
Well Type:		Rig:	Patterson 277	State:	WV
				Type of Job:	CM-PROD. CASING

Materials Furnished by NexTier

Plugs	Casing Hardware	Physical Slurry Properties						
		Sacks of Cement	Fluid Density (lb/gal)	Excess	Yield (cuft/sk)	Mix Water (gal/sk)	Fluid Volume (bbbls)	Mix Water (bbbls)
Top and Bottom Latch	Citadel 10K 5.5" Double Plug Container w/ Latch Collar							
Plugs, supplied by cust.								
13.5 lb/gal PureScrub Spacer w/Surfactant	+15.0 PPB NAC-111+7.0 PPB NFP-702+1.0 GPB NSU-887L	100	13.5		5.64	26.34	80.00	63
14.5 lb/gal Cement	50 % NCM-910+50 % NPZ-010 +0.2 % NFP-702+0.15 % NAS-504+0.2 % NRT-213+0.15 % NFL-549+0.1 % NTC-405	3385	14.5		1.16	4.90	697.65	395
Fresh Water Displacement			8.33		-	-	411.80	
0					-	-		
					-	-		
					-	-		
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					-	-		
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		

Displacement Chemicals:

OPEN HOLE DATA				TUBULAR DATA							
8.75 in. O.H. 2,570 to 7,364 ft		8.5 in. O.H. 7,364 to 18,572 ft		5.5 in. 20#, ( 0 to 18,572 ft)	SIZE WEIGHT	THR	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
Mix Cemt. Temperature *F	Lead Temp.	Middle Temp.	Tail Temp.	5.5" 20#	BTC	18620'	P 110	4.778	12640	11080	
60.0 *F											

PREVIOUS CASING DATA				MIX WATER			CASING EQUIPMENT DEPTHS				
9.625 in. 36# ( 0 to 2,570 ft)				TEMP	PH		SHOE	FLOAT	STAGE	ACP	
				56	7		18516.8				

WELL FLUID		DISPLACEMENT FLUID			DIFF PRESS	C&G LIFT	MAX PRESS	Total Number of Runs	WATER ON LOC (bb)
TYPE	DENSITY	VOLUME	TYPE	DENSITY	(psi)	(psi)	(psi)		(bb)
OBM	12.4#	413.3 bbl	H2O	8.3 ppg	2520		10000		1600

Bumped Plug	Final Differential (psi)	Floata Held (Y/N)	PSI Left on Casing	Cement to Surface (bbl)	Top of Cement (ft)	Full Circ. During Job (Y/N)	Max Pump Pressure (psi)	Casing Rotation	Additional Hrs Charged (hrs)	Casing Reciprocation	Rathole Length (ft)
Yes	3,600.00	Y	-	-	2.042	Yes	4,750.00	No	1.00	No	40'

Comments/Special Customer Instructions:

