

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

API 47 - 051 - 01977 County Marshall District Franklin
Quad Powhatan Point 7.5' Pad Name Bryan Field/Pool Name _____
Farm name CNX Land Resources, Inc. Well Number Bryan N-6HM
Operator (as registered with the OOG) Tug Hill Operating, LLC
Address 380 Southpointe Boulevard, Plaza II, Suite 200 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 4,402,888.18 Easting 519,135.24
Landing Point of Curve Northing 4,403,273.94 Easting 519,663.28
Bottom Hole Northing 4,406,770.42 Easting 517,657.96

Elevation (ft) 1191.6' 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)
SOBM; Base oil, osmotic inhibitor, weighting agent, viscosifier, emulsifier, hardness buffer, fluid loss additive, LCM, Shale inhibitor, de-foamer, soaping agent, coagulant, flocculant; specific additives per WSSP and Permit.

Date permit issued 2/7/2018 Date drilling commenced 3/11/2019 Date drilling ceased 4/2/2019
Date completion activities began 8/27/2020 Date completion activities ceased 9/13/2020
Verbal plugging (Y/N) N Date permission granted n/a Granted by n/a

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

Freshwater depth(s) ft 831' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1595' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 729-735', 824-830' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

API 47-051 - 01977 Farm name CNX Land Resources, Inc. Well number Bryan N-6HM

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"	120'	NEW	94.5#	N/A	Y
Surface	17 1/2"	13 3/8"	931'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	931'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,659'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	20,712'	NEW	20#	N/A	Y
Tubing		2 3/8"	10,356'	NEW	4.7#	N/A	Y
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	A		15.6	1.19		0	8
Surface	A	964	15.6	1.19	1153	0	8
Coal	A	964	15.6	1.19	1153	0	8
Intermediate 1	A	1075	15.6	1.19	1274	0	8
Intermediate 2							
Intermediate 3							
Production	A	4143	14.5	1.17	4866	0	8
Tubing							

Drillers TD (ft) 20,740' Loggers TD (ft) n/a
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

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Kick off depth (ft) 6,452'

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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 3 centralizers on surface casing at equal distance.
Intermediate - 1 centralizer every other joint.
 Production - one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint 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- 051 - 01977 Farm name CNX Land Resources, Inc. Well number Bryan N-6HM

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)
	attached							

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Please insert additional pages as applicable.

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>			
<u>MARCELLUS</u>	<u>6509' - 6391'</u>	<u>TVD</u>	<u>6890' - 16956'</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 1300 psi Bottom Hole _____ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas Oil NGL Water GAS MEASURED BY
 0 mcfpd 0 bpd 0 bpd 600 bpd Estimated Orifice Pilot

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

Please insert additional pages as applicable.

Drilling Contractor Precision
 Address 10350 Richmond Avenue, Suite 700 City Houston State TX Zip 77042

Logging Company n/a
 Address _____ City _____ State _____ Zip _____

Cementing Company BJ Cementing Services
 Address 4000 Town Center Boulevard City Canonsburg State PA Zip 15317

Stimulating Company Pro-Frac
 Address 333 Shops Boulevard City Willow Park State TX Zip 76087

Please insert additional pages as applicable.

Completed by Amy L. Morris Telephone 304-376-0111
 Signature *Amy L. Morris* Title Permitting Specialist Date 12-28-2020

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**Bryan N-6HM
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	8/27/2020	20535	20577	48	Marcellus
2	8/27/2020	20335	20480	48	Marcellus
3	8/27/2020	20161	20306	48	Marcellus
4	8/28/2020	19986	20131	48	Marcellus
5	8/28/2020	19812	19957	48	Marcellus
6	8/28/2020	19637	19782	48	Marcellus
7	8/28/2020	19463	19608	48	Marcellus
8	8/29/2020	19288	19433	48	Marcellus
9	8/29/2020	19114	19259	48	Marcellus
10	8/29/2020	18939	19084	48	Marcellus
11	8/29/2020	18765	18910	48	Marcellus
12	8/29/2020	18590	18735	48	Marcellus
13	8/30/2020	18416	18561	48	Marcellus
14	8/30/2020	18241	18386	48	Marcellus
15	8/30/2020	18067	18212	48	Marcellus
16	8/30/2020	17892	18037	48	Marcellus
17	8/31/2020	17718	17863	48	Marcellus
18	8/31/2020	17543	17688	48	Marcellus
19	8/31/2020	17369	17514	48	Marcellus
20	8/31/2020	17194	17339	48	Marcellus
21	9/1/2020	17020	17165	48	Marcellus
22	9/1/2020	16845	16990	48	Marcellus
23	9/1/2020	16671	16816	48	Marcellus
24	9/1/2020	16496	16641	48	Marcellus
25	9/2/2020	16322	16467	48	Marcellus
26	9/2/2020	16147	16292	48	Marcellus
27	9/2/2020	15973	16118	48	Marcellus
28	9/2/2020	15798	15943	48	Marcellus
29	9/2/2020	15624	15769	48	Marcellus
30	9/3/2020	15449	15594	48	Marcellus
31	9/3/2020	15275	15420	48	Marcellus
32	9/3/2020	15100	15245	48	Marcellus
33	9/3/2020	14926	15071	48	Marcellus
34	9/4/2020	14751	14896	48	Marcellus
35	9/4/2020	14577	14722	48	Marcellus
36	9/4/2020	14402	14547	48	Marcellus
37	9/4/2020	14228	14373	48	Marcellus
38	9/5/2020	14053	14198	48	Marcellus
39	9/5/2020	13879	14024	48	Marcellus
40	9/5/2020	13704	13849	48	Marcellus
41	9/5/2020	13,530	13,675	48	Marcellus

