

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

Wednesday, September 6, 2023 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

EQT PRODUCTION COMPANY 625 LIBERTY AVE., SUITE 1700

PITTSBURGH, PA 15222

Re: Permit Modification Approval for 12H

47-049-02510-00-00

Utilize Class L Cement

EQT PRODUCTION COMPANY

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.

James A. Martin

Chief

Operator's Well Number: 12H

Farm Name: JACKIE D & SHELIA L RADCLIFF

U.S. WELL NUMBER: 47-049-02510-00-00

Horizontal 6A New Drill

Date Modification Issued: 9/6/2023

Promoting a healthy environment.

WW-6B
(04/15)

cr\$ 2,500.00

CK# 000598889

API NO. 47- 049 - 02510

OPERATOR WELL NO. 12H

Well Pad Name: Pledd#*

STATE OF WEST VIRGINIA

DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS WELL WORK PERMIT APPLICATION

1) Well Operat	or: EQT P	roduction C	ompany	306686	Marion	Mannington	Glover Gap
	_			Operator ID	County	District	Quadrangle
2) Operator's V	Well Number	: <u>12H</u>		Well Pad	Name: Radclin	f	
3) Farm Name/	Surface Owi	ner: Jackie D.	& Sheila L. F	Radeliff Public Road	d Access: CR 4	/4	
4) Elevation, co	urrent ground	ł: <u>1,493'</u> (b	uilt) Ele	evation, proposed p	oost-construction	n; 1,493'	
5) Well Type	(a) Gas Other	<u> </u>	_ Oil	Unde	rground Storag	e	
	(b)If Gas	Shallow Horizontal	x	Deep		Office o	ECEIVED of Oil and Gas
6) Existing Pad	l: Yes or No		<u>~</u>			AUG	1 7 2023
7) Proposed Ta	rget Formati 7,916', 78', 2	on(s), Depth	(s), Antici	pated Thickness ar	nd Expected Pr	WY D CSS UED(B) Am	epartment of ental Protection
8) Proposed To	tal Vertical I	Depth: 7,916	3'				
9) Formation at	Total Vertic	al Depth: _h	Marcellus		<u> </u>		
10) Proposed T	otal Measure	ed Depth: 1	2,351'				
11) Proposed H	Iorizontal Le	g Length: 4	,045'	<u></u>	<u></u>		
12) Approxima	te Fresh Wat	er Strata Dep	oths:	460', 490', 621', 75	<u> </u>		
13) Method to 1	Determine Fr	esh Water D	epths: O	ffset Wells - 049-021	84, 049-00699, (049-00168, 0	049-30339, 049-30238
14) Approxima	te Saltwater I	Depths: 1,8	56', 2,127',	2,247'			
15) Approxima	te Coal Seam	Depths: 1,3	200'-1,206	', 1,297'- <mark>1,304</mark> '			
16) Approxima	te Depth to P	ossible Void	l (coal mir	ne, karst, other): N	I/A		
17) Does Propo directly overlyi				ns Yes	No	X	<u> </u>
(a) If Yes, pro	viđe Mine In	ıfo: Name:				_	
		Depth:					
		Seam:					
		Owner	:				

WW-6B	
(04/15)	

API NO. 47049 02510	
OPERATOR WELL NO.	12H

Well Pad Name: Radoliff

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	<u>Grade</u>	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	26	New	A252 GR 3 Bare	85.6	40	40	50 ft^3 / CTS
Fresh Water	13 3/8	New	J-55	54.5	1354	1354	1230 ft^3 / CTS
Coal							
Intermediate	9 5/8	New	J-55	36	2721	2721	1050 ft^3 / CTS
Production	6	New	P-110	24	12351	12351	500' above intermediate casing
Tubing							
Liners							

