

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: Longworth M08H

API: 47 - 051 - 02128

Submission:  Initial  Amended

Notes:

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

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API 47 - 051 - 02128 County Marshall District Clay  
Quad Glen Easton Pad Name Longworth Field/Pool Name N/A  
Farm name Graham H. Longworth Jr. Well Number Longworth M08H  
Operator (as registered with the OOG) EQT CHAP LLC  
Address 2400 Ansys Drive, 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 4,410,827.88 Easting 523,401.05  
Landing Point of Curve Northing 4,410,436.99 Easting 523,394.11  
Bottom Hole Northing 4,408,142.39 Easting 525,235.72

Elevation (ft) 1270' 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 Oil Based Mud 13.5 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 01/25/2019 Date drilling commenced 04/11/2019 Date drilling ceased 11/17/2019  
Date completion activities began 6/11/2022 Date completion activities ceased 08/19/2022  
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 99,605 Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1576,1998,2102,2139 Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 583,853 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

**APPROVED**

Reviewed by:

*[Signature]*  
12/13/2022  
12/16/2022

API 47-051 - 02128

Farm name Graham H. Longworth Jr.

Well number Longworth M08H

CASING STRINGS	Hole Size	Casing Size	Depth (GL)	New or Used	Grade wt/ft	Basket Depth(s) (GL)	Did cement circulate (Y/N) * Provide details below*
Conductor	30"	20"	40'	NEW	X-52 78.67#	N/A	Y
Surface	17-1/2"	13-3/8"	628'	NEW	J-55 54.5#	N/A	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	2180'	NEW	L-80 40#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	16,709'	NEW	P-110 20#	N/A	N
Tubing							
Packer type and depth set							

Comment Details Production Cement job has a calculated TOC of 1814' GL, which is greater than 500' TVD above the producing formation. No issues during cement job.

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 (GL)	WOC (hrs)
Conductor	CLASS A	14BBLS	15.6	N/A	N/A	0	8+
Surface	CLASS A	521	15.6	1.19	620	0	8
Coal							
Intermediate 1	CLASS A	896	15.6	1.19	1066	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	2702	15.0	1.23	3323	1814	8+
Tubing							

Drillers TD (ft) 16,758'

Loggers TD (ft) N/A

Deepest formation penetrated MARCELLUS

Plug back to (ft) N/A

Plug back procedure \_\_\_\_\_

Kick off depth (ft) 5898'

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 \_\_\_\_\_

CONDUCTOR- NONE

SURFACE- ON SHOE TRACK AND EVERY 500' TO SURFACE

INTERMEDIATE: ON SHOE TRACK AND EVERY 500' FEET TO SURFACE

PRODUCTION: ON SHOE TRACK AND EVERY JOINT TO ABOVE TOC

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 \_\_\_\_\_

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API 47- 051 - 02128 Farm name Graham H. Longworth Jr. Well number Longworth M08H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
2	1/28/2020	16484	16322	47	Marcellus
3	1/28/2020	16284	16122	47	Marcellus
4	1/29/2020	16084	15922	47	Marcellus
5	1/29/2020	15884	15722	47	Marcellus
CHEVRON COMPLETED.					
PLEASE SEE ATTACHED FOR EQT COMPLETED					

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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)
1	1/28/20			5472		400304	9387	
2	1/28/20			5236		401004	9408	
3	1/29/20			4920		401634	9370	
4	1/29/20			4770		400546	9409	
5	1/29/20			6055		401274	9484	
CHEVRON COMPLETED.								
PLEASE SEE ATTACHED FOR EQT COMPLETED								

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Please insert additional pages as applicable.



API 47- 051 - 02128 Farm name Graham H. Longworth Jr. Well number Longworth M08H

Drilling Contractor Precision Drilling  
Address 10350 Richmond Ave. Suite 700 City Houston State TX Zip 77042

Logging Company Scientific Drilling International  
Address 124 Vista Drive City Charleroi State PA Zip 15022

Logging Company \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Stimulation Contractor US Well Services LLC  
Address 770 S Post Oak Ln Ste 405 City Houston State TX Zip 77056

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Well # Longworth M08H Final Formations API# 47-051-02128				
Formation Name	Drill Top MD (ftGRD)	Drill Top (TVD) (ftGRD)	Drill Btm MD (ftGRD)	Drill Btm (TVD) (ftGRD)
Sand/Shale	1	1	583	583
Waynesburg Coal	583	583	583	583
Sand/Shale	583	583	853	853
Pittsburgh Coal	853	853	858	858
Sand/Shale	858	858	1,872	1,868
Big Lime	1,872	1,868	2,100	2,095
Big Injun	2,100	2,095	2,182	2,176
Sand/Shale	2,182	2,176	2,819	2,805
Gantz	2,819	2,805	2,880	2,865
Gordon	2,880	2,865	2,960	2,944
50F	2,960	2,944	3,009	2,992
Sand/Shale	3,009	2,992	3,088	3,070
Bayard	3,088	3,070	3,453	3,430
Sand/Shale	3,453	3,430	5,255	5,205
Alexander	5,255	5,205	5,692	5,636
Elks	5,692	5,636	6,298	6,211
Sonyea	6,298	6,211	6,402	6,294
Middlesex	6,402	6,294	6,436	6,319
Genesee	6,436	6,319	6,512	6,370
Geneseo	6,512	6,370	6,550	6,394
Tully	6,550	6,394	6,633	6,439
Hamilton	6,633	6,439	6,794	6,499
Marcellus	6,794	6,499	16,758	6,683

