



 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

Wednesday, September 19, 2018

WELL WORK PERMIT
 Horizontal 6A / New Drill

AMERICAN PETROLEUM PARTNERS OPERATING, LLC
 4600 J. BARRY COURT SUITE 310

CANONSBURG, PA 15317

Re: Permit approval for CASTERLY ROCK - 1UH
 47-051-02047-00-00

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.

Please be advised that form WR-35, Well Operators Report of Well Work 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: CASTERLY ROCK - 1UH
 Farm Name: LESLIE B. & LORI D. SCHABE
 U.S. WELL NUMBER: 47-051-02047-00-00
 Horizontal 6A New Drill
 Date Issued: 9/19/2018

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) 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. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-926-0499 Ext 1274

Barry K. Lay, Chairman
dep.wv.gov

August 30, 2018

Department of Environmental Protection
Office of Oil and Gas
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-051-02047

COMPANY: American Petroleum Partners Operating, LLC

FARM: American Petroleum Partners Operating, LLC Casterly Rock-IUH

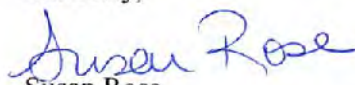
COUNTY: Marshall DISTRICT: Union QUAD: Moundsville

The deep well review of the application for the above company is **Approved to drill to Point Pleasant for completion.**

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: *yes, Docket 266-256 Exception Location Hearing, 47-051-02018, 47-051-02046, 47-051-02071, 47-051-02072, and 47-051-02073.
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,


Susan Rose
Administrator

09/21/2018

WW-6B
(04/15)

API NO. 47-051 -
OPERATOR WELL NO. Casterly Rock-1UH (CRN1-UH)
Well Pad Name: Casterly Rock

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

1) Well Operator: American Petroleum Partners 494521257 Marshall Union Moundsville
Operator ID County District Quadrangle

2) Operator's Well Number: Casterly Rock-1UH (CRN1-UH) Well Pad Name: Casterly Rock

3) Farm Name/Surface Owner: Leslie B. & Lori D. Schaber Public Road Access: State Route 88

4) Elevation, current ground: 1,337.89' Elevation, proposed post-construction: 1311.38

5) Well Type (a) Gas Oil Underground Storage

Other

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

JN 5/7/18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant Formation 11,395' / 130' thick 10,141 or .89 psi per foot / Utica Formation 11,212 150' thick / 10,000 psi or .89 psi per foot.

8) Proposed Total Vertical Depth: 11,395'

9) Formation at Total Vertical Depth: Point Pleasant

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10) Proposed Total Measured Depth: 20,271'

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11) Proposed Horizontal Leg Length: 8,427'

12) Approximate Fresh Water Strata Depths: 130', 1125'

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Environmental Protection

13) Method to Determine Fresh Water Depths: Nearest offset well

14) Approximate Saltwater Depths: Na

15) Approximate Coal Seam Depths: 625', 825'

16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated. Mine maps attached.

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

(a) If Yes, provide Mine Info: Name: The Ohio County Mine

Depth: 625' - 825'

Seam: Sewickley and Pittsburgh

Owner: Murray American Energy & Consolidation Coal Company

WW-6B
(04/15)

4705102047
API NO. 47-051 - 09/21/2018
OPERATOR WELL NO. Casterly Rock-1UH (CRN1-UH)
Well Pad Name: Casterly Rock

18) CASING AND TUBING PROGRAM

TYPE	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	30"	New	LS	81.3#	60'	60'	CTS
Fresh Water	20"	New	J-55	94#	1225'	1225'	15.6ppg to sur 521 ex w/30% OH excess
Coal	13 3/8"	New	J-55	54.5#	2111'	2111'	15.2ppg to sur 556 ex w/30% OH Excess
Intermediate	9 5/8"	New	HCP-110	43.5#	9712'	9712'	15.4ppg to sur 926 ex w/30% OH excess
Production	5 1/2"	New	HCP-110	23#	20271'	20271'	14.8ppg TOC =>200' above 9.825 shoe
Tubing	2 7/8"	New	J-55	6.5#	11,400	11,400'	
Liners							

JW
5/2/18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"		300		Type 1	Lead yield 2.38 Tail 521 ex Yield 1.18
Fresh Water	20"	24"	.438	2110	400	Class A	Lead yield 2.38 Tail 556 ex Yield 1.27
Coal	13 3/8"	17.5"	.380	2730	688	Class A	Lead Yield 2.38 Tail 556 ex Yield 1.27
Intermediate	9 5/8"	12.38"	.435	8700	3166	Class A	Lead Yield 1.28 Tail 930 ex Yield 1.29
Production	5 1/2"	8.75"	.415	16,510	13000	Class H	Lead Yield 1.27 Tail 4714 ex Yield 1.27
Tubing	2 7/8"	5.14"	.217	10570	8000		
Liners							

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PACKERS

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Kind:				
Sizes:				
Depths Set:				

WW-6B
(10/14)

4705102047
API NO. 47-051 - 09/21/2018

OPERATOR WELL NO. Casterly Rock-1UH (CRN1-UR)

Well Pad Name: Casterly Rock

J. [Signature]
5/7/18

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

Drill the vertical depth to the Point Pleasant at an estimated total vertical depth of approximately 11,395'. Drill the horizontal leg- stimulate and produce the Utica/Point Pleasant formation. Should we encounter a unanticipated void we will install a minimum of 20' of casing below the void but not more than 100' below the void, set a basket and grout to surface.

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

The stimulation will be in multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. Our maximum pressure is not to exceed 10,000 lbs.

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21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 22.5 acres

22) Area to be disturbed for well pad only, less access road (acres): 9.9 acres

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23) Describe centralizer placement for each casing string:

Conductor- No centralizers used. Freshwater/Surface- Bow Spring centralizers every 3 joints to 100' from surface. 1st Intermediate - Bow Spring centralizers every 3 joints to 100' from surface. 2nd Intermediate - Bow Spring centralizers every 3 joints to 100' from surface. Production - Rigid bow springs every third joint from KOP to TOC. Rigid every joint to KOP.

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

Type 1 to Surface. Surface/Freshwater - 15.6 Class A +2% CaCl, 30% OH Excess Yield =1.18. 1st Intermediate - 15.6 ppg Class A +2% CaCl, 0.25 Lost Circ. 30% Yield =1.27. 2nd Intermediate- 2 Stage cement job with 15.4 ppg Class A lead + additives (antisetting, antifoam, fluid loss retarder, salt, viscosifier) & 15.4 Class A tail with additives (antisetting, antifoam, fluid loss retarder, salt, dispersant or 12.0 Class A lead + additives (+/-5% dispersant, 10% light weight additive, 75% fluid loss additive, and 1.15% fluid loss additive, Yield=1.28) 15.4 ppg Class A Tail + additives (+/- fluid loss additive, & .5% light weight additive, Yield 1.28), 0.125#/SK lost circ 30% excess to Surface. Production- 12.5ppg Class H Lead +additives and 14.8 ppg Class H Tail + additives (antifoam, antisetting, extender, dispersant) 15%excess TOC>=200' above 9.625" shoe.

25) Proposed borehole conditioning procedures:

Conductor - The hole is drilled w/ air and casing is run on air. Apart from insuring hole is clean via air circulation at TD, there are no other conditioning procedures. Freshwater/Surface- The hole is drilled w/air or Freshwater based mud and casing is run on air. Once casing is at setting depth, fill with KCl water circulate a minimum of one hole volume prior to pumping cement. First Intermediate- Drilled on Air. Once casing is at a setting depth, circulate a minimum of one hole volume prior to pumping cement. Second Intermediate - Drilled on air. Fill with salt saturated water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement. Production- drilled on +/- 14.8ppg SOBMs. Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate minimum of one hole volume prior to pumping cement.

*Note: Attach additional sheets as needed.

Surface Hole Section (Air)

Objective

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Successfully drill surface hole to 30' above the Pittsburgh Coal while staying within the maximum allowable deviation specified in the coal letter. Run either a gyro or directional survey depending on the requirements of the company operating the mines (See well specific data sheet). If within the maximum allowable deviation at 30' above the coal, continue drilling surface hole to section TD and cement casing back to cover all coal zones. If deviation is $>0.5^\circ$ for two surveys, notify APP Drilling Superintendent. Run CBL log to meet requirement after WOC 24 hours. Casing shoe for this section must be at least 30' below base of coal.

Intermediate Phase (Air)

Objective

Successfully drill intermediate hole through the gas storage interval to section TD. Casing and cement must cover tlf time permits run CBL log on the 9-5/8" and provide results to APP Engineers

Potential Hazards

- Stuck pipe due to inadequate hole cleaning, errors made during connections or red clays.
- Gas kick in storage zone with air filled wellbore.
- Loading the hole with cuttings (insufficient air volume)
- Bit balling / mud rings
- Deviation

8.75" Vertical/Tangent Section

Objective

Run CBL on 9-5/8" section and send results to Jim Amos with NiSource for approval if not already done. Displace hole with 8.0ppg SOBMs, test casing, drill out 9.625" shoe track after approval has been granted from NiSource, drill 10' new formation and perform FIT to 13ppg eq, drill vertically to KOP1, KO and drill tangent section to KOP2 with minimal tortuosity. If well plan is vertical to curve KOP, directionally drill as necessary to maintain inclination $<2^\circ$ and manage all AC concerns. Ensure hole is clean prior to displacing hole to 12.5ppg SOBMs and TOOHS for curve assembly. (If drilling a pilot well, see notes under Pilot Well at the end of this section)

Mud

First section on fluid before Point Pleasant

MW:	13.6
YP	18 - 25
6 RPM	6 - 10
Chlorides	160K - 180K
LGS	<3%
Fluid Loss	6 - 8
pH	9.5 - 10
pf	0.2
MW at Marcellus top	14.3-14.4
YP	18 - 25
6 RPM	8 - 10
Chlorides	160K - 180K
LGS	<3%
Fluid Loss	6 - 8
pH	9.5 - 10
pf	0.5
MW at TD:	14.4-14.5
MW to POOH:	14.4-14.5

Second section on fluid at landing point and lateral

Mud weight increased at TD

Never add slurry mud to the active pits. Prior to adding slurry to the active pits, weight mud up and bring fluid up to the same rheology as the fluid in the pits. Then bleed fluid over to the active system slowly.

