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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Tuesday, April 21, 2020
WELL WORK PLUGGING PERMIT
Vertical Plugging

CHEVRON APPALACHIA, LLC
700 CHERRINGTON PARKWAY

CORAOPOLIS, PA 15108

Re: Permit approval for CARMICHAEL 1
47-051-01235-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. Please be advised that form WR-38, Affidavit of Plugging and Filling Well, is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless 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: CARMICHAEL 1
Farm Name: CARMICHAEL, EARL &ALBE
U.S. WELL NUMBER: 47-051-01235-00-00
Vertical Plugging
Date Issued: 4/21/2020

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47-051-01235P

PERMIT CONDITIONS

West Virginia Code § 22-6-11 allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. All pits must be lined with a minimum of 20 mil thickness synthetic liner.

2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.

3. Well work activities shall not constitute a hazard to the safety of persons.

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WW-4B
Rev. 2/01

1) Date 3/5, 2020
2) Operator's
Well No. 1H CARMICHAEL P
3) API Well No. 47- 051 - 01235 P

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

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

4) Well Type: Oil ____/ Gas X / Liquid injection ____/ Waste disposal ____/
(If "Gas, Production X or Underground storage ____) Deep X / Shallow ____

5) Location: Elevation 1181.74 Watershed Unnamed tributary of Wolf Run
District Webster County Marshall Quadrangle Majorsville 7.5'

6) Well Operator Chevron Appalachia, LLC
Address 700 Cherrington Parkway
Coraopolis, PA 15108

7) Designated Agent ____
Address ____

8) Oil and Gas Inspector to be notified
Name James Nicholson
Address PO Box 44
Moundsville, WV 26041

9) Plugging Contractor
Name ____
Address ____

10) Work Order: The work order for the manner of plugging this well is as follows:

See Attached

3 pages:

RECEIVED
Office of Oil and Gas
MAR 19 2020
WV Department of
Environmental Protection

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work order approved by inspector Jim Nicholson Date 3/18/2020

47-051-01235P

Chevron U.S.A. Inc.

Well:	Carmichael 1H	**Total Depth:**	9,330'
API#:	47-051-01235	**Coordinates:**	
County:	Marshall, West Virginia	**Quad:**	Majorsville 7.5', Webster Dist.
GL Elevation / KB:	1182' GL, 1200' KB		

Objective: Isolate Marcellus Perforations. Cut and Pull Casing from above TOC (per CBL). Permanently abandon existing wellbore to surface. Cut, Cap, and Mark Well 72" above ground level.

NOTE(S):

- Parted production casing was remediated by the following:
  - 5-1/2" casing cut and pulled from 4886'
  - Install casing patch and DV tool on 105 joints of 5-1/2" and engage TOF
  - Successfully pressure tested 5-1/2" casing and patch to 6,000 psi
  - DV tool installed at 4906'. Pump 900 sacks of Class A cement from 4906'. TOC at 4,250' per CBL.
  - Drilled out DV tool

Wellbore Data, Completions Data, Casing and Tubular Data can be found within the attached schematic

K.B.	18'	
195 joints 2-3/8" 8R EUE 4.7# J55 tbg	6157.40'	6175.40
X profile nipple (1.875" ID)	.9'	6176.30
9 jt 2-3/8" 8R EUE 4.7# L80 tbg	285.16'	6461.46
XN profile nipple (1.791" ID)	1.0'	6462.46
Tbg sub w/ rupture disc	.8'	6463.26
1 jt 2 3/8" 8R EUE 4.7# L80 tbg	31.81'	6495.07
Tbg collar	.4'	6495.47
EOT	**6495.47**	**30 Degree Hole**

Barrier Table

Operation	Internal Barrier	External Barrier
N/D tree, N/U BOPE	1. Slickline plug in X profile of tbg 2. BPV 3. Kill weight fluid	1. Kill weight fluid 2. Tubing hanger

Procedure:

1. MIRU w/ P&A Equipment
2. Check pressure on all casing and tubing strings.
3. R/U slickline unit to set plug in X profile at 6175'; 1.875" ID. R/U lubricator and test to 500 psi over wellbore pressure. Set plug in profile. Bleed off tubing pressure and perform 30 minute inflow test to verify tubing integrity. If tubing passes pressure test use as workstring throughout remainder of abandonment.
4. Fill 5-1/2" casing with kill weight fluid and conduct flow check to verify KWF as barrier
5. Set BPV. ND Tree. NU BOPE. Remove BVP and install 2-way check. Test BOPE to 250 psi low / 5,000 psi high. Remove 2-way check.
6. Once well is confirmed dead - POOH & LD 2-3/8" 4.7# L-80 Production Tbg.
7. MIRU E-line, test lubricator to pressure used in step 3.
8. RIH w/ gauge ring to 6,500' (+/- 30 deg inclination).
9. PU & RIH w/ 5-1/2" CIBP
10. Set CIBP between KOP and +/- 30 deg inclination
11. Load and test casing / bridge plug to BHP + 500 psi for 30 minutes.
12. MIRU wireline to re-run CBL to verify TOC results and to evaluate if any formations have collapsed/sloughed that may prevent casing from being pulled.

