

#### west virginia department of environmental protection

Office of Oil and Gas 601 57th Street, S.E. Charleston, WV 25304 (304) 926-0450 fax: (304) 926-0452

Harold D. Ward, Cabinet Secretary www.dep.wv.gov

Monday, December 11, 2023 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

NORTHEAST NATURAL ENERGY LLC 707 VIRGINIA STREET EAST STE 1200 CHARLESTON, WV 25301

Re:

Permit Modification Approval for MIRACLE RUN 4H

47-061-01923-00-00

Extended lateral length

## NORTHEAST NATURAL ENERGY LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926-0450.

Operator's Well Number: MIRACLE RUN 4H

Farm Name: BYRON LANE RAPP

U.S. WELL NUMBER: 47-061-01923-00-00

Horizontal 6A New Drill

Date Modification Issued: 12/11/2023

Promoting a healthy environment.

API NO. 47-061	_ 01923
OPERATOR V	VELL NO. 4H
Well Pad Na	me: Miracle Run

# STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS WELL WORK PERMIT APPLICATION

1) Well Operator: No	theast Natural Energy	494498281	Monongalia	Battelle	Wadestown
· · · · · · · · · · · · · · · · · · ·		Operator ID	County	District	Quadrangle
2) Operator's Well Nur	mber: 4H	Well F	ad Name: Mirac	le Run	
3) Farm Name/Surface	Owner: Byron Lane Rap	pp Public R	oad Access: Rou	ute 13/Zeb	Haught Rd
4) Elevation, current gr	ound: 1,520' E	levation, propose	d post-constructi	on: 1,458	r.
5) Well Type (a) Gas Other	X Oil	Ur	derground Stora	ge	
(b)If G	as Shallow X Horizontal X	Deep			ŧ.
6) Existing Pad: Yes or					
7) Proposed Target For Marcellus, 8,109', 110	mation(s), Depth(s), Antio	cipated Thickness	s and Expected P	ressure(s):	
8) Proposed Total Vert	ical Depth: 8,107' (Pilot	t to 8,150'; Plug	back to 5,505')		
9) Formation at Total V	and the second s				
10) Proposed Total Me	asured Depth: 29,760'				
11) Proposed Horizonta	al Leg Length: 21,157'				
12) Approximate Fresh	Water Strata Depths:	50', 1,262'			
3.5	ne Fresh Water Depths: rater Depths: 1,600', 2,60	offset wells			
15) Approximate Coal	Seam Depths: 500', 1,26	60'			
16) Approximate Depth	n to Possible Void (coal m	ine, karst, other)	: NA		
	l location contain coal sea jacent to an active mine?	Yes X	No		
(a) If Yes, provide M	ine Info: Name: Mari	on County Coal	Company Mine		December
1	Depth: 1,26	0			Office of Oil and Ga
	Seam: Pitts	burgh			NOV 2 0 2023
CK# 5168	Owner: Mari	on Co. Coal Re	sources Inc.		WV Department of Environmental Protecti

Gayne Knitowski, Digitally signed by Gayne Knitowski, Inspector Date: 2023.11.03 08:11:27 -04'00'

API	NO.	47-	061	-	01923	

OPERATOR WELL NO. 4H
Well Pad Name: Mirade Run

# 18)

# **CASING AND TUBING PROGRAM**

ТҮРЕ	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	24"	New	NA	NA	100	100'	GTS
Fresh Water	13-3/8"	New	J-55	54.5	1,485'*	1,455'*	CTS
Coal							
Intermediate	9-5/8"	New	J-55	36	2,730'	2,700'	CTS
Production	5-1/2"	New	P-110	20	29,760'	29,730'	7,160
Tubing	2-7/8"	New	P-110	6.5	NA		
Liners							

\*covering red rock formation

Gayne Knitowski, Knitowski, Inspector
Inspector
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ТҮРЕ	Size (in)	Wellbore Diameter (in)	<u>Wall</u> <u>Thickness</u> (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	24"	28"	0.375	NA	NA	Type 1	1.18
Fresh Water	13-3/8"	17-1/2"	0.380	2,730	500	Class A or L	1.19
Coal		<del></del>					
Intermediate	9-5/8"	12-3/8"	0.395	3,520	2,800	Class A or L	1.19
Production	5-1/2"	8-3/4"	0.361	14,360	11,400	50:50 POZ	1.07
Tubing	2-7/8"	NA	0.271	13,870	NA	NA	NA
Liners							

## **PACKERS**

Kind:	RECEIVED Office of Oil and Gas
Sizes:	NOV 2 0 2023
Depths Set:	WV Department of Environmental Protection

W۷	V-I	6B
(10,	/1	4)

APINO, 47-061 - 0192	API	NO.	47-	061	- 01923
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OPERATOR WELL NO. 4H

Well Pad Name: Mirade Run

## 19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Utilize auger rig to set cellar & conductor. The conductor will be grouted with cement to surface.