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42	9/6/2020	13,355	13,500	48	Marcellus
43	9/6/2020	13,181	13,326	48	Marcellus
44	9/6/2020	13,006	13,151	48	Marcellus
45	9/6/2020	12,832	12,977	48	Marcellus
46	9/6/2020	12,657	12,802	48	Marcellus
47	9/7/2020	12,483	12,628	48	Marcellus
48	9/7/2020	12,308	12,453	48	Marcellus
49	9/7/2020	12,134	12,279	48	Marcellus
50	9/7/2020	11,959	12,104	48	Marcellus
51	9/8/2020	11,785	11,930	48	Marcellus
52	9/8/2020	11,610	11,755	48	Marcellus
53	9/8/2020	11,436	11,581	48	Marcellus
54	9/8/2020	11,261	11,406	48	Marcellus
55	9/8/2020	11,087	11,232	48	Marcellus
56	9/9/2020	10,912	11,057	48	Marcellus
57	9/9/2020	10,738	10,883	48	Marcellus
58	9/9/2020	10,563	10,708	48	Marcellus
59	9/9/2020	10,389	10,534	48	Marcellus
60	9/9/2020	10,214	10,359	48	Marcellus
61	9/10/2020	10,040	10,185	48	Marcellus
62	9/10/2020	9,865	10,010	48	Marcellus
63	9/10/2020	9,691	9,836	48	Marcellus
64	9/10/2020	9,516	9,661	48	Marcellus
65	9/10/2020	9,342	9,487	48	Marcellus
66	9/11/2020	9,167	9,312	48	Marcellus
67	9/11/2020	8,993	9,138	48	Marcellus
68	9/11/2020	8,818	8,963	48	Marcellus
69	9/11/2020	8,644	8,789	48	Marcellus
70	9/11/2020	8,469	8,614	48	Marcellus
71	9/12/2020	8,295	8,440	48	Marcellus
72	9/12/2020	8,120	8,265	48	Marcellus
73	9/12/2020	7,946	8,091	48	Marcellus
74	9/12/2020	7,771	7,916	48	Marcellus
75	9/13/2020	7,597	7,742	48	Marcellus
76	9/13/2020	7,422	7,567	48	Marcellus

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STIMULATION INFORMATION PER STAGE

Stage No.	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)
1	90	8548	8372	4167	247460	6488	0
2	86	7366	4683	4603	443930	8899	0
3	86	6999	4704	4193	448040	8832	0
4	89	7343	4060	5108	444800	10321	0
5	90	7251	4825	5023	455220	8867	0
6	90	7328	5343	4856	443900	8845	0
7	89	7125	5049	5186	449040	8811	0
8	90	7331	4862	5042	440500	8493	0
9	90	7237	4960	4921	446280	8593	0
10	86	7034	4768	5257	435160	8786	0
11	87	7184	4571	4425	448160	8719	0
12	89	7369	4632	4727	444920	8594	0
13	90	7223	4969	4769	444880	8575	0
14	90	7109	4832	4815	440800	8563	0
15	89	7050	5033	4863	448460	8681	0
16	89	7195	5137	5117	449200	8770	0
17	90	7424	5185	5038	441700	8417	0
18	89	7858	5316	4658	436860	8449	0
19	88	7466	5096	4505	454400	8823	0
20	88	7248	5301	4745	444000	8696	0
21	89	7231	5076	4815	440920	8424	0
22	90	7237	5253	5087	447260	8509	0
23	88	7288	5204	4799	446600	8723	0
24	89	7119	5582	4836	445056	8805	0
25	90	7393	5377	4666	446700	8486	0
26	90	7212	5283	4800	441420	8448	0
27	90	7259	5457	5064	439180	8352	0
28	90	7206	5000	5005	449780	8583	0
29	90	7275	4968	4599	423880	8219	0
30	90	7124	5166	5091	434360	8410	0
31	90	7213	5532	4824	433980	8338	0
32	90	7448	5304	5003	442200	8570	0

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Stage No.	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)
33	91	6972	5117	5329	449000	8530	0
34	89	7233	5651	5006	429200	8230	0
35	89	7185	5307	4679	431400	8357	0
36	90	7263	5511	4830	446220	8307	0
37	90	7161	5205	4203	443200	8397	0
38	90	7340	5274	7197	440280	8378	0
39	90	7391	5287	5240	438380	8341	0
40	90	7478	5153	4583	399580	7895	0
41	90	7098	5110	4480	439980	8333	0
42	90	7087	5187	5145	437280	8342	0
43	88	7309	5069	4387	440140	8414	0
44	90	7041	5000	4630	437860	8271	0
45	90	6888	5436	4451	440780	8317	0
46	90	6986	5115	4775	445820	8651	0
47	90	6858	5495	4862	438780	8311	0
48	90	6795	5416	4985	440800	8407	0
49	90	6638	5235	4781	436360	8338	0
50	90	6723	6473	4713	438860	8193	0
51	90	6656	5169	4766	440260	8195	0
52	90	6671	5253	5199	443320	8280	0
53	89	6760	5345	4661	447860	8271	0
54	89	6551	5828	4974	442520	8278	0
55	90	6460	6873	4676	447780	8370	0
56	90	6660	5271	5029	441120	8292	0
57	90	6842	5237	4907	443880	8339	0
58	90	6654	5127	4561	436240	8196	0
59	89	6630	5393	5301	448460	8199	0
60	90	6508	5166	4692	439920	8118	0
61	90	6576	5239	4539	438970	8225	0
62	90	6580	5188	4864	442380	8219	0
63	89	6546	6541	4257	446120	8174	0
64	89	6315	6695	4476	443480	8256	0
65	89	6455	5027	5200	441600	8062	0
66	89	6424	5178	5101	440160	8293	0

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Stage No.	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)
67	90	6624	5214	4732	444140	8294	0
68	89	6277	4969	4603	447520	8230	0
69	88	6352	5136	4777	445560	8087	0
70	89	6238	5298	5294	437340	7991	0
71	90	6223	5197	5220	447520	8251	0
72	89	6218	4911	4615	445880	8187	0
73	90	6199	6801	4697	441040	8135	0
74	89	6255	6884	4756	443730	8010	0
75	90	6259	5198	5281	439360	8185	0
76	89	6157	5350	4793	440380	8979	0