   a. CBL post-casing patch run 8/21/2009.
13. Evaluate CBL results and communicate TOC to engineer and superintendent
14. RIH w/ 2-3/8" workstring to top of CIBP
15. Balance cement plugs in multiple stages as required from CIBP to 4250' (TOC in annulus). TOH racking back workstring.
16. R/U wireline and RIH with casing cutting tool. Proposed casing cut depth +/- 4,100'. Cut casing and POOH with wireline tools. RDMOL wireline.
17. R/U casing pulling tools, casing jacks (if needed), and other auxiliary equipment. Pull free casing; tally same and document footage retrieved to surface in daily report.
    a. See Contingency Procedure section if unable to pull cut casing
18. P/U bit and scraper and RIH to cleanout intermediate casing string down to top of cut casing. Circulate until wellbore becomes clean. POOH with cleanout assembly.
19. Set CIBP inside of intermediate casing string directly above the cut production casing. CIBP can be set mechanically or via wireline, whichever is more cost effective and/or readily available.
20. RIH open ended with 2-3/8" workstring and tag CIBP inside of the intermediate casing. Circulate wellbore with cement from tag depth to surface in multiple intervals as needed.
21. Verify TOC at surface
22. ND BOP. RDMOL.

Contingency Procedure

If unable to cut/pull casing from planned depth...

1. Establish circulation through cut portion of casing. Document pressure and rate.

Option 1: circulation established to surface; casing not removed from well	1. RIH with cement retainer and set +/- 20' above casing cut depth 2. Sting into retainer, mix and pump sufficient cement volume to fill production casing annulus with cement from cut depth to surface 3. Pull out of cement retainer and proceed to pump balanced plugs from cement retainer depth to surface
Option 2: circulation established to surface; casing stuck in well but planned to be cut/pulled from shallower well	1. RIH with cement retainer and set +/- 20' above casing cut depth 2. Sting into retainer, mix and pump sufficient cement volume to fill production casing annulus with cement from cut depth to +/- 100' below 9-5/8" intermediate casing shoe 3. Pull out of cement retainer and proceed to pump balanced plugs inside of production casing from cement retainer to calculated TOC in annulus at +/- 100' below 9-5/8" intermediate shoe 4. Cut casing 50' below 9-5/8" intermediate casing shoe and attempt to pull to surface 5. If able to pull casing, cleanout well and spot CIBP inside intermediate casing above cut depth and spot cement plugs from tag depth inside of 5-1/2" production casing to surface 6. If unable to pull casing, review preferred contingency options with OGI.
Option 3: successful injection rate but unable to establish circulation to surface	1. Spot balanced plug across cut casing and squeeze cement volume equivalent to 100 linear feet in the annulus. WOC and tag or pressure test to confirm as barrier. 2. Perforate and squeeze cement into annulus at Alexander Sand formation top (3760' RKB) a. Squeeze volume to be minimum of 100 linear feet in annulus above formation top to serve as barrier

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	3. Perforate and squeeze cement volume into annulus at Gordan Sand formation top (2735' RKB) a. Squeeze volume to be minimum of 100 linear feet in annulus above formation top to serve as barrier 4. Cut casing at 2,550' RKB (38' below 9-5/8" intermediate shoe) and attempt to pull 7. If unable to pull casing, review preferred contingency options with OGI.

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Planned P&A Schematic

WELLBORE DATA AND SKETCH

Well: Carmichael #1H	**Quad: Majorsville 7.5', Webster Dist.**	**Updated: 12/7/18**
County: Marshall	**State: West Virginia**	**Status: Proposed Plugging**
Abandonment Objective:	Kill well, remove tubing, establish mechanical barrier near KOP; test same. Spot cement from CIBP to TOC in annulus. Cut casing above TOC and pull same. Fill wellbore with cement from tag depth to surface. Verify at surface.	
Directions: See Prognosis	Location: 9437' S Lat 39° 55' 00"	Survey:
Well Type: Horizontal Well	Lease: 10,003' W Long 80° 32' 30"	API # 47-051-01235

Elevation: GL: 1182'
DF: 1199'
KB: 1200'

20" Conductor Csg @ 84' - Sanded-in

17 1/2" Hole @ 1234'
13 3/8" 54.5# Surface Csg @ 1203'
Cemented w/ 880 sxs

12 1/4" Hole @ 2550'
9 5/8" 36# Intermediate Csg @ 2512'
Cemented w/ 830 sxs - Circ

