

RECEIVED  
Office of Oil and Gas  
State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work  
MAR 17 2022

WV Department of  
Environmental Protection

API 47 - 061 - 01870 County Monongalia District Clay  
Quad Blacksville, WV Pad Name Bunner Field/Pool Name \_\_\_\_\_  
Farm name Patricia A. Bunner Well Number 8H  
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 4390589.7 Easting 567100.0  
Landing Point of Curve Northing 4390140.0 Easting 566741.2  
Bottom Hole Northing 4386108.9 Easting 569605.4

Elevation (ft) 1,277' 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 3/2/2021 Date drilling commenced 6/8/2021 Date drilling ceased 6/25/2021  
Date completion activities began 8/18/2021 Date completion activities ceased 10/7/2021  
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 1,150' Open mine(s) (Y/N) depths NA  
Salt water depth(s) ft 1,359' Void(s) encountered (Y/N) depths NA  
Coal depth(s) ft 865' Cavern(s) encountered (Y/N) depths NA  
Is coal being mined in area (Y/N) N

Reviewed by: \_\_\_\_\_  
**Reviewed**  
*Kenneth Reynolds 8-22-2022* **09/02/2022**

API 47-061 - 01870 Farm name Patricia A. Bunner Well number 8H

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"	75'	N			Y
Surface	17-1/2"	13-3/8"	1,242'	N	54.5	NA	Y, 40 bbl
Coal							
Intermediate 1	12-3/8"	9-5/8"	2,495'	N	36	NA	Y, 15 bbl
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	25,117'	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	Type 1					CTS	24
Surface	Class A	1,065	15.6	1.2	1,274	CTS	8
Coal							
Intermediate 1	Class A	850	15.6	1.19	1,009	CTS	8
Intermediate 2							
Intermediate 3							
Production	50:50 Poz	4,720	14.5	1.16	5,467	1,921'	24
Tubing							

Drillers TD (ft) 25,173 Loggers TD (ft) 25,143'  
 Deepest formation penetrated Marcellus Plug back to (ft) NA  
 Plug back procedure NA

Kick off depth (ft) 8,428'

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 - 01870 Farm name Patricia A. Bunner Well number 8H

**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 - 01870 Farm name Patricia A. Bunner Well number 8H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>8,101'</u>	<u>TVD</u>	<u>25,173'</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 3163 psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 5180 mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ 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	
See attached	0		0		

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 NexTier  
Address 4000 Town Center Blvd City Canonsburg State PA Zip 15317