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LITHOLOGY/FORMATION	TOP DEPTH IN FT/ Name TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID
Maxton	1940	2030	1941	2031	Sandstone
Big Lime	2030	2100	2031	2101	Limestone
Big Injun	2100	2384	2101	2386	Sandstone
Weir	2384	2579	2386	2582	Sandstone
Berea	2579	2924	2582	2927	Sandstone
Gordon	2924	2978	2927	2982	Sandstone
Fifty Foot	2978	3526	2982	3532	Sandstone
Speechley	3526	4948	3532	5142	Sandstone
Benson	4948	5323	5142	5634	Sandstone
Alexander	5323	5889	5634	6367	Siltstone
Rhinestreet	5889	6303	6367	6925	Black shale
Middlesex	6303	6376	6925	7039	Black shale
Geneseo/Burkett	6376	6403	7039	7084	Black shale
Tully	6403	6441	7084	7155	Limestone
Hamilton	6441	6487	7155	7271	Grey shale
Marcellus	6487	-	7271	-	Black shale

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Tug Hill Operating LLC
Well: Bryan N-06HM (slot B)
Site: Bryan Pad
Project: Marshall County, West Virginia.
Design: rev6
Rig: Precision 110

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1428.00	0.00	0.00	1428.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	1628.00	4.00	71.28	1627.84	2.24	6.61	2.00	71.28	-0.25	Begin 4.00° tangent
4	3232.07	4.00	71.28	3228.00	38.15	112.58	0.00	0.00	-4.22	Begin 2°/100' build/turn
5	5036.90	40.10	72.56	4873.32	239.29	747.84	2.00	1.39	-41.22	Begin 40.10° tangent
6	6451.80	40.10	72.56	5955.68	512.47	1617.21	0.00	0.00	-93.81	Begin 8°/100' build/turn
7	6964.36	50.00	14.76	6332.69	762.56	1834.03	8.00	-98.92	63.22	Begin 10°/100' build/turn
8	7541.15	91.00	330.21	6530.00	1270.05	1738.88	10.00	-56.10	571.50	Begin 91.00° lateral
9	20760.69	91.00	330.21	6300.00	12740.96	-4827.81	0.00	0.00	3624.97	PBHL/TD 20760.68 MD/6300.00 TVD



Azimuths to Grid North
 True North: -0.14°
 Magnetic North: -8.83°

Magnetic Field
 Strength: 51977.6snT
 Dip Angle: 66.81°
 Date: 3/7/2019
 Model: IGRF2015

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (84 W to 78 W)

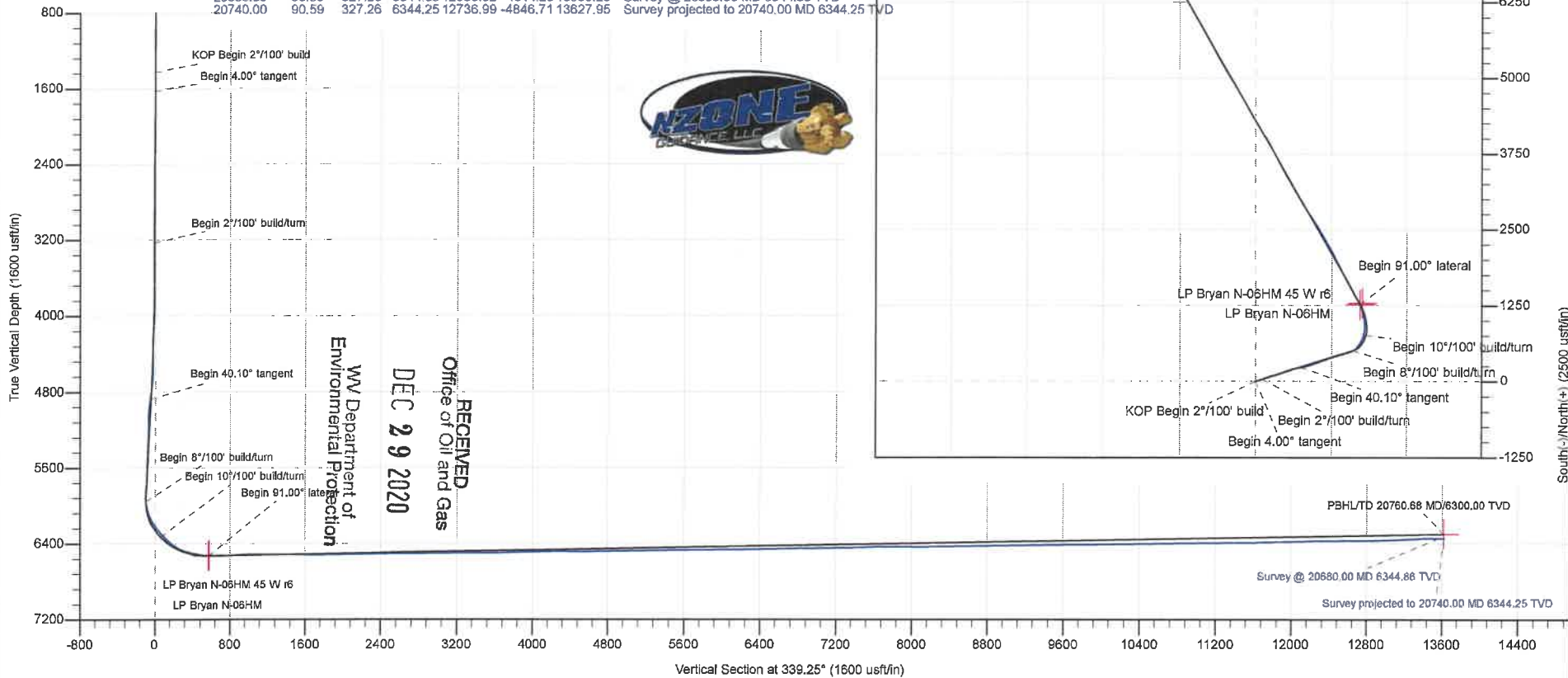
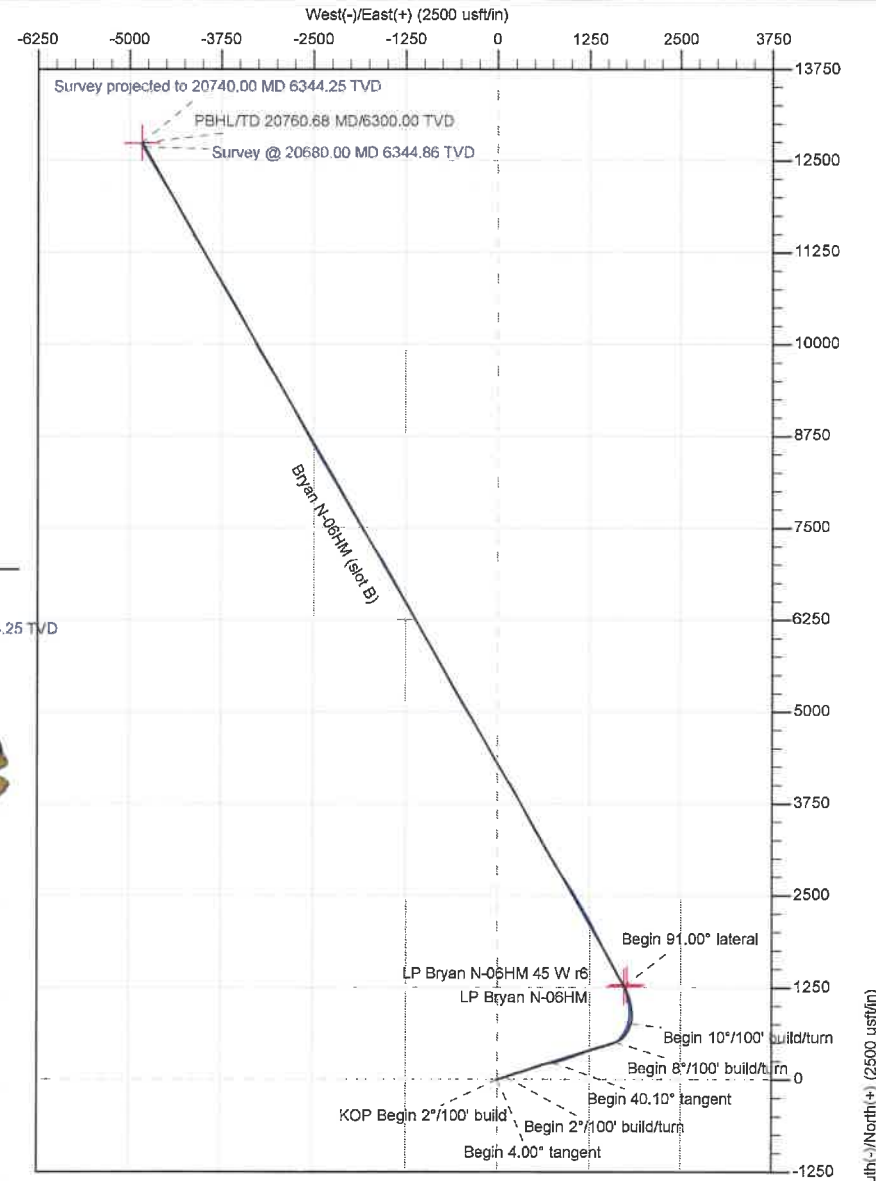
System Datum: Mean Sea Level
 Depth Reference: RKB=1191+28 @ 1219.00usft (Precision 110)
 Surface location