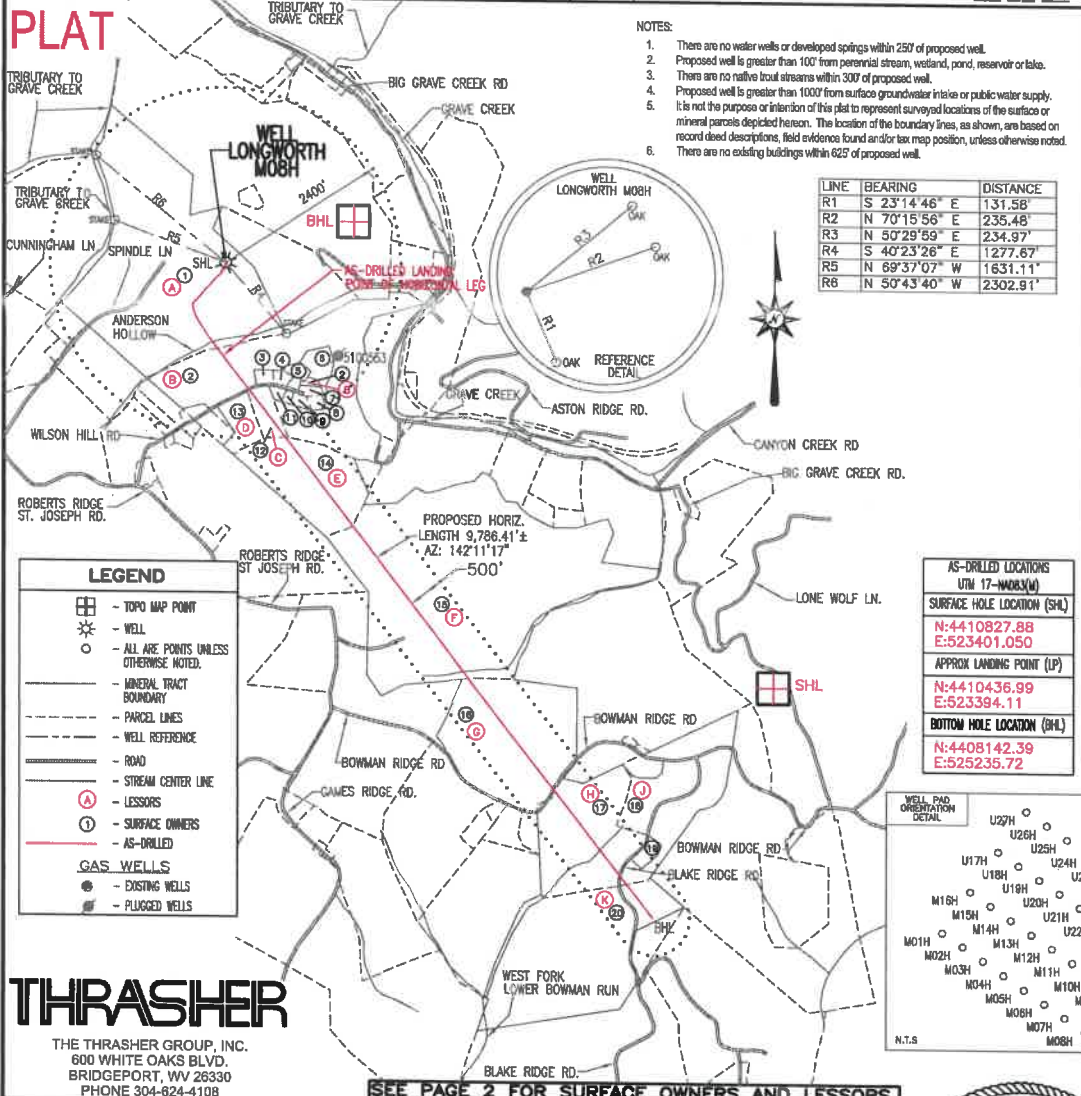
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# AS-DRILLED PLAT

BHL is located on topo map 3,830 feet south of Latitude: 39° 50' 00"  
 SHL is located on topo map 10,147 feet south of Latitude: 39° 52' 30"



- NOTES:
- There are no water wells or developed springs within 250' of proposed well.
  - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
  - There are no native trout streams within 300' of proposed well.
  - Proposed well is greater than 1000' from surface groundwater intake or public water supply. It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.
  - There are no existing buildings within 625' of proposed well.

LINE	BEARING	DISTANCE
R1	S 23°14'46" E	131.58'
R2	N 70°15'56" E	235.48'
R3	N 50°29'59" E	234.97'
R4	S 40°23'26" E	1277.67'
R5	N 69°37'07" W	1631.11'
R6	N 50°43'40" W	2302.91'

**LEGEND**

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- ROAD
- STREAM CENTER LINE
- LESSORS
- SURFACE OWNERS
- AS-DRILLED
- GAS WELLS**
- EXISTING WELLS
- PLUGGED WELLS