- Prior to bringing fluid out of storage, check fluid for weight, FV, PV, and YP. This will allow the mud engineer to determine a treatment for the fluid being added to the system.
- Pay attention for signs of seepage, add preventative LCM sweeps. Pump 10 bbl LCM sweeps 25 ppb (10-15 ppb Tiger Bullets, 10-20 ppb Vinseal F, 10-20 ppb Safe Carb 250, 10-15 ppb G-Seal Plus) as needed.
- If needed for hole cleaning pump viscous sweeps if inclination less than 30 degrees. Above 30 degrees inclination use weighted sweeps **only if the APP Rig Engineer approves of the operation first.**
- For hole cleaning, maintain rotary RPM and flow rate.
- Run all available solids control equipment to prevent solids build-up. Use finest mesh screens possible on shale shakers ("screened up"). Use centrifuge for barite recovery
- Calcium chloride to control salinity. HTHP will be controlled with Versatrol M
- Prior to tripping (for bit trip or casing), model well with "TripPro" to avoid surge / swab.
- Ensure hole is clean before TOOH.

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Additives for Drilling Medium

CALCIUM CHLORIDE POWDER
CARBO TEC
CARBO-GEL 2
CARBO-TEC S
ECCO-BLOK
LIME
MIL-CARB TM
MIL-CLEAN
MIL-SEAL
NEXT BASE eC
NEXT DRILL
NEXT-HOLD
NEXT-MUL
OMNI-COTE
MIL-BAR
NEXT-MUL HT
SODA ASH
POTASSIUM CHLORIDE



DRILLING WELL PLAN

**Casterly Rock-1UH
Utica Horizontal
Marshall Co, WV**

Horizontal Well Plan with Cemented Long String Completion

HOLE	RIG	CASING	GEOLOGY	Top TVD	MD	MUD	CEMENT	DIRECTIONAL	LOGS	BITS	COMMENTS
36"	Conductor Rig	30" 81.3# LS				AIR	To Surface	N/A	N/A		Stabilize surface fill/soil
			Conductor	60	60						
24"	Top-Hole	20" 94# J-55 BTC	Sewickley Coal	625		AIR	15.6ppg to surface 521sx w/ 30% OH excess	20" Air Hammer Totco at TD	CBL Log Cased hole NPHI, GR at Pilot TD in Pilot Well only	Carbide hammer bit	Protect fresh groundwater
			Pittsburgh Coal	825							
			Surf. Casing	1225	1225						
17.5"	Top-Hole	13-3/8" 54.5# J-55 BTC	Big Lime	1695	1611	AIR	15.2ppg to surface 556sx w/ 30% OH excess	Center Rock 15" Air Hammer Gyro above Coal, (Mine Approval) Totco at TD		Hammer bit w/ diamond gage Test casing to 800psi	
			Greenbrier Group	1762							
			Big Injun	1811							
			Int. Casing	2111	2111						
12.375" - 12.25"	Horizontal Rig	9-5/8" 43.5# P-110 BTC	Tully LS	6386		AIR	15.4ppg to surface 936sx w/ 30% OH excess	12" Air Hammer Totco every 400ft	MWD surveys Mud Logger - 90 ft samples	Hammer bit w/ full face diamond Test casing to 1000psi	PU cleanout assembly, dress plug, displace to 12.0ppg SOBM, PU Curve BHA, time drill / KO cement plug. Expect Seepage in curve
			Hamilton	6415							
			Cherry Valley	6524							
			Marcellus Shale	6526							
			Onondaga Ls	6560							
			Oriskany Sandstone	6789							
			Salina Group	7373							
			Vernon Shale	8128							
			Lockport Dolomite	8345							
			Clinton Group	9060							
			Medina Group	9132							
Queenston Shale	9312	10112									
	Int. Casing	9712									
8.5" Curve/Lateral	Horizontal Rig	5-1/2" 23# HCP-110 BPN	Utica Shale	11212		+/- 14.5 ppg SOB	14.8ppg TOC >= 200" Above 9.625 shoe 3841sx w/ 15% OH excess	6.75" PDM & MWD 2.38° ADJ Bend (10° Build DLS)	MWD Surveys Mud Logger - 30 ft samples (Curve) 90 ft samples (Lateral)	PDC 5 - 25 WOB 100 - 120 RPM 450 - 500 GPM	Geosteering
			Point Pleasant Formation	11395							
			Curve LP								
			TARGET								
	Production Casing										

8.5 Hole - Cemented Long String 5-1/2" 23# HCP-110 BPN

Lateral Targets	Landing Point 11395 TVD 11844 MD	90.5 degrees	8427 ft Lateral Length	90.5 Inc 325 Az	Total Depth 11395 TVD 20271 TD
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Objective

To successfully drill the lateral section, geo-steering as needed, to target depth to produce a useable wellbore to gather information and provide long-term production.

Potential Hazards

- Differential sticking
- Lost circulation
- Kicks while drilling / tripping
- Loading the hole with cuttings
- Sloughing shale and/or wellbore instability
- Tight hole
- Bit balling.

Drilling Procedure

1. Hold BOP drills each tour and record in IADC book, Pason and Peloton report. If drill is under 2 minutes, then hold drills once a week per crew.
2. Determine slow pump rates on each tour and record on Pason, Peloton report, and post on rig floor or every 1000 ft.
3. Ensure all drilling tools and equipment are on the rig, checked out, and in serviceable condition. Check the OD/ID of all down hole equipment.
4. Ensure Directional Driller double checks directional plan and verifies all hard lines. Ensure MWD is set up for flow rates. TD will be called based on a 100' safety factor from lease line.
5. If the BHA used to drill the curve phase is not capable of drilling the lateral phase, then TIH with the lateral BHA specified in the data sheet provided.
6. When tripping in the hole with the MWD and Gamma Ray fill the drill string with clean mud (no LCM) to avoid plugging the MWD. **Utilize all screens to prevent LCM from remaining in the system.**
7. Drill lateral section from landing point to TD:
 - a. Wellsite is given the allowance of +/- 5 ft of the target line, beyond +/- 5 ft the superintendent and the drilling engineer shall be notified.
 - b. Take frequent mud checks, closely maintain rheology per **Mi-Swaco** mud program.
 - c. Clean mud across shakers and centrifuge mud (Do not jet away). Move mud volume around in order to jet and clean pits.

- d. Have mud logger take samples at **90 foot** intervals or as required by geologist. Ensure Mudlogger communicates sample descriptions to Geologist frequently.
 - e. Drill the lateral section with directional MWD/GR package.
 - f. Ensure geologist and engineer receives GR and directional updates **every stand**.
 - g. Drill the line unless target change is issued by APP Geologist or Engineer.
 - h. If slack off weight is less than 95klbs in the lateral section, immediately stop and circulate bottoms up with rotation to avoid buckling the pipe.
 - i. Ream each connection as required.
 - j. Record torque, rotating string weight, PU and slack-off weights at each connection on drilling trend sheet and compare to predicted trends. Any divergence may indicate a hole cleaning problem.
 - k. Use solids control equipment to control mud weight. Unless required for well control purposes, do not allow mud weight to exceed **12.5ppg (keep as low as possible)**. Losses are expected at **14.0 ppg**.
 - l. If hole conditions indicate, perform a short trip back to the heel.
8. After TD of the lateral section has been reached:
- a. Circulate a minimum of 6x bottoms up or until shakers clean up at maximum allowable flow rates and RPM, reciprocating the drill string. Monitor shakers for quantity and quality of cuttings to surface. If cuttings content is high, continue to circulate until well cleans up, pumping additional sweeps if required. Do not shut down rotary or pumps until the sweep reaches the surface. If cutting size or shape change, contact Drilling Engineer as this may indicate a change in hole conditions. While circulating, POOH 1 stand every 30 minutes to prevent localized washout.
 - b. TOOH to base of curve w/out pumps or rotation to 100-ft to 50-ft outside landing point in the lateral section. **Do not wash and ream**. If tight spots are encountered, always assume it to be cuttings related. RIH with BHA two stands and circulate at maximum allowable pump rate and rpm for a minimum of 30 minutes, then continue to TOOH w/o pumps and rotation. If tight spot has moved up hole assume the cuttings bed is moving up hole. RIH with BHA two stands and circulate at maximum allowable pump rate and rpm for a minimum of 2-3 bottoms up. If tight spot has not moved up hole, pump out of hole. When pumping out of hole consideration should be given to artificially high cuttings buildup ahead of the BHA. Pump weighted & LCM sweeps as needed.

- c. At base of curve, pump sweeps at maximum allowable flow rates and rpm as per above procedure until hole completely cleans up. Pump weighted & LCM sweeps as needed.
 - d. Pump slug and check for flow.
 - e. SLM out of hole with lateral drilling assembly. **PULL WEAR BUSHING ON TOO**H. Notify Drilling Superintendent and Drilling Engineer if any tight hole is encountered, then RIH with BHA two stands and circulate as per above procedure.
9. LD directional tools; if torque & drag indicates hole issues then prepare for a clean out run.