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 3/9/22

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

## Bunner 8H Stimulation Report

Stage Number	Report Date	ISIP (psi)	Breakdown Pressure (psi)	Avg Treating Pressure (psi)	Avg Treating Rate (BPM)	Pad Volume (bbls)	Total Clean Fluid (Bbls)	Total Proppant Amount (lbs)	Flush Volume (bbls)
1	08/27/21	5,240	7,936	9,731	87	328	6,830	302,740	558
2	08/28/21	5,865	6,292	9,622	86	45	9,444	454,640	559
3	08/28/21	4,758	8,556	9,819	87	429	9,868	448,110	550
4	08/29/21	5,208	6,875	9,841	89	397	9,766	445,740	547
5	08/30/21	5,332	5,295	9,791	90	44	9,658	452,040	541
6	08/30/21	5,139	7,454	10,043	88	25	9,270	440,000	536
7	08/31/21	5,277	9,231	9,476	86	16	9,314	441,000	533
8	09/01/21	5,240	6,944	9,920	88	51	9,385	437,880	526
9	09/01/21	6,297	6,839	9,891	90	11	9,216	440,200	532
10	09/02/21	5,240	6,793	9,830	85	38	9,294	433,860	519
11	09/02/21	5,369	6,811	9,601	84	209	8,857	443,280	524
12	09/03/21	5,911	6,692	9,694	87	55	9,989	441,040	510
13	09/04/21	5,433	6,614	9,977	86	14	9,164	436,420	643
14	09/05/21	5,433	6,953	9,753	84	20	9,313	438,840	500
15	09/05/21	6,076	7,463	9,637	87	31	11,267	453,280	496
16	09/06/21	5,328	6,572	9,833	86	24	9,361	453,080	493
17	09/06/21	5,713	6,618	9,762	87	23	9,305	443,080	490
18	09/07/21	6,265	4,432	9,738	85	21	9,410	452,360	483
19	09/07/21	5,580	6,930	9,730	88	21	9,407	446,520	482
20	09/08/21	5,433	6,990	9,626	84	16	9,418	451,980	474
21	09/08/21	5,047	6,710	9,854	87	21	9,525	444,160	469
22	09/09/21	5,736	6,861	9,728	89	23	9,256	441,980	466
23	09/10/21	5,589	6,710	9,773	88	40	9,351	446,220	462
24	09/10/21	6,021	6,793	9,558	90	35	10,006	435,600	458
25	09/10/21	5,521	7,803	9,731	89	15	9,271	442,000	452
26	09/11/21	5,989	6,962	9,732	90	38	9,328	445,040	450
27	09/11/21	5,860	6,623	9,581	90	19	9,246	450,960	443
28	09/12/21	5,833	6,494	9,683	92	20	9,455	446,140	440
29	09/12/21	5,580	7,220	9,434	90	20	9,263	450,380	433
30	09/13/21	5,819	7,624	9,476	88	18	9,388	442,660	431
31	09/14/21	5,171	6,944	9,744	92	25	9,539	441,820	429
32	09/14/21	5,047	7,270	9,696	91	34	9,127	444,100	426
33	09/15/21	5,020	8,138	9,606	90	15	9,156	439,400	417
34	09/15/21	5,231	7,582	9,726	92	18	9,362	445,500	413
35	09/16/21	5,553	7,831	9,595	90	14	9,214	438,080	407
36	09/16/21	5,805	6,990	9,231	89	25	9,222	444,080	405
37	09/17/21	5,259	7,169	9,575	90	11	9,164	437,700	400
38	09/17/21	5,805	6,912	9,251	89	21	9,497	447,620	395
39	09/17/21	5,543	7,537	9,367	87	11	9,192	443,500	395
40	09/18/21	5,213	7,417	9,477	92	26	9,212	441,420	386
41	09/18/21	5,658	7,606	9,391	87	14	9,280	444,500	381
42	09/19/21	5,612	7,280	9,434	92	20	9,172	446,500	376
43	09/20/21	5,746	7,895	9,434	87	14	9,078	435,900	374
44	09/20/21	5,672	8,005	9,478	91	24	8,829	447,020	369
45	09/21/21	5,573	8,455	9,342	87	22	9,331	449,240	364

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46	09/21/21	5,902	7,569	9,299	92	22	9,074	438,840	360
47	09/21/21	5,539	7,826	9,318	87	15	9,340	443,400	355
48	09/22/21	5,240	7,569	9,409	91	21	9,062	447,660	350
49	09/22/21	5,833	7,799	9,198	87	15	9,152	441,860	345
50	09/23/21	6,039	6,972	9,108	92	30	9,152	440,600	343
51	09/24/21	5,525	7,160	9,187	92	429	9,149	450,120	338
52	09/24/21	5,488	6,990	8,866	90	71	9,391	441,540	334
53	09/25/21	5,718	6,940	8,845	92	32	9,078	441,760	329
54	09/25/21	5,107	7,211	9,677	92	32	9,431	438,940	324
55	09/26/21	5,093	6,393	8,972	89	24	8,257	396,740	319
56	09/26/21	5,566	6,113	8,696	92	28	8,186	398,120	315
57	09/27/21	6,150	6,903	8,969	91	44	7,860	396,000	312
58	09/27/21	5,323	6,870	8,843	92	33	8,057	401,020	310
59	09/28/21	5,677	6,843	8,601	86	20	10,166	402,340	302
60	09/28/21	5,741	7,233	8,940	93	41	8,071	398,680	302
61	09/29/21	5,557	7,491	8,922	92	20	8,092	399,980	293
62	09/29/21	5,649	7,555	8,990	92	32	8,188	397,100	290
63	09/30/21	5,677	6,783	8,984	90	25	8,277	395,960	288
64	09/30/21	5,860	7,316	8,712	90	8	8,337	398,640	281
65	10/01/21	5,865	6,889	8,743	92	14	8,077	395,160	277
66	10/01/21	5,580	7,348	8,801	89	8	8,172	399,700	271
67	10/02/21	5,107	6,926	8,670	92	18	8,101	402,220	267
68	10/02/21	5,301	7,032	8,542	91	16	8,110	399,340	267
69	10/03/21	5,429	6,673	8,338	92	27	8,186	400,640	258
70	10/03/21	5,332	7,293	8,597	90	11	7,966	396,560	252
71	10/03/21	5,250	7,358	8,592	92	21	8,119	402,900	250
72	10/04/21	5,364	6,242	8,525	90	28	8,144	398,180	245
73	10/04/21	5,286	6,200	8,217	88	68	8,297	396,180	240
74	10/04/21	5,002	6,756	8,235	92	164	8,164	393,920	236
75	10/05/21	5,213	6,751	8,517	91	19	8,102	399,160	231
76	10/05/21	5,250	6,513	8,408	89	169	8,307	399,600	226
77	10/05/21	5,442	6,154	8,572	92	24	8,137	402,700	225
78	10/06/21	5,369	7,141	8,461	91	23	7,809	399,060	219
79	10/06/21	5,585	7,711	8,208	91	13	8,149	400,920	278
80	10/06/21	5,346	7,601	8,155	91	20	8,083	400,140	210
81	10/07/21	4,432	7,036	8,990	90	13	8,618	393,040	250
82	10/07/21	5,305	7,105	8,896	89	126	8,167	401,100	205
83	10/07/21	5,181	8,350	8,882	90	16	8,261	393,520	590