Mobilize top hole drilling rig. Drill surface section on air. Run surface (freshwater & coal string) casing to desired depth. The surface section will not penetrate sea level. Surface casing will be cemented to surface. Drill intermediate section on air. Run intermediate casing to desired depth. Intermediate casing will be cemented to surface. Drill pilot hole to 8,150' and plug back to 5,505'. Drill on air the production section to the start of the curve (KOP). The well will be loaded with synthetic oil base drilling mud (SOBM). Demobilize top hole rig.

Mobilize horizontal drilling rig. Finish drilling the production section utilizing MWD surveys and geosteering practices to maintain the wellbore in the Marcellus shale and prevent anti-collision. Production casing will be ran to TD and cement top will be inside the intermediate casing.

# 20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

A cement bond log will determine the top of production casing cement.

The production casing will be pressure tested. The hydraulic fracturing equipment will then open the toe sleeves and begin pumping the first stage. The plug-and-perf method will be used for the remaining stages. The max anticipated pressure during frac is 11,200psi and a max rate of 90bpm. After frac, the drillout rig will drill all plugs out of the well. Land production tubing at desired depth. Then flowback well until ready to turn in line to production facilities.

- 21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 52.95
- 22) Area to be disturbed for well pad only, less access road (acres): 6.43
- 23) Describe centralizer placement for each casing string:

Surface: shoe track & every 3rd joint to surface

Intermediate: shoe track & every 3rd joint to surface

Production: Rigid bow centralizers at shoe track & every other joint in the lateral to KOP. Bow springs

from KOP to surface every third joint.

## 24) Describe all cement additives associated with each cement type:

Surface: Class A or L Cement + Max 3% bwoc Calcium Chloride Fresh Water blend.

Intermediate: Class A or L Cement + Max 3% bwoc Calcium Chloride + Fresh Water.

Production: 50:50 Poz (Fly Ash & Class A or L) plus additives such as defoamer, retarder, & fluid loss to

meet well specific requirements

## 25) Proposed borehole conditioning procedures:

Surface & intermediate on air will utilize high volumetric flow rates of air to ensure the wellbore is clean prior to TOH.

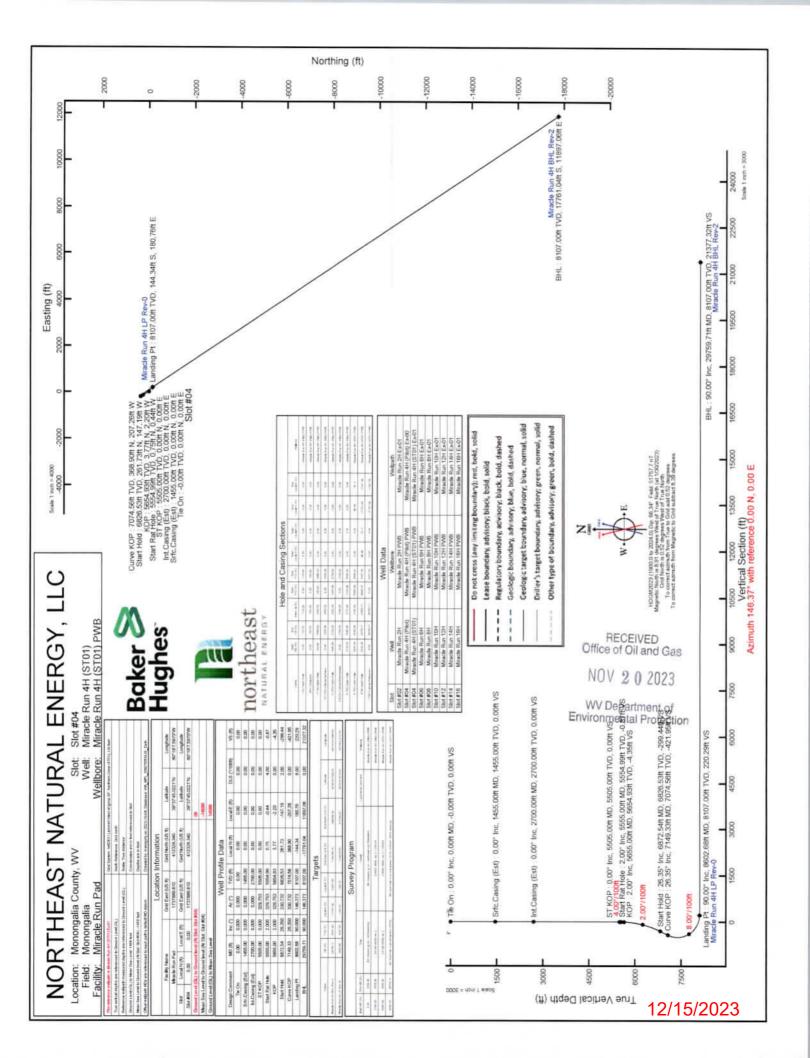
Production section will utilize synthetic oil based drilling mud to properly clean the wellbore. At TD, pump rate and rotation will be maximized and tripping will not begin until shakers flow clean.