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09/21/2018

Allied Material Name CCAC (Class A Common)	Fresh Water Protection String: Additive (Material) Type	Cement Additives Additive (Material) Description	CAS #
CA-100	Base Cement Accelerator	Grey powder White, flake	65997-15-1 10043-52-4 7447-40-7 7732-18-5 7647-14-5

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DRILLING WELL PLAN

Casterly Rock-1UH
Utica Horizontal
Marshall Co, WV

Horizontal Well Plan with Cemented Long String Completion

HOLE	RIG	CASING	GEOLOGY	Top TVD	MD	MUD	CEMENT	DIRECTIONAL	LOGS	BITS	COMMENTS
36"	Conductor Rig	30" 81.3# LS				AIR	To Surface	N/A	N/A		Stabilize surface fill/soil
			Conductor	60	60						
24"	Top-Hole	20" 94# J-55 BTC	Sewickley Coal	625		AIR	15.8ppg to surface 521sx w/ 30% OH excess	20" Air Hammer Totco at TD	CBL Log Cased hole NPHI, GR at Pilot TD in Pilot Well only	Carbide hammer bit	Protect fresh groundwater
			Pittsburgh Coal	825							
			Surf. Casing	1225	1225						
17.5"	Top-Hole	13-3/8" 54.5# J-55 BTC	Big Lime	1695	1811	AIR	15.2ppg to surface 556sx w/ 30% OH excess	Center Rock 15" Air Hammer Gyro above Coal, (Mine Approval) Totco at TD		Hammer bit w/ diamond gage Test casing to 800psi	
			Greenbrier Group	1762							
			Big Injun	1811							
			Int. Casing	2111	2111						
12.375" - 12.25"	Horizontal Rig	9-5/8" 43.5# P-110 BTC	Tully LS	6386		AIR	15.4ppg to surface 936sx w/ 30% OH excess	12" Air Hammer Totco every 400ft	MWD surveys Mud Logger - 90 ft samples	Hammer bit w/ full face diamond Test casing to 1000psi	PU cleanout assembly, dress plug, displace to 12.0ppg SOBM, PU Curve BHA, time drill / KO cement plug. Expect Seepage in curve
			Hamilton	6415							
			Cherry Valley	6524							
			Marcellus Shale	6526							
			Onondaga Ls	6560							
			Oriskany Sandstone	6789							
			Salina Group	7373							
			Vernon Shale	8128							
			Lockport Dolomite	8345							
			Clinton Group	9060							
			Medina Group	9132							
			Queenston Shale	9312	10112						
Int. Casing	9712										
8.5" Curve/Lateral	Horizontal Rig	5-1/2" 23# HCP-110 BPN	Utica Shale	11212		- +/- 14.5 ppg SOB	14.8ppg TOC >= 200' Above 9.625 shoe 3841sx w/ 15% OH excess	6.75" PDM & MWD 2.38" ADJ Bend (10° Build DLS)	MWD Surveys Mud Logger - 30 ft samples (Curve) 90 ft samples (Lateral)	PDC 5 - 25 WOB 100 - 120 RPM 450 - 500 GPM	Geosteering
			Point Pleasant Formation	11395							
			Curve LP								
			TARGET								
			Production Casing								

8.5 Hole - Cemented Long String 5-1/2" 23# HCP-110 BPN

Lateral Targets	Landing Point 11395 TVD 11844 MD	90.5 degrees	8427 ft Lateral Length	90.5 Inc 325 Az	Total Depth 11395 TVD 20271 TD
-----------------	--	--------------	------------------------------	--------------------	-----------------------------------

Handwritten signature and date: 5/21/18

WW-9
(4/16)

4705102047

09/21/2018

API Number 47 - 051 - _____
Operator's Well No. Casterly Rock-1UH (CRN1-UH)

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name American Petroleum Partners Operating, LLC OP Code 494521257

Watershed (HUC 10) Short Creek-Ohio River, Upper Ohio South Quadrangle Moundsville

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
- Underground Injection (UIC Permit Number See attached sheet)
- Reuse (at API Number at next anticipated well)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Yes

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air/water based mud through intermediate then SOB/M

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

Additives to be used in drilling medium? See attached sheet with list.

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Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill - See attached sheet

MAY 14 2018

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

-Landfill or offsite name/permit number? See Attached Sheet

WV Department of
Environmental Protection

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 August 1, 2005, 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 *Braulio Silva* 05-03-2018

Company Official (Typed Name) Braulio Silva

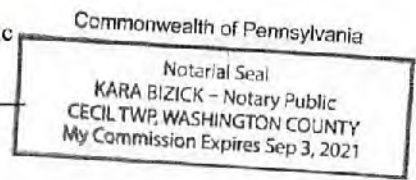
Company Official Title Vice President - Drilling

Subscribed and sworn before me this 7 day of May, 20 18

Kara Bizick

Notary Public

My commission expires 9/3/2021



American Petroleum Partners Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 22.5 Prevegetation pH 6.0

Lime 2-3 Tons/acre or to correct to pH _____

Fertilizer type 10-20-20 or Equal

Fertilizer amount 500 lbs/acre

Mulch Hay or Straw at 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Rye Grass	40	Crownvetch	10-15
Filed Bromegrass	40	Tall Fescue	30
Spring Oats	96	Perennial Ryegrass	20

*Refer to attached Reclamation Plan for further detail.

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, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jim Melcher*

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Comments: _____

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WV Department of
Environmental Protection

Title: WV DEP Oil and Gas Inspector

Date: 5/2/18

Field Reviewed? Yes

No

4705102047

Cuttings Disposal/Site Water

Cuttings –Haul off Company:

Eap Industries, Inc. DOT # 0876278
1575 Smith Two State Rd. Atlasburg, PA 15004
1-888-294-5227

09/21/2018

Waste Management
200 Rangos Lane
Washington, PA 15301
724-222-3272

Environmental Coordination Services & Recycling (ECS&R)
3237 US Highway 19
Cochranon, PA 16314
814-425-7773

Disposal Locations:

Apex Environnemental, LLC Permit # 06-08438
11 County Road 78
Amsterdam, OH 43903
740-543-4389

Westmoreland Waste, LLC Permit # 100277
111 Conner Lane
Belle Vernon, PA 15012
724-929-7694

Sycamore Landfill Inc. Permit #R30-079001 05-2010
4301 Sycamore Ridge Road
Hurricane, WV 25526
304-562-2611

Max Environnemental Technologies, Inc. Facility Permit # PAD004835146 / 301071
233 Max Lane
Yukon, PA 25968
724-722-3500

Max Environnemental Technologies, Inc. Facility Permit # PAD05087072 / 301359
200 Max Drive
Bulger, PA 15019
724-796-1571

Waste Management Kelly Run Permit # 100663
1901 Park Side Drive
Elizabeth, PA 15037
412-384-7569

Waste Management South Hills (Arnoni) Permit # 100592
3100 Hill Road
Library, PA 15129
724-348-7013
412-384-7569

Waste Management Arden Permit # 100172
200 Rangos Lane
Washington, PA 15301
724-222-3272

Waste Management Meadowfill Permit # 1032
1488 Dawson Drive
Bridgeport, WV 26330

Brooke County Landfill Permit # SWF-103-97 / WV 0109029
Rd 2 Box 410
Colliers, WV 26035
304-748-0014

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Wetzel County Landfill Permit # SWF-1021-97 / WV 0109185
Rt 1 Box 156A
New Martinsville, WV 26035
304-455-3800

09/21/2018

Energy Solutions, LLC Permit # UT 2300249
423 West 300 South
Suite 200
Salt Lake City, UT 84101

Energy Solutions Services, Inc. Permit # R-73006-L24
1560 Bear Creek Road
Oak Ridge, TN 37830

Northern A-1 Environmental Services Permit ID MID020906814
3947 US 131 North, PO Box 1030
Kalkaska, MI 49646
231-258-9961

Water Haul off Companies:

Dynamic Structures, Clear Creek DOT # 720485
3790 State Route 7
New Waterford, OH 44445
330-892-0164

CMS of Delaware Inc. DBA CMS Oilfield Serv
301 Commerce Drive
Moorestown, NJ 08057

Nabors Completion & Production Services Co.
PO Box 975682
Dallas, TX 75397-5682

Force, Inc.
1380 Rte. 286 Hwy. E, Suite 303
Indiana, PA 15701

Select Energy Services, LLC
PO Box 203997
Dallas, TX 75320-3997

Solo Construction
P.O. Box 544
St. Mary's, WV 26170

Nuverra Environmental Solutions
11942 Veterans Memorial Highway
Masontown, WV 26542

Equipment Transport
1 Tyler Court
Carlisle, PA 17015

Mustang Oilfield Services LLC
PO Box 739
St. Clairsville, OH 43950

Myers Well Service, Inc.
2001 Ballpark Court
Export, PA 15632

Wilson's Outdoor Services, LLC
456 Cracraft Road
Washington, PA 15301

Burns Drilling & Excavating
618 Crabapple Road P.O. Box 41
Wind Ridge, PA 15380

Disposal Locations:

Solidification
Waste Management, Arden Landfill Permit # 100172
200 Rangos Lane
Washington, PA 15301
724-225-1589

Nichlos 1-A (SWIW #13)
Permit # 3862
300 Cherrington Pkwy, Suite 200
Coraopolis, PA 15108
412-329-7275

Solidification/Incineration
Soil Remediation, Inc. Permit # 02-20753
6065 Arrel-Smith Road
Lowelville, OH 44436
330-536-6825

Groselle (SWIW #34)
Permit # 4096
Rt. 88
Garrettsville, OH
713-275-4816

Adams #1 (Buckeye Brine, LLC)
Permit # 34-031-2-7177
23986 Airport Road
Coshocton, OH 43812
740-575-4484
512-478-6545

Kemble 1-D Well
Permit # 8780
7675 East Pike
Norwich, Oh 43767
614-648-8898
740-796-6495

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Adams #2 (Buckeye Brine, LLC)
2205 Westover Road
Austin Tx 78703
Permit # 34-031-2-7178
740-575-4484
512-478-6545

Adams #3 (Buckeye Brine, LLC)
Permit #34-031-2-7241-00-00
2630 Exposition, Suite 117
Austin, TX 78703
512-478-6545

Mozena #1 Well (SWIW # 13)
Permit # 34-157-2-5511-00-00
5367 E. State Street
Newcomerstown, OH 43832
740-763-3966

Goff SWD #1 (SWIW # 27)
Permit # 34-119-2-8776-000
300 Cherrington Pkwy, Suite 200
Coraopolis, PA 15108
412-329-7275

SOS D#1 (SWIW #12)
Permit # 34-059-2-4202-00-00
Silcor Oilfield Services, Inc.
2939 Hubbard Road
Youngstown, PH 44505

Dudley #1 UIC (SWIW #1)
Permit # 34-121-2-2459-00-00
Select Energy Services, LLC
7994 S. Pleasants Hwy
St. Marys, WV 26170
304-665-2652

OH UIC #1 Buckeye UIC Barnesville 1 & 2
CNX Gas Company, LLC
1000 Consol Energy Drive
Permit # 34-013-2-0609-00-00
Permit # 34-013-2-0614-00-00
304-323-6568

09/21/2018

US Steele 11385
Permit # 47-001-00561
200 Evergreen Drive
Waynesburg, PA 15730
304-323-6568

Chapin #7 UIC (SWIW #7)
Permit # 34-083-2-4137-00-00
Elkhead Gas & Oil Company
12163 Marne Rd. NE
Newark, OH 43055
740-763-3966

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4705102047

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Additives for Drilling Medium

**CALCIUM CHLORIDE POWDER
CARBO TEC
CARBO-GEL 2
CARBO-TEC S
ECCO-BLOK
LIME
MIL-CARB TM
MIL-CLEAN
MIL-SEAL
NEXT BASE eC
NEXT DRILL
NEXT-HOLD
NEXT-MUL
OMNI-COTE
MIL-BAR
NEXT-MUL HT
SODA ASH
POTASSIUM CHLORIDE**

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MAY 14 2018

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Environmental Protection**

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4705102047
09/21/2018

MAY 16 2018

WW-6AW
(1-12)

WV Department of
Environmental Protection

API NO. 47-051-02047
OPERATOR WELL NO. Casterly Rock 1UH
Well Pad Name: Casterly Rock

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
VOLUNTARY STATEMENT OF NO OBJECTION

Instructions to Persons Named on Page WW-6A

The well operator named on page WW-6A is applying for a permit from the State of West Virginia to conduct oil or gas well work. Well work permits are valid for twenty-four (24) months. Please contact the listed well operator and the Office of Oil and Gas if you do not own any interest in the listed surface tract.

