

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

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Office of Oil and Gas

MAR 16 2022

WV Department of  
Environmental Protection

API 47 - 061 - 01865 County Monongalia District Clay  
Quad Blacksville, WV Pad Name Bunner Field/Pool Name \_\_\_\_\_  
Farm name Patricia A. Bunner Well Number 4H

Operator (as registered with the OOG) Northeast Natural Energy, LLC.  
Address 707 Virginia St. E., Suite 1200 City Charleston State WV Zip 25301

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As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4390590.0 Easting 567112.2  
Landing Point of Curve Northing 4390541.4 Easting 567201.6  
Bottom Hole Northing 4386376.5 Easting 570161.0

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 5/11/2020 Date drilling commenced 5/7/2021 Date drilling ceased 5/22/2021

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 N

Salt water depth(s) ft 1,359' Void(s) encountered (Y/N) depths N

Coal depth(s) ft 865' Cavern(s) encountered (Y/N) depths \_\_\_\_\_

Is coal being mined in area (Y/N) N

Reviewed by: \_\_\_\_\_

Reviewed

*Ernest Reynolds* 8-22-2022

09/02/2022

API 47-061 - 01865 Farm name Patricia A. Bunner Well number 4H

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'				
Surface	17-1/2"	13-3/8"	1,250'	N	54.5	NA	Y, 56 bbl
Coal							
Intermediate 1	12-3/8"	9-5/8"	2,498'	N	36	NA	Y, 17 bbl
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	25,052'	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	1,085	15.6	1.20	1,298	CTS	8
Coal							
Intermediate 1	Class A	850	15.6	1.19	1,009	CTS	8
Intermediate 2							
Intermediate 3							
Production	50:50 Poz	4,700	14.5	1.16	5,443	1,935'	24
Tubing							

Drillers TD (ft) 25,079' Loggers TD (ft) 25,052'  
 Deepest formation penetrated Marcellus Plug back to (ft) NA  
 Plug back procedure NA

Kick off depth (ft) 5,468'

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 - 01865 Farm name Patricia A. Bunner Well number 4H

**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 - 01865 Farm name Patricia A. Bunner Well number 4H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	8,121'	TVD 25,079' MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface \_\_\_\_\_ psi Bottom Hole 2627 psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 1737 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 4H Stimulation Report

Stage Number	Report Date	ISIP (psi)	Breakdown Pressure (psi)	Avg Treating Pressure (psi)	Avg Treating Rate (BPM)	Pad Volume (bbbls)	Total Clean Fluid (Bbls)	Total Proppant Amount (lbs)	Flush Volume (bbbls)
1	08/21/21	4,547	7,440	9,253	89	442	7,669	303,460	562
2	08/21/21	5,658	7,335	9,350	83	580	10,936	368,040	557
3	08/22/21	5,530	6,076	9,472	88	32	8,179	373,380	557
4	08/22/21	5,626	6,366	9,714	89	19	8,090	374,300	545
5	08/23/21	5,429	6,536	9,495	87	413	8,529	369,040	542
6	08/23/21	5,539	6,614	9,578	87	17	8,229	380,400	538
7	08/23/21	5,819	8,157	9,579	88	10	8,181	376,990	535
8	08/23/21	5,521	7,629	9,541	87	431	8,640	383,780	529
9	08/24/21	5,842	7,436	9,563	91	13	8,130	371,860	529
10	08/24/21	5,576	6,806	9,550	89	490	8,574	377,160	521
11	08/25/21	5,883	7,776	9,629	89	11	8,126	375,500	520
12	08/25/21	5,902	8,841	9,882	90	130	8,571	380,640	514
13	08/26/21	6,439	7,555	9,750	90	12	8,066	371,380	516
14	08/26/21	6,214	7,417	9,886	88	330	8,401	379,540	505
15	08/27/21	6,136	7,459	9,616	89	21	8,015	374,620	505
16	08/27/21	5,392	6,728	9,813	88	52	8,245	370,000	498
17	08/27/21	6,669	7,243	9,722	88	5	9,115	377,380	498
18	08/29/21	5,727	6,981	9,924	89	51	8,192	386,140	490
19	08/29/21	5,631	6,999	9,925	89	51	8,066	377,320	486
20	08/30/21	5,994	7,404	9,600	87	8	7,861	370,400	489
21	08/31/21	6,053	6,476	9,872	91	429	8,479	378,580	479
22	08/31/21	5,631	7,826	9,708	87	18	8,081	376,460	474
23	09/01/21	5,649	7,468	9,693	87	10	8,155	381,080	478
24	09/01/21	5,833	7,275	9,778	89	77	8,230	380,240	467
25	09/02/21	5,318	7,156	9,816	88	22	8,105	376,880	463
26	09/03/21	5,700	7,275	9,877	89	25	7,982	372,160	462
27	09/04/21	6,191	6,791	9,716	87	51	8,061	376,500	455
28	09/04/21	5,888	7,137	9,717	88	25	8,200	375,240	452
29	09/05/21	5,465	7,284	9,747	85	85	8,284	375,360	449
30	09/05/21	5,984	7,321	9,797	87	41	8,016	373,540	443
31	09/06/21	5,998	10	9,766	85	23	7,955	381,920	440
32	09/06/21	5,631	7,206	9,716	86	4	8,727	377,720	436
33	09/07/21	5,819	7,582	9,826	87	25	8,271	378,660	432
34	09/08/21	5,580	6,095	9,621	90	17	8,118	379,260	429
35	09/08/21	5,727	6,816	9,795	89	17	8,000	376,720	425
36	09/09/21	5,888	6,999	9,724	88	24	8,202	380,280	419
37	09/09/21	6,196	7,224	9,761	90	22	8,083	374,980	417
38	09/10/21	5,406	7,546	9,772	89	47	8,147	378,620	412
39	09/10/21	5,608	7,151	9,734	89	22	8,042	384,620	410
40	09/11/21	5,465	7,440	9,514	90	20	7,967	381,080	405
41	09/11/21	5,585	7,325	9,594	91	28	8,095	387,000	401
42	09/12/21	5,534	7,550	9,424	90	18	8,007	385,760	398
43	09/12/21	5,571	7,459	9,475	92	17	8,012	372,720	394
44	09/13/21	6,062	6,907	9,378	91	32	7,970	375,320	418
45	09/14/21	5,690	7,169	9,507	90	22	8,079	383,200	395