*Drew Forsythe*      20-Mar-21  
 Service Supervisor      Date

Cement Job Log

NEXTIER											
Customer:	NORTHEAST NATURAL ENERGY LLC			Date:	20-Mar-21	Serv. Supervisor:	Drew Forsythe				
Cust. Rep.:	Josh			Ticket #:	BPA-2103-0038	Serv. Center:	Black Lick - 1571				
Well Name:	Lemley 5H	RTS Date:	20-Mar-21	API Well #:	47-061-01843	County:	Monongalia	State:	WV		
Well Type:		RTS Time:	2:00 PM	Rig:	Patterson 277	Type of Job:	CM-PROD. CASING				
Left Yard:	20-Mar-21	Time	11:00 AM	Left Loc.:	21-Mar-21	Time	2:30 AM	Start Pump:	20-Mar-21	Time	9:40 PM
Arrived Loc.:	20-Mar-21	Time	2:00 PM	Returned Yd.:	21-Mar-21	Time	6:00 AM	End Pump:	21-Mar-21	Time	1:14 AM
TIME	Rate	Csg. Press.	Tbg. Press.	Ann. Press.	Stg. Vol.	Cum. Vol.	Stage Num.	Stage Details			
	(bbl/min)	(psi)	(psi)	(psi)	(bbl)	(bbl)	Stage #				
11:00 AM								Left Yard or Current Location			
2:00 PM								ARRIVE ON LOCATION			
2:00 PM							1	ARRIVE ON LOCATION, RIG HAS ABOUT 100 JOINTS TO RUN.			
3:00 PM							1	SPOT EQUIPMENT			
3:20 PM							1	RIG UP IRON, WATER, AND WASH UP LINE.			
6:30 PM							1	STAB HEAD AND RIG UP FLOOR.			
7:00 PM							1	RIG BURST DISC AND BEGAN CIRCULATION. RAISE STANDPIPE.			
7:20 PM							1	PRIME PUMPS.			
9:00 PM							1	PRE JOB SAFETY MEETING WITH RIG CREW.			
9:20 PM							1	BATCH SPACER WHILE RIG FINISHES CIRCULATING.			
9:30 PM							1	PUMP SPACER @ 13.5# WITH SURFACTANT			
9:40 PM	10	850			10.0 bbl	10.0 bbl	1	LAUNCH BOTTOM PLUG AND LOAD LINES WITH BOTH PUMPS.			
9:42 PM		3000					1	LOW PRESSURE TEST, FAILED.			
9:50 PM							1	REPRIME PUMP.			
9:55 PM		3000					1	LOW PRESSURE TEST.			
9:58 PM		7000					1	HIGH PRESSURE TEST.			
9:59 PM							1	LOAD TOP PLUG.			
10:03 PM	7.3	1900			80.0 bbl	80.0 bbl	1	PUMP SPACER @ 13.5# WITH SURFACTANT			
10:24 PM	7	1800			699.0 bbl	789.0 bbl	1	PUMP CEMENT. 14.7# ON DENSOMETER, 14.5# ON SCALE.			
12:14 AM							1	SHUT DOWN, WASH LINES, DROP TOP PLUG.			
12:24 AM	10	4750			413.0 bbl	1202.0 bbl	1	TOP PLUG AWAY, PUMP DISPLACEMENT WITH BOTH PUMPS.			
1:14 AM	4	3600-4000					1	LAND PLUG AND HOLD PRESSURE			
1:20 AM							1	BLEED OFF PRESSURE. 6 BBLS BACK. FLOATS HELD.			
1:30 AM							1	WASH UP PUMP.			
1:50 AM							1	RACK OUT.			
2:30 AM							1	LEAVE LOCATION			
								WATER TEMP: 56 PH: 7			
								CEMENT TEMP: 60			
								TOP OF CEMENT = 2042'			

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/31/2021
Job End Date:	6/13/2021
State:	West Virginia
County:	Monongalia
API Number:	47-061-01843-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Lemley 5H
Latitude:	39.67084000
Longitude:	-80.13742500
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8,400
Total Base Water Volume (gal):	19,801,924
Total Base Non Water Volume:	0



## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Northeast Natural Energy LLC	Carrier/Base Fluid	Water	7732-18-5	100.00000	87.45754	
Sand	J.S. Well Services	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	11.78336	
HCL Acid (5% to 7.5%)	J.S. Well Services	Bulk Acid	Water	7732-18-5	95.00000	0.62455	
			Hydrogen Chloride	7647-01-0	7.50000	0.05725	
Clearal 268	J.S. Well Services	Anti-Bacterial Agent	Non-hazardous substances	Proprietary	90.00000	0.02817	
			Glutaraldehyde	111-30-8	20.00000	0.00664	
			Alkyl dimethyl benzyl ammonium chloride	68391-01-5	3.00000	0.00094	
			Didecyl dimethyl ammonium chloride	7173-51-5	3.00000	0.00094	
StimSTREAM SC-405	J.S. Well Services	Scale Inhibitor	Non-hazardous substances	Proprietary	70.00000	0.01795	
			2-Phosphono-1,2,4-butanetricarboxylic acid (PBTC)	37971-36-1	10.00000	0.00256	