Comment and Waiver Provisions

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary.

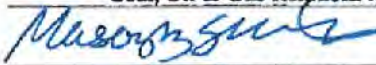
Pursuant to West Virginia Code § 22-6A-8(b) No permit may be issued less than thirty days after the filing date of the application for any well work except plugging or replugging; and no permit for plugging or replugging may be issued less than five days after the filing date of the application except a permit for plugging or replugging a dry hole: *Provided*, That if the applicant certifies that all persons entitled to notice of the application under the provisions of subsection (b), section ten of this article have been served in person or by certified mail, return receipt requested, with a copy of the well work application, including the erosion and sediment control plan, if required, and the well plat, and further files written statements of no objection by all such persons, the secretary may issue the well work permit at any time.

VOLUNTARY STATEMENT OF NO OBJECTION

I, Mason Smith, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State:	<u>West Virginia</u>	West Virginia	East:	<u>1,673,303.753 ft</u>
County:	<u>Marshall</u>	North State Plane	North:	<u>536,196.967 ft</u>
District:	<u>Union</u>	NAD 27	Public Road Access:	_____
Quadrangle:	<u>Moundsville</u>	Generally used farm name:	<u>Casterly Rock</u>	_____
Watershed:	<u>Short Creek, Ohio River</u>			

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials, **provided that American Petroleum Partners Operating, LLC. drills the well on West Virginia North State Plane NAD 27 coordinates of North 536,196.967 ft, East 1,673,303.753 ft in accordance with the Agreement between Consolidation Coal Company, Murray American Energy and American Petroleum Partners Operating, LLC dated 02/18/18.**

*Please check the box that applies <input type="checkbox"/> SURFACE OWNER <input type="checkbox"/> SURFACE OWNER (Road and/or Other Disturbance) <input type="checkbox"/> SURFACE OWNER (Impoundments/Pits) <input checked="" type="checkbox"/> COAL OWNER OR LESSEE <input checked="" type="checkbox"/> COAL OPERATOR <input type="checkbox"/> WATER PURVEYOR <input type="checkbox"/> OPERATOR OF ANY NATURAL GAS STORAGE FIELD	FOR EXECUTION BY A NATURAL PERSON Signature: _____ Print Name: _____ Date: _____
	FOR EXECUTION BY A CORPORATION, ETC. Company: <u>Consolidation Coal Company</u> By: <u>Mason Smith</u> Its: <u>Coal, Oil & Gas Relations Manager</u> Signature: <u></u> Date: <u>5/16/2018</u>

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as 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 depprivacyofficer@wv.gov

4705102047



Site Safety Plan

**American Petroleum Partners Operating, LLC
Casterly Rock Well Pad**

June 2018: Version 1 *JW 6/18/18*

**For Submission to
West Virginia Department of Environmental Protection,
Office of Oil and Gas**

American Petroleum Partners Operating, LLC
4600 J. Barry Ct
Suite 310
Canonsburg, PA 15317

4705102047

09/21/2018

SCALE BAR: 1"=100'

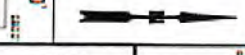


LEGEND
= EVACUATION ROUTE

PREVAILING WIND

PREVAILING WIND

PREVAILING WIND



SCALE BAR: 1"=600'



NO.	REVISIONS	DATE

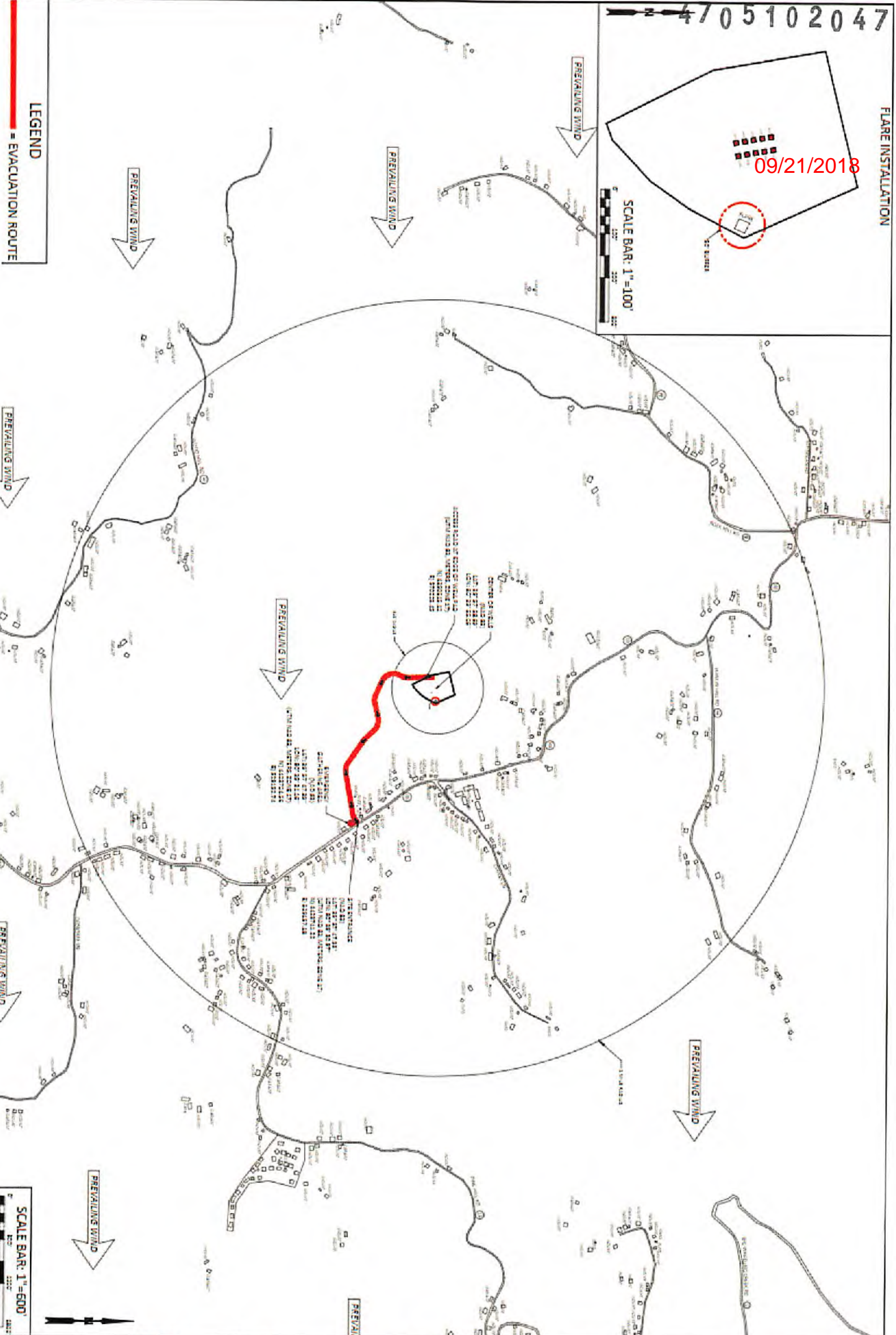
DATE:
FEBRUARY 2018
CASTLE ROCK
WELL PAD
UNION DISTRICT
MARSHALL COUNTY,
WV

EVACUATION ROUTE/PREVAILING WIND

THIS DOCUMENT WAS PREPARED BY:
BOORD, BENCHEK AND ASSOC., INC.
FOR: AMERICAN PETROLEUM PARTNERS OPERATING, LLC.