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46	09/14/21	6,310	7,725	9,703	92	35	8,157	372,040	382
47	09/14/21	6,127	7,918	9,575	89	72	8,130	377,160	376
48	09/15/21	5,870	6,728	9,288	92	25	7,723	369,980	375
49	09/15/21	5,452	7,573	9,246	90	19	7,991	373,820	370
50	09/16/21	5,433	7,463	9,311	92	33	7,977	377,580	364
51	09/16/21	5,521	7,321	9,080	88	16	8,041	383,580	362
52	09/17/21	5,640	6,921	9,119	92	19	7,916	377,860	357
53	09/17/21	5,746	7,183	9,051	87	18	7,896	384,840	355
54	09/18/21	5,278	7,247	9,147	91	32	7,739	372,700	350
55	09/18/21	5,576	7,647	9,209	87	14	7,845	373,440	349
56	09/19/21	5,266	7,886	9,361	91	21	7,752	375,280	343
57	09/19/21	5,139	8,685	9,513	84	21	7,465	349,520	338
58	09/20/21	5,727	8,005	9,284	87	26	8,092	374,240	333
59	09/20/21	5,631	8,083	9,270	87	15	7,991	376,760	331
60	09/21/21	5,732	8,386	9,368	89	14	7,745	378,780	326
61	09/21/21	5,851	7,151	9,227	89	21	7,904	380,040	321
62	09/22/21	5,778	8,226	8,879	89	17	7,816	376,900	319
63	09/22/21	6,664	7,160	9,029	89	18	7,858	378,300	314
64	09/23/21	5,714	7,633	8,842	90	9	7,895	377,200	312
65	09/24/21	5,649	7,325	8,879	92	28	7,876	373,020	307
66	09/24/21	5,539	8,699	9,242	92	102	7,947	382,000	302
67	09/25/21	6,278	7,211	9,332	92	24	8,886	376,500	301
68	09/25/21	5,957	6,967	8,689	92	25	7,728	369,920	295
69	09/26/21	5,507	6,806	8,759	92	36	6,935	324,960	365
70	09/26/21	6,297	6,494	8,601	91	26	8,095	381,300	288
71	09/27/21	6,113	6,834	8,666	92	24	8,052	385,140	286
72	09/27/21	5,893	7,381	8,700	90	20	7,829	377,300	300
73	09/28/21	5,911	6,995	8,618	91	30	7,875	379,980	279
74	09/28/21	6,650	7,142	8,671	92	13	7,731	367,160	271
75	09/29/21	5,883	6,995	8,545	92	26	7,830	379,680	267
76	09/29/21	6,108	6,995	8,624	91	25	7,759	377,820	264
77	09/30/21	5,897	7,491	8,619	92	24	8,046	381,860	261
78	09/30/21	5,759	7,866	8,868	89	15	7,842	375,660	257
79	09/30/21	5,612	7,472	8,701	92	17	7,853	374,640	252
80	10/01/21	6,104	7,909	8,749	89	8	7,822	377,240	248
81	10/01/21	5,530	7,738	8,529	92	429	8,114	371,740	247
82	10/02/21	6,044	7,191	8,266	89	14	7,779	376,820	240
83	10/02/21	5,741	7,582	8,378	92	27	7,865	384,640	236
84	10/03/21	5,805	7,821	8,355	90	15	7,842	383,400	233
85	10/03/21	5,718	7,578	8,324	91	23	7,953	385,820	229
86	10/04/21	5,571	7,545	8,156	92	16	8,113	378,100	224
87	10/04/21	5,824	7,583	8,183	91	11	7,702	376,380	221
88	10/04/21	5,893	6,586	8,081	91	13	7,791	371,580	217
89	10/05/21	5,277	7,096	7,979	92	18	7,692	369,380	214
90	10/05/21	5,419	7,348	8,109	91	8	7,764	377,780	210
91	10/05/21	5,553	7,785	8,283	91	11	7,751	373,320	205
92	10/06/21	5,369	6,981	8,227	92	16	7,617	374,560	202
93	10/06/21	5,677	7,711	8,044	91	27	7,850	379,120	198
94	10/06/21	5,672	8,184	8,071	91	12	7,929	377,520	196
95	10/07/21	5,654	7,780	8,313	92	30	7,783	374,840	190