Production casing will be circulated prior to cementing to ensure a prepared wellbore for each of the composition of the composi

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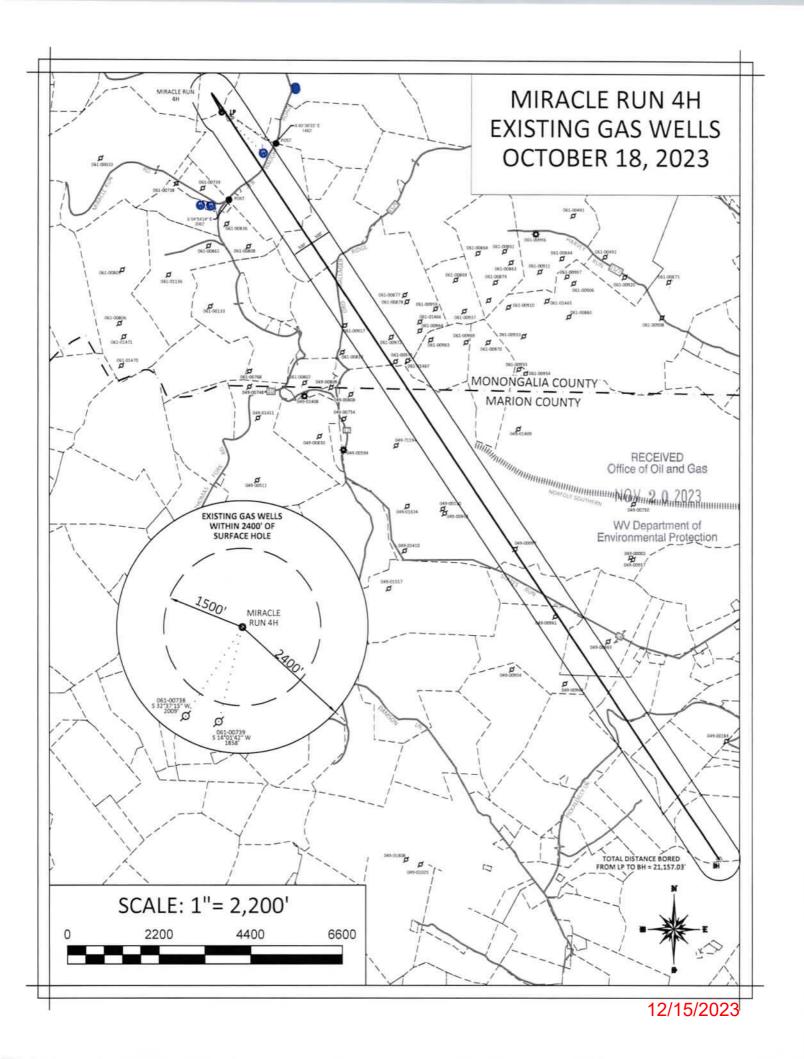
WV Department of Fagigographical Protection 12/15/2023

<sup>\*</sup>Note: Attach additional sheets as needed.