Northing	Easting	Latitude	Longitude
14445142.16	1703196.45	39.77571503	-80.77655671

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.83°

ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
223.00	0.62	13.65	223.00	1.17	0.28	1.00	MWD surveys
20680.00	90.59	327.26	6344.86	12686.52	-4814.26	13569.26	Survey @ 20680.00 MD 6344.86 TVD
20740.00	90.59	327.26	6344.25	12736.99	-4846.71	13627.95	Survey projected to 20740.00 MD 6344.25 TVD



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/27/2020
Job End Date:	9/13/2020
State:	West Virginia
County:	Marshall
API Number:	47-051-01977-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Bryan N 6HM
Latitude:	39.77571503
Longitude:	-80.77655671
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,344
Total Base Water Volume (gal):	26,847,114
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	Tug Hill Operating	Carrier/Base Fluid	Water	7732-18-5	100.00000	86.67342	None
Sand (40/70 White Proppant)	ProFrac	Proppant	Silica Substrate	14808-60-7	100.00000	8.62941	None
Sand (100 Mesh Proppant)	ProFrac	Proppant	Silica Substrate	14808-60-7	100.00000	3.09422	None
Sand (30/50 White Proppant)	ProFrac	Proppant	Silica Substrate	14808-60-7	100.00000	1.19367	None
Hydrochloric Acid (7.5%)	PVS	Acidizing	Water	7732-18-5	85.00000	0.24746	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.10772	None
StimStream FR 9800	Chemstream	Friction Reducer	Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01771	None
			Butene, homopolymer	9003-29-6	25.00000	0.01771	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00212	None

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MC MX 9-4743	Multi-Chem	Biocide					
			Sodium Nitrate	7631-99-4	60.00000	0.02215	None
LD-7750W	Multi-Chem	Scale Inhibitor					
			Methanol	67-56-1	60.00000	0.00501	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00042	None
ProFE 105	ProFrac	Iron Control					
			Citric Acid	77-92-9	100.00000	0.00111	None
ProHib 100	ProFrac	Acid Inhibitor					
			2-Propyn-1-ol compound w/ methyloxirane	38172-91-7	15.00000	0.00014	None
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.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Water	7732-18-5	85.00000	0.24746	
			Butene, homopolymer	9003-29-6	25.00000	0.01771	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00212	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00042	

* 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)

RECEIVED
Office of Oil and Gas
DEC 29 2020
WV Department of
Environmental Protection

(If Gas) PRODUCTION STORAGE DEEP SHALLOW STATE COUNTY PERMIT

LOCATION ELEVATION **1191.6'** WATERSHED (HUC 10) Fish Creek

DISTRICT Franklin COUNTY Marshall

QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE WW-6A1 Form ACREAGE 81.98

SURFACE OWNER CNX LAND RESOURCES, INC.