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## Bunner 4H Perforation Summary

Stage Number	Report Date	Total Shots	Cluster 1 Top TD	Cluster 5 Bottom TD
1	08/21/21	0	0	24,942
2	08/21/21	40	24,904	24,765
3	08/22/21	40	24,728	24,589
4	08/22/21	40	24,552	24,413
5	08/23/21	40	24,376	24,238
6	08/23/21	40	24,200	24,062
7	08/23/21	40	24,025	23,886
8	08/23/21	40	23,849	23,711
9	08/24/21	40	23,673	23,534
10	08/24/21	40	23,497	23,359
11	08/25/21	40	23,321	23,183
12	08/25/21	40	23,146	23,007
13	08/26/21	40	22,970	22,831
14	08/26/21	40	22,794	22,655
15	08/27/21	40	22,618	22,480
16	08/27/21	40	22,442	22,304
17	08/27/21	40	22,267	22,128
18	08/29/21	40	22,091	21,952
19	08/29/21	40	21,915	21,776
20	08/30/21	40	21,739	21,601
21	08/31/21	40	21,564	21,425
22	08/31/21	40	21,388	21,249
23	09/01/21	40	21,212	21,073
24	09/01/21	40	21,036	20,898
25	09/02/21	40	20,860	20,722
26	09/03/21	40	20,685	20,546
27	09/04/21	40	20,509	20,370
28	09/04/21	40	20,333	20,194
29	09/05/21	32	20,157	20,019
30	09/05/21	40	19,981	19,843
31	09/06/21	40	19,806	19,667
32	09/06/21	40	19,630	19,491
33	09/07/21	40	19,454	19,315
34	09/08/21	40	19,278	19,140
35	09/08/21	40	19,102	18,964
36	09/09/21	40	18,927	18,788
37	09/09/21	40	18,751	18,612
38	09/10/21	40	18,575	18,436
39	09/10/21	40	18,399	18,261
40	09/11/21	40	18,224	18,085
41	09/11/21	40	18,048	17,909
42	09/12/21	40	17,872	17,733
43	09/12/21	40	17,696	17,558
44	09/13/21	40	17,520	17,382
45	09/14/21	40	17,345	17,206