			Diethylenetriamine penta (methylene phosphonic acid) (DTPMP)	15827-60-8	10.00000	0.00256
			Citric acid	77-92-9	10.00000	0.00256
CFR-H-2800	U.S. Well Services	Friction Reducer				
			Hydrotreated Light Distillates	64742-47-8	30.00000	0.01183
			Alcohols, C11-14-iso-, C13-rich, ethoxylated	78330-21-9	5.00000	0.00244
StimSTREAM FR 9800	U.S. Well Services	Friction Reducer				
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.00023
			Butene, homopolymer	9003-29-6	25.00000	0.00023
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00003
AI-303	U.S. Well Services	Acid Corrosion Inhibitor				
			Ethylene glycol	107-21-1	40.00000	0.00010
			Cinnamaldehyde	104-55-2	20.00000	0.00004
			Formic acid	64-18-6	20.00000	0.00003
			Butyl cellosolve	111-76-2	20.00000	0.00003
			Polyether	60828-78-6	10.00000	0.00002
			Acetophenone, thiourea, formaldehyde polymer	68527-49-1	5.00000	0.00001

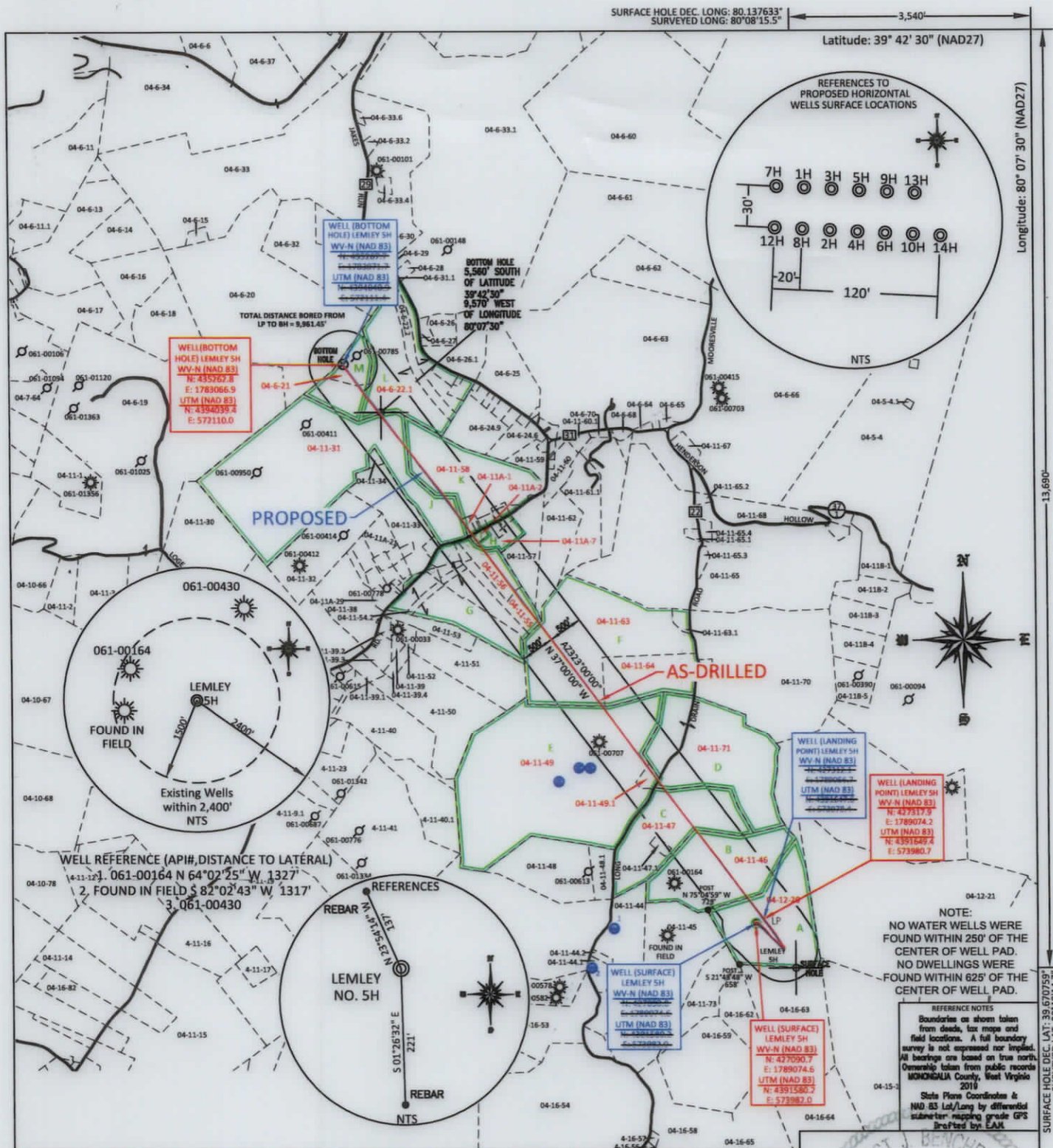
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