Randall M Kuchberg WV DEP

ТҮРЕ	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	26	30	0.312	1000	18	Class A/L	1.04 - 1.20
Fresh Water	13 3/8	17 1/2	0.380	2730	2184	Class A/L	1.04 - 1.20
Coal							
Intermediate	9 5/8	12 3/8	0.352	3520	2816	Class A/L	1.04 - 1.20
Production	6	8 1/2	0.400	14580	11664	Class A/H/L	1.04 - 2.10
Tubing							
Liners					or(EIVED	
					Office of	Oil and Gas	

AUG 1 7 2023

WV Department of Environmental Protection

PACKERS

Kind:		
Sizes:		
Depths Set:		

WW-6B
(10/14)

API NO. 47- 049 -	02510
OPERATOR WELL	NO. <u>12H</u>
Well Pad Name:	Raddiff

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

Drill and complete a new horizontal well in the Marcellus Formation. Drill the vertical, kick off and drill curve. Drill the lateral in the Marcellus. Cement casing.

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

Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.1%) of chemicals (including 15% Hydrochloric acid, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum anticipated internal casing pressure is expected to be approximately 10,000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 350,000 gallons of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000-600,000 pounds of proppant per stage.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 17.33 (6911) Oil and Gas

RECEIVED

22) Area to be disturbed for well pad only, less access road (acres): 5.19 (built)

AUG 1 7 2023

23) Describe centralizer placement for each casing string:

WV Department of Environmental Protection

- Surface: Bow spring centralizers One centralizer at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers— One centralizer at the shoe and one spaced every 500'.
- Production: One solid body centralizer spaced every other joint from production casing shoe to landing point. One solid body centralizer spaced every joint from landing point to planned top of cement.

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

Conductor: Class A no additives

Surface: Calcium Chloride. Used to speed the setting of cement slurries intermediate: Calcium Chloride. Used to speed the setting of cement slurries.

Production: Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent, Retarder,

Anti-Settling/Suspension Agent

25) Proposed borehole conditioning procedures:

Surface: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.

Intermediate: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.

Production: Perform a cleanup cycle by pumping 3-8 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

*Note: Attach additional sheets as needed.

EQT Production Wellbore Diagram Well: Radcliff 12H County: Marion Pad: Radcliff State: West Virginia Elevation: 1493' GL 1506' KB Conductor @ 40' 26", 85.6, A252 GR3 Bare, cement to surface w/ Class A/L Surface @ 1,354 13-3/8", 54.5#, J-55, cement to surface w/ Class A/L Office of Oil and Gas AUG 1 7 2023 WV Department of Environmental Protection Intermediate 2,721' 9-5/8", 36#, J-55, cement to surface w/ Class A/L **Production** 12,351' MD / 7,916' TVD 6", 24#, P-110, cement to 500' inside 9-5/8" w/ Class A/H/L Formation: Marcellus



August 16, 2023

Mr. Taylor Brewer West Virginia Department of Environmental Protection Office of Oil and Gas 601 57th Street SE Charleston, WV 25304

Re:

Class L Cement Variance Request

Radcliff 12H Well

Permit Number 47-049-02510 Mannington District, Marion County Office RECEIVED of Oil and Gas

AUG 1 7 2023

WV Department of Environmental Protection

Dear Mr. Brewer.

EQT Production Company (EQT) has been notified by our cement providers that they will no longer be providing Class A cement. As a result of this, EQT is requesting the option to utilize Class L cement, if necessary, in place of Class A cement for its cement jobs.

The variance request from Legislative Rule 35CSR8, Section 9.2.h.8, related to the use of Class L Cement, was approved by the Office of Oil and Gas on September 13, 2022. A copy of the variance is included with this request.

If you have any questions, please do not hesitate to contact me at 724-746-9073.