**AS-DRILLED LOCATIONS UTM 17-W083(W)**

**SURFACE HOLE LOCATION (SHL)**

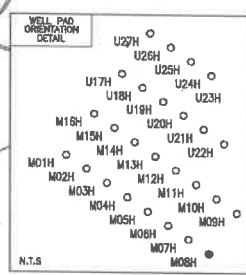
N:4410827.88  
E:523401.050

**APPROX LANDING POINT (LP)**

N:4410436.99  
E:523394.11

**BOTTOM HOLE LOCATION (BHL)**

N:4408142.39  
E:525235.72



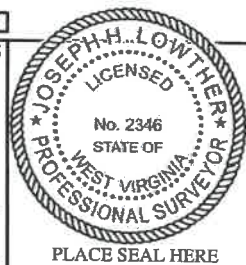
**THRASHER**  
 THE THRASHER GROUP, INC.  
 600 WHITE OAKS BLVD.  
 BRIDGEPORT, WV 26330  
 PHONE 304-824-4108

**SEE PAGE 2 FOR SURFACE OWNERS AND LESSORS**

FILE #: LONGWORTH M08H - AS-DRILLED  
 DRAWING #: LONGWORTH M08H - AS-DRILLED  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/2500  
 PROVEN SOURCE OF ELEVATION: U.S.C.S. MONUMENT THOMAS 1498.81'

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: *Joseph H. Lowther*  
 R.P.E.: \_\_\_\_\_ L.L.S.: P.S. No. 2346



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

DATE: FEBRUARY 23, 2021  
 OPERATOR'S WELL #: LONGWORTH M08H - AS-DRILLED  
 API WELL #: 47 51 02128  
 STATE COUNTY PERMIT

Well Type:  Oil  Waste Disposal  Production  Deep  Gas  Liquid Injection  Storage  Shallow

WATERSHED: MIDDLE GRAVE CREEK-GRAVE CREEK ELEVATION: 1295'  
 COUNTY/DISTRICT: MARSHALL / CLAY QUADRANGLE: GLEN EASTON, WV 7.5'  
 SURFACE OWNER: GRAHAM H. LONGWORTH JR. ACREAGE: 123.589±  
 OIL & GAS ROYALTY OWNER: GRAHAM H. LONGWORTH JR. ACREAGE: 630.126±  
 DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION   
 PERFORATE NEW FORMATION  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE   
 (SPECIFY): AS-DRILLED PLAT

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,708'± TMD: 16,783'±  
 WELL OPERATOR EQT CHAP LLC DESIGNATED AGENT JOSEPH C. MALLOW  
 Address 400 WOODCLIFF DRIVE Address 115 PROFESSIONAL PLACE, PO BOX 280  
 City CANONSBURG State PA Zip Code 15317 City BRIDGEPORT State WV Zip Code 26330

BHL is located on topo map 10,821 feet west of Longitude: 80° 40' 00"  
 SHL is located on topo map 5,090 feet west of Longitude: 80° 42' 30"

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# LONGWORTH

## M08H

### PAGE 2 OF 2

## AS-DRILLED

AS-DRILLED LOCATIONS UTM 17-NAD83(V)
SURFACE HOLE LOCATION (SHL)
N:4410827.88 E:523401.050
APPROX LANDING POINT (LP)
N:4410436.99 E:523394.11
BOTTOM HOLE LOCATION (BHL)
N:4408142.39 E:525235.72

	LESSOR	DIST-TM/PAR
A	GRAHAM H. LONGWORTH JR. ET AL	4-11/1
B	DELORES J. FOX	4-11/54
C	NELLI J. MIDCAP	4-11/53
D	*JOHN D. LIGHTNER	4-11/54.4
E	JOHN D. LIGHTNER	4-11/57
F	HOWARD E. & SUSAN C. YOUNG	9-1/18
G	DEAN B. COLVIN	9-1/22
	MARGARET KINNEY	
	PATRICIA COLVIN GRANDSTAFF	
	MARILYN PYLES SNYDER	
	JAMES E. PYLES	
	SUSAN ASTON	
	CAROL HULL	
	DAVID GEORGE MOORE	
	BETTY LOU DELLGET KERNS	
	MARILYN SOUTH	
	HOWARD GUMP ET UX	
	JUDY REILLEY FEIERSTEIN	
	RICHARD O'HARA	
	CATHY J. COLVIN	
	ALICE FAYE VAN DINE	
	LORA FORNSHELL	
	KEITH PYLES	
	WANDA L. PYLES	
	SHERLEY M. WHITE FKA SHERLEY M. VAN DINE	
	VERENDA STOKES	
	DOMINAE VESICO-RAMIREZ	
	KRISTA L. VAN DINE	
	ROBERT P. COLVIN	
	RONALD PYLES	
	DONALD COOK POA CAROL HULL	
	KEVIN O'HARA	
	CATHY LUDWIG GARRETT	
	ROBERT R. D'ERAMO JR., ET AL	
	DEBRA FORDYCE	
	KEITH JOEL VAN DINE	
	GLADYS PETRELLE BY AIF SHIRLEY BUFFONE	
	RODNEY COLVIN	
	PAULA REILLEY	
	VICKIE EISENHAEUER	
	KIM YOHO	
	JASON COLVIN	
	BRENDA WILLINGHAM	
	DONALD COLVIN	
	MICHAEL COLVIN	
	STACY PANYKO	
	HAROLD E. VAN DINE	
	JOHN E. VAN DINE	
H	JOHN K. MASON JR.	9-1/23
J	PETER MILLER	9-1/24
K	THOMAS B. CLARK ET UX	9-5/2