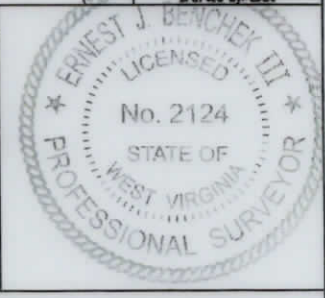
Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)



FILE #: NEE14  
 DRAWING #: 2902  
 SCALE: PLAT: 1" = 2000'  
TICK MARK: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/200  
 PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

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]  
 L.L.S. #2124 : Ernest J. Benchek III

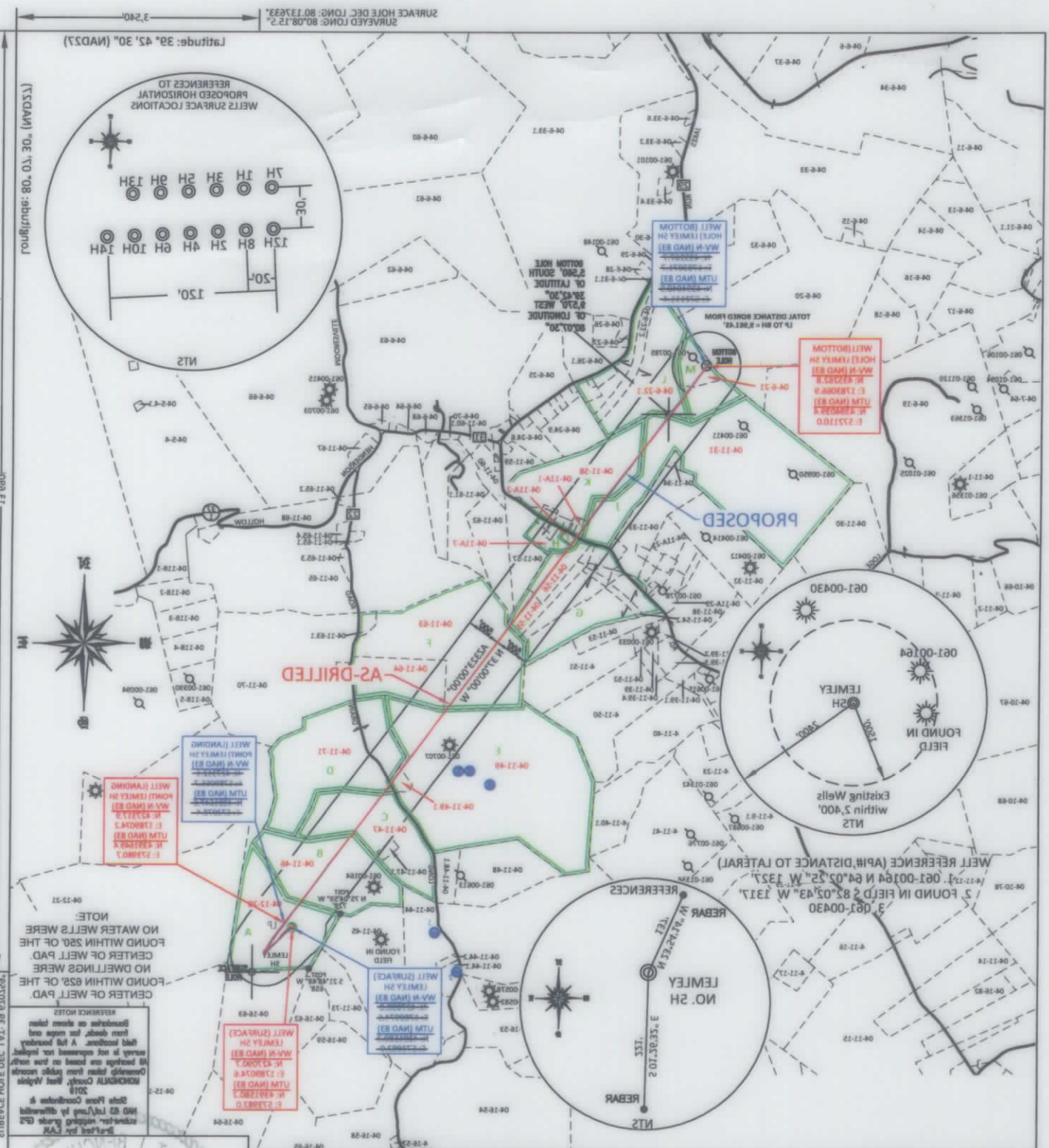


(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304  
 Well Type:  Oil  Waste Diposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow  
 WATERSHED: DUNKARD CREEK  
 COUNTY/DISTRICT: MONONGALIA / CLAY  
 SURFACE OWNER: CLARENCE W. LEMLEY JR. & CHARLOTTE E. LEMLEY  
 OIL & GAS ROYALTY OWNER: LEROY TENNANT, et al  
 LEASE NUMBERS: \_\_\_\_\_

DATE: DECEMBER 7, 2021  
 OPERATOR'S WELL #: LEMLEY 5H AS-DRILLED  
 API WELL #: 47 61 01843  
 STATE COUNTY PERMIT  
AS-BUILT  
 ELEVATION: 1,549.47'  
 QUADRANGLE: BLACKSVILLE, WV  
 ACREAGE: 128.58 +/-  
 ACREAGE: 639.799 +/-

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
 PLUG OFF FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
 CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY): \_\_\_\_\_  
 TARGET FORMATION: MARCELLUS  
 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301  
 DRILLED DEPTH: TVD: 8,401' TMD: 18,660'  
 DESIGNATED AGENT: JOHN ADAMS  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