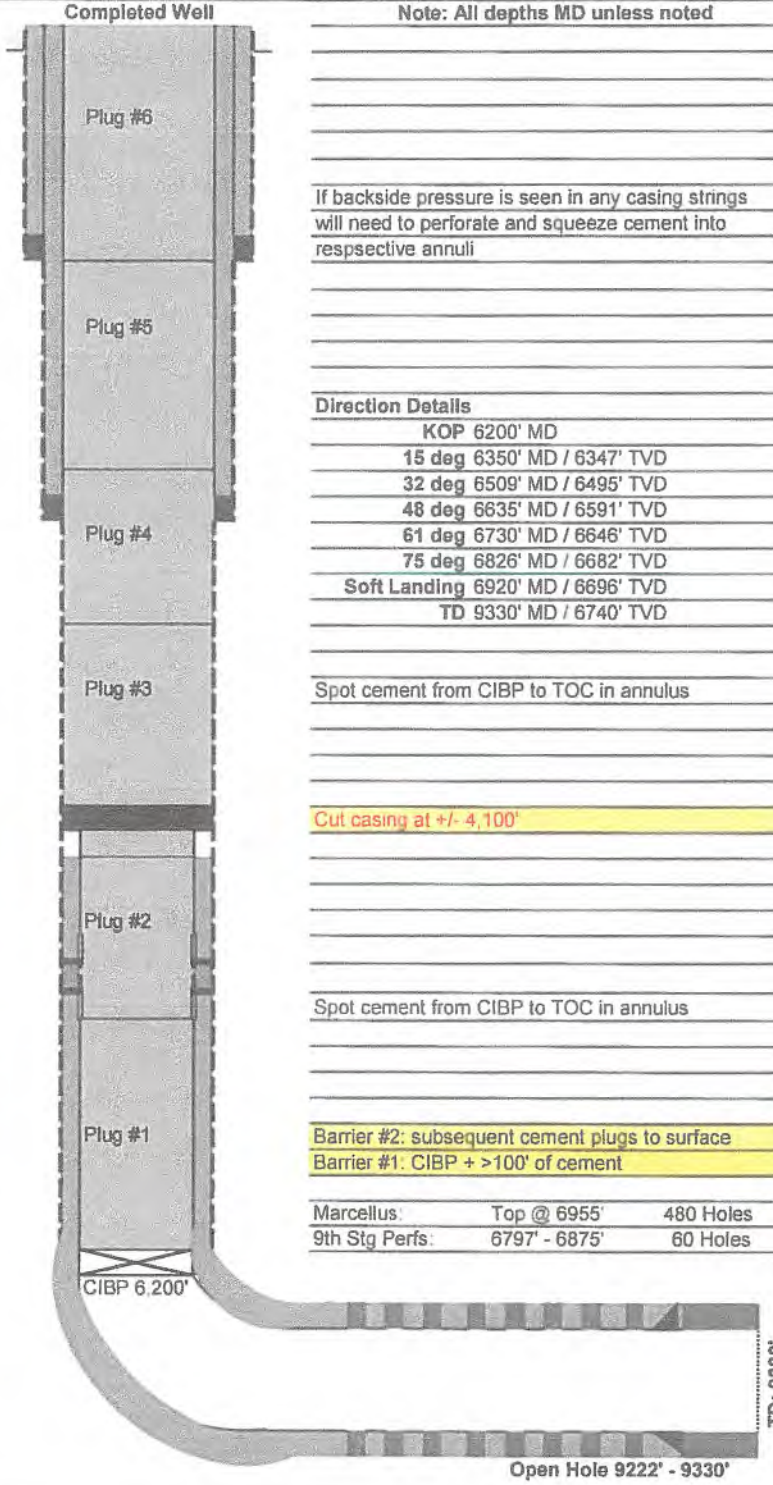
8 3/4" Hole @ 5900' MD

7 7/8" Hole @ 9330' MD (6740' TVD)

TOC @ 4250' by CBL

DV Tool Set @ 4950' (Drld out)
Casing Patch Set @ 4955'

KOP: 6200'
Target Centerline: 6701' TVD
Pen. Marcellus - 6955' MD (6698' TVD) VS 467'
Maximum Deflection - 15.4 degree @ 6794'
Maximum Angle - 90.7 degree @ 8410'
Displacement - 2720 S 23.10 E
Landing Point - 7015' MD (6701' TVD) VS 516'
MWD Gamma run.



Note: All depths MD unless noted

If backside pressure is seen in any casing strings will need to perforate and squeeze cement into respsective annuli

Direction Details

KOP	6200' MD
15 deg	6350' MD / 6347' TVD
32 deg	6509' MD / 6495' TVD
48 deg	6635' MD / 6591' TVD
61 deg	6730' MD / 6646' TVD
75 deg	6826' MD / 6682' TVD
Soft Landing	6920' MD / 6696' TVD
TD	9330' MD / 6740' TVD

Spot cement from CIBP to TOC in annulus

Cut casing at +/- 4,100'

Spot cement from CIBP to TOC in annulus

Barrier #2: subsequent cement plugs to surface
Barrier #1: CIBP + >100' of cement