BOORD, BENCHEK and ASSOC., INC.
Engineering, Surveying, Construction,
and Mining Services

Southpointe, PA 15317 Phone: 724-746-1055



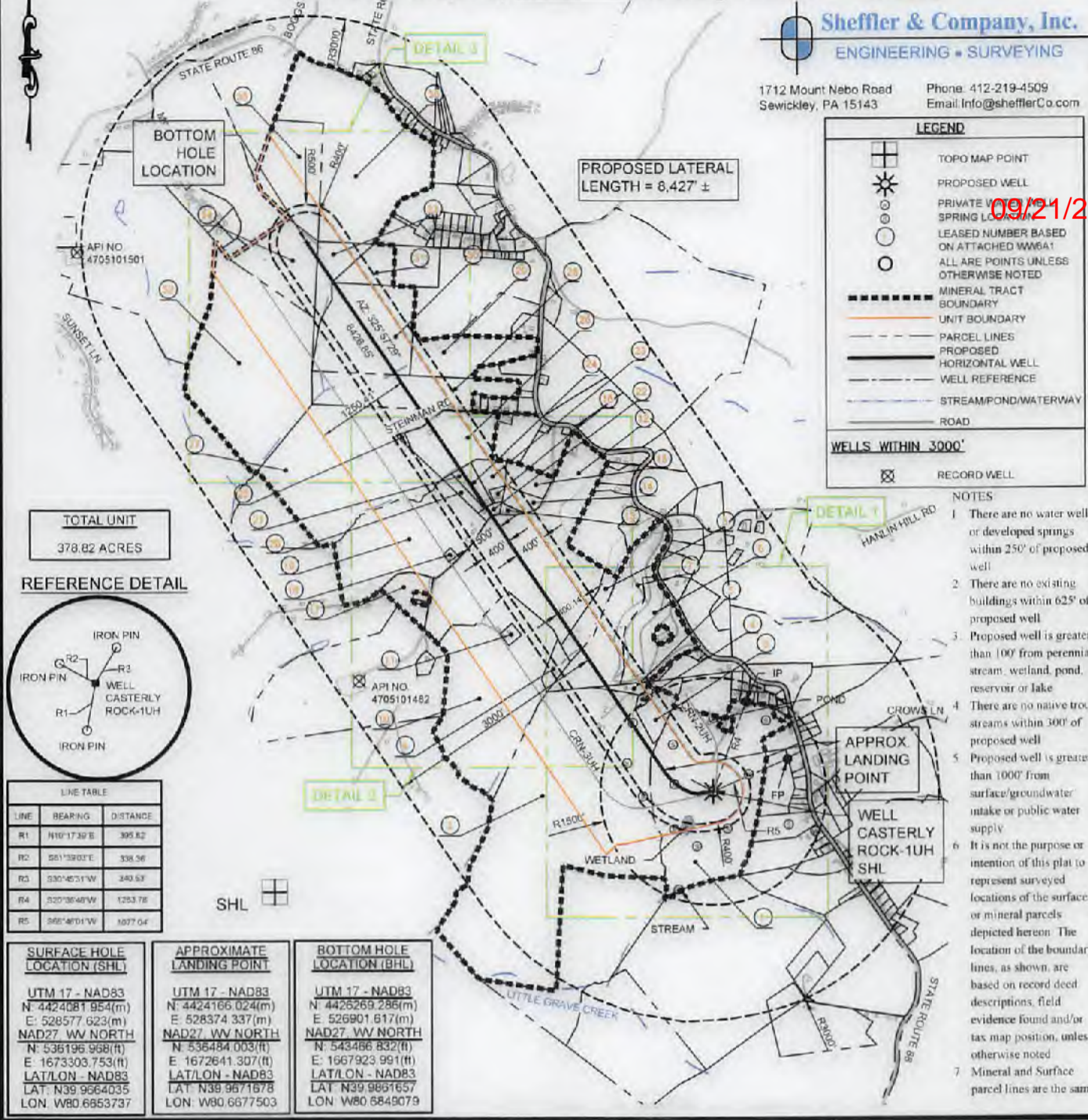
Well is located on topo map 12.238 feet south of Latitude: 40° 00' 00"

Sheffler & Company, Inc.
ENGINEERING • SURVEYING

1712 Mount Nebo Road Phone: 412-219-4509
Sewickley, PA 15143 Email: info@shefflerCo.com

Well is located on topo map 11.316 feet west of Longitude: 80° 37' 30"

09/21/2018

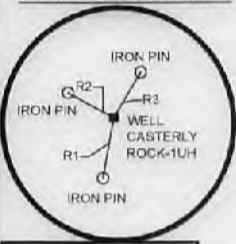


LEGEND	
	TOPO MAP POINT
	PROPOSED WELL
	PRIVATE WELL
	SPRING LOCATION
	LEASED NUMBER BASED ON ATTACHED WWSAT
	ALL ARE POINTS UNLESS OTHERWISE NOTED
	MINERAL TRACT BOUNDARY
	UNIT BOUNDARY
	PARCEL LINES
	PROPOSED HORIZONTAL WELL
	WELL REFERENCE
	STREAM/POND/WATERWAY
	ROAD
WELLS WITHIN 3000'	
	RECORD WELL

- NOTES**
- There are no water wells or developed springs within 250' of proposed well
 - There are no existing buildings within 625' 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
 - Mineral and Surface parcel lines are the same

TOTAL UNIT
378.82 ACRES

REFERENCE DETAIL



LINE	BEARING	DISTANCE
R1	N89°17'39"E	395.82
R2	S51°39'01"E	338.56
R3	S30°40'51"W	340.53
R4	S20°38'40"W	1253.78
R5	S85°48'01"W	1077.04

SURFACE HOLE LOCATION (SHL)
UTM 17 - NAD83
N: 4424081.954(m)
E: 528577.623(m)
NAD27 - WV NORTH
N: 536196.968(ft)
E: 1673303.753(ft)
LAT: N39 9664035
LON: W80 66653737

APPROXIMATE LANDING POINT
UTM 17 - NAD83
N: 4424166.024(m)
E: 528374.337(m)
NAD27 - WV NORTH
N: 536484.003(ft)
E: 1672641.307(ft)
LAT/LON - NAD83
LAT: N39 9671678
LON: W80 6677503

BOTTOM HOLE LOCATION (BHL)
UTM 17 - NAD83
N: 4425269.286(m)
E: 526901.617(m)
NAD27 - WV NORTH
N: 543486.832(ft)
E: 1667923.991(ft)
LAT/LON - NAD83
LAT: N39 9661657
LON: W80 6649079

FILE #: CASTERLY ROCK-1UH
DRAWING #: CRN-1UH_REV3.DWG
SCALE: 1"=2000'
MINIMUM DEGREE OF ACCURACY: 1/2500
PROVEN SOURCE OF ELEVATION: USGS MONUMENT JX0787- 1319.9'

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:

R.P.E.: 21452 L.L.S.: P.S. NO.



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

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

WATERSHED: SHORT CREEK - OHIO RIVER ELEVATION: 1,338.53'
COUNTY/DISTRICT: MARSHALL / UNION QUADRANGLE: MOUNDSVILLE, WV
SURFACE OWNER: LESLIE B. & LORI D. SCHABER ACREAGE: 71.75
OIL & GAS ROYALTY OWNER: CAROL A. WENSYEL A/K/A CAROL A. MILLER, ACTING AS TRUSTEE FOR THE CAROL A. WENSYEL IRREVOCABLE TRUST DATED OCTOBER 28, 2010 AND JOHN F. MILLER, SR. TRUSTEE OF THE JOHN F. MILLER, SR. IRREVOCABLE TRUST, DATED OCTOBER 28, 2010. TRUST ACREAGE: 73.74

DATE: May 22, 2018 - REV ---
OPERATOR'S WELL #: CASTERLY ROCK-1UH
API WELL # 47 051 D2047H16A
STATE COUNTY PERMIT

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

TARGET FORMATION: POINT PLEASANT ESTIMATED DEPTH: TVD: 11,395' ± TMD: 20,271.09' ±
WELL OPERATOR: AMERICAN PETROLEUM PARTNERS, LLC DESIGNATED AGENT: STEVEN GREEN
Address: 4600 J. BARRY COURT, SUITE 310 Address: 300 SUMMERS ST, SUITE 1000
City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

Well is located on topo map 5,040 feet south of Latitude: 40° 00' 00"



1712 Mount Nebo Road
Sewickley, PA 15143

Phone: 412-219-4509
Email: Info@shefflerCo.com

Well is located on topo map 5,111 feet west of Longitude: 80° 40' 00"

09/21/2018



FILE #: CASTERLY ROCK-1UH
DRAWING #: CRN-1UH_REV3.DWG
SCALE: 1"=2000'
MINIMUM DEGREE OF ACCURACY: 1/2500
PROVEN SOURCE: USGS MONUMENT
OF ELEVATION: JX0787 - 1319.9'

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: [Signature]
R.P.E.: 21452 L.L.S.: P.S. NO. _____



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



DATE: May 22, 2018 --- REV ---
OPERATOR'S WELL #: CASTERLY ROCK-1UH
API WELL # 47 051 02047H6A
STATE COUNTY PERMIT

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

WATERSHED: SHORT CREEK - OHIO RIVER ELEVATION: 1,338.53'
COUNTY/DISTRICT: MARSHALL / UNION QUADRANGLE: MOUNDSVILLE, WV
SURFACE OWNER: LESLIE B. & LORI D. SCHABER ACREAGE: 71.75
OIL & GAS ROYALTY OWNER: CAROL A. WENSYEL A/K/A CAROL A. MILLER, ACTING AS TRUSTEE FOR THE CAROL A. WENSYEL IRREVOCABLE TRUST DATED OCTOBER 28, 2010
AND JOHN F. MILLER, SR. TRUSTEE OF THE JOHN F. MILLER, SR. IRREVOCABLE TRUST, DATED OCTOBER 28, 2010. ACREAGE: 73.74

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

TARGET FORMATION: POINT PLEASANT ESTIMATED DEPTH: TVD: 11,395' ± TMD: 20,271.09' ±
WELL OPERATOR: AMERICAN PETROLEUM PARTNERS, LLC DESIGNATED AGENT: STEVEN GREEN
Address: 4600 J. BARRY COURT, SUITE 310 Address: 300 SUMMERS ST, SUITE 1000
City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301