01/21/2022



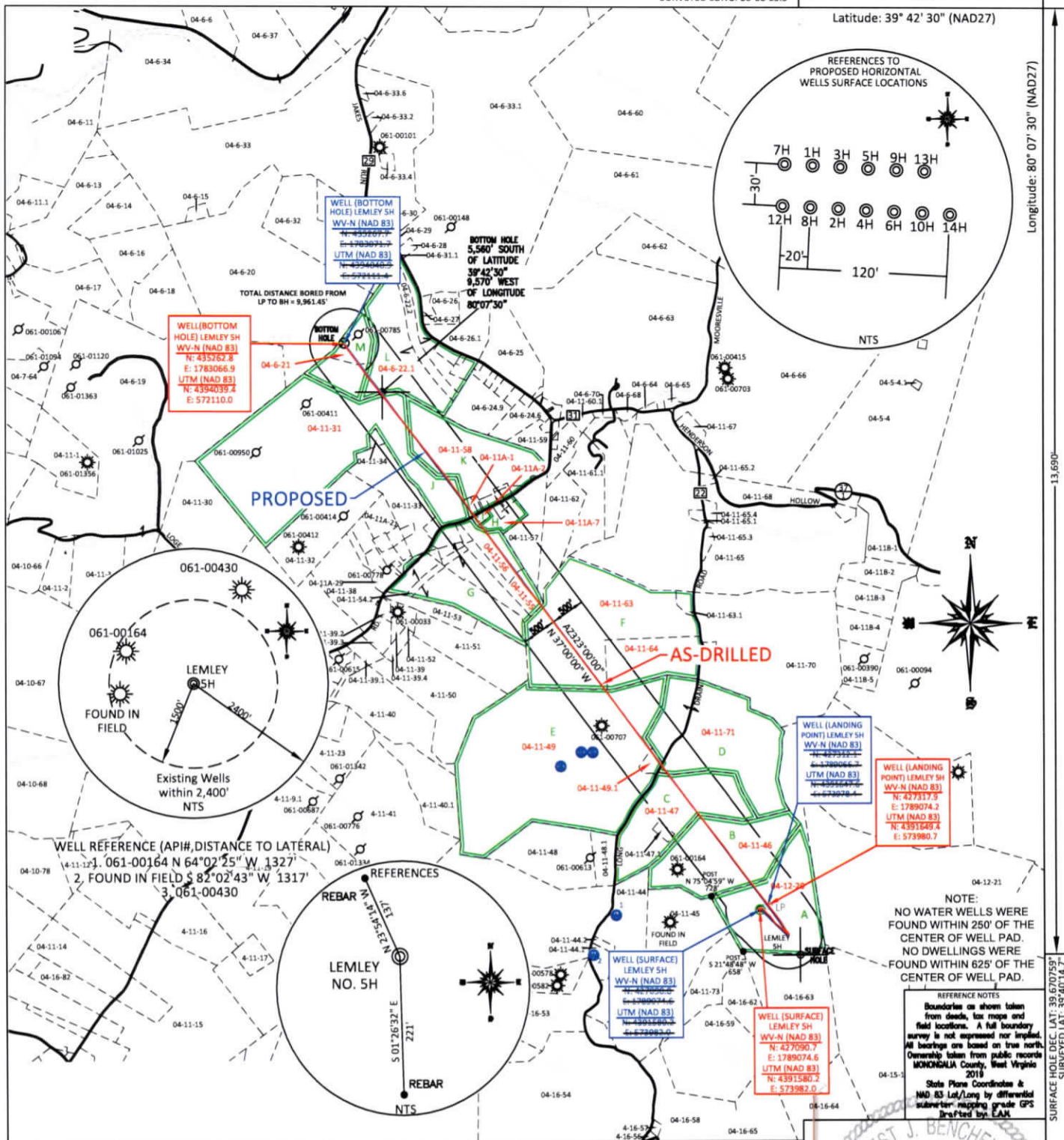
CITY: CHARLESTON STATE: WV ZIP CODE: 25301 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC DESIGNATED AGENT: JOHN ADAMS DRILLED DEPTH: TMD: 18,660'		TARGET FORMATION: MARCELLUS CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input type="checkbox"/> (SPECIFY): PLUG OFF FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> DRILL CONVERT <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/>	
CITY: CHARLESTON STATE: WV ZIP CODE: 25304 OFFICE OF OIL & GAS 601 5TH STREET CHARLESTON, WV 25304		WATERSHED: DUNKARD CREEK COUNTY/DISTRICT: MONONGALIA / CLAY SURFACE OWNER: CLARENCE W. LEMLEY JR. & CHARLOTTE E. LEMLEY OIL & GAS ROYALTY OWNER: LEROY TENNANT, et al	
OPERATOR'S WELL #: LEMLEY 5H AS-DRILLED DATE: DECEMBER 7, 2021		PROVEN SOURCE SUBMETER MAPPING OF ELEVATION: GRADE GPS	