OIL & GAS ROYALTY OWNER MICHAEL R. BRYAN - SEE WW 6A1 LEASE ACREAGE 81.98

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION

PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) As Drilled

DISTRICT As Drilled

PLUG & ABANDON CLEAN OUT & REPLUG

TARGET FORMATION Marcellus

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER SYSTEM CT CORPORATION

ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD

FORT WORTH, TX 76107 CHARLESTON, WV 25313

COUNTY NAME PERMIT

MC MX 9-4743	Multi-Chem	Biocide					
			Sodium Nitrate	7631-99-4	60.00000	0.02215	None
LD-7750W	Multi-Chem	Scale Inhibitor					
			Methanol	67-56-1	60.00000	0.00501	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00042	None
ProFE 105	ProFrac	Iron Control					
			Citric Acid	77-92-9	100.00000	0.00111	None
ProHib 100	ProFrac	Acid Inhibitor					
			2-Propyn-1-ol compound w/ methyloxirane	38172-91-7	15.00000	0.00014	None
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.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
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			Butene, homopolymer	9003-29-6	25.00000	0.01771	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00212	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00042	

* 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)

RECEIVED
Office of Oil and Gas
DEC 29 2020
WV Department of
Environmental Protection

BRYAN LEASE WELL N-6HM 969.9328± ACRES

Kentucky Power Company
& A.E.P. Generation
Resources, Inc.
05-5-12 165.0

John F.
Arruda, Et Ux
05-5-4.1
1,399

Edwin C.
Miller
05-08-07
190.31 Ac.

James B.
Jackson
Jr. et ux
05-08-09
89,723 Ac.

Edwin Miller
05-09-31
32.10Ac.

Alvin A.
Yoder
05-11-10
31.91 Ac.

Alvin A.
Yoder
05-10-17
57.28 Ac.

Timothy
McGinnis Sr.
& Linda
05-10-16
30.87Ac.

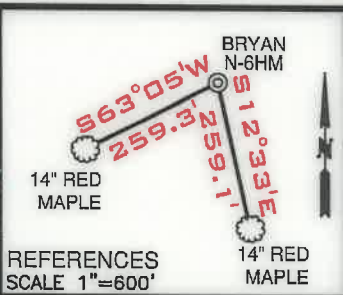
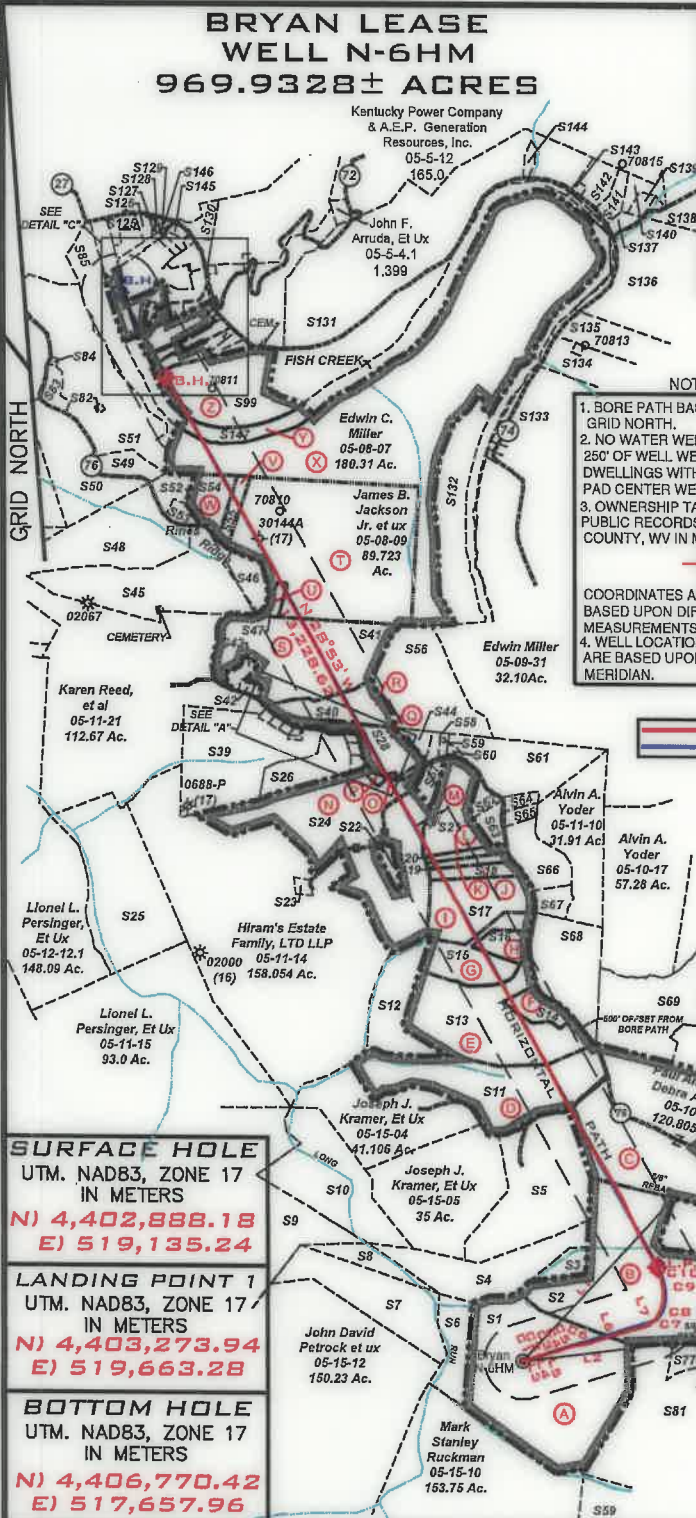
John Swierkos
05-10-14
100 Ac.

John Swierkos
05-16-05
52.07 Ac.

John Swierkos
05-16-06
134.05 Ac.

John Swierkos
05-16-25
79.04 Ac.

Mark
Stanley
Ruckman
05-15-10
163.75 Ac.