## Bunner 8H Perforation Summary

Stage Number	Report Date	Total Shots	Cluster 1 Top TD	Cluster 5 Bottom TD
1	08/27/21	40	0	25,008
2	08/28/21	40	24,964	24,807
3	08/28/21	40	24,765	24,608
4	08/29/21	40	24,567	24,410
5	08/30/21	40	24,368	24,211
6	08/30/21	40	24,169	24,012
7	08/31/21	40	23,970	23,813
8	09/01/21	40	23,771	23,614
9	09/01/21	40	23,572	23,415
10	09/02/21	40	23,374	23,217
11	09/02/21	40	23,175	23,018
12	09/03/21	40	22,976	22,819
13	09/04/21	40	22,777	22,620
14	09/05/21	40	22,578	22,421
15	09/05/21	40	22,380	22,223
16	09/06/21	40	22,181	22,024
17	09/06/21	40	21,982	21,825
18	09/07/21	40	21,783	21,626
19	09/07/21	40	21,584	21,427
20	09/08/21	40	21,385	21,228
21	09/08/21	40	21,187	21,030
22	09/09/21	40	20,988	20,831
23	09/10/21	40	20,789	20,632
24	09/10/21	40	20,590	20,433
25	09/10/21	40	20,391	20,234
26	09/11/21	40	20,193	20,036
27	09/11/21	40	19,994	19,837
28	09/12/21	40	19,795	19,638
29	09/12/21	40	19,596	19,439
30	09/13/21	40	19,397	19,240
31	09/14/21	40	19,198	19,041
32	09/14/21	40	19,000	18,843
33	09/15/21	40	18,801	18,644
34	09/15/21	40	18,602	18,445
35	09/16/21	40	18,403	18,246
36	09/16/21	40	18,204	18,047
37	09/17/21	40	18,006	17,848
38	09/17/21	40	17,807	17,650
39	09/17/21	40	17,608	17,451
40	09/18/21	40	17,409	17,252
41	09/18/21	40	17,210	17,053
42	09/19/21	40	17,011	16,854
43	09/20/21	40	16,813	16,656
44	09/20/21	40	16,614	16,457
45	09/21/21	40	16,415	16,258
46	09/21/21	40	16,216	16,059

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47	09/21/21	40	16,017	15,860
48	09/22/21	40	15,819	15,661
49	09/22/21	40	15,421	15,264
50	09/23/21	40	15,421	15,264
51	09/24/21	40	15,222	15,065
52	09/24/21	40	15,023	14,866
53	09/25/21	40	14,824	14,667
54	09/25/21	40	14,626	14,469
55	09/26/21	40	14,427	14,270
56	09/26/21	40	14,228	14,071
57	09/27/21	40	14,029	13,872
58	09/27/21	40	13,830	13,673
59	09/28/21	40	13,631	13,474
60	09/28/21	40	13,433	13,276
61	09/29/21	40	13,234	13,077
62	09/29/21	40	13,035	12,878
63	09/30/21	40	12,836	12,679
64	09/30/21	40	12,637	12,480
65	10/01/21	40	12,439	12,282
66	10/01/21	40	12,240	12,083
67	10/02/21	40	12,041	11,884
68	10/02/21	40	11,842	11,685
69	10/03/21	40	11,643	11,486
70	10/03/21	40	11,444	11,287
71	10/03/21	40	11,246	11,089
72	10/04/21	40	11,047	10,890
73	10/04/21	40	10,848	10,671
74	10/04/21	40	10,649	10,492
75	10/05/21	40	10,450	10,293
76	10/05/21	40	10,252	10,095
77	10/05/21	40	10,053	9,896
78	10/06/21	40	9,854	9,697
79	10/06/21	40	9,655	9,498
80	10/06/21	40	9,456	9,299
81	10/07/21	40	9,257	9,100
82	10/07/21	40	9,059	8,902
83	10/07/21	40	8,860	8,702