	SURFACE OWNER	DIST-TM/PAR
1	GRAHAM H. LONGWORTH JR.	4-11/1
2	DUNCAN OR SUSAN ARNETT	4-11/54
3	DUNCAN R. OR SUSAN M. ARNETT	4-11/54.10
4	EDWARD WILLIAMS ET UX	4-11/54.11
5	JEFFREY STUCKEY	4-11/54.13
6	JAMES E. & LEAH A. YOHO	4-11/54.12
7	JAMES C. & MELISSA S. THATCHER	4-11/54.9
8	MARY STUCKEY	4-11/54.7
9	MARY STUCKEY	4-11/54.2
10	RAYMOND L. MIDCAP ET UX	4-11/54.6
11	NELLIE MIDCAP EST	4-11/54.5
12	NELLIE MIDCAP EST	4-11/53
13	*JOHN D. LIGHTNER ET UX	4-11/54.4
14	JOHN D. LIGHTNER ET UX	4-11/57
15	CNX LAND RESOURCES INC	9-1/18
16	CNX LAND RESOURCES INC	9-1/22
17	JOHN K. MASON JR.	9-1/23
18	PETER A. MILLER	9-1/24
19	KAREN LOUISE BELL AND ROGER L. DUNHAM	9-1/24.2
20	THOMAS B. & ANETTE K. CLARK	9-5/2

\* - DENOTES PARCEL WITHIN 30 FEET OF PLANNED WELL BORE

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# THRASHER

THE THRASHER GROUP, INC.  
600 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

FEBRUARY 23, 2021

12/16/2022

CHEVRON COMPLETED.

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/28/2020
Job End Date:	1/29/2020
State:	West Virginia
County:	Marshall
API Number:	47-051-02128-00-00
Operator Name:	Chevron USA Inc.
Well Name and Number:	Longworth 8H
Latitude:	39.84714600
Longitude:	-80.72646300
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,700
Total Base Water Volume (gal):	2,049,768
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	Chevron	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.45268	None
Sand	UPP	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	10.35639	None
FR-11	UPP	Friction reducer	Water	7732-18-5	55.00000	0.04972	None
			Hydrotreated Petroleum Distillate	64742-47-8	25.00000	0.02260	None
			CHEMPLEX-Polymer_00019	Trade Secret	25.00000	0.02260	None
			Sodium Chloride	7647-14-5	15.00000	0.01356	None
			Alcohol Ethoxylate Surfactants	68551-12-2	3.00000	0.00271	None
			Oleic Acid Diethanolamide	93-83-4	3.00000	0.00271	None
			Ammonium Chloride	12125-02-9	2.00000	0.00181	None
			Polyoxyethylene Sorbitan Monoleate	9005-65-6	1.00000	0.00090	None
HCL Acid (7.5%)	UPP	Acidizing	Hydrochloric Acid	7647-01-0	7.50000	0.07720	None
K-BAC 1020	UPP	Biocide					

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			Polyethylene glycol	25322-68-3	50.00000	0.01055	None
			Water	7732-18-5	30.00000	0.00633	None
			2,2-Dibromo-3-nitropropionamide	10222-01-2	21.00000	0.00443	None
Scale Hib PE-18	UPP	Scale Inhibitor					
			Ethylene glycol	107-21-1	40.00000	0.00715	None
			Proprietary Scale Inhibitor	Proprietary	30.00000	0.00537	None
17L	UPP	Iron Control Agent					
			Ethylene Glycol	107-21-1	20.00000	0.00416	None
			Ammonium glycolate	35249-89-9	20.00000	0.00416	None
			Hydroxyacetic acid	79-14-1	5.00000	0.00104	None
Unihib G	UPP	Acid inhibitor					
			Butyl diglycol	112-34-5	75.00000	0.00060	None
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00040	None
			Methanol	67-56-1	5.00000	0.00004	None
			Thiourea	62-56-6	1.00000	0.00001	None
			Formaldehyde	50-00-0	1.00000	0.00001	None
Unigel 5F	UPP	Viscosifier					
			Guar Gum	9000-30-0	99.00000	0.00026	None
AP Breaker	UPP	Gel Breaker					
			Ammonium Persulfate	7727-54-0	100.00000	0.00001	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	55.00000	0.04972	
			Hydrotreated Petroleum Distillate	64742-47-8	25.00000	0.02260	
			Sodium Chloride	7647-14-5	15.00000	0.01356	
			Polyethylene glycol	25322-68-3	50.00000	0.01055	
			Ethylene glycol	107-21-1	40.00000	0.00715	
			Water	7732-18-5	30.00000	0.00633	
			Ammonium glycolate	35249-89-9	20.00000	0.00416	
			Oleic Acid Diethanolamide	93-83-4	3.00000	0.00271	
			Alcohol Ethoxylate Surfactants	68551-12-2	3.00000	0.00271	
			Ammonium Chloride	12125-02-9	2.00000	0.00181	
			Hydroxyacetic acid	79-14-1	5.00000	0.00104	
			Polyoxyethylene Sorbitan Monoleate	9005-65-6	1.00000	0.00090	
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00040	
			Methanol	67-56-1	5.00000	0.00004	
			Formaldehyde	50-00-0	1.00000	0.00001	
			Thiourea	62-56-6	1.00000	0.00001	

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\* 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)

EQT COMPLETED

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/11/2022
Job End Date:	8/1/2022
State:	West Virginia
County:	Marshall
API Number:	47-051-02128-00-00
Operator Name:	EQT Production
Well Name and Number:	Longworth A 8H
Latitude:	39.84714558
Longitude:	-80.72646286
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,708
Total Base Water Volume (gal):	18,214,476
Total Base Non Water Volume:	0