OP HOLE LATITUDE: 39°47'30"
BOTTOM HOLE LATITUDE: 39°50'00"

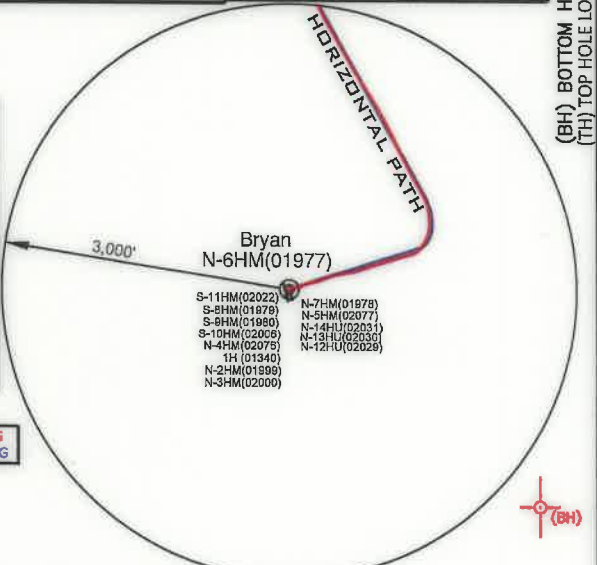
S-11HM(02022) O N-7HM(01978)
S-8HM(01979) O N-8HM(01977)
S-9HM(01980) O N-5HM(02077)
S-10HM(02005) O N-4HM(02076)
N-4HM(02076) O N-14HU(02031)
1H(01340) O N-13HU(02030)
N-2HM(01999) O N-12HU(02029)
N-3HM(02000) O

DETAIL
SKETCH "A"
SCALE 1"=800'

NOTES

1. BORE PATH BASED ON GRID NORTH.
2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017.
4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.



ASDRILLED LEG
PERMITTED LEG

LEGEND

- LEASED TRACTS
- SURFACE TRACTS
- UNIT BOUNDARY
- LEASE # (SEE 6A1 FORM)

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,402,888.18
E) 519,135.24

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,403,273.94
E) 519,663.28

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,406,770.42
E) 517,657.96

LINE	BEARING	DISTANCE
L1	N 42°42' E	2912.90'
L2	N 82°48' E	1981.07'
L3	N 70°49' E	39.15'
L4	N 62°10' E	22.93'
L5	N 68°55' E	119.34'
L6	N 71°16' E	233.47'
L7	N 73°20' E	442.60'

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C1	N 79°27' E	39.69'	145.01'	39.82'
C2	N 79°12' E	28.30'	229.67'	26.32'
C3	N 77°57' E	60.67'	474.07'	60.71'
C4	N 73°37' E	158.61'	817.86'	158.85'
C5	N 74°31' E	311.44'	1374.37'	312.11'
C6	N 75°42' E	228.60'	995.91'	229.11'
C7	N 62°27' E	138.58'	256.20'	140.34'
C8	N 20°10' E	324.06'	504.71'	329.21'
C9	N 07°05' W	248.65'	1090.71'	249.15'
C10	N 21°29' W	133.16'	610.45'	133.43'

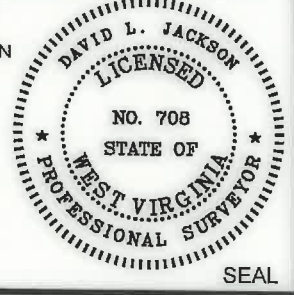
FILE NUMBER _____
DRAWING NUMBER BRYAN_WP_N-6HM
SCALE 1" = 2500'
MINIMUM DEGREE OF ACCURACY 1/200
PROVEN SOURCE OF ELEVATION SUBMETER MAPPING
GRADE GPS

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION



David L Jackson

JACKSON SURVEYING INC.
P.O. Box 1460
Clarksburg, WV 26302
304-623-5851



WVDEP
OFFICE OF OIL & GAS
601 57TH STREET, SE
CHARLESTON, WV 25304

DATE: OCTOBER 27, 2020

OPERATORS WELL NO. BRYAN N-6HM
API WELL NO. 47-051-01977

STATE WV COUNTY MARSHALL PERMIT SEE WW-6A1 FORM

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF "GAS") PRODUCTION STORAGE DEEP SHALLOW

LOCATION ELEVATION 1191.6' WATERSHED (HUC 10) Fish Creek

DISTRICT Franklin COUNTY Marshall

QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER CNX LAND RESOURCES, INC. ACREAGE 81.98

OIL & GAS ROYALTY OWNER MICHAEL R. BRYAN - SEE WW 6A1 LEASE ACREAGE 81.98

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) AsDrilled

TARGET FORMATION Marcellus PLUG & ABANDON CLEAN OUT & REPLUG

WELL OPERATOR TUG HILL OPERATING, LLC ESTIMATED DEPTH TVD: 6,344' TMD: 20,740'

DESIGNATED AGENT DIANNA STAMPER
CT CORPORATION SYSTEM

ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
FORT WORTH, TX 76107

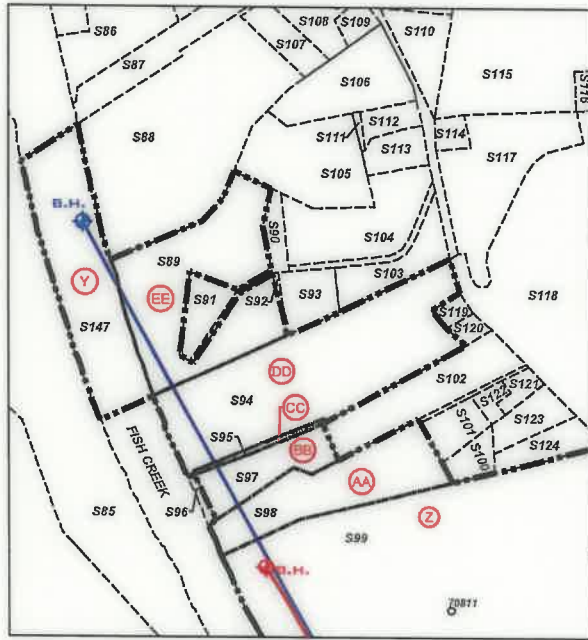
ADDRESS 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