### Bunner 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	280	Sand/silt
silt/shale	280	520	silt/shale
sandstone	520	590	sandstone
coal	530	533	coal
coal	580	584	coal
sandstone	590	680	sandstone
siltstone/sandstone	680	715	siltstone/sandstone
sandstone/siltstone	715	767	sandstone/siltstone
sandstone/limestone	767	800	sandstone/limestone
Limestone/sandstone/shale	800	865	Limestone/sandstone/shale
Pittsburgh coal	865	873	Pittsburgh coal
Limestone/siltstone	873	910	Limestone/siltstone
Limestone	910	950	Limestone
sandstone/siltstone	950	974	sandstone/siltstone
coal	974	978	coal
sandstone/siltstone	978	1000	sandstone/siltstone
Limestone	1000	1040	Limestone
Limestone/siltstone	1040	1063	Limestone/siltstone
coal	1063	1066	coal
Limestone/siltstone	1066	1090	Limestone/siltstone
Maxon	1090	1110	Maxon
Limestone/siltstone	1110	1220	Limestone/siltstone
Red Rock/siltstone/limestone	1220	1440	Red Rock/siltstone/limestone
Limestone/siltstone	1440	1610	Limestone/siltstone
sandstone/siltstone	1610	2080	sandstone/siltstone
Little Lime	2080	2140	Little Lime
Big Lime	2140	2250	Big Lime
siltstone/sandstone	2250	2320	siltstone/sandstone
Big Injun	2320	2410	Big Injun
Gantz	2410	2420	Gantz
Sand/shale	2420	5560	Sand/shale
gray shale/siltstone	5560	7705	gray shale/siltstone
Middlesex	7395	7646	Middlesex
Burkett	7646	7819	Burkett
Geneseo	7819	7870	Geneseo
Tully	7870	7923	Tully
Hamilton	7923	8026	Hamilton
Marcellus	8026	TD	Marcellus

Cement Job Log



NexTier Completion Solutions  
3990 Rogerdale Rd., Houston, TX 77042  
(713)325-6000

Customer: <b>NORTHEAST NATURAL ENERGY LLC</b>		Date: <b>9-Jun-21</b>	Serv. Supervisor: <b>Drew Forsythe</b>
Cust. Rep.: <b>Josh</b>	Ticket #: <b>BPA-2106-0016</b>		Serv. Center: <b>Black Lick - 1571</b>
Well Name: <b>Bunner 8H</b>	API Well #: <b>47-061-01870</b>	County: <b>Monongalia</b>	State: <b>WV</b>
Well Type:	Rig: <b>Patterson 277</b>	Type of Job: <b>CM-SURFACE CASING</b>	

Plugs	Casing Hardware	Physical Slurry Properties							
		Sacks of Cement	Fluid Density (lb/gal)	Excess	Yield (cuft/sk)	Mix Water (gal/sk)	Fluid Volume (bbts)	Fluid Volume (cuft)	Mix Water (bbbl)
Top plug Supplied by	13.375" Single Plug Container								
Customer:									
6% Gel Spacer	+20.0 PPB NEX-020		8.7		4.62	33.66	25.00	-	
15.6 lb/gal Cement	100 % NCM-910 +2.0 % NAC-110+0.25 PPS NLM-600	1065	15.6	30%	1.20	5.21	226.92	1,274.13	132
Fresh Water Displacement			8.33			-	187.06	-	
0						-	-	-	
						-	-	-	
						-	-	-	
						-	-	-	
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Displacement Chemicals:

OPEN HOLE DATA						TUBULAR DATA						
17.5 in. O.H. 103 to 1,250 ft						13.375 in. 54.5#, ( 0 to 1,250 ft)						
Ambient Temp.	Bulk Temp.	Slurry 1 Temp.	Slurry 2 Temp.	Slurry 3 Temp.	Slurry 4 Temp.	SIZE WEIGHT	THRD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
		89.0 °F				13.375" 54.5#	BTC	1242		12.615	2730	1130

PREVIOUS CASING DATA	PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS			
	TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP
	24 in. 97.4# ( 0 to 103 ft)					1239.8	1196.5	

WELL FLUID			DISPLACEMENT FLUID			DIFF PRESS (psi)	CSG LIFT (psi)	MAX PRESS (psi)	Mix H2O Chlorides (ppm)	Mix H2O pH	Mix H2O Temp	WATER ON LOC (bbl)
TYPE	DENSITY	VOLUME	TYPE	DENSITY								
H2O	8.3 ppg	185.5 bbl	H2O	8.3 ppg	450	367	2000		7	75.0 °F	2000	
Bumped Plug	Frost Differential (psi)	Floets Hold (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	500.00	N	-	40.00	-	Yes	600.00	No	1.00	No	58	

Comments/Additional Details:

**Drew Forsythe**  
Service Supervisor  
**9-Jun-21**  
Date

Cement Job Log



NextTier Completion Solutions  
 3990 Rogerdale Rd., Houston, TX 77042  
 (713)925-8000

Customer:	NORTHEAST NATURAL ENERGY LLC	Date:	10-Jun-21	Serv. Supervisor:	Steven Long
Cust. Rep.:	JOSH ANGLINE	Ticket #:	BPA-2106-0017	Serv. Center:	Black Lick - 1571
Well Name:	Bunner 8H	API Well #:	47-081-01870	County:	Monongalia
Well Type:	GAS	Rig:	PATTERSON 277	State:	WV
Plugs		Materials Furnished by NextTier		Type of Job:	CM-INTER. CASING

Plugs	Casing Hardware	Physical Slurry Properties							
		Sacks of Cement	Fluid Density (lb/gal)	Excess	Yield (cuft/sk)	Mix Water (gal/sk)	Fluid Volume (bbbls)	Fluid Volume (cuft)	Mix Water (bbbls)
6% Gel Spacer	+20.0 PPB NEX-020		8.7		4.62	33.66	25.00	-	
15.6 lb/gal Cement	100% NCM-910 +1.0% NAC-110	860	15.6	30%	1.19	5.24	179.62	1,009.71	106
Fresh Water Displacement			8.33			-	190.18	-	
0									

Displacement Chemicals:

OPEN HOLE DATA					TUBULAR DATA									
12.375 in. O.H. 1,260 to 2,600 ft					9.625 in. 36#, ( 0 to 2,600 ft)			SIZE WEIGHT	THRD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
Ambient Tmp.	Bulk Tmp.	Slurry 1 Tmp.	Slurry 2 Tmp.	Slurry 3 Tmp.	Slurry 4 Tmp.	9.625 36#	BTC	2497.8	J-55	8.921	3520	2020		
70.0 °F		85.0 °F												
PREVIOUS CASING DATA					PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS					
13.375 in. 54.5# ( 0 to 1,260 ft)					TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP		
									2497.8	2453.4				
WELL FLUID			DISPLACEMENT FLUID			DIFF PRESS (psi)	C90 LIFT (psi)	MAX PRESS (psi)	Mix H2O Chlorides (ppm)	Mix H2O pH	Mix H2O Temp	WATER ON LOC (bbbl)		
TYPE	DENSITY	VOLUME	TYPE	DENSITY		927	940	2815	< 200	7	61.0 °F	1800		
H2O	8.3 ppg	189.6 bbl	P.H2O	8.3 ppg										
Bumped Plug	Final Differential (psi)	Floats 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	1,200.00	Y	-	15.00	-	Yes	1,700.00	No	4.00	No	70			

Comments/Additional Details:

*Steven Long*  
 Service Supervisor

10-Jun-21  
 Date

**Cement Job Log**



NexTier Completion Solutions  
3990 Rogerdale Rd., Houston, TX 77042  
(713)926-8000