Marcellus:	Top @ 6955'	480 Holes
9th Stg Perfs:	6797' - 6875'	60 Holes

5 1/2" 20# P-110 Csg @ 9221'
Cemented w/ 1335 sxs

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P&A Contingency Option #2

WELLBORE DATA AND SKETCH

Well: Carmichael #1H	**Quad: Majorsville 7.5', Webster Dist.**	**Updated: 12/7/18**
County: Marshall	**State: West Virginia**	**Status: Proposed Plugging**
Contingency Option #2 Description	Unable to establish circulation to surface after initial casing cut Need to isolate hydrocarbon bearing formations per barrier standard Includes additional casing cut/pull attempt	
Directions: See Prognosis	Location: 9437' S Lat 39° 55' 00"	Survey:
Well Type: Horizontal Well	Lease: 10,003' W Long 80° 32' 30"	API # 47-051-01235
Elevation: GL: 1182'	**Completed Well**	**Note: All depths MD unless noted**
DF: 1199'		
KB: 1200'		
20" Conductor Csg @ 84' - Sanded-in		
17 1/2" Hole @ 1234'		
13 3/8" 54.5# Surface Csg @ 1203'		If backside pressure is seen in any casing strings
Cemented w/ 880 sxs		will need to perforate and squeeze cement into
		respsective annuli
		Spot balanced cement plugs from cut depth to SURF
12 1/4" Hole @ 2550'		
9 5/8" 36# Intermediate Csg @ 2512'		Cut casing +/- 50' below 9 5/8" intermediate shoe
Cemented w/ 830 sxs - Circ		
		Perf & squeeze at Gordon Sand formation top
		100' worth of annular coverage to serve as barrier
8 3/4" Hole @ 5900' MD		
7 7/8" Hole @ 9330' MD (6740' TVD)		Perf & squeeze at Alexander Sand formation top
		100' worth of annular coverage to serve as barrier
		Cut casing at +/- 4,100' but unable to pull
TOC @ 4250' by CBL		
	Plug #2	
DV Tool Set @ 4950' (Drld out)		
Casing Patch Set @ 4955'		Spot cement from CIBP to TOC in annulus
	Plug #1	Barrier #2: subsequent cement plugs to surface
		Barrier #1: CIBP + >100' of cement
		Marcellus: Top @ 6955' 480 Holes
		9th Stg Perfs: 6797' - 6875' 60 Holes
KOP: 6200'		
Target Centerline: 6701' TVD	CIBP 6,200'	
Pen. Marcellus - 6955' MD (6698' TVD) VS 467'		
Maximum Deflection - 15.4 degree @ 6794'		
Maximum Angle - 90.7 degree @ 8410'		
Displacement - 2720 S 23.10 E		
Landing Point - 7015' MD (6701' TVD) VS 516'		
MWD Gamma run.		TD: 9330'
		Open Hole 9222' - 9330'
		5 1/2" 20# P-110 Csg @ 9221'
		Cemented w/ 1335 sxs

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Language for Alternative Method

Carmichael 1H

Problem

78a.92(a)(3) After the plug has been installed below the [coal string] casing seat, the inner casing shall be emptied of liquid from the surface to the plug of cement. A vent or other device approved by the Department shall then be installed on top of the inner string of casing to prevent liquids and solids from entering the well but permit access to the full internal diameter of the inner casing when required. The vent or other device approved by the Department must extend, when finally in place, a distance of at least 72 inches above ground level and the permit or registration number must be permanently affixed.

Solution

Propose to not vent to coal string and instead fill the wellbore with cement to surface. Casing strings will be cut and capped below grade and marked with a surface plate affixed with API number and well name.

47-051-01235P

As Drilled Schematic

WELLBORE DATA AND SKETCH

Well: Carmichael #1H	**Quad: Majorsville 7.5', Webster Dist.**	**Updated: 3/17/10**
County: Marshall	**State: West Virginia**	**Status: Producing**
Directions: See Prognosis	Location: 9437' S Lat 39° 55' 00"	Survey:
Well Type: Horizontal Well	Lease: 10,003' W Long 80° 32' 30"	API # 47-051-01235

Elevation: GL: 1182'
DF: 1199'
KB: 1200'

20" Conductor Csg @ 84' - Sanded-in

17 1/2" Hole @ 1234'
13 3/8" 54.5# Surface Csg @ 1203'
Cemented w/ 880 sxs

12 1/4" Hole @ 2550'
9 5/8" 36# Intermediate Csg @ 2512'
Cemented w/ 830 sxs - Circ

DV Tool Set @ 4950' (Drld out)
Casing Patch Set @ 4955'

8 3/4" Hole @ 5900' MD

7 7/8" Hole @ 9330' MD (6740' TVD)

TOC @ 4250' by CBL

KOP: 6200'
Target Centerline: 6701' TVD
Pen. Marcellus - 6955' MD (6698' TVD) VS 467'
Maximum Deflection - 15.4 degree @ 6794'
Maximum Angle - 90.7 degree @ 8410'
Displacement - 2720 S 23.10 E
Landing Point - 7015' MD (6701' TVD) VS 516'
MWD Gamma run.

10/24/09: Frac w/ 7,677 BFW (Treated) & 165,017# 100 Mesh & 253,220# 40/70 Sd & 26,040# 40/70 Resin Sd. TLTR: 66,413 bbls-Stg 9

10/24/09: Frac w/ 8,345 BFW (Treated) & 170,500# 100 Mesh & 222,502# 40/70 Sd & 14,448# 40/70 Resin Sd. LTR: 58,736 bbls-Stg 8

10/23/09: Frac w/ 8,112 BFW (Treated) & 164,963# 100 Mesh & 238,390# 40/70 Sd & 12,576# 40/70 Resin Sd. LTR: 50,391 bbls-Stg 7

10/23/09: Frac w/ 7,835 BFW (Treated) & 165,049# 100 Mesh & 231,520# 40/70 Sd & 7,578# 40/70 Resin Sd. LTR: 42,279 bbls-Stg 6