	MIRACLE RUN 4H AREA OF REVIEW											
API Number	Well Name	Well Number	Operator	Latitude (NAD 83)	Longitude (NAD 83)	ТМР	TVD'	Notes				
049-00097	i, Shuman	1	Owens-Illinois, Inc.	39.600874	-80.293514	16-01-01	3223'	Abandoned Well				
049-00961	Francis Toothman	NA	Consolidation Coal Co.	39.596515	-80.2901	16-03-01	NA	Plugged				
061-00917	Shirley S Walker	NA	Consolidation Coal Co.	39.615366	-80.308154	1-27-20	NA	Plugged 5/28/1989				
061-00971	Consol Coal	NA	Consolidation Coal Co.	39.613046	-80.303842	1-27-20	NA	Plugged 8/11/1990				
061-00972	Consol Coal Co	NA	Consolidation Coal Co.	39.614641	-80.304217	1-27-20	NA	Plugged 2/13/1991				
061-01467	Consol Coal Co	L-86	CNX Gas Co. LLC (North)	39.613112	-80.302795	1-27-20	1195'	Plugged 11/28/2014				

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ROW 2 0 2023
WV Department of
Environmental Protection



## INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE Chapter 22, Article 6A, Section 5(a)(5) IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that -

- the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number

Grantor, Lessor, etc.

Grantee, Lessee, etc.

Royalty

Book/Page

See Attached

## Acknowledgement of Possible Permitting/Approval In Addition to the Office of Oil and Gas

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- · WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

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The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Northeast Natural Energy

By:

Hollie Medley

Its:

Regulatory Manager

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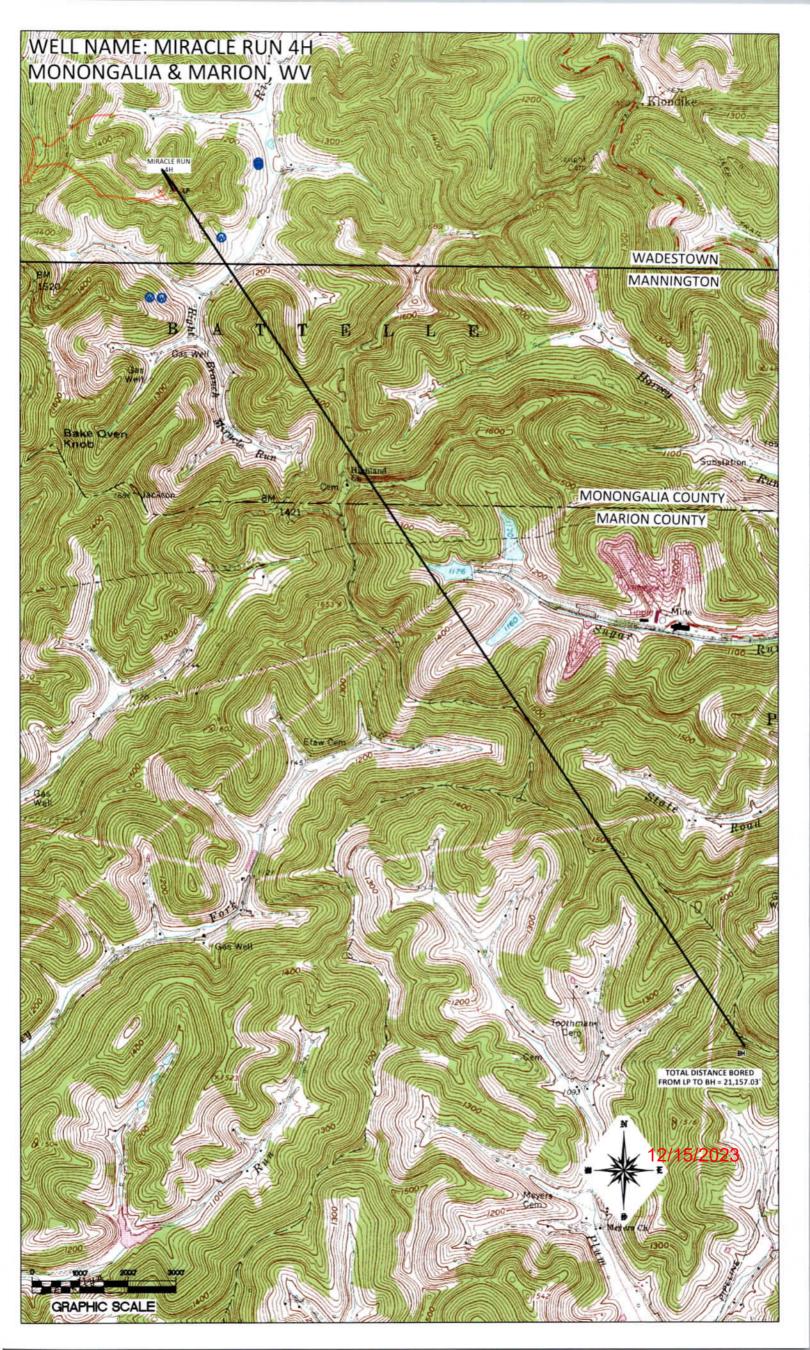
Tract	Lease Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book	Page
А	WV-061-003830-005	Claude S. Anderson and Joni L. Anderson	Northeast Natural Energy, LLC	12.5% or Greater	1578	343
Α	WV-061-004540-003	Jerry Yost	Northeast Natural Energy, LLC	12.5% or Greater	1591	124
Α	WV-061-004540-004	Gene Yost	Northeast Natural Energy, LLC	12.5% or Greater	1591	126
Α	WV-061-004540-006	Eilene Kucix	Northeast Natural Energy, LLC	12.5% or Greater	1591	130
Α	WV-061-004540-001	Gary Yost	Northeast Natural Energy, LLC	12.5% or Greater	1591	146
Α	WV-061-004540-002	Mary Marlene Miller	Northeast Natural Energy, LLC	12.5% or Greater	1591	122
Α	WV-061-004540-007	Roger Yost	Northeast Natural Energy, LLC	12.5% or Greater	1591	132
Α	WV-061-004540-005	Larry Yost	Northeast Natural Energy, LLC	12.5% or Greater	1591	128
В	WV-061-003828-007	Ethel Aldene Efaw	Northeast Natural Energy, LLC	12.5% or Greater	1794	596
С	WV-061-005463-023	Michael Ray Efaw	Northeast Natural Energy, LLC	12.5% or Greater	1793	300
D	WV-061-006519-001	EQT Production Company	Northeast Natural Energy, LLC	12.5% or Greater	1829	725
Е	WV-061-006233-001	Ralph Parks Cornelius	Northeast Natural Energy, LLC	12.5% or Greater	1805	183
F	WV-061-004692-002	Angela R. Baker	Northeast Natural Energy, LLC	12.5% or Greater	1602	85
F	WV-061-004692-004	Ida Kathryn Wilson	Northeast Natural Energy, LLC	12.5% or Greater	1607	628
F	WV-061-004692-016	James Wilford Haught Sr.	Northeast Natural Energy, LLC	12.5% or Greater	1607	276
F	WV-061-004692-018	Rachel Anne Haught	Northeast Natural Energy, LLC	12.5% or Greater	1608	660
F	WV-061-004692-019	Terry L. Haught	Northeast Natural Energy, LLC	12.5% or Greater	1608	662
F	WV-061-004692-024	Rozenna J. Pack Picklesimer	Northeast Natural Energy, LLC	12.5% or Greater	1611	706
F	WV-061-004692-025	Donald A. Haught	Northeast Natural Energy, LLC	12.5% or Greater	1611	708
F	WV-061-004692-028	Buddy Joe Haught	Northeast Natural Energy, LLC	12.5% or Greater	1613	106
F	WV-061-004692-032	Betty Ann Dours Tamarac	Northeast Natural Energy, LLC	12.5% or Greater	1613	840
F	WV-061-004692-034	Dora Jean Pack Webster	Northeast Natural Energy, LLC	12.5% or Greater	1615	581
G	WV-049-104625-002	Jodie Dawn Shriver (The Devine Family Trust interest)	Northeast Natural Energy, LLC	12.5% or Greater	1212	1071
Н	WV-061-000198-001-LOI	John W. Whetzel and Calla Whetzel	South Penn Oil Company	12.5% or Greater	70	35
		**See Whetzel Leasehold Chain				
Ţ	WV-049-004839-001; WV- 049-004839-002	CSX Transportation	Northeast Natural Energy	12.5% or Greater	1226	927
J	WV-061-006503-001	CNX Gas Company LLC	Northeast Natural Energy, LLC	12.5% or Greater	1817	466
К	WV-049-086187-001	Bernard W. Toothman	NNE Land LLC	12.5% or Greater	1315	898
	Vir	NNE Land LLC	Marion Natural Energy LLC	Assignment book	64	938
	9	NNE Land LLC  Marion Natural Energy LLC	Northeast Natural Energy	Assignment book	1330	528
L	WV-049-086187-001	Bernard W. Toothman	NNE Land LLC	12.5% or Greater	1315	898
-	7.8	NNE Land LLC	Marion Natural Energy LLC	Assignment book	64	938
	note of the	Marion Natural Energy LLC	Northeast Natural Energy	Assignment book	1330	528
М	WV-049-086168-003	The Burns Family General Partnership	NNE Land LLC	12.5% or Greater	1318	59