Sincerely,

John Zavatchan

Project Specialist - Permitting

Enc.



west virginia department of environmental protection

Office of Oil and Gas 601 57th Street, SE Charleston, WV 25304 Phone (304) 926-0450

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

BEFORE THE OFFICE OF OIL AND GAS DEPARTMENT OF ENVIRONMENTAL PROTECTION STATE OF WEST VIRGINIA

IN THE MATTER OF A VARIANCE FROM LEGISLATIVE RULE 35CSR4)	ORDER NO.	2022-14
SECTION 11.5 AND LEGISLATIVE RULE)		
35CSR8 SECTION 9.2.h.8.,)		
RELATING TO THE CEMENTING)		Office of Oil and Gas
OF OIL AND GAS WELLS)		Alla and Gas
			AUG 1 7 2023
			WV Department of Environmental Protection

REPORT OF THE OFFICE

In response to industry requests, the West Virginia Department of Environmental Protection, Office of Oil and Gas has reviewed the proposed use of American Petroleum Institute (API) Class L cement to be used in place of API Class A cement for well construction.

FINDINGS OF FACT

- On July 14, 2022, Northeast Natural Energy (NNE) submitted a variance request from Legislative Rule 35CSR8 Section 9.2.h.8., for the use of API Class L cement in place of API Class A cement, relating to the construction of horizontal wells.
- Laboratory analysis submitted by NNE on July 14, 2022, indicates API Class L cement is comparable to API Class A cement and thereby satisfies the requirements of the West Virginia Code.
- Contemporaneously, the Chief of the Office of Oil and Gas also chose to consider a
 variance to Legislative Rule 35CSR4 Section 11.5., for the use of API Class L cement in
 place of API Class A cement, relating to the construction of vertical wells.

On August 18, 2022, the Office of Oil and Gas provided public notice of acceptance of
public comments on the variance consideration. During the 20-day public comment
period, no comments were received.

CONCLUSIONS OF LAW

Pursuant to Article 6 and Article 6A, Chapter 22 of the Code of West Virginia, the Office of Oil and Gas has jurisdiction over the subject matter, and the persons interested therein, and jurisdiction to promulgate the hereinafter prescribed Order.

Pursuant to Legislative Rule 35CSR4, Section 18 and Legislative Rule 35CSR8, Section 14, the Chief of the Office of Oil and Gas may grant a variance from any requirement of these rules.

ORDER

It is ordered that the Class L cement product approved and monogramed by API is approved for use in place of API Class A cement for well construction subject to the provisions of Legislative Rule 35CSR4 and Legislative Rule 35CSR8.

Dated this, the 13th day of September, 2022.