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46	09/14/21	40	17,169	17,030
47	09/14/21	40	16,993	16,854
48	09/15/21	40	16,817	16,679
49	09/15/21	40	16,641	16,503
50	09/16/21	40	16,466	16,327
51	09/16/21	40	16,290	16,151
52	09/17/21	40	16,114	15,975
53	09/17/21	40	15,938	15,800
54	09/18/21	40	15,762	15,624
55	09/18/21	40	15,587	15,448
56	09/19/21	40	15,411	15,272
57	09/19/21	40	15,235	15,096
58	09/20/21	40	15,059	14,921
59	09/20/21	40	14,884	14,745
60	09/21/21	40	14,708	14,569
61	09/21/21	40	14,532	14,393
62	09/22/21	40	14,356	14,218
63	09/22/21	40	14,180	14,042
64	09/23/21	40	14,005	13,866
65	09/24/21	40	13,829	13,690
66	09/24/21	40	13,653	13,514
67	09/25/21	40	13,477	13,339
68	09/25/21	40	13,301	13,163
69	09/26/21	40	13,126	12,987
70	09/26/21	40	12,950	12,811
71	09/27/21	40	12,774	12,635
72	09/27/21	40	12,598	12,460
73	09/28/21	40	12,422	12,284
74	09/28/21	40	12,247	12,108
75	09/29/21	40	12,071	11,932
76	09/29/21	40	11,895	11,756
77	09/30/21	40	11,719	11,581
78	09/30/21	40	11,544	11,405
79	09/30/21	40	11,368	11,229
80	10/01/21	40	11,192	11,053
81	10/01/21	40	11,016	10,878
82	10/02/21	40	10,840	10,702
83	10/02/21	40	10,665	10,526
84	10/03/21	40	10,489	10,350
85	10/03/21	40	10,313	10,174
86	10/04/21	40	10,137	9,999
87	10/04/21	40	9,961	9,823
88	10/04/21	40	9,786	9,647
89	10/05/21	40	9,610	9,471
90	10/05/21	40	9,434	9,295
91	10/05/21	40	9,258	9,120
92	10/06/21	40	9,082	8,944
93	10/06/21	40	8,907	8,768
94	10/06/21	40	8,731	8,592
95	10/07/21	40	8,555	8,416

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**Bunner Completion Lithology**

<b>Lithology/Formation</b>	<b>Top Depth in FT TVD</b>	<b>Bottom Depth in FT TVD</b>	<b>Describe rock type and record quantity and type of fluid (freshwater, brine, oil, gas, H2S, etc)</b>
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:	NORTHEAST NATURAL ENERGY LLC	Date:	8-May-21	Serv. Supervisor:	Draw Forsythe
Cust. Rep.:	Troy Hamidi, Sam	Ticket #:	BPA-2105-0007	Serv. Center:	Black Lick - 1571
Well Name:	Bunner 4H	API Well #:	47-061-01865	County:	Monongalia
Well Type:		Rig:	Patterson 277	State:	WV
			Type of Job:	CM-SURFACE CASING	

Plugs		Casing Hardware		Physical Slurry Properties							
13 3/8 Top Rubber Plug		13 3/8 Single Plug Container with Butress Crossover.		Secks 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 +2.0 % NAC-110+0.25 PPS NUM-600		1085	15.6	30%	1.20	5.21	231.16	1,268.06	135
Fresh Water Displacement					8.33			-	167.06	-	
0								-		-	

Displacement Chemicals:

OPEN HOLE DATA				TUBULAR DATA									
17.6 in. O.H. 126 to 1,260 ft				13.375 in. 64.6#, (0 to 1,260 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.	13.375" 54.5#	BTC	1300	J-55	12.615	2730	1130	

PREVIOUS CASING DATA		PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS			
24 in. 97.4# (0 to 125 ft)		TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP
						1235.9	1193.1		

WELL FLUID			DISPLACEMENT FLUID				DIFF PRESS	CEG LIFT	MAX PRESS	Mix H2O Chlorides (ppm)	Mix H2O pH	Mix H2O Temp	WATER ON LOC (bbl)
TYPE	DENSITY	VOLUME	TYPE	DENSITY		(psi)	(psi)	(psi)					
H2O	8.4 ppg	184.5 bbl	H2O	8.4 ppg		450	365	2000		7	52.0 °F	1600	
Bumped Plug	Final Differential (psi)	Floats Held (Y/N)	PSI Lost on Casing	Cement to Surface (bbl)	Top of Cement (ft)	Full Cks. During Job (Y/N)	Max Pump Pressure (psi)	Casing Rotation	Additional Hrs Charged (hrs)	Casing Reciprocation	Rathole Length (ft)		
Yes	500.00	Y	-	56.00	-	Yes	630.00	No	1.00	No	62		