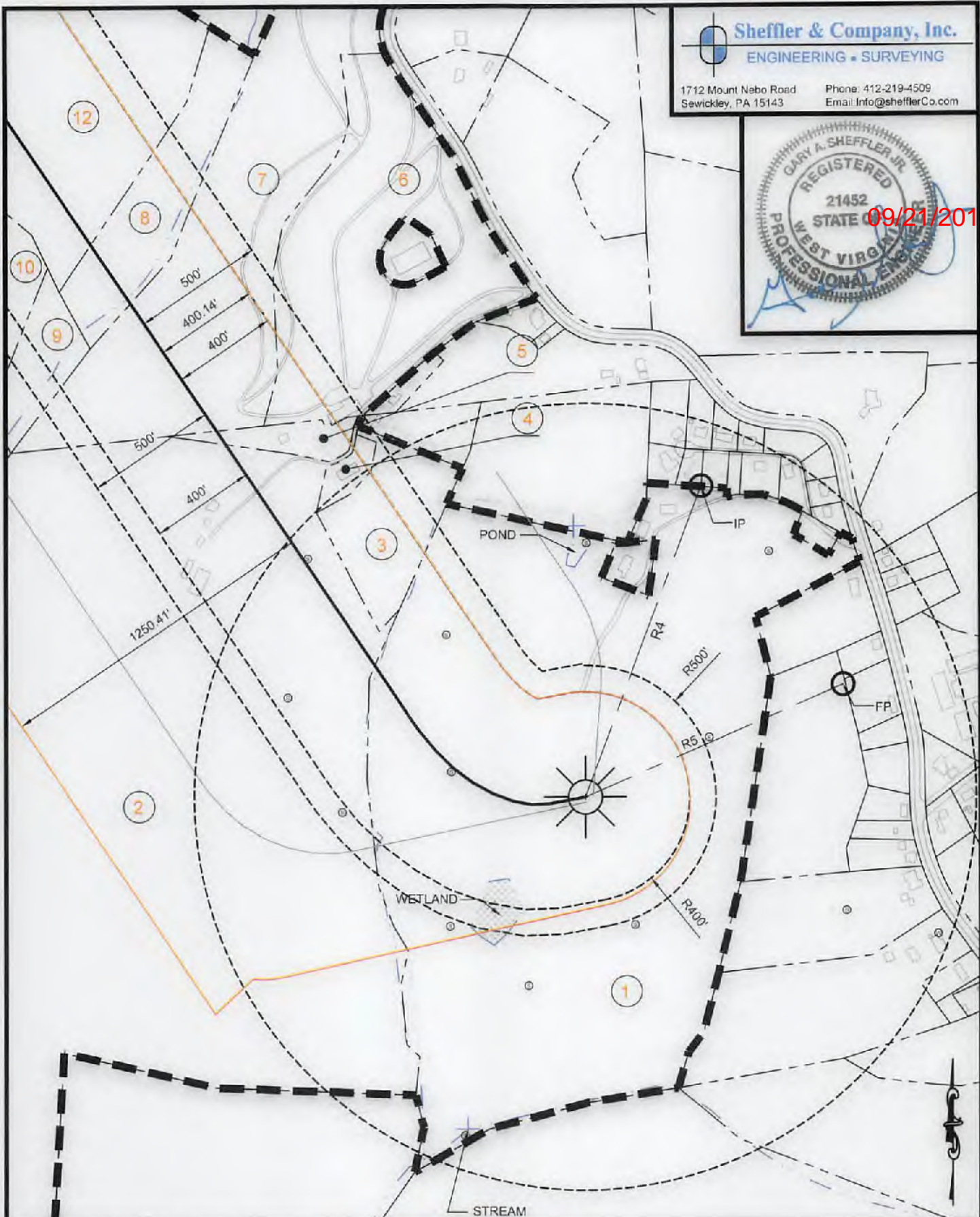
Sheffler & Company, Inc.
ENGINEERING • SURVEYING

1712 Mount Nebo Road
Sewickley, PA 15143

Phone: 412-219-4509
Email: Info@shefflerCo.com



09/21/2018



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



DATE: May 22, 2018 --- REV ---

OPERATOR'S WELL #: CASTERLY ROCK-1UH

API WELL # 47 051 02047H6A
STATE COUNTY PERMIT

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

WATERSHED: SHORT CREEK - OHIO RIVER ELEVATION: 1,338.53'

COUNTY/DISTRICT: MARSHALL / UNION QUADRANGLE: MOUNDSVILLE, WV

SURFACE OWNER: LESLIE B. & LORI D. SCHABER ACREAGE: 71.75

OIL & GAS ROYALTY OWNER: CAROL A. WENSYEL A/K/A CAROL A. MILLER, ACTING AS TRUSTEE FOR THE CAROL A. WENSYEL IRREVOCABLE TRUST DATED OCTOBER 28, 2010 AND JOHN F. MILLER, SR. TRUSTEE OF THE JOHN F. MILLER, SR. IRREVOCABLE TRUST, DATED OCTOBER 28, 2010, TRUST ACREAGE: 73.74

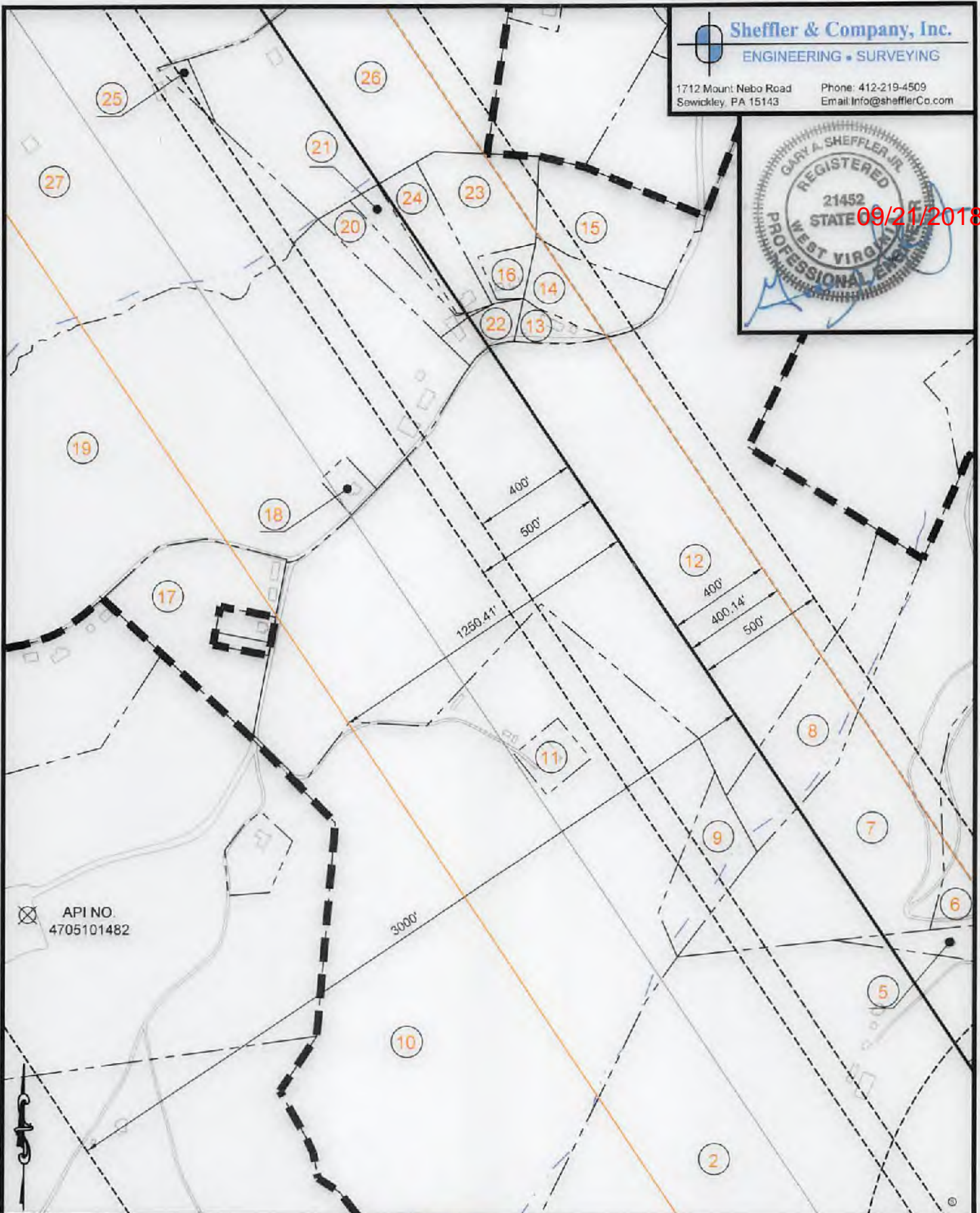
DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON
CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: POINT PLEASANT ESTIMATED DEPTH: TVD: 11,395' ± TMD: 20,271.09' ±

WELL OPERATOR: AMERICAN PETROLEUM PARTNERS, LLC DESIGNATED AGENT: STEVEN GREEN

Address: 4600 J. BARRY COURT, SUITE 310 Address: 300 SUMMERS ST, SUITE 1000

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DATE: May 22, 2018 --- REV ---