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### 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	EQT	Carrier/Base Fluid	Water	7732-18-5	100.00000	88.44239	None
Sand (Proppant)	EQT	Proppant	Silica Substrate	14808-60-7	100.00000	11.47330	None
Clearal 268	ChemStream	Biocide	Non-hazardous substances	Proprietary	80.00000	0.00898	None
StimSTREAM SC-398	ChemStream	Scale Inhibitor	Non-hazardous substances	Proprietary	90.00000	0.00757	None
StimSTREAM FR 9800	ChemStream	Friction Reducer	Copolymer of 2-propenamide	Proprietary	30.00000	0.00314	None
StimSTREAM FR 9800	ChemStream	Friction Reducer	Petroleum Distillate	64742-47-8	20.00000	0.00139	None
15% HCl	US Well Services	Acid	Hydrogen Chloride	7647-01-0	15.00000	0.00056	None
Clearal 268	ChemStream	Biocide	Glutaraldehyde	111-30-8	20.00000	0.00056	None
StimSTREAM SC-398	ChemStream	Scale Inhibitor					

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			Bis(HexaMethylene Triamine Penta(Methylene Phosphonic Acid)(BHMT)	34690-00-1	10.00000	0.00009	None
StimSTREAM FR 9800	ChemStream	Friction Reducer					
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00001	None
StimSTREAM FR 9800	ChemStream	Friction Reducer					
			Oleic Acid Diethanolamide	93-83-4	2.00000	0.00001	None
Clearal 268	ChemStream	Biocide					
			Quaternary Ammonium Compounds	68424-85-1	3.00000	0.00001	None
Clearal 268	ChemStream	Biocide					
			Didecyl dimethyl ammonium chloride	7173-51-5	3.00000	0.00001	None
OPTIINHIBIT PLUS	USWS	Corrosion Inhibitor					
			Methanol	67-56-1	25.00000	0.00001	None
OPTIINHIBIT PLUS	USWS	Corrosion Inhibitor					
			Pyridinium, 1-(phenylmethyl)-, ethyl methyl derivs., chlorides	68909-18-2	25.00000	0.00001	None
OPTIINHIBIT PLUS	USWS	Corrosion Inhibitor					
			Ethanoic Acid	64-19-7	15.00000	0.00000	None
OPTIINHIBIT PLUS	USWS	Corrosion Inhibitor					
			Ethoxylated Alcohols	68439-50-9	15.00000	0.00000	None
Clearal 268	ChemStream	Biocide					
			Ethanol	64-17-5	1.50000	0.00000	None
StimSTREAM FR 9800	ChemStream	Friction Reducer					
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.00000	0.00000	None
OPTIINHIBIT PLUS	USWS	Corrosion Inhibitor					
			Proprietary	Proprietary	10.00000	0.00000	None
OPTIINHIBIT PLUS	USWS	Corrosion Inhibitor					
			Proprietary	Proprietary	10.00000	0.00000	None
OPTIINHIBIT PLUS	USWS	Corrosion Inhibitor					
			Ethoxylated Nonylphenols	127087-87-0	5.00000		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.

\* 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)

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## Perforation Data

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Stage No.	Perforation Date	Stage Perforated From TMD Ft.	Stage Perforated To TMD Ft.	# of Perforations/Stage	Formation(s)
1	06/12/2022	15706	15525	40	Marcellus
2	06/12/2022	15501	15322	40	Marcellus
3	06/12/2022	15303	15123	40	Marcellus
4	06/13/2022	15104	14925	40	Marcellus
5	06/14/2022	14906	14726	40	Marcellus
6	06/15/2022	14707	14528	40	Marcellus
7	06/17/2022	14509	14329	40	Marcellus
8	06/17/2022	14310	14131	40	Marcellus
9	06/18/2022	14112	13932	40	Marcellus
10	06/18/2022	13913	13734	40	Marcellus
11	06/19/2022	13715	13535	40	Marcellus
12	06/19/2022	13516	13337	40	Marcellus
13	06/20/2022	13318	13138	40	Marcellus
14	06/20/2022	13119	12940	40	Marcellus
15	06/21/2022	12921	12741	40	Marcellus
16	06/21/2022	12722	12543	40	Marcellus
17	06/22/2022	12524	12344	40	Marcellus
18	06/22/2022	12325	12146	40	Marcellus
19	06/23/2022	12127	11947	40	Marcellus
20	06/23/2022	11928	11749	40	Marcellus
21	06/24/2022	11730	11550	40	Marcellus
22	06/25/2022	11531	11352	40	Marcellus
23	06/25/2022	11333	11153	40	Marcellus
24	06/26/2022	11134	10955	40	Marcellus
25	06/27/2022	10936	10756	40	Marcellus
26	06/28/2022	10737	10558	40	Marcellus
27	06/28/2022	10539	10359	40	Marcellus
28	06/28/2022	10340	10161	40	Marcellus
29	06/28/2022	10142	9962	40	Marcellus
30	06/29/2022	9943	9764	40	Marcellus
31	06/29/2022	9745	9565	40	Marcellus
32	06/29/2022	9546	9367	40	Marcellus
33	06/29/2022	9348	9168	40	Marcellus
34	06/29/2022	9149	8970	40	Marcellus
35	06/30/2022	8951	8771	40	Marcellus
36	06/30/2022	8752	8573	40	Marcellus
37	06/30/2022	8554	8374	40	Marcellus
38	06/30/2022	8355	8176	40	Marcellus
39	07/01/2022	8157	7977	40	Marcellus
40	07/01/2022	7958	7779	40	Marcellus
41	07/01/2022	7760	7580	40	Marcellus