Comments/Additional Details:

*Draw Forsythe*  
 Service Supervisor 8-May-21  
Date

09/02/2022

### Cement Job Log



NextTier Completion Solutions  
3980 Rogerdale Rd., Houston, TX 77042  
(713)326-8000

Customer: <b>NORTHEAST NATURAL ENERGY LLC</b>		Date: <b>10-May-21</b>	Serv. Supervisor: <b>Steven Long</b>	
Cust. Rep.: <b>TROY</b>	Ticket #: <b>BPA-2105-0008</b>		Serv. Center: <b>Black Lick - 1571</b>	
Well Name: <b>Burner 4H</b>	API Well #: <b>47-061-01865</b>		County: <b>Monongalia</b>	State: <b>WV</b>
Well Type: <b>GAS</b>	Rig: <b>PATTERSON 277</b>		Type of Job: <b>CM-INTER. CASING</b>	

Plugs	Casing Hardware	Materials Furnished by NextTier							
		Sacks of Cement	Fluid Density (lb/gal)	Excess	Yield (cuft/sk)	Mix Water (gal/sk)	Fluid Volume (bbls)	Fluid Volume (cuft)	Mix Water (bbls)
8% Gel Spacer	+20.0 PP8 NEX-020								
15.6 lb/gal Cement	100% NCM-910 +1.0% NAC-110	850	15.6	30%	1.19	5.24	179.82	1,009.71	108
Fresh Water Displacement			8.33				190.18		
0									
Displacement Chemicals:									

OPEN HOLE DATA				TUBULAR DATA									
12.375 in. O.H. 1,250 to 2,500 ft				9.625 in. 36#, (0 to 2,500 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.	9.625 36#	BTC	2498.4	J-55	8.921	3520	2020	
42.0 °F		62.0 °F											

PREVIOUS CASING DATA		PERFORATED INTERVAL DATA			CASING EQUIPMENT DEPTHS				
13.375 in. 54.6# (0 to 1,250 ft)		TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP
						2498.4	2454.7		

WELL FLUID			DISPLACEMENT FLUID				DIFF PRESS (psi)	CAS 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	189.7 bbl	H2O	8.3 ppg		927	941	2816	< 200	7	52.0 °F	1600	
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 Recirculator	Rethole Length (ft)		
Yes	1,200.00	Y		17.00		Yes	1,730.00	No	1.00	No	50		

Comments/Additional Details:

	<b>Steven Long</b> Service Supervisor	<b>10-May-21</b> Date
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09/02/2022

Cement Job Log



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

Customer: <b>NORTHEAST NATURAL ENERGY LLC</b>	Date: <b>22-May-21</b>	Serv. Supervisor: <b>Michael Franco</b>
Cust. Rep.:	Ticket #: <b>BPA-2105-0031</b>	Serv. Center: <b>Black Lick - 1571</b>
Well Name: <b>Bunner 4H</b>	API Well #: <b>47-061-01895</b>	County: <b>Monongalia</b> State: <b>WV</b>
Well Type:	Rig: <b>Patterson 277</b>	Type of Job: <b>CM-PROD. CASING</b>

Materials Furnished by NextTier

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)
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	26.34	80.00	563.98	83
14.5 lb/gal Cement	50 % NCM-910+50 % NPZ-010 +0.2 % NFP-702+0.15 % NAS-504+0.4 % NRT-213+0.15 % NFL-549+0.1 % NTC-405	4700	14.5		1.16	4.89	969.49	5,443.71	547
Sugar Water Displacement	+5.0 PPB NRT-215					-	20.00	-	
Fresh Water Displacement						-	535.20	-	

Displacement Chemicals:

OPEN HOLE DATA				TUBULAR DATA										
8.75 in. O.H. 2,500 to 8,468 ft 8.5 in. O.H. 8,468 to 25,038 ft				5.5 in. 20#, ( 0 to 25,038 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	25052	P-110	4.778	12840	11080		
		77.0 °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
							25052			

WELL FLUID			DISPLACEMENT FLUID				DIFF PRESS	CSG LEFT	MAX PRESS	Mix H2O Chlorides (ppm)	Mix H2O pH	Mix H2O Temp	WATER ON LOC (bbl)
TYPE	DENSITY	VOLUME	TYPE	DENSITY		(psi)	(psi)	(psi)					
OBM	12.7 ppg	553.6 bbl	H2O	8.3 ppg		1650	17057		2	7	63.0 °F		
Bumped Plug	Final Differential (psi)	Floate 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	4,800.00	Y	-	-	1,935	Yes		No	-	No	27		