API WELL #: 47 STATE COUNTY PERMIT 01843		OF ACCURACY: 1/200 MINIMUM DEGREE	
ELEVATION: 1,249.47' AS-BUILT		SCALE: 1" = 2000' DRAWING #: 2805 FILE #: NEED 4	
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION. LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS			
L.S. #5124 : Ernest J. Banchek III Signed:		OF ELEVATION: GRADE GPS PROVEN SOURCE SUBMETER MAPPING OF ACCURACY: 1/200 MINIMUM DEGREE	
STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR LICENSED No. 2124 ERNEST J. BANCHEK III			

01/21/2022

SURFACE HOLE DEC. LONG: 80.137633° SURVEYED LONG: 80°08'15.5" 3,540'

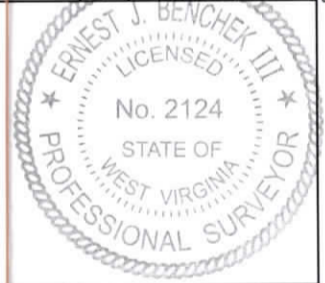
Latitude: 39° 42' 30" (NAD27)

Longitude: 80° 07' 30" (NAD27)



FILE #: NEE14  
 DRAWING #: 2902  
 SCALE: PLAT: 1" = 2000' TICK MARK: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/200  
 PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