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12/16/2022

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42	07/01/2022	7561	7382	40	Marcellus
43	07/01/2022	7363	7183	40	Marcellus
44	07/01/2022	7164	6985	40	Marcellus
45	07/02/2022	6966	6826	40	Marcellus

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## Stimulation Data

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Well_UID	Stage #	Stimulation 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/oth (units)
-015632	1	06/12/2022	100	8946	5209	3055	440100	10301	
-015632	2	06/12/2022	100	9185	4297	4891	440400	9892	
-015632	3	06/13/2022	100	9009	5494	4735	440160	9858	
-015632	4	06/14/2022	100	8800	4576	5027	440200	9843	
-015632	5	06/15/2022	100	8673	3978	4904	440140	9891	
-015632	6	06/17/2022	100	8360	3483	4641	440100	9802	
-015632	7	06/18/2022	100	8868	5327	4536	440160	9814	
-015632	8	06/18/2022	100	8753	3851	4823	440100	9795	
-015632	9	06/19/2022	100	8572	2562	4820	440140	9775	
-015632	10	06/19/2022	100	8792	3989	4987	440100	9787	
-015632	11	06/20/2022	100	8765	5609	4781	440120	9737	
-015632	12	06/20/2022	100	8648	4623	4966	440100	9771	
-015632	13	06/21/2022	97	8327	4839	5158	440160	9767	
-015632	14	06/21/2022	100	8599	5170	4775	438500	9738	
-015632	15	06/22/2022	100	8610	7581	5157	440120	9710	
-015632	16	06/22/2022	100	8485	4441	5166	440068	9708	
-015632	17	06/23/2022	100	8523	8498	5032	440160	9883	
-015632	18	06/23/2022	100	8579	4328	4795	440520	9696	
-015632	19	06/24/2022	97	8206	8512	5015	440800	9766	
-015632	20	06/25/2022	100	8371	8748	5213	440150	9696	
-015632	21	06/25/2022	100	8250	4148	4825	440060	9699	
-015632	22	06/25/2022	100	7966	9040	4699	440500	9669	
-015632	23	06/26/2022	100	8006	6050	5145	440300	9647	
-015632	24	06/27/2022	100	7933	8690	5402	440250	9686	
-015632	25	06/28/2022	101	8172	8727	5427	440100	9663	
-015632	26	06/28/2022	100	7821	5034	5324	440100	9635	
-015632	27	06/28/2022	100	7938	4723	4905	440020	9618	
-015632	28	06/28/2022	100	7896	7404	5554	440250	9613	
-015632	29	06/29/2022	100	7886	5892	4886	440600	9623	
-015632	30	06/29/2022	100	7749	5680	4988	440300	9606	
-015632	31	06/29/2022	100	7822	5021	5196	440120	9599	
-015632	32	06/29/2022	100	7901	5151	4874	440040	9610	
-015632	33	06/30/2022	100	7721	5507	5113	440200	9592	
-015632	34	06/30/2022	100	7525	7728	5101	440150	9595	
-015632	35	06/30/2022	100	7440	5244	4952	440150	9553	
-015632	36	06/30/2022	100	7724	5227	5068	440040	9552	
-015632	37	06/30/2022	100	7532	5129	5017	440100	9539	
-015632	38	07/01/2022	100	7449	5257	5084	440150	9531	
-015632	39	07/01/2022	100	7747	6399	4739	440210	9520	
-015632	40	07/01/2022	99	8322	5183	4492	440000	9522	
-015632	41	07/01/2022	98	8780	5231	4370	440000	9506	

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-015632	42	07/01/2022	99	8256	5207	5092	440000	9497
-015632	43	07/02/2022	100	7353	5048	5413	440200	9502
-015632	44	07/02/2022	98	8417	3834	4745	440200	9493
-015632	45	07/02/2022	97	8433	3809	4742	352020	7578