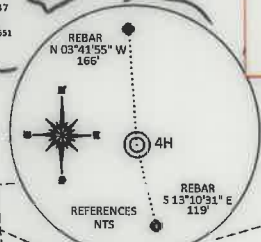
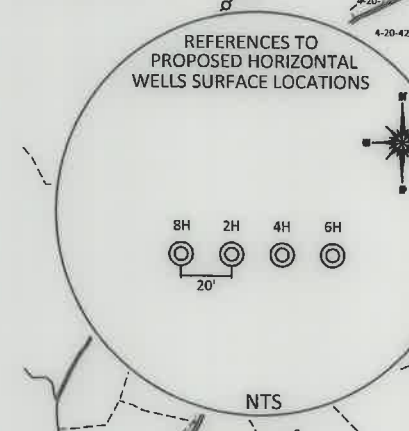
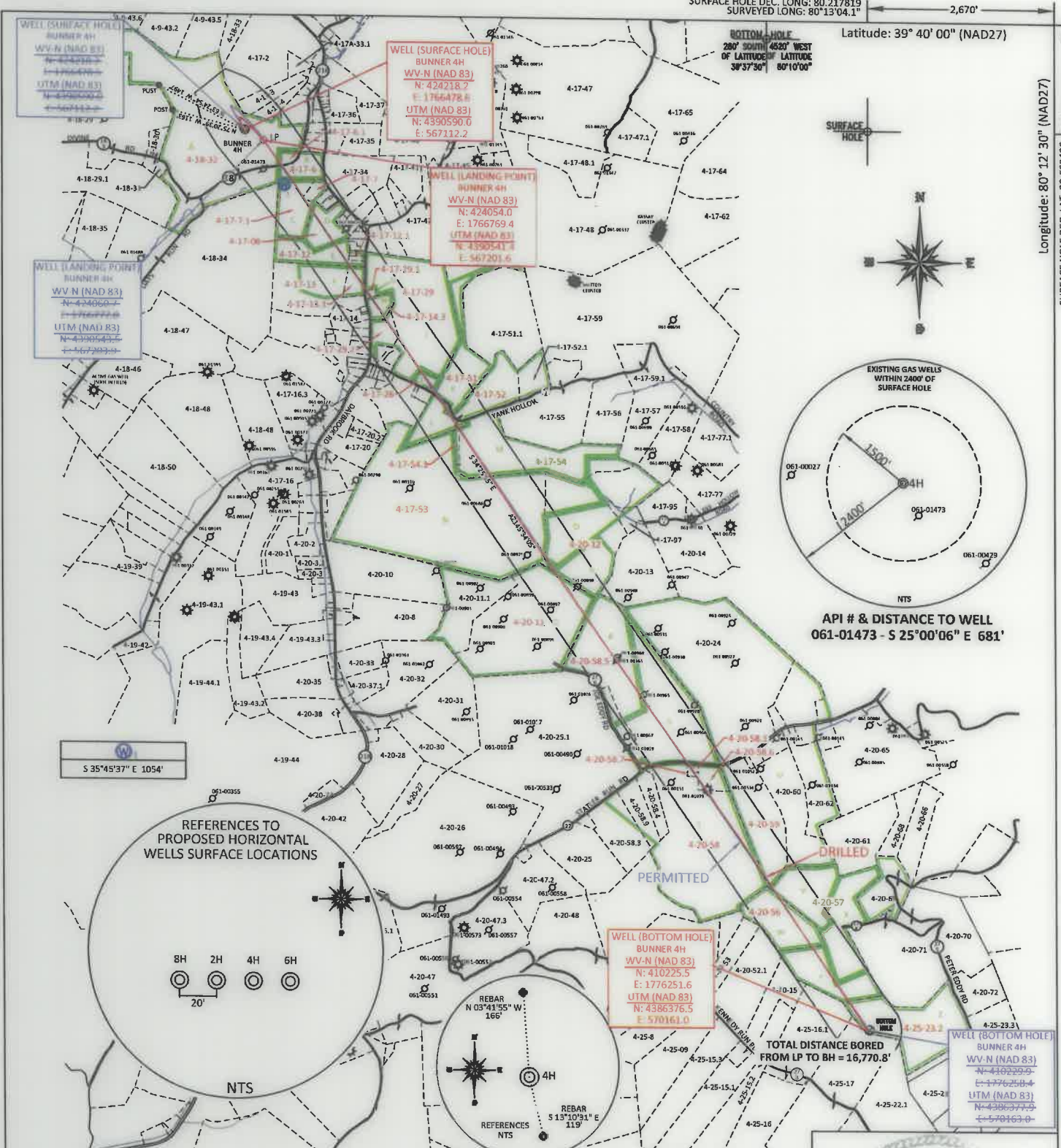
Comments/Additional Details:

	<p><i>Michael Franco</i> Service Supervisor</p> <p><i>22-May-21</i> Date</p>
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SURFACE HOLE DEC. LONG: 80.217819 SURVEYED LONG: 80°13'04.1" 2,670'

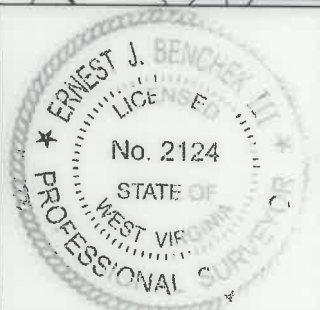
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Longitude: 80° 12' 30" (NAD27)  
SURFACE HOLE DEC. LAT: 39.662406 SURVEYED LAT: 39.662447 1,550'



FILE #: NEE14  
 DRAWING #: 2949  
 SCALE: PLAT: 1" = 2200' TICK MARK: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/200  
 PROVEN SOURCE: SUBMETER MAPPING OF ELEVATION: 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 QUADRANGLE: BLACKSVILLE, WV

SURFACE OWNER: PATRICIA A. BUNNER ACREAGE: 94.72 +/-

OIL & GAS ROYALTY OWNER: PATRICIA BUNNER, et al ACREAGE: 985.462 **09/02/2022**

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 DRILLED DEPTH: TVD: 8,121' TMD: 25,079'

WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC DESIGNATED AGENT: JOHN ADAMS  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

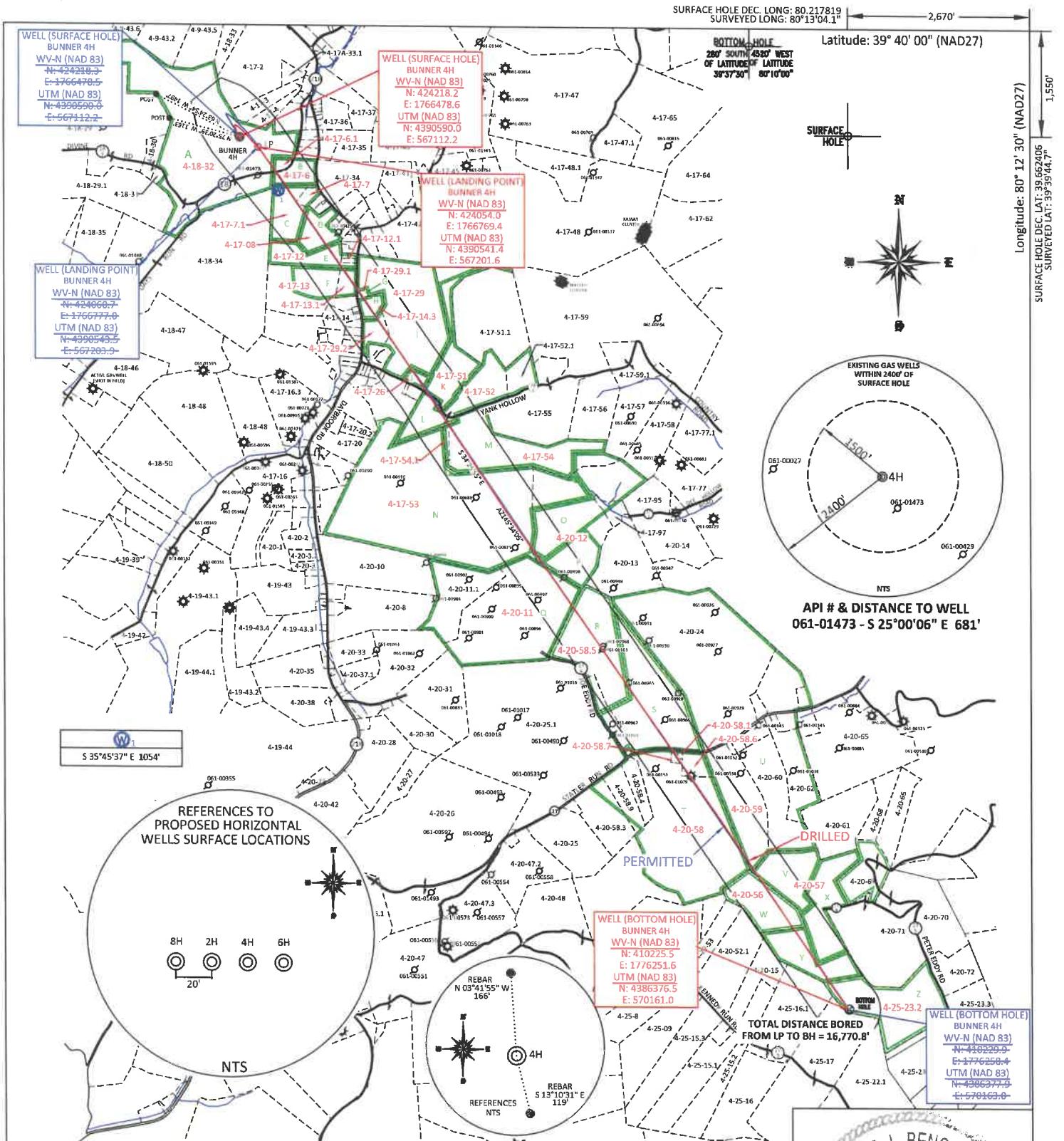
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4-18-32	PATRICIA A. BUNNER
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LEASE INDEX			
A	WV-061-004154-001	O	WV-061-005145-001
B	WV-061-005350-010	P	WV-061-002566-001
C	WV-061-005256-001	Q	WV-061-001052-002
D	WV-061-003845-001	R	WV-061-003457-001
E	WV-061-004249-001	S	WV-061-003457-001
F	WV-061-004249-001	T	WV-061-003457-001
G	WV-061-003860-001	U	WV-061-003566-001
H	WV-061-005466-001	V	WV-061-004348-001
I	WV-061-003860-001	W	WV-061-004246-001
J	WV-061-005270-001	X	WV-061-003749-001
K	WV-061-003680-002	Y	WV-061-003749-001
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N	WV-061-003539-003		