COUNTY NAME
PERMIT

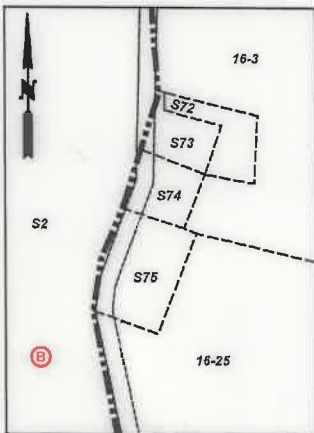
BRYAN LEASE WELL N-6HM 969.9328± ACRES



DETAIL "A"
SCALE 1"=400'

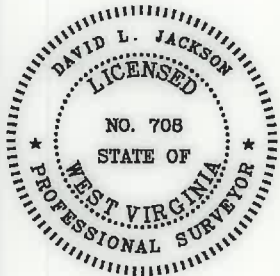


DETAIL "C"
SCALE 1"=500'



DETAIL "B"
SCALE 1"=250'

SURFACE HOLE UTM. NAD83, ZONE 17 IN METERS N) 4,402,888.14 E) 519,135.32
LANDING POINT 1 UTM. NAD83, ZONE 17 IN METERS N) 4,403,275.22 E) 519,665.30
BOTTOM HOLE UTM. NAD83, ZONE 17 IN METERS N) 4,407,109.10 E) 517,470.61



P.S.
708

David L Jackson



TUG HILL OPERATING

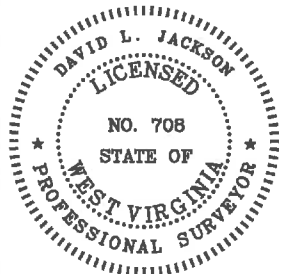
OPERATOR'S
WELL #: Bryan N-6HM
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API #: 047-051-01977

WELL PLAT
PAGE 2 OF 3
DATE: 10/27/2020

**BRYAN LEASE
WELL N-6HM
969.9328± ACRES**

Number	TAX MAP -PARCEL	ADJOINER OWNER	ACRES
S1	05-15-9	CNX Land Resources, Inc.	81.98
S2	05-15-8	Terry D. Rose, et ux	77.11
S3	05-15-7	Terry D. Rose, et ux	4.5
S4	05-15-6.1	Joseph J. Kramar, et ux	39.40
S5	05-15-6	Joseph J. Kramar, et ux	42.5
S6	05-15-13	CNX Land Resources, Inc.	11.0
S7	05-15-14	John David Petrock, et ux	25.0
S8	05-15-2	John David Petrock, et ux	5.0
S9	05-15-1	Marcus Sharp & David Schlabach, Hrs.	121.0
S10	05-15-3	Joseph J. Kramar, et ux	36.10
S11	05-11-12	Joseph J. Kramar, et ux	43.2188
S12	05-11-13	Joy D. Gartman & Arlin Gatts	12.29
S13	05-11-11.3	Herman D. Lantz	43.96
S14	05-11-11.1	Nellie Marie & Robert W. Spencer	5.813
S15	05-11-11.4	Brad M. & Amanda J. Blake	15.193
S16	05-11-11	Brad M. & Amanda J. Blake	5.0
S17	05-11-9	Edwin C. & Kimberly A. Miller	54.625
S18	05-11-9.9	Leonard L. Parsons, et ux	5.89
S19	05-11-9.6	Southern Country Farms, Inc	2.488
S20	05-11-9.5	Southern Country Farms, Inc	2.559
S21	05-11-9.3	Joseph M. & Steven Haught	16.3
S22	05-11-16.2	Joseph Haught	2.181
S23	05-11-14.1	Dennis F. Moore, et ux	1.056
S24	05-11-16	Keith E. Haught, et al	83.674
S25	05-12-11	Wesley R. Bryan & Wesley R. Bryan II	52.478
S26	05-11-17.2	Brenda & Michael Bryan	11.504
S27	05-11-5.1	James R. Anderson, et ux	0.205
S28	05-11-5	Kevin R. Corley, et ux	10.36
S29	05-11-16.1	Susan Marie Smith, (Life)	0.876
S30	05-11-25	Owen Michael Barr	0.598
S31	05-11-23	Owen Michael Barr	0.845
S32	05-11-24	Charles Edward Furbee, et ux	0.603
S33	05-11-5.2	Rickey Lynn & Victoria Rose Cross	1.0
S34	05-11-17.1	David Gray	0.297
S35	05-11-22	David Gray	0.353
S36	05-11-18	David E. Gray	0.569
S37	05-11-19	David E. Gray	0.532
S38	05-11-20	David E. Gray	0.569
S39	05-11-17	Kevin R. Corley, et ux	36.13
S40	05-11-3	Kevin R. Corley, et ux	13.18
S41	05-11-2	Walter C. Cheryl A. Rine	42.367
S42	05-11-2.1	Walter C. & Cheryl A. Rine	1.19
S43	05-11-2.2	Joshua A. Myers	2.193
S44	05-11-5.3	Robert Harris Arrick, et ux	3.0
S45	05-11-1.1	Larry W. Dunlap & Charles Lee Dunlap	34.405
S46	05-11-1.2	Jay A. Conner, et ux	5.824
S47	05-8-9.1	Scott E. Jackson, Tammy S. South & Marion Jackson	1.957
S48	05-11-1.4	Larry W. Dunlap, et al	32.493
S49	05-7-32	William N. & Virginia A. Roupe	4.2
S50	05-7-33	William N. Roupe	24.60
S51	05-7-31	William N. Roupe et ux	43.147
S52	05-11-1	William N. & Virginia A. Roupe	4.527
S53	05-11-1.6	Debra Morris	2.093
S54	05-11-1.7	William S. & Mary K. Adams	8.0
S55	05-11-1.5	Paul & Sandy Whitt	3.507
S56	05-11-4	David H. Arrick, et ux	31.5
S57	05-11-16.3	Kegan Michael Haught - Life	3.265
S58	05-11-6	Robert & Rebecca Arrick	1.29
S59	05-11-7	Baptist Cemetery	1.0
S60	05-11-8	Baptist Church	0.8
S61	05-11-9	Edwin C. & Kimberly A. Miller	54.625
S62	05-11-9.10	John A. & Janet L. Beucke	2.348
S63	05-11-9.2	Michael R. Bryan	3.143
S64	05-11-9.8	Sean F. Moore	2.070
S65	05-11-9.7	Sean F. Moore	2.026
S66	05-11-9.1	Jack Shephard Huggins Jr., et al	10.92
S67	05-11-9.4	Jack S. Huggins, et ux	4.129
S68	05-11-11.2	Wesley R. Bryan & Wesley R. Bryan II	25.031
S69	05-10-16.4	Melvin E. Jr. & Elizabeth Ferguson	30.87
S70	05-10-15.1	Donald T. Miller	2.095