<b>Customer:</b>	NORTHEAST NATURAL ENERGY LLC	<b>Date:</b>	24-Jun-21	<b>Serv. Supervisor:</b>	Anthony Barbara
<b>Cust. Rep.:</b>		<b>Ticket #:</b>	BPA-2106-0037	<b>Serv. Center:</b>	Black Lick - 1571
<b>Well Name:</b>	Bunner 8H	<b>API Well #:</b>	47-061-01670	<b>County:</b>	Monongalia
<b>Well Type:</b>		<b>Rig:</b>	Patterson 277	<b>State:</b>	WV
			<b>Type of Job:</b>	CM-PROD. CASING	

Pflugs	Casing Hardware	Materials Furnished by NexTier							
		Sacks of Cement	Fluid Density (lb/gal)	Excess	Yield (cuft/sk)	Mix Water (gal/sk)	Fluid Volume (bbbls)	Fluid Volume (cuft)	Mix Water (bbbls)
13.5 lb/gal PureScrub Spacer w/Surfactant	+15.0 PPB NAC-111+7.0 PPB NFP-702+1.2 GPB NSU-887L	100	13.5		5.64	26.94	80.00	563.96	63
14.5 lb/gal Cement	50% NCM-910+50% NP2-010 +0.2% NFP-702+0.15% NAG-504+0.4% NRT-213+0.15% NFL-549+0.1% NDS-415	4720	14.5		1.16	4.69	973.67	5,467.14	550
Sugar Water Displacement	+5.0 PPB NRT-215						20.00	-	
Fresh Water Displacement							536.93	-	

Displacement Chemicals: \_\_\_\_\_

OPEN HOLE DATA				TUBULAR DATA								
8.75 in. O.H. 2,600 to 8,886 ft		8.8 in. O.H. 8,886 to 25,116 ft		5.5 in. 20#, ( 0 to 25,116 ft)		SIZE WEIGHT	THRD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
Ambient Temp.	Bulk Temp.	Slurry 1 Temp.	Slurry 2 Temp.	Slurry 3 Temp.	Slurry 4 Temp.	5.5: 20#	BTC					
75.0 °F		72.3 °F										

PREVIOUS CASING DATA		PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS			
9.625 in. 36# ( 0 to 2,500 ft)		TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP.
						25117	25114		