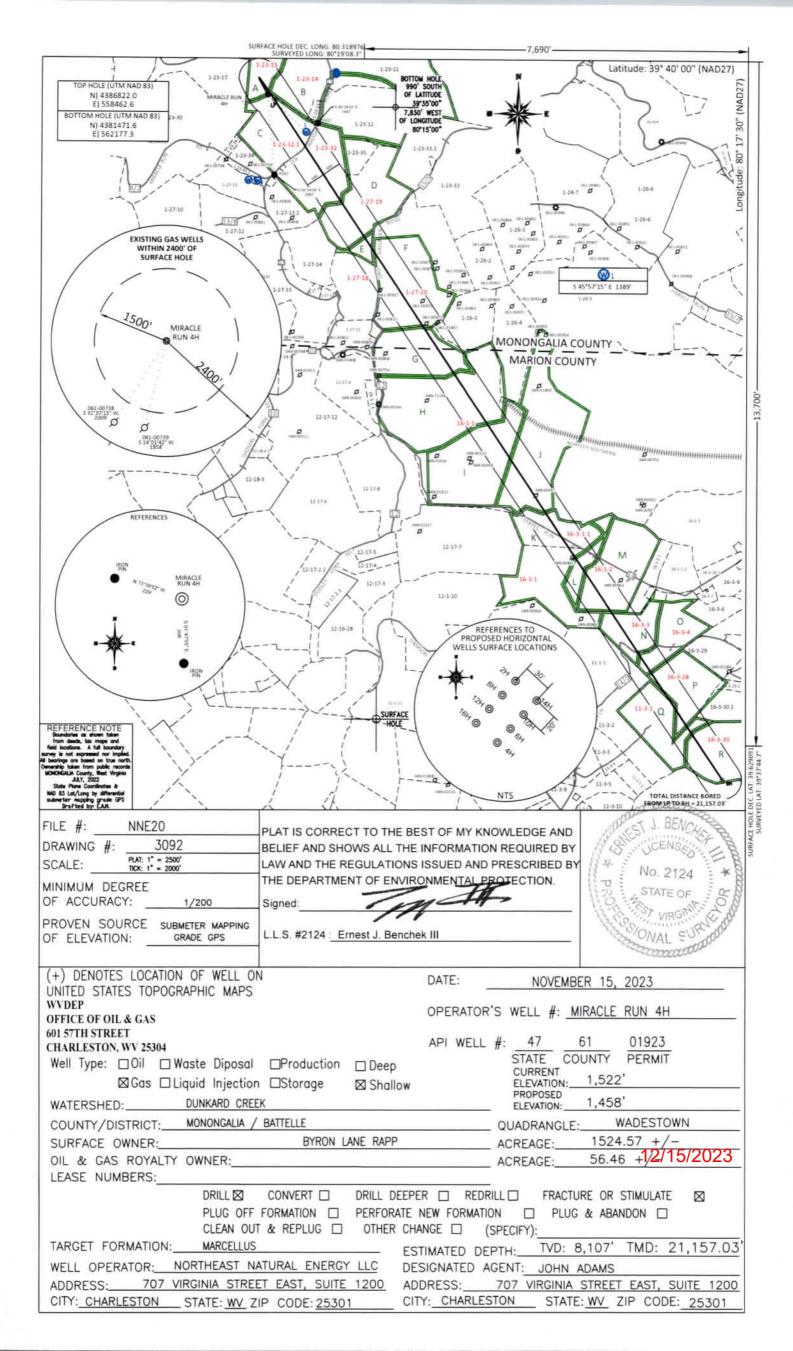
Tract	Lease Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book	Page
		NNE Land LLC	Marion Natural Energy LLC	Assignment book	64	938
		Marion Natural Energy LLC	Northeast Natural Energy	Assignment book	1330	528
N	WV-061-000198-001-LOI	Patricia Ann Starkey	EQT Production Company	12.5% or Greater	1173	158
		EQT Production Company	Northeast Natural Energy, LLC		1829	725
0	WV-049-086145-001	Mike Ross, Inc.	NNE Land LLC	12.5% or Greater	1314	838
		NNE Land LLC	Marion Natural Energy LLC	Assignment book	64	938
		Marion Natural Energy LLC	Northeast Natural Energy	Assignment book	1330	528
0	WV-049-086145-002	Waco Oil and Gas	NNE Land LLC	12.5% or Greater	1314	840
		NNE Land LLC	Marion Natural Energy LLC	Assignment book	64	938
		Marion Natural Energy LLC	Northeast Natural Energy	Assignment book	1330	528
Р	WV-049-106192-001	Larry Shriver	NNE Land LLC	12.5% or Greater	1315	871
Р		NNE Land LLC	Marion Natural Energy LLC	Assignment book	64	938
		Marion Natural Energy LLC	Northeast Natural Energy	Assignment book	1330	528
0	WV-049-086214-001	Denzil L. Parker, Emma Louise Parker, and Allen Lynn Parker	NNE Land LLC	12.5% or Greater	1315	900
		NNE Land LLC	Marion Natural Energy LLC	Assignment book	64	938
		Marion Natural Energy LLC	Northeast Natural Energy	Assignment book	1330	528
R	WV-049-106399-001	Susan L. Underwood	Marion Natural Energy LLC (75%) NNE Land LLC (25%)	12.5% or Greater	1324	9
		NNE Land LLC	Marion Natural Energy LLC	Assignment book	64	938
		Marion Natural Energy LLC	Northeast Natural Energy	Assignment book	1330	528