Office of Oil and Gas

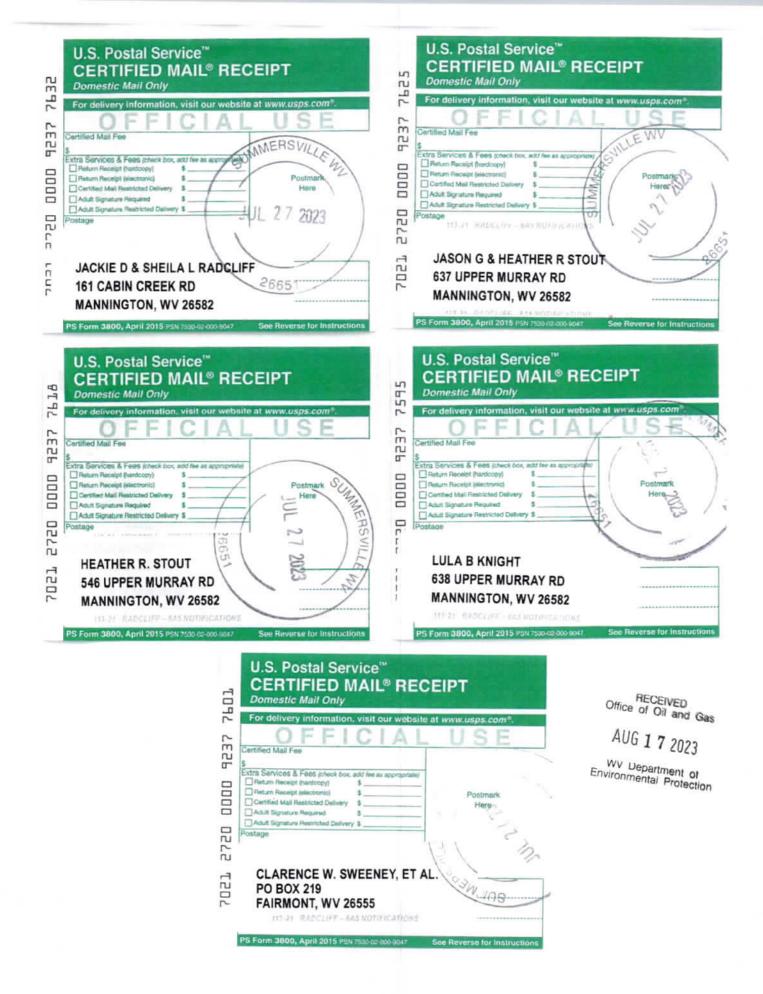
AUG 1 7 2023

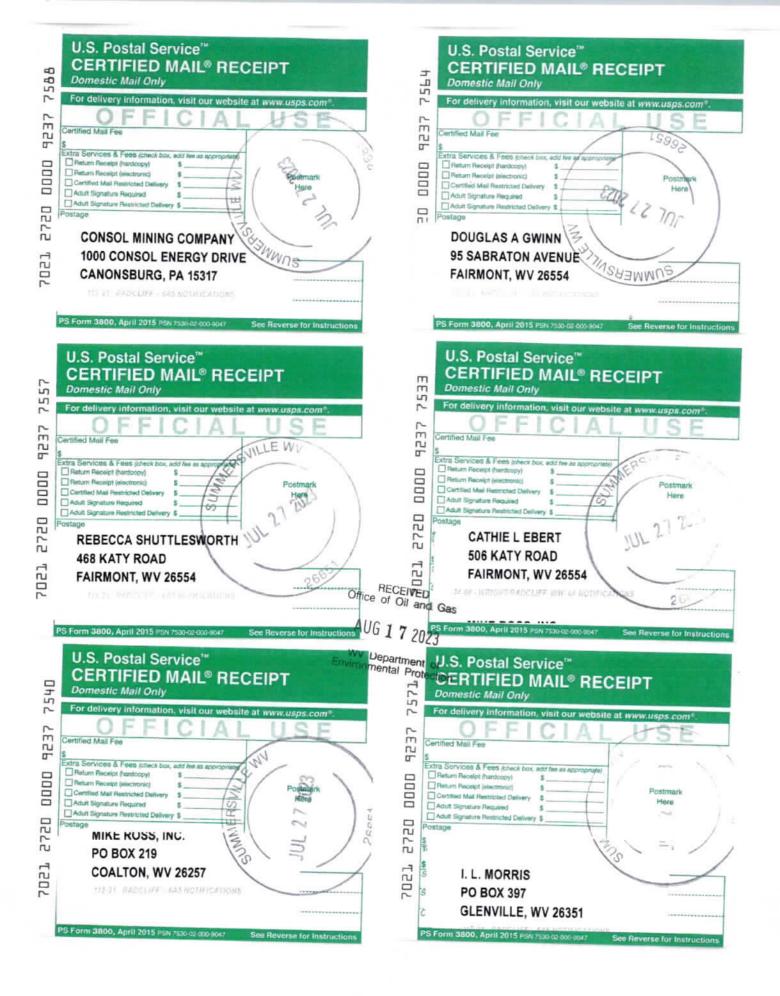
WV Department of Environmental Protection

IN THE NAME OF THE STATE OF WEST VIRGINIA

OFFICE OF OIL AND GAS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OF THE STATE OF WEST VIRGINIA

James Martin, Chief Office of Oil and Gas









Office of Oil and Gas

AUG 1 7 2023

WV Department of Environmental Protection