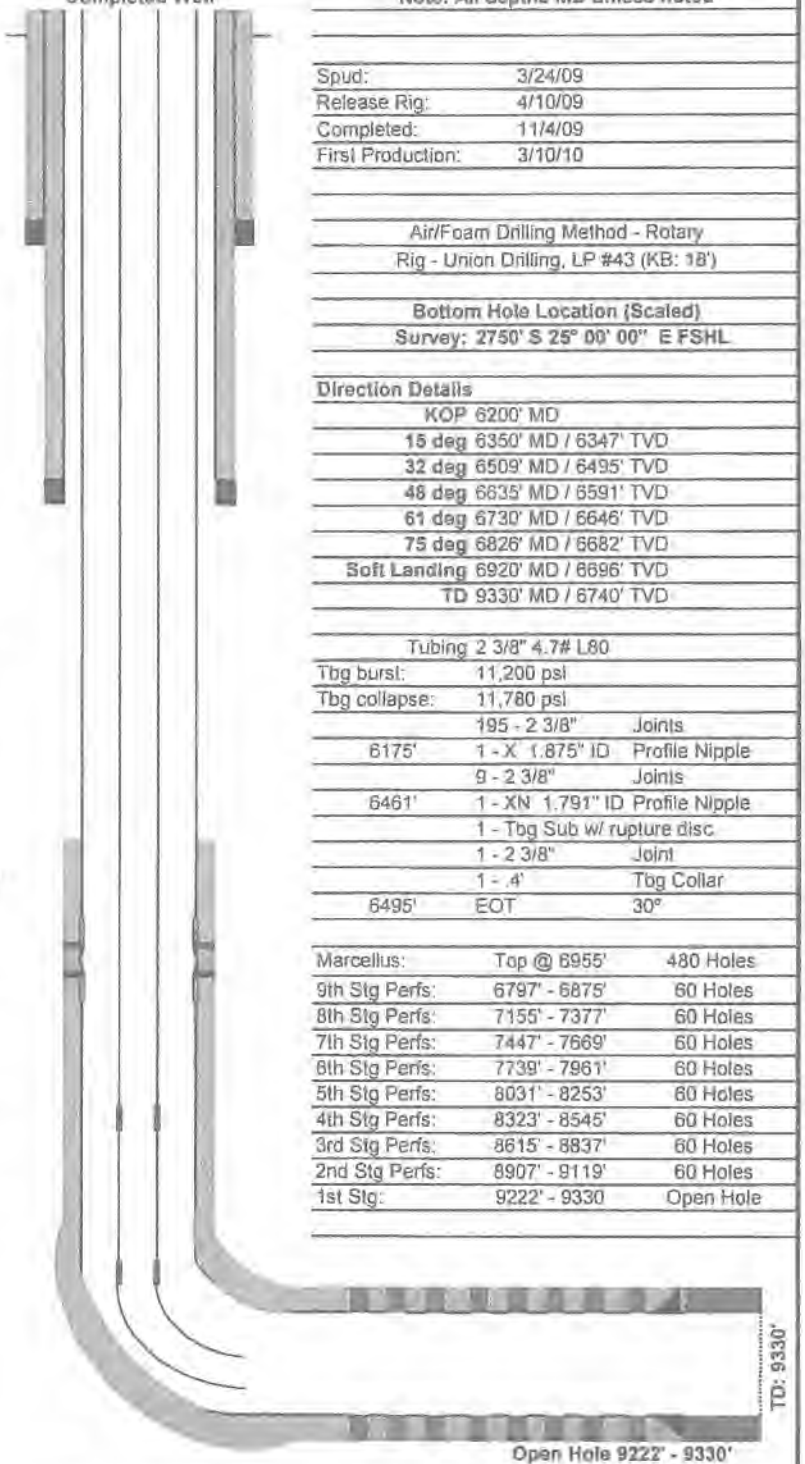
10/22/09: Frac w/ 7,892 BFW (Treated) & 164,826# 100 Mesh & 247,735# 40/70 Sand. LTR: 34,444 bbls-Stg 5

10/22/09: Frac w/ 7,902 BFW (Treated) & 164,826# 100 Mesh & 247,735# 40/70 Sand. LTR: 26,552 bbls-Stg 4

10/21/09: Frac w/ 7,843 BFW (Treated) & 168,825# 100 Mesh & 220,446# 40/70 Sd & 21,767# 40/70 Resin Sd. LTR: 18,650 bbls-Stg 3

10/19/09: Frac w/ 6,892 BFW (Treated) & 146,647# 100 Mesh & 193,356# 40/70 Sd & 24,903# 40/70 Resin Sd. LTR: 10,807 bbls-Stg 2

Completed Well



Open Hole 9222' - 9330'

10/19/09: Frac w/ 3,915 BFW (Treated) & 69,353# 100 Mesh & 95,860# 40/70 sand, & 4,091# 40/70 resin coated sand. LTR: 3,915 bbls - Stage 1
Weatherford Frac'd All Stages

5 1/2" 20# P-110 Csg @ 9221'
Cemented w/ 1335 sxs

Note: All depths MD unless noted

Spud:	3/24/09
Release Rig:	4/10/09
Completed:	11/4/09
First Production:	3/10/10

Air/Foam Drilling Method - Rotary
Rig - Union Drilling, LP #43 (KB: 18')

Bottom Hole Location (Scaled)
Survey: 2750' S 25° 00' 00" E FSHL

Direction Details

KOP	6200' MD
15 deg	6350' MD / 6347' TVD
32 deg	6509' MD / 6495' TVD
48 deg	6635' MD / 6591' TVD
61 deg	6730' MD / 6646' TVD
75 deg	6826' MD / 6682' TVD
Soft Landing	6920' MD / 6696' TVD
TD	9330' MD / 6740' TVD