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# AS-DRILLED PLAT

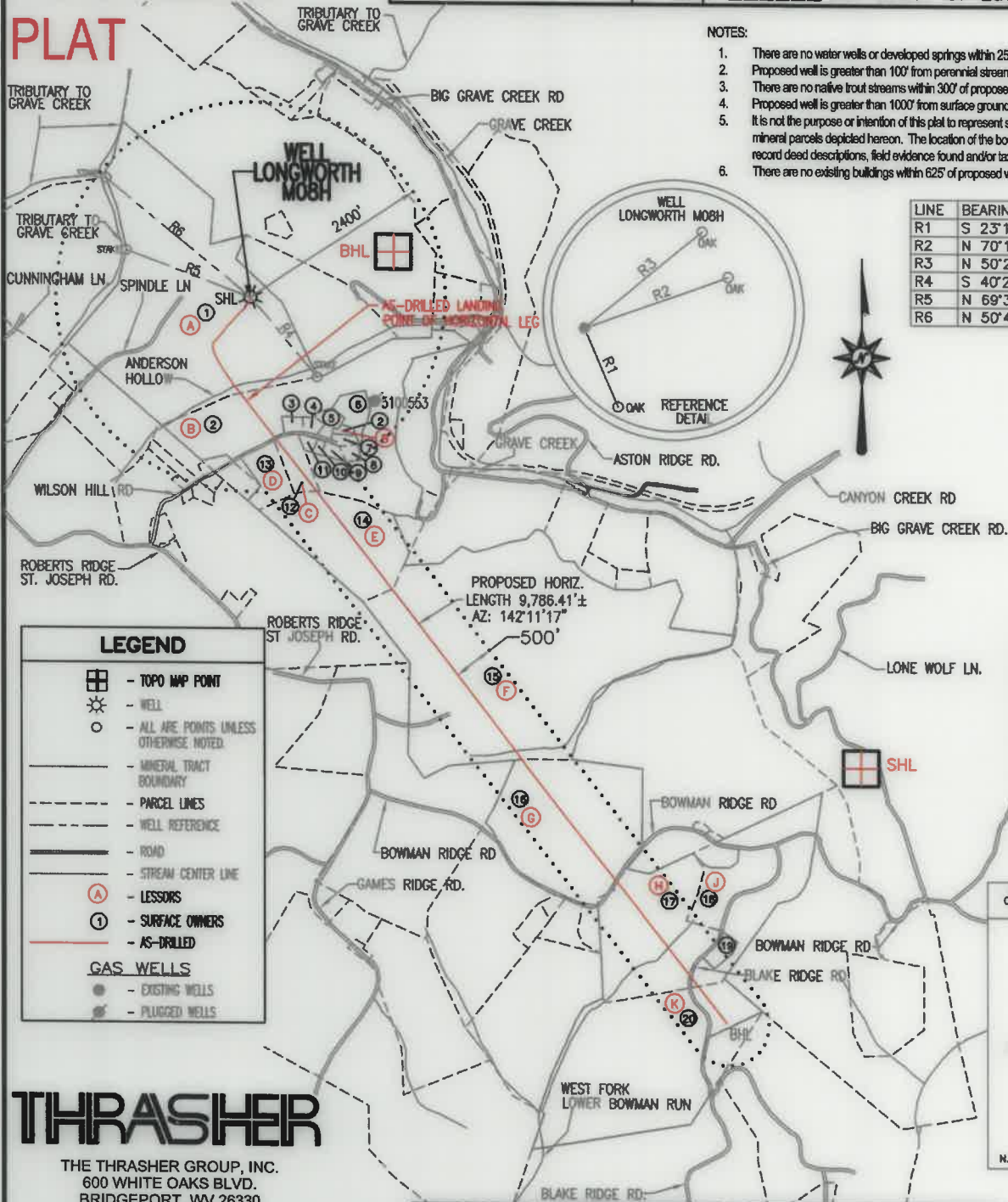
BHL is located on topo map 3,830 feet south of Latitude: 39° 50' 00"  
 SHL is located on topo map 10,147 feet south of Latitude: 39° 52' 30"

**NOTES:**

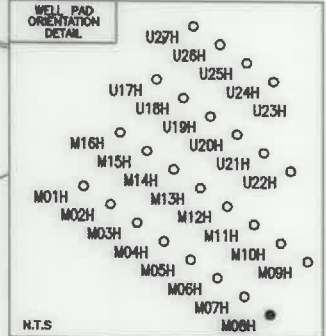
1. There are no water wells or developed springs within 250' of proposed well.
2. Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
3. There are no native trout streams within 300' of proposed well.
4. Proposed well is greater than 1000' from surface groundwater intake or public water supply.
5. It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.
6. There are no existing buildings within 625' of proposed well.

LINE	BEARING	DISTANCE
R1	S 23°14'46" E	131.58'
R2	N 70°15'56" E	235.48'
R3	N 50°29'59" E	234.97'
R4	S 40°23'26" E	1277.67'
R5	N 69°37'07" W	1631.11'
R6	N 50°43'40" W	2302.91'

BHL is located on topo map 10,621 feet west of Longitude: 80° 40' 00"  
 SHL is located on topo map 5,090 feet west of Longitude: 80° 42' 30"



AS-DRILLED LOCATIONS UTM 17-HAD83(M)	
SURFACE HOLE LOCATION (SHL)	N:4410827.88 E:523401.050
APPROX LANDING POINT (LP)	N:4410436.99 E:523394.11
BOTTOM HOLE LOCATION (BHL)	N:4408142.39 E:525235.72



**LEGEND**

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- ROAD
- STREAM CENTER LINE
- LESSORS
- SURFACE OWNERS
- AS-DRILLED

**GAS WELLS**

- EXISTING WELLS
- PLUGGED WELLS

**THRASHER**  
 THE THRASHER GROUP, INC.  
 600 WHITE OAKS BLVD.  
 BRIDGEPORT, WV 26330  
 PHONE 304-624-4108

**SEE PAGE 2 FOR SURFACE OWNERS AND LESSORS**

FILE #: LONGWORTH M08H - AS-DRILLED  
 DRAWING #: LONGWORTH M08H - AS-DRILLED  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/2500  
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

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: *Joseph C. Mallow*  
 R.P.E.: \_\_\_\_\_ L.L.S.: P.S. No. 2346



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

DATE: FEBRUARY 23, 2021  
 OPERATOR'S WELL #: LONGWORTH M08H - AS-DRILLED  
 API WELL #: 47 51 02128  
 STATE COUNTY PERMIT