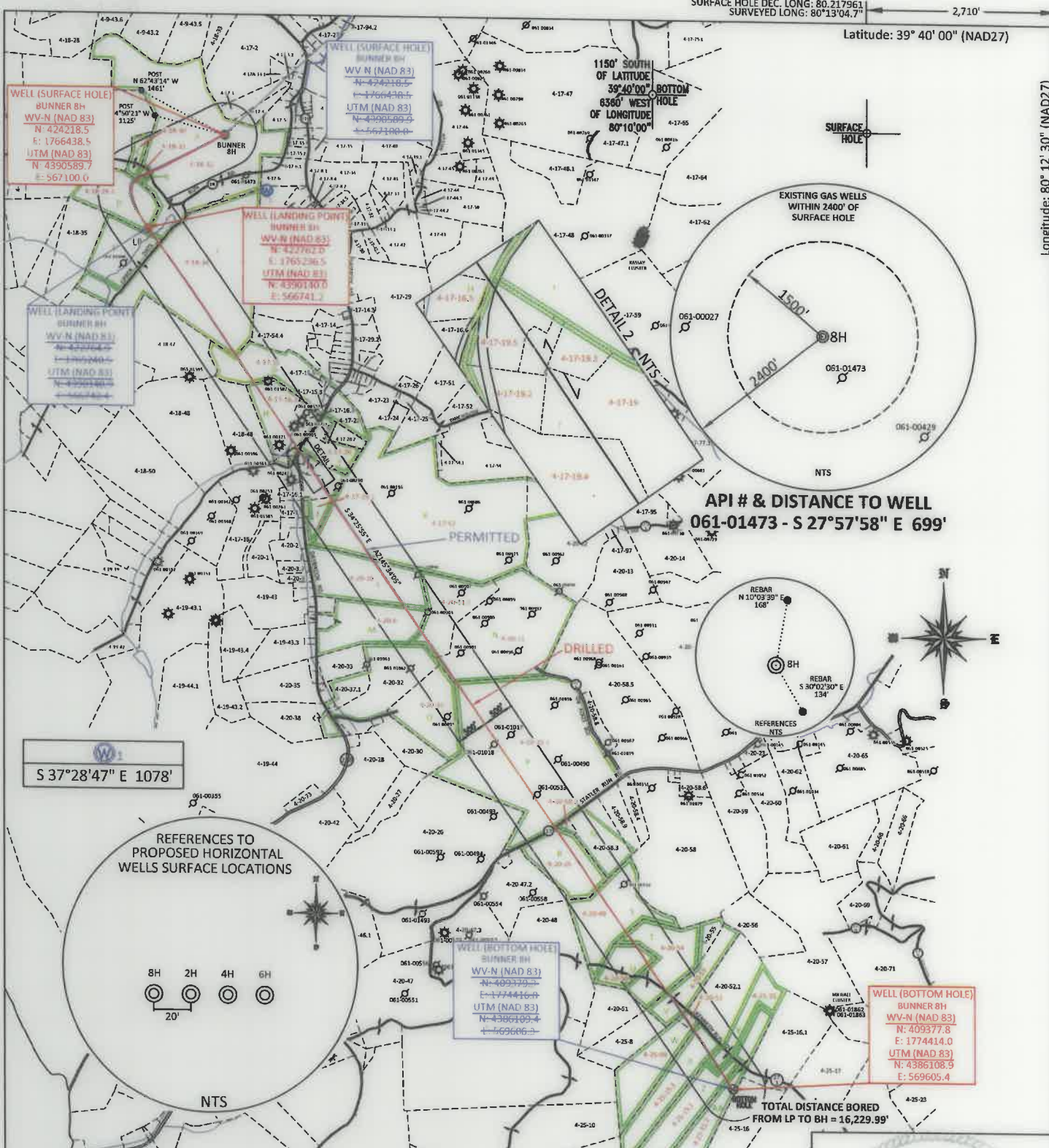
WELL FLUID		DISPLACEMENT FLUID				OFF PRESS	CSG LFT	MAX PRESS	Mix H2O Chlorides (ppm)	Mix H2O pH	Mix H2O Temp	WATER ON LOC (bbl)
TYPE	DENSITY	VOLUME	TYPE	DENSITY	(psi)	(psf)	(psi)	<200	8	88.1 °F	1600	
MUD	12.5 ppg	558 bbl	H2O	8.3 ppg	2485	210000	5000					
Bumped Plug	Final Differential (psi)	Floats Held (Y/N)	PSI Lost 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 Recirculation	Rathole Length (ft)	
Yes	3,830.00	Y	-		1,921	Yes	5,220.00	No	-	No	56	

Comments/Additional Details: \_\_\_\_\_

*Anthony Barbara*  
Service Supervisor 24-Jun-21  
Date

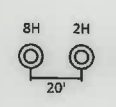
SURFACE HOLE DEC. LONG: 80.217961  
 SURVEYED LONG: 80°13'04.7"  
 Latitude: 39° 40' 00" (NAD27)

Longitude: 80° 12' 30" (NAD27)  
 SURFACE HOLE DEC. LAT: 39.662405  
 SURVEYED LAT: 39° 39' 44.7"



S 37°28'47" E 1078'

REFERENCES TO PROPOSED HORIZONTAL WELLS SURFACE LOCATIONS



FILE #: NEE14  
 DRAWING #: 2947  
 SCALE: PLAT: 1" = 2200'  
 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: PATRICIA A. BUNNER

OIL & GAS ROYALTY OWNER: PATRICIA BUNNER, et al

LEASE NUMBERS:

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

DATE: MARCH 11, 2022

OPERATOR'S WELL #: BUNNER 8H

API WELL #: 47 61 01870  
 STATE COUNTY PERMIT

AS-BUILT  
 ELEVATION: 1277.25'

QUADRANGLE: BLACKSVILLE, WV

ACREAGE: 94.72 +/-

ACREAGE: 915.251 **09/02/2022**

DRILLED DEPTH: TVD: 8,101' TMD: 25,173'  
 DESIGNATED AGENT: JOHN ADAMS  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

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G	WV-061-003325-011	V	WV-061-005551-002
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I	WV-061-003260-001	X	WV-061-005757-001
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O	WV-061-003862-001		