Tubing 2 3/8" 4.7# L80
Tbg burst: 11,200 psi
Tbg collapse: 11,780 psi

	195 - 2 3/8"	Joints
6175'	1 - X 1.875" ID	Profile Nipple
	9 - 2 3/8"	Joints
6461'	1 - XN 1.791" ID	Profile Nipple
	1 - Tbg Sub w/ rupture disc	
	1 - 2 3/8"	Joint
	1 - .4'	Tbg Collar
6495'	EOT	30°

Marcellus:	Top @ 6955'	480 Holes
9th Stg Perfs:	6797' - 6875'	60 Holes
8th Stg Perfs:	7155' - 7377'	60 Holes
7th Stg Perfs:	7447' - 7669'	60 Holes
6th Stg Perfs:	7739' - 7961'	60 Holes
5th Stg Perfs:	8031' - 8253'	60 Holes
4th Stg Perfs:	8323' - 8545'	60 Holes
3rd Stg Perfs:	8615' - 8837'	60 Holes
2nd Stg Perfs:	8907' - 9119'	60 Holes
1st Stg:	9222' - 9330	Open Hole

47-051-01235P

WR-35

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

DATE: 12/04/2009
API#: 4705101235

Farm Name: Carmichael
Location Elev. (ft): 1182
District: Webster
Operator Well #: 1H
Quadrangle: Majorsville
County: Marshall

LAT: 9437 Ft South of: 39 Deg. 55 Min. 00 Sec.
LON: 10003 Ft West of: 80 Deg. 32 Min 30 Sec.

Company:	AB RESOURCES
Address:	6802 W Snowville Rd. Suite E
	Brecksville, OH 44141
Agent:	CT CORPORATION SERVICES
Inspector:	TRISTAN JENKINS
Date Permit Issued:	2/11/2009
Date Work Commenced:	3/24/2009
Date Well Completed:	11/4/2009
Verbal Plugging:	NA
Date Perm. Granted:	NA
Drill Type:	☒ ROTARY ☐ CABLE ☐ RIG
Total Depth (ft):	9330 TD / 6701 TVD
Fresh Water Depth (ft):	Na
Salt Water Depth (ft):	Na
Active Coal Mining:	☒ YES ☐ NO ☐ UNKNOWN
Coal Depths (ft):	650

Csg/Tbg Diam"	*Used in Drilling*	*Left in Well*	*Cement Fill (ft³)*
13 3/8	1203	1203	1144 cts
9 5/8	2512	2512	1079 cts
5 1/2	9222	9222	
2 3/8	6495	6495	

All Depths are measured from Kelly Bushing (KB) 18' above Ground level.

NOTES: 3' extra casing run to stabilize open borehole through red-bed shale zone.

RECEIVED
Office of Oil & Gas
FEB 16 2010
WV Department of
Environmental Protection

OPEN FLOW DATA

1st PRODUCING FORMATION: Marcellus — PAY ZONE DEPTH (ft): 6960

GAS: Init. Open Flow: Na MCF/d — OIL: Init. Open Flow: Na Bbl/d
Final Open Flow: Na MCF/d — Final Open Flow: Na Bbl/d
Time of open flow between initial and final tests: Na Hours
ROCK Static Pressure: Na psig — (surface pressure) after Na Hours

2nd PRODUCING FORMATION: Na — PAY ZONE DEPTH (ft): Na

GAS: Init. Open Flow: Na MCF/d — OIL: Init. Open Flow: Na Bbl/d
Final Open Flow: Na MCF/d — Final Open Flow: Na Bbl/d
Time of open flow between initial and final tests: Na Hours
ROCK Static Pressure: Na psig — (surface pressure) after Na Hours

Company Name: AB Resources
Signature: James K. Wilson
Name (PRINT): James K. Wilson
Date: 2/9/10

Submit to
West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street, SE
Charleston, WV 25304-2345
Phone: (304) 926-0450
Fax: (304) 926-0452

47-051-01235P

PAGE 2: SUPPLEMENTAL DATA Well Name: Carmichael 1H API #: 4705101235

Perforated Intervals:	
Interval (ft):	**# Holes:**
6955-9330	480

Stimulation:				
TYPE USED: Sand & Water				
Number Units	**Units: lbs/Sx/Bbls**	**Mesh:**	**Type:**	**Notes:**
1,380,006	Lbs	100	SD	
2,047,719	Lbs	40/70	SD	
66,413	Bbls	NA	FW	

Well Log

Surface: 1182' GL

Formations Encountered	Top Depth (ft):	Bot Depth (ft):	Notes:
Shale	0	300	
Sand	300	328	
Shale	328	350	
Sand	350	388	
Shale	388	438	
Coal	438	454	Interbedded w Shale
Lime	454	492	
Shale	492	500	
Lime	500	550	
Shale	550	642	
Coal	684	748	Interbedded w Shale
Shale	748	1050	
Sand	1050	1160	
Shale	1160	1200	
Sand	1200	1348	
Coal	1348	1354	
Shale and Sand	1354	1620	
Sand	1620	1780	
Limestone	1780	1920	
Sand	1920	2650	
Shale	2650	3310	
Sand	3310	3850	
Upper Devonian Shale	3850	6356	
Sand	6356	6400	
Shale	6400	6590	
Tully Lime	6590	6629	
Shale	6629	6960	
Marcellus Shale	6960	9330	
TD	9330		