Number	TAX MAP -PARCEL	ADJOINER OWNER	ACRES
S71	05-16-3.2	Jimmy Lee Ostrander Jr., Sheena Lynn Ostrander & Brody Ray Ostrander	1.435
S72	05-16-3.1	Dennis Jackson, et ux	0.27
S73		Cemetery - No Deed	
S74	05-16-2	Christian Church	0.19
S75	05-16-1	Christian Church	0.50
S76	05-16-23.1	Ray E. Minor, et ux	2.0
S77	05-16-23.4	Michael R. & Brenda K. Bryan	3.0
S78	05-16-23.3	Greg & Christina Riddle	1.0
S79	05-16-24	Alan M. Beyser, et ux	1.083
S80	05-16-23.2	Alan M. Beyser, et ux	1.726
S81	05-16-23	CNX Land Resources, Inc.	60.138
S82	05-7-31.4	Grandview-Doolen PSD	0.23
S83	05-7-31.2	William N. Roupe Et Ux	3.304
S84	05-7-31.3	William N. & Virginia A. Roupe	0.230
S85	05-7-31.1	David L. & Lori M. Yoders	30.115
S86	05-8A-16	Jon David Fromhart	2.0
S87	05-8A-26	Albert James Anderson Jr.	1.605
S88	05-8A-27	Clarence S. Siburt, Et Ux	8.296
S89	05-8A-39	Barbara L. Daniels & Elaine Wills	3.223
S90	05-8A-38	William J. Gamble, Et Ux	0.354
S91	05-8A-40	Barbara L. Daniels & Elaine Wills	0.627
S92	05-8A-41	William J. Gamble, Et ux	0.046
S93	05-8A-37	William J. Gamble, Et Ux	0.706
S94	05-8A-42	Robert M. White	7.23
S95	05-8A-49	Raymond Scott, Jr. & Lariette	0.159
S96	05-8A-45	Raymond Scott, Jr. & Lariette	0.305
S97	05-8A-46	Barbara L. & Mary L. Rose	1.5
S98	05-8A-47	Barbara L. & Mary L. Rose	3.0
S99	05-8-4.1	Frances E. Nieman	33.46
S100	05-8A-53	Frances E. Nieman	0.422
S101	05-8A-52	Barbara L. & Mary L. Rose	0.59
S102	05-8A-48	Raymond Scott, Jr. + Lariette	2.12
S103	05-8A-36	William J. & Linda E. & Erin R. Gamble	1.031
S104	05-8A-33	Elaine Wills & Jeffrey D. Brooks	2.517
S105	05-8A-31	Randall K. Keener, Et Ux	2.346
S106	05-8A-28	Norman G. Johnson (Life)	2.0
S107	05-8A-24	Clarence Paul Siburt	0.653
S108	05-8A-23	Danny Lee & Leona May Darrah	0.738
S109	05-8A-25	Charles & Whitney Woods	2.6
S110	05-8A-14	Board Of Education	1.0
S111	05-8A-30	Randall Keith Keener, Et Ux	0.059
S112	05-8A-29	Catherine P. Rine	0.394
S113	05-8A-32	Jonathan David Bopp	0.580
S114	05-8A-34	Norman G Johnson, Et Ux (Life)	0.25
S115	05-8-3	Tammy L. Mitchell	35.07
S116	05-8-23	Robert L. & Donald Shields	0.46
S117	05-8A-35	Jared C. Sells	2.780
S118	05-8-4	C. Wayne Berisford	23.355
S119	05-8A-43	Charles G. Stein & Eva A. Wade	0.17
S120	05-8A-44	Charles G. Stein & Eva A Wade	0.18
S121	05-8A-50	Lucretia M. Harrison	0.277
S122	05-8A-51	Lucretia M. Harrison	0.210
S123	05-8A-54	David D. & Christine S. Daniels	0.68
S124	05-8A-54.1	David D. & Christine S. Daniels	0.69
S125	05-8A-15	June Morris	2.06
S126	05-8A-17	Isaac Luke Vanscyoc	1.44
S127	05-8A-18	David D. & Christine S. Daniels	0.25
S128	05-8A-19	David D. & Christine S. Daniels	0.25
S129	05-8A-21	David D. & Christine S. Daniels	0.122
S130	05-8A-13	Letha I. Ruckman	2.993
S131	05-8-5	Richard L. Gatts (Life)	98.819
S132	05-8-8	James Edward Francis, Et Ux	28.3
S133	05-9-35	Lloyd C. & Judith C. Arnold	47.0
S134	05-9-2	James R. Legg Estate	23.141
S135	05-9-2.1	Jeffery L. Legg	20.5
S136	05-9-1	Sheldon Ray Ruckman & Marvin Edgar Ruckman	57.683
S137	05-9-1.2	Marvin E. Ruckman	1.359
S138	05-4-17	JPM Properties, LLC	5.0
S139	05-4-19	William L. Maxwell Jr.	1.5
S140	05-4-18	William L. Maxwell Jr.	3.0
S141	05-9-1.3	Marvin E. Ruckman Et Ux	3.326
S142	05-9-1.4	Sheldon R. Ruckman Et Al Life	4.494
S143	05-9-1.1	Beverly E. Clark	0.52
S144	05-8-6	Richard L. Gatts - Life	1.181
S145	05-8A-22	Whitney Woods	0.715
S146	05-8A-10	David D. & Christine S. Daniels	0.20
S147	Fish Creek	State of W.V.	12.26



P.S. 708

David L Jackson



**TUG HILL
OPERATING**

OPERATOR'S
WELL #: Bryan N-6HM
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API #: 047-051-01977

WELL PLAT

PAGE 3 OF 3

DATE: 10/27/2020