09/02/2022

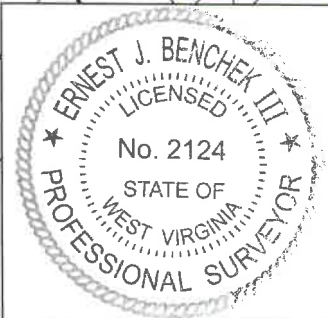
FILE #: NEE14  
DRAWING #: 2949  
SCALE: N/A

DATE: MARCH 11, 2022  
OPERATOR'S WELL #: BUNNER 4H  
API WELL #: 47 61 01865  
STATE COUNTY PERMIT



FILE #: NEE14  
 DRAWING #: 2949  
 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: \_\_\_\_\_

DATE: MARCH 11, 2022

OPERATOR'S WELL #: BUNNER 4H

API WELL #: 47 61 01865  
 STATE COUNTY PERMIT

AS-BUILT  
 ELEVATION: 1277.25'

QUADRANGLE: BLACKSVILLE, WV

ACREAGE: 94.72 +/-

ACREAGE: 985.462 09/02/2022

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: 8,121' TMD: 25,079'

DESIGNATED AGENT: JOHN ADAMS

ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200

CITY: CHARLESTON STATE: WV ZIP CODE: 25301

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D	WV-061-003845-001	R	WV-061-003457-001
E	WV-061-004249-001	S	WV-061-003457-001
F	WV-061-004249-001	T	WV-061-003457-001
G	WV-061-003860-001	U	WV-061-003566-001
H	WV-061-005466-001	V	WV-061-004348-001
I	WV-061-003860-001	W	WV-061-004246-001
J	WV-061-005270-001	X	WV-061-003749-001
K	WV-061-003680-002	Y	WV-061-003749-001
L	WV-061-003414-006	Z	WV-061-003015-007
M	WV-061-004066-001		
N	WV-061-003539-003		

09/02/2022

FILE #: NEE14  
DRAWING #: 2949  
SCALE: N/A

DATE: MARCH 11, 2022  
OPERATOR'S WELL #: BUNNER 4H  
API WELL #: 47 61 01865  
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