OPERATOR'S WELL #: CASTERLY ROCK-1UH

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 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
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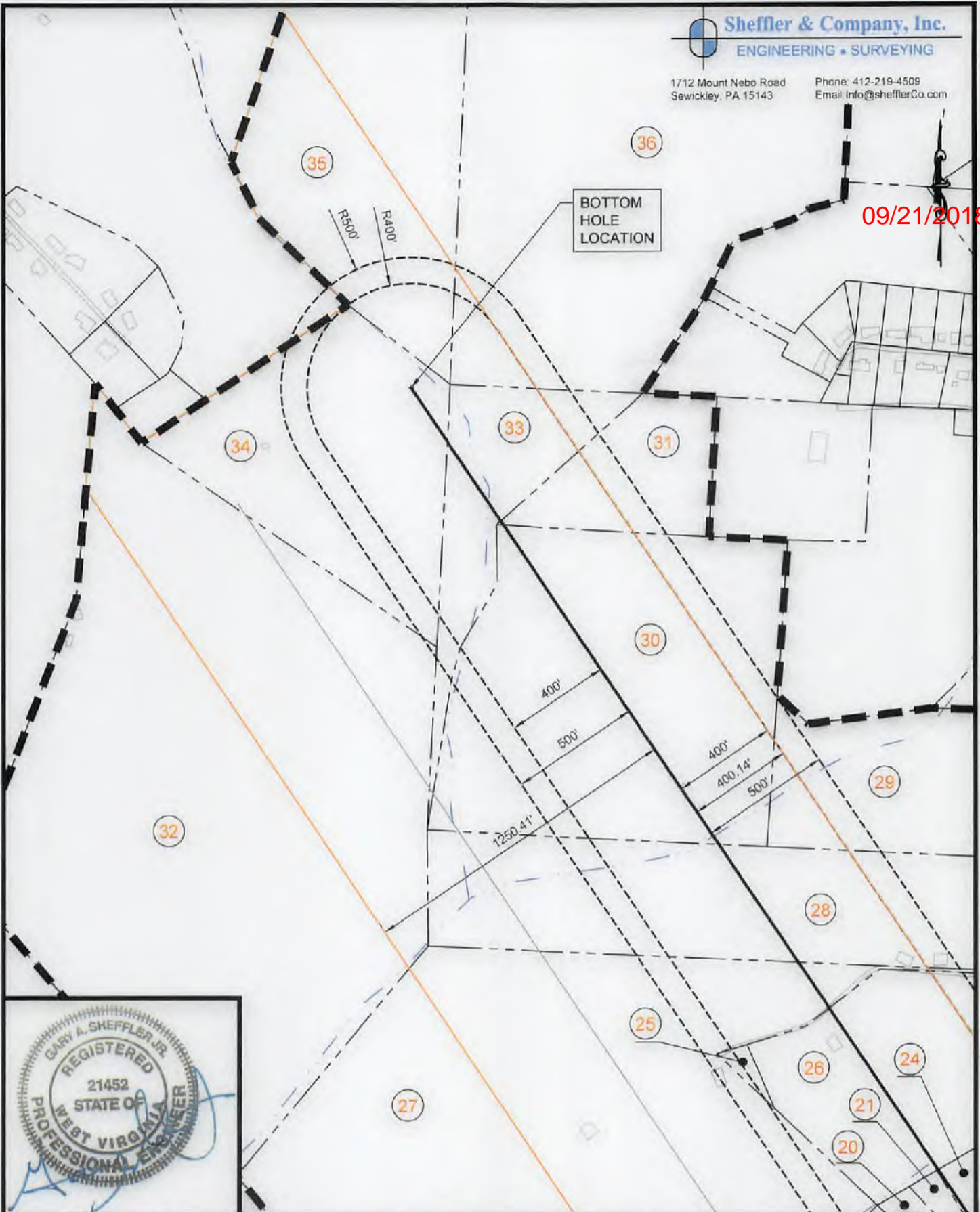
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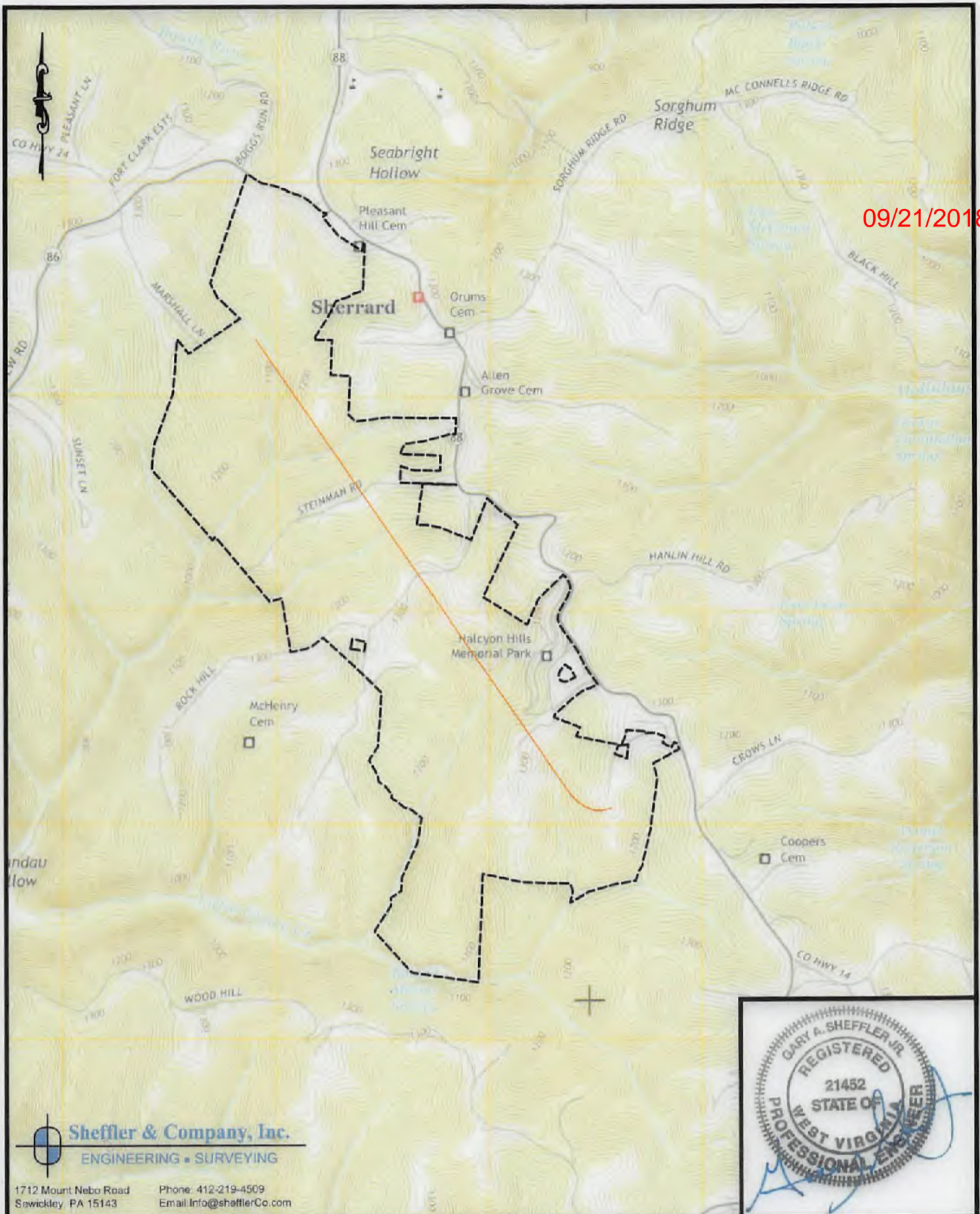
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09/21/2018

1 TAX MAP NO.
13-0013-0010-0000-0000
ASSESSED ACREAGE = 73.79

SURFACE OWNER:
SCHABER, LESLIE B. & LORI D.

MINERAL OWNER:
CAROL A. WENSYEL A/K/A CAROL A. MILLER,
ACTING AS TRUSTEE FOR THE CAROL A. WENSYEL
IRREVOCABLE TRUST DATED OCTOBER 28, 2010

JOHN F. MILLER, SR. TRUSTEE OF THE
JOHN F. MILLER, SR. IRREVOCABLE
TRUST, DATED OCTOBER 28, 2010

2 TAX MAP NO.
13-0013-0009-0000-0000
ASSESSED ACREAGE = 156.14

SURFACE & MINERAL OWNERS:
HELLER, EDGAR

3 TAX MAP NO.
13-0013-0009-0003-0000
ASSESSED ACREAGE = 4.76

SURFACE & MINERAL OWNERS:
JOHN E. KOCH AND
BARBARA A. KOCH

4 TAX MAP NO.
13-0013-0009-0004-0000
ASSESSED ACREAGE = 0.66

SURFACE & MINERAL OWNERS:
JOHN E. KOCH AND
BARBARA A. KOCH

5 TAX MAP NO.
13-0013-0009-0001-0000
ASSESSED ACREAGE = 1.40

SURFACE & MINERAL OWNERS:
ALTMAYER FUNERAL HOMES, INC.

6 TAX MAP NO.
13-0010-0036-0000-0000
ASSESSED ACREAGE = 19.28

SURFACE & MINERAL OWNERS:
CORNERSTONE FAMILY SERVICES
OF WEST VIRGINIA, LLC

7 TAX MAP NO.
13-0010-0037-0000-0000
ASSESSED ACREAGE = 25.0

SURFACE & MINERAL OWNERS:
CORNERSTONE FAMILY SERVICES
OF WEST VIRGINIA, LLC

8 TAX MAP NO.
13-0010-0038-0000-0000
ASSESSED ACREAGE = 6.4

SURFACE & MINERAL OWNERS:
CORNERSTONE FAMILY SERVICES
OF WEST VIRGINIA, LLC

9 TAX MAP NO.
13-0010-0039-0000-0000
ASSESSED ACREAGE = 2.86

SURFACE & MINERAL OWNERS:
CORNERSTONE FAMILY SERVICES
OF WEST VIRGINIA, LLC

10 TAX MAP NO.
13-0010-0040-0000-0000
ASSESSED ACREAGE = 64.11

SURFACE & MINERAL OWNERS:
HILL, MICHAEL W., & JENNIFER S.

11 TAX MAP NO.
13-0010-0040-0001-0000
ASSESSED ACREAGE = 1.00

SURFACE & MINERAL OWNERS:
HILL, MICHAEL W., & JENNIFER S.

12 TAX MAP NO.
13-0010-0006-0002-0000
ASSESSED ACREAGE = 72.18

SURFACE & MINERAL OWNERS:
RANDOLPH, ROBERT A.

13 TAX MAP NO.
13-0010-0007-0003-0000
ASSESSED ACREAGE = 0.49

SURFACE OWNERS:
DEREK M. & ANGELA M. SALATINO

MINERAL OWNERS:
ROBERT LEROY STRAIT JR. AND
DIANE MARY STRAIT

14 TAX MAP NO.
13-0010-0007-0000-0000
ASSESSED ACREAGE = 4.12

SURFACE & MINERAL OWNERS:
DREWS, S. & REBECCA A. BECKETT

15 TAX MAP NO.
13-0010-0012-0000-0000
ASSESSED ACREAGE = 4.41

SURFACE & MINERAL OWNER:
RANDOLPH, PEARLY D.

16 TAX MAP NO.
13-0010-0007-0002-0000
ASSESSED ACREAGE = 0.71

SURFACE & MINERAL OWNERS:
PEGG, RICHARD, & JUDITH E.

17 TAX MAP NO.
13-0010-0041-0000-0000
ASSESSED ACREAGE = 6.14

SURFACE & MINERAL OWNERS:
DECREASE, VINCENT MICHAEL

18 TAX MAP NO.
13-0010-0006-0001-0000
ASSESSED ACREAGE = 0.54

SURFACE OWNERS:
KIMBERLY, JERAMY R.

MINERAL OWNERS:
RANDOLPH, PEARLY D.

19 TAX MAP NO.
13-0010-0006-0000-0000
ASSESSED ACREAGE = 38.00

SURFACE & MINERAL OWNERS:
RANDOLPH, PEARLY D.