09/02/2022

FILE #: NEE14

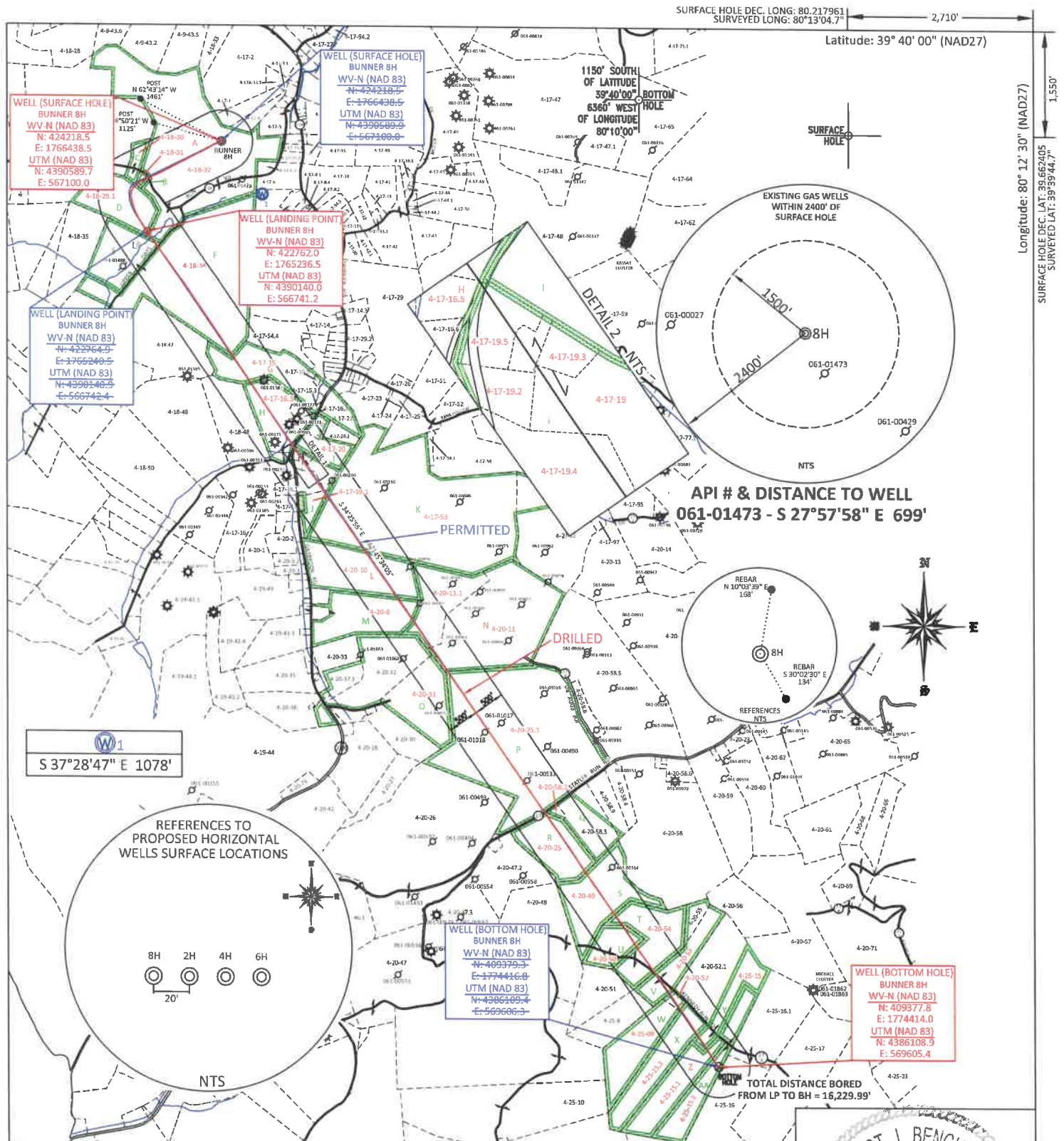
DATE: MARCH 11, 2022

DRAWING #: 2947

OPERATOR'S WELL #: BUNNER 8H

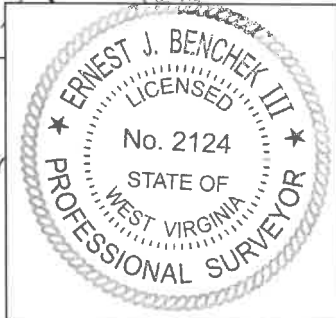
SCALE: N/A

API WELL #: 47 61 01870  
STATE COUNTY PERMIT



FILE #: NEE14  
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09/02/2022

FILE #: NEE14

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