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]*  
 L.L.S. #2124 : Ernest J. Benchek III



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

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

WATERSHED: DUNKARD CREEK  
 COUNTY/DISTRICT: MONONGALIA / CLAY  
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DATE: DECEMBER 7, 2021  
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QUADRANGLE: BLACKSVILLE, WV  
 ACREAGE: 128.58 +/-  
 ACREAGE: 639.799 +/-

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

TARGET FORMATION: MARCELLUS  
 DRILLED DEPTH: TVD: 8,401' TMD: 18,660'  
 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301  
 DESIGNATED AGENT: JOHN ADAMS  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

01/21/2022

PROPERTY OWNER INDEX	
4-12-20	CLARENCE W. LEMLEY JR. & CHARLOTTE E. LEMLEY
4-11-46	JAMES ALLEN JR. & CHANDRA DARLENE BENNETT
4-11-47	JAMES ALLEN JR. & CHANDRA DARLENE BENNETT
4-11-71	MELINDA WILEY
4-11-49	RONALD W. & PATRICIA A. STATLER
4-11-49.1	NELSON EARL & ROSEMARY STATLER
4-11-64	ALBERT D. & CAROLYN JONES
4-11-55	DEBBIE DARRAH & MARY L. JOHNSON
4-11-63	ALBERT D. & CAROLYN JONES
4-11-56	ROBERT M. & KATHLEEN A. TENNANT
4-11A-7	ROBERT M. & KATHLEEN A. TENNANT
4-11A-2	HEATHER ELIZABETH ROSE
4-11A-1	TAMARA C. CERRA
4-11-58	PHYLLIS J. & NELLIE E. JOHNSON
4-11-31	NELLIE & PHYLLIS GEAN JOHNSON
4-6-22.1	TAYLOR E. & BRIANNA N. DITTMAN
4-6-21	CHRISTOPHER K. EMRICK & ASHLEY N. DEMCHAK

LEASE INDEX			
A	WV-061-003525-001	H	WV-061-005128-001
B	WV-061-002339-006	I	WV-061-005545-004
C	WV-061-003622-001	J	WV-061-003664-001
D	WV-061-003860-001	K	WV-061-003672-001
E	WV-061-002367-002	L	WV-061-005549-001
F	WV-061-003763-001	M	WV-061-004056-000
G	WV-061-003316-000		

01/21/2022

FILE #: NEE14  
DRAWING #: 2902  
SCALE: N/A

DATE: DECEMBER 7, 2021  
OPERATOR'S WELL #: LEMLEY 5H AS-DRILLED  
API WELL #: 47 61 01843  
STATE COUNTY PERMIT

01/21/2022

FILE #:	_____
DRAWING #:	2802
SCALE:	N/A
DATE:	DECEMBER 7, 2021
OPERATOR'S WELL #:	LEMLEY 2H AS-DRILLED
API WELL #:	47
STATE	61
COUNTY	01843
PERMIT	

LEASE INDEX		
A	WV-061-003252-001	H
B	WV-061-002339-006	I
C	WV-061-003625-001	J
D	WV-061-003860-001	K
E	WV-061-002367-002	L
F	WV-061-003263-001	M
G	WV-061-003316-000	

PROPERTY OWNER INDEX	
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4-11-31	NELLIE & PHYLIS GEAN JOHNSON
4-11-28	PHYLLIS J. & NELLIE E. JOHNSON
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4-11A-7	ROBERT M. & KATHLEEN A. TENNANT
4-11-26	ROBERT M. & KATHLEEN A. TENNANT
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LEASE INDEX			
A	WV-061-003525-001	H	WV-061-005128-001
B	WV-061-002339-006	I	WV-061-005545-004
C	WV-061-003622-001	J	WV-061-003664-001
D	WV-061-003860-001	K	WV-061-003672-001
E	WV-061-002367-002	L	WV-061-005549-001
F	WV-061-003763-001	M	WV-061-004056-000
G	WV-061-003316-000		

01/21/2022

FILE #: NEE14

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OPERATOR'S WELL #: LEMLEY 5H AS-DRILLED

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STATE COUNTY PERMIT