Well Type:  Oil  Waste Disposal  Production  Deep  Gas  Liquid Injection  Storage  Shallow

WATERSHED: MIDDLE GRAVE CREEK-GRAVE CREEK ELEVATION: 1295'  
 COUNTY/DISTRICT: MARSHALL / CLAY QUADRANGLE: GLEN EASTON, WV 7.5'

SURFACE OWNER: GRAHAM H. LONGWORTH JR. ACREAGE: 123.589±  
 OIL & GAS ROYALTY OWNER: GRAHAM H. LONGWORTH JR. ACREAGE: 630.126± **12/16/2022**

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION   
 PERFORATE NEW FORMATION  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE

(SPECIFY): AS-DRILLED PLAT

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,708'± TMD: 16,783'±  
 WELL OPERATOR EQT CHAP LLC DESIGNATED AGENT JOSEPH C. MALLOW  
 Address 400 WOODCLIFF DRIVE Address 115 PROFESSIONAL PLACE, PO BOX 280  
 City CANONSBURG State PA Zip Code 15317 City BRIDGEPORT State WV Zip Code 26330

# LONGWORTH M08H PAGE 2 OF 2 AS-DRILLED

AS-DRILLED LOCATIONS UTM 17-MA083(M)
SURFACE HOLE LOCATION (SHL)
N:4410827.88 E:523401.050
APPROX LANDING POINT (LP)
N:4410436.99 E:523394.11
BOTTOM HOLE LOCATION (BHL)
N:4408142.39 E:525235.72

	LESSOR	DIST-TM/PAR
A	GRAHAM H. LONGWORTH JR. ET AL	4-11/1
B	DELORES J. FOX	4-11/54
C	NELLI J. MIDCAP	4-11/53
D	*JOHN D. LIGHTNER	4-11/54.4
E	JOHN D. LIGHTNER	4-11/57
F	HOWARD E. & SUSAN C. YOUNG	9-1/18
G	DEAN B. COLVIN	9-1/22
	MARGARET KINNEY	
	PATRICIA COLVIN GRANDSTAFF	
	MARILYN PYLES SNYDER	
	JAMES E. PYLES	
	SUSAN ASTON	
	CAROL HULL	
	DAVID GEORGE MOORE	
	BETTY LOU DELLGET KERNS	
	MARILYN SOUTH	
	HOWARD GUMP ET UX	
	JUDY REILLEY FEIERSTEIN	
	RICHARD O'HARA	
	CATHY J. COLVIN	
	ALICE FAYE VAN DINE	
	LORA FORNSHELL	
	KEITH PYLES	
	WANDA L. PYLES	
	SHERLEY M. WHITE FKA SHERLEY M. VAN DINE	
	VERENDA STOKES	
	DOMINAE VESICO-RAMIREZ	
	KRISTA L. VAN DINE	
	ROBERT P. COLVIN	
	RONALD PYLES	
	DONALD COOK POA CAROL HULL	
	KEVIN O'HARA	
	CATHY LUDWIG GARRETT	
	ROBERT R. D'ERAMO JR., ET AL	
	DEBRA FORDYCE	
	KEITH JOEL VAN DINE	
	GLADYS PETRELLE BY AIF SHIRLEY BUFFONE	
	RODNEY COLVIN	
	PAULA REILLEY	
	VICKIE EISENHAUER	
	KIM YOHO	
	JASON COLVIN	
	BRENDA WILLINGHAM	
	DONALD COLVIN	
	MICHAEL COLVIN	
	STACY PANYKO	
	HAROLD E. VAN DINE	
	JOHN E. VAN DINE	
H	JOHN K. MASON JR.	9-1/23
J	PETER MILLER	9-1/24
K	THOMAS B. CLARK ET UX	9-5/2

	SURFACE OWNER	DIST-TM/PAR
1	GRAHAM H. LONGWORTH JR.	4-11/1
2	DUNCAN OR SUSAN ARNETT	4-11/54
3	DUNCAN R. OR SUSAN M. ARNETT	4-11/54.10
4	EDWARD WILLIAMS ET UX	4-11/54.11
5	JEFFREY STUCKEY	4-11/54.13
6	JAMES E. & LEAH A. YOHO	4-11/54.12
7	JAMES C. & MELISSA S. THATCHER	4-11/54.9
8	MARY STUCKEY	4-11/54.7
9	MARY STUCKEY	4-11/54.2
10	RAYMOND L. MIDCAP ET UX	4-11/54.6
11	NELLIE MIDCAP EST	4-11/54.5
12	NELLIE MIDCAP EST	4-11/53
13	*JOHN D. LIGHTNER ET UX	4-11/54.4
14	JOHN D. LIGHTNER ET UX	4-11/57
15	CNX LAND RESOURCES INC	9-1/18
16	CNX LAND RESOURCES INC	9-1/22
17	JOHN K. MASON JR.	9-1/23
18	PETER A. MILLER	9-1/24
19	KAREN LOUISE BELL AND ROGER L. DUNHAM	9-1/24.2
20	THOMAS B. & ANETTE K. CLARK	9-5/2

\* - DENOTES PARCEL WITHIN 30 FEET OF PLANNED WELL BORE

12/16/2022

# THRASHER

THE THRASHER GROUP, INC.  
800 WHITE OAKS BLVD.  
BRIDGEPORT, WV 26330  
PHONE 304-624-4108

FEBRUARY 23, 2021