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Tract	Lease Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book	Page
Н	WV-061-000198-001-LOI	John W. Whetzel and Calla Whetzel	South Penn Oil Company	12.5% or Greater	70	35
		Pennzoil Compnay, Successor-in-interest to South Penn Oil Company	Pennzoil Products Company	Assignment Book	11	349
		Pennzoil Products Company	Pennzoil Exploration and Prodcution Company		949	854
		Devon Energy, successor-in-interest to Pennzoil Exploration and Production Company	East Resources, Inc.		965	371
		East Resources, Inc.	HG Energy, LLC	[	40	825
		HG Energy, LLC	American Energy - Marcellus, LLC		47	692
		Aascent Resources - Marcellus, LLC successor-in-interest to American Energy - Marcellus, LLC	EQT Production Company		52	99
		EQT Production Company	Northeast Natural Energy, LLC		1829	725





	PROPERTY INDEX
1-23-14	CLAUDE S & JONI L ANDERSON
1-23-15	CLAUDE S & JONI L ANDERSON
1-23-32	BYRON LANE RAPP
1-23-32.1	BYRON LANE RAPP
1-27-19	CNX LAND LLC
1-27-18	SHIRLEY S WALKER
1-27-20	CONSOL MINING COMPANY LLC
16-1-1	MARION COUNTY COAL RESOURCES INC
16-3-1.1	DAVE L & DIANA L MCDOUGAL
16-1-2	JAMES A TENNANT & KIM M DENSON
16-3-1	DAVID P & LINDA M AINSWORTH
16-3-3	RALPH & ZORA SHRIVER
16-3-4	WACO OIL & GAS
16-3-28	CHARLES L & SUSAN L UNDERWOOD ETAL
11-3-1	DENZIL L PARKER; EMMA L & ALLEN L PARKER
16-3-30	CHARLES L & SUSAN L UNDERWOOD ETAL

	LEASE INDEX		
Α	WV-061-003830-005	J	WV-061-006503-001
В	WV-061-003828-007	K	WV-049-086187-001
C	WV-061-005463-023	L	WV-049-086187-001
D	WV-061-006519-001	M	WV-049-086168-003
Е	WV-061-006233-001	N	WV-061-000198-001-LOI
F	WV-061-004692-002	0	WV-049-086145-001
G	WV-049-104625-002	Р	WV-049-106192-001
Н	WV-061-000198-001-LOI	Q	WV-049-086214-001
I	WV-049-004839-001; WV-049-004839-002	R	WV-049-106399-001

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12/15/2023

FILE #: NEE20	DATE: NOVEMBER 15, 2023
DRAWING #:3092	OPERATOR'S WELL #: MIRACLE RUN 4H
SCALE: N/A	API WELL #: 47 61 STATE COUNTY PERMIT