47-051-01235P

WW-4A
Revised 6-07

1) Date: 3/5/20
2) Operator's Well Number
1H Carmichael

3) API Well No.: 47 - 47051 - 01235

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE 0F APPLICATION TO PLUG AND ABANDON A WELL

4) Surface Owner(s) to be served:
(a) Name: Alberta B Carmichael - Estate c/o Sherry Rahm
Address: 424 Cove Beach Ave
Sheffield Lake, OH 44054

(b) Name
Address

(c) Name
Address

6) Inspector: James Nicholson
Address: PO Box 44
Moundsville, WV 26041
Telephone: 304-552-3874

5) (a) Coal Operator
Name
Address

(b) Coal Owner(s) with Declaration
Name: Consol Energy
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

Name
Address

(c) Coal Lessee with Declaration
Name
Address

TO THE PERSONS NAMED ABOVE: You should have received this Form and the following documents:

(1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
(2) The plat (surveyor's map) showing the well location on Form WW-6.

The reason you received these documents is that you have rights regarding the application which are summarized in the instructions on the reverses side However, you are not required to take any action at all.

Take notice that under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Department of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of this Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Chief.

Well Operator: Chevron Appalachia, LLC
By: Branden Weimer
Its: Senior Permitting Advisor
Address: 700 Cherrington Parkway
Coraopolis, PA 15108
Telephone: 412-865-1533

Commonwealth of Pennsylvania
County of Allegheny

Subscribed and sworn before me this 4th day of March, 2020
Laura Savage Notary Public

Commonwealth of Pennsylvania - Notary Seal
Laura Savage, Notary Public
Allegheny County
My commission expires September 17, 2022
Commission number 1285773
Member, Pennsylvania Association of Notaries

My Commission Expires September 17, 2022

Oil and Gas Privacy Notice

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at deprivacyoffier@wv.gov.

47-051-01235 P

WW-4B

API No. 47-051-01235
Farm Name Carmichael
Well No. 1H

INSTRUCTIONS TO COAL OPERATORS
OWNERS AND LESSEE

The well operator named on the obverse side of WW-4 (B) is about to abandon the well described in the enclosed materials and will commence the work of plugging and abandoning said well on the date the inspector is notified. Which date shall not be less then five days after the day on which this notice and application so mailed is received, or in due course should be received by the Department of Environmental Protection Office of Oil & Gas.

This notice and application is given to you in order that your respective representatives may be present at the plugging and filling of said well. You are further notified that whether you are represented or not the operator will proceed to plug and fill said well in the manner required by Section 24, Article 6, Chapter 22 of the Code and given in detail on obverse side of this application.

NOTE: If you wish this well to be plugged according to 22-6-24(d) then as per Regulation 35CSR4-13.9 you must complete and return to this office on form OB-16 "Request by Coal Operator, Owner, or Lessee for plugging" prior to the issuance of this plugging permit.

WAIVER

The undersigned coal operator ___✓___ / owner ___✓___ / lessee ___ / of the coal under this well location has examined this proposed plugging work order. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

Date: 03/11/2020

Casey V. Saunders
By: Casey V. Saunders
Its Manager Coal/Gas Coordination - Consol Energy

47-051-01235P

WW-9
(5/16)

API Number 47 - 47-051 - 01235
Operator's Well No. 1h

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Chevron Appalachia,, LLC OP Code _____

Watershed (HUC 10) Unnamed tributary to Wolfs Run Quadrangle Majorsville 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes ☐ No ☑

Will a pit be used? Yes ☐ No ☑

If so, please describe anticipated pit waste: _____

Will a synthetic liner be used in the pit? Yes ☐ No ☐ If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

_____ Land Application (if selected provide a completed form WW-9-GPP)
_____ Underground Injection (UIC Permit Number _____)
_____ Reuse (at API Number _____)
_____ Off Site Disposal (Supply form WW-9 for disposal location)
_____ Other (Explain _____

Will closed loop systembe used? If so, describe: _____

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. _____

-If oil based, what type? Synthetic, petroleum, etc. _____

Additives to be used in drilling medium? _____

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. _____

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) _____

-Landfill or offsite name/permit number? _____

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on April 1, 2016, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature _____

Company Official (Typed Name) Branden Weimer

Company Official Title Senior Permitting Advisor

Commonwealth of Pennsylvania County of Allegheny

Subscribed and sworn before me this 4th day of March, 2020

Laura Savage Notary Public

My commission expires September 17, 2022

Commonwealth of Pennsylvania - Notary Seal
Laura Savage, Notary Public
Allegheny County
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Commission number 1285773
Member, Pennsylvania Association of Notaries

47-051-01235P

Form WW-9

Operator's Well No. Carmichael 1H

Proposed Revegetation Treatment: Acres Disturbed _____ Prevegetation pH _____

Lime _____ Tons/acre or to correct to pH _____

Fertilizer type _____

Fertilizer amount _____ lbs/acre

Mulch _____ Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre

Attach:
Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, provide water volume, include dimensions (L, W, D) of the pit, and dimensions (L, W), and area in acres, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

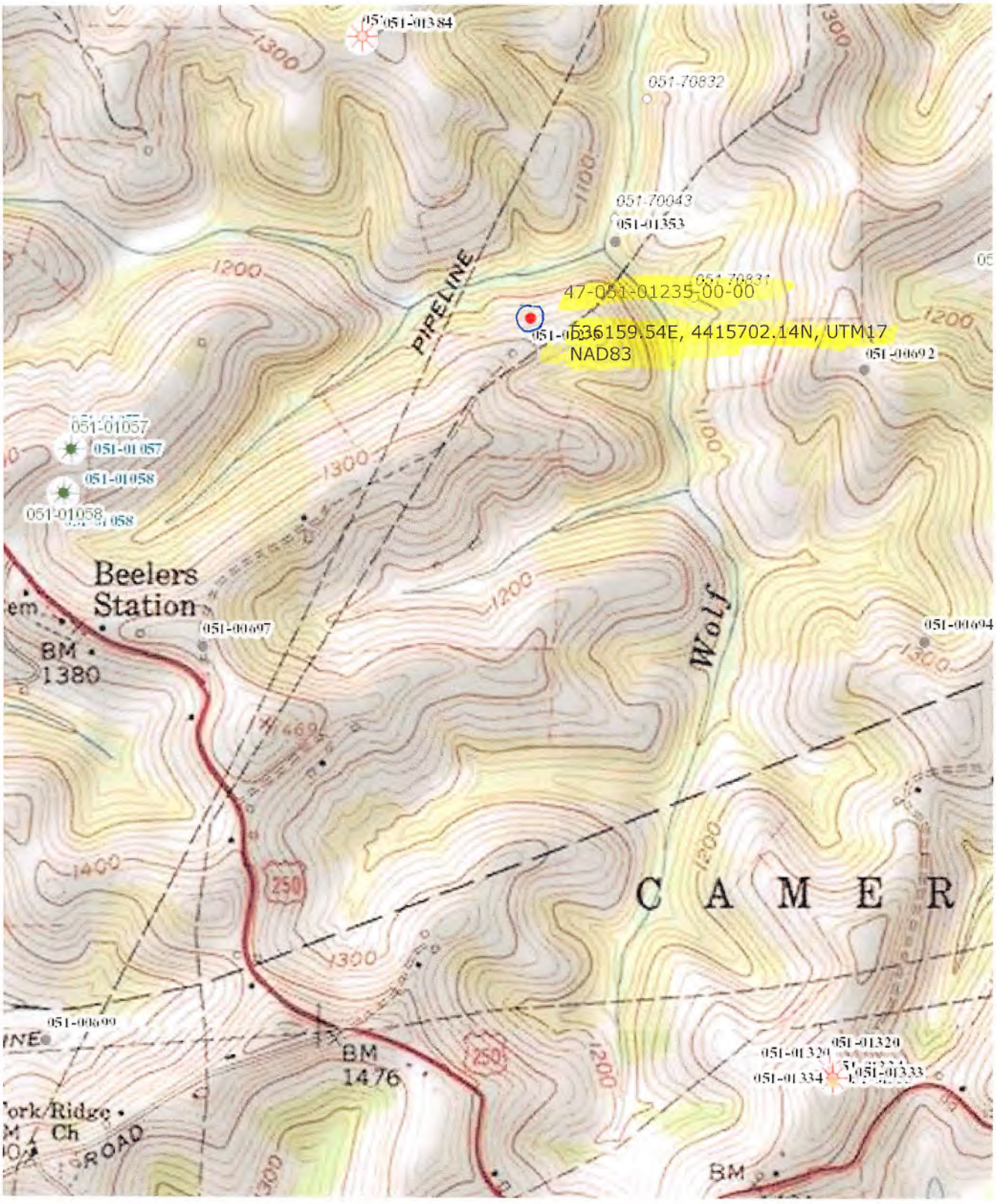
Plan Approved by: _____

Comments: _____

Title: _____ Date: _____

Field Reviewed? (_____) Yes (_____) No

47-051-01235P



47-051-01235P

47-051-01235P

WW-7
8-30-06

West Virginia Department of Environmental Protection
Office of Oil and Gas
WELL LOCATION FORM: GPS

API: 47-051-01235 **WELL NO.:** 1H

FARM NAME: Carmichael

RESPONSIBLE PARTY NAME: Chevron Appalachia, LLC

COUNTY: Marshall **DISTRICT:** Webster

QUADRANGLE: Majorsville 7.5'

SURFACE OWNER: Alberta B Carmichael Estate c/o Sherry Rahm

ROYALTY OWNER: Earl and Alberta Carmichael

UTM GPS NORTHING: 4415702.2

UTM GPS EASTING: 536159.5 **GPS ELEVATION:** 1181.74

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit or assigned API number on the above well. The Office of Oil and Gas will not accept GPS coordinates that do not meet the following requirements:

1. Datum: NAD 1983, Zone: 17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) – meters.
2. Accuracy to Datum – 3.05 meters
3. Data Collection Method:

Survey grade GPS X: Post Processed Differential _____

Real-Time Differential _____

Mapping Grade GPS ____: Post Processed Differential _____

Real-Time Differential _____

4. **Letter size copy of the topography map showing the well location.**

I the undersigned, hereby certify this data 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 Office of Oil and Gas.

Signature	Senior Permitting Advisor	04/20/20
	Title	Date