20 TAX MAP NO.
13-0010-0007-0005-0000
ASSESSED ACREAGE = 1.78

SURFACE & MINERAL OWNERS:
PEGG, DANNY ALAN, & DEBRA J.

21 TAX MAP NO.
13-0010-0007-0007-0000
ASSESSED ACREAGE = 0.87

SURFACE & MINERAL OWNERS:
PEGG, DANNY ALAN, & DEBRA J.

22 TAX MAP NO.
13-0010-0007-0004-0000
ASSESSED ACREAGE = 0.91

SURFACE & MINERAL OWNERS:
PEGG, DANNY ALAN, & DEBRA J.

23 TAX MAP NO.
13-0010-0007-0006-0000
ASSESSED ACREAGE = 3.37

SURFACE OWNERS:
PEGG, RICHARD ET UX

MINERAL OWNERS:
JUDITH EVELYN PEGG

24 TAX MAP NO.
13-0010-0007-0001-0000
ASSESSED ACREAGE = 2.15

SURFACE OWNERS:
HUGHES, IAN E. & TERESA D.

MINERAL OWNERS:
JESSICA D. KNAPP, NKA
JESSICA D. HUTTON

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City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

30 TAX MAP NO.
13-0010-0008-0002-0000
ASSESSED ACREAGE = 0.32

SURFACE OWNERS:
MCCABE FAMILY TRUST

MINERAL OWNERS:
RESOURCE MINERALS HEADWATER I, LP
DOGWOOD ACRES, LLC

34 TAX MAP NO.
13-0007-0036-0000-0000
ASSESSED ACREAGE = 18.86

SURFACE OWNERS:
GAMBLE, REBECCA C. EST.

MINERAL OWNERS:
AMY J. GAMBLE,
CHARLES RAY MEREDITH,
DOUGLAS I. GAMBLE,
SHELLEY L. TUSKEY,
SHERRY L. GAMBLE,
DONNA SUE KIRCH,
MARTHA ANN MIGLIORINI,
CYNTHIA M. GAMBLE,
KATHRYN J. MERCURIO

09/21/2018

36 TAX MAP NO.
13-0010-0008-0000-0000
ASSESSED ACREAGE = 17.05

SURFACE & MINERAL OWNERS:
KUDLAK, JAMES K. & LORI

38 TAX MAP NO.
13-0007-0038-0000-0000
ASSESSED ACREAGE = 20.00

SURFACE OWNERS:
CALDWELL, JANICE ANN - LIFE

MINERAL OWNERS:
CHARLES W. CALDWELL,
RICHARD J. CALDWELL,
CHRISTIAN A. CALDWELL

32 TAX MAP NO.
13-0010-0005-0000-0000
ASSESSED ACREAGE = 66.00

SURFACE OWNERS:
MCCABE FAMILY TRUST

MINERAL OWNERS:
RESOURCE MINERALS HEADWATER I, LP
DOGWOOD ACRES, LLC

39 TAX MAP NO.
13-0007-0031-0003-0000
ASSESSED ACREAGE = 24.56

SURFACE & MINERAL OWNERS:
PARSONS, CLARENCE E., ET UX.

35 TAX MAP NO.
13-0007-0037-0000-0000
ASSESSED ACREAGE = 67.28

SURFACE OWNERS:
CALDWELL, JANICE ANN - LIFE

MINERAL OWNERS:
CHARLES W. CALDWELL,
RICHARD J. CALDWELL,
CHRISTIAN A. CALDWELL

37 TAX MAP NO.
13-0007-0027-0000-0000
ASSESSED ACREAGE = 16.93

SURFACE OWNERS:
BLACK, ERNEST E. - LIFE

MINERAL OWNERS:
ERNEST ELLSWORTH BLACK (LIFE ESTATE)
SCOTT A. BLACK (REMAINDERMAN)
TIMOTHY JON BLACK (REMAINDERMAN)

33 TAX MAP NO.
13-0007-0032-0000-0000
ASSESSED ACREAGE = 32.90

SURFACE OWNERS:
MERINAR & KOONTZ CO

MINERAL OWNERS:
MERINAR & KOONTZ CO, D/B/A
A-1 AUTO PARTS

31 TAX MAP NO.
13-0007-0034-0000-0000
ASSESSED ACREAGE = 6.87

SURFACE & MINERAL OWNERS:
KAHLBAUGH, DAVID W. & DELORES

32 TAX MAP NO.
13-0010-0003-0000-0000
ASSESSED ACREAGE = 74.00

SURFACE & MINERAL OWNERS:
GINDY L. VARGO,
LINDA S. ELSON,
MARK S. MUSILLI,
PAUL J. MUSILLI

30 TAX MAP NO.
13-0007-0035-0000-0000
ASSESSED ACREAGE = 9.06

SURFACE & MINERAL OWNERS:
GAMBLE, ESTHER M.

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WW-6A1
(5/13)

Operator's Well No. Casterly Rock-1UH (CRN1-UH)

**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 –

- (1) 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 sheet				

**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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Office of Oil and Gas
MAY 14 2018

WV Department of
Environmental Protection

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: American Petroleum Partners Operating, LLC

By: Braulio Silva  05-03-2019

Its: Vice President-Drilling

	LEASE #	LESSOR	CURRENT LESSEE	ROYALTY	MOL RECORDING INFORMATION	TAX PARCEL
1	WV-MAR-0685	Carol A. Wensyel a/k/a Carol A. Miller, acting as Trustee for the Carol A. Wensyel Irrevocable Trust dated October 28, 2010	American Petroleum Partners Operating, LLC	Not less than 1/8	777/21	13-13-10
1	WV-MAR-0686	John F. Miller, Sr. Trustee of the John F. Miller, Sr. Irrevocable Trust, dated October 28, 2010	American Petroleum Partners Operating, LLC	Not less than 1/8	777/30	13-13-10
2	Pending	Edgar Heller	American Petroleum Partners Operating, LLC	Not less than 1/8	879/272	13-13-9
3	WV-MAR-0723	John E. Koch and Barbara A. Koch	American Petroleum Partners Operating, LLC	Not less than 1/8	835/232	13-13-9.3
4	WV-MAR-0723	John E. Koch and Barbara A. Koch	American Petroleum Partners Operating, LLC	Not less than 1/8	835/232	13-13-9.4
5	WV-MAR-0524	Altmeyer Funeral Homes, Inc.	American Petroleum Partners Operating, LLC	Not less than 1/8	938/70	13-13-9.1
6	WV-MAR-0342	Cornerstone Family Services of West Virginia LLC	American Petroleum Partners Operating, LLC	Not less than 1/8	920/120	13-10-36
7	WV-MAR-0342	Cornerstone Family Services of West Virginia LLC	American Petroleum Partners Operating, LLC	Not less than 1/8	920/120	13-10-37
8	WV-MAR-0342	Cornerstone Family Services of West Virginia LLC	American Petroleum Partners Operating, LLC	Not less than 1/8	920/120	13-10-38
9	WV-MAR-0342	Cornerstone Family Services of West Virginia LLC, a West Virginia LLC	American Petroleum Partners Operating, LLC	Not less than 1/8	920/120	13-10-39
10	Pending	Michael W. Hill and Jennifer S. Hill	American Petroleum Partners Operating, LLC	Not less than 1/8	800/228	13-10-40
12	Pending	Robert A. Randolph	American Petroleum Partners Operating, LLC	Not less than 1/8	721/219	13-10-6.2
13	Pending	Robert Leroy Strait Jr. and Diane Mary Strait	American Petroleum Partners Operating, LLC	Not less than 1/8	740/364	13-10-7.3
14	Pending	Drew S. Beckett and Rebecca A. Beckett	American Petroleum Partners Operating, LLC	Not less than 1/8	888/605	13-10-7

4705102047

15	WV-MAR-0329	Pearly D. Randolph	American Petroleum Partners Operating, LLC	Not less than 1/8	919/391	13-10-12
16	Pending	Richard L. Pegg and Judith E. Pegg	American Petroleum Partners Operating, LLC	Not less than 1/8	709/604	13-10-7.2
19	WV-MAR-0329	Pearly D. Randolph	American Petroleum Partners Operating, LLC	Not less than 1/8	919/391	13-10-6
20	Pending	Danny A. Pegg and Debra J. Pegg	American Petroleum Partners Operating, LLC	Not less than 1/8	709/572	13-10-7.5
21	Pending	Danny A. Pegg and Debra Jo Pegg	American Petroleum Partners Operating, LLC	Not less than 1/8	709/572	13-10-7.7
22	Pending	Danny A. Pegg and Debra J. Pegg	American Petroleum Partners Operating, LLC	Not less than 1/8	709/572	13-10-7.4
23	Pending	Judith Evelyn Pegg	American Petroleum Partners Operating, LLC	Not less than 1/8	709/604	13-10-7.6
24	Pending	Jessica D. Hutson	American Petroleum Partners Operating, LLC	Not less than 1/8	729/626	13-10-7.1
25	WV-MAR-0632	Dogwood Acres, LLC	American Petroleum Partners Operating, LLC	Not less than 1/8	942/274	13-10-8.2
25	Pending	Resource Minerals Headwater I, LP	American Petroleum Partners Operating, LLC	Not less than 1/8	940/448	13-10-8.2
26	WV-MAR-0138	James K. Kudlak and Lori A. Kudlak	American Petroleum Partners Operating, LLC	Not less than 1/8	838/525	13-10-8
27	Pending	Resource Minerals Headwater I, LP	American Petroleum Partners Operating, LLC	Not less than 1/8	940/448	13-10-5
27	WV-MAR-0801	Dogwood Acres, LLC	American Petroleum Partners Operating, LLC	Not less than 1/8	949/383	13-10-5
28	WV-MAR-0147	Clarence Edward Parsons and Deanna Kay Parsons	American Petroleum Partners Operating, LLC	Not less than 1/8	827/136	13-7-31.3
29	WV-MAR-0327	Ernest Ellsworth Black, life estate; Scott A. Black, remainderman; Timothy Jon Black, remainderman	American Petroleum Partners Operating, LLC	Not less than 1/8	917/24	13-7-27
30	WV-MAR-0033	Merinar and Koontz Co. d/b/a A-1 Parts	American Petroleum Partners Operating, LLC	Not less than 1/8	822/198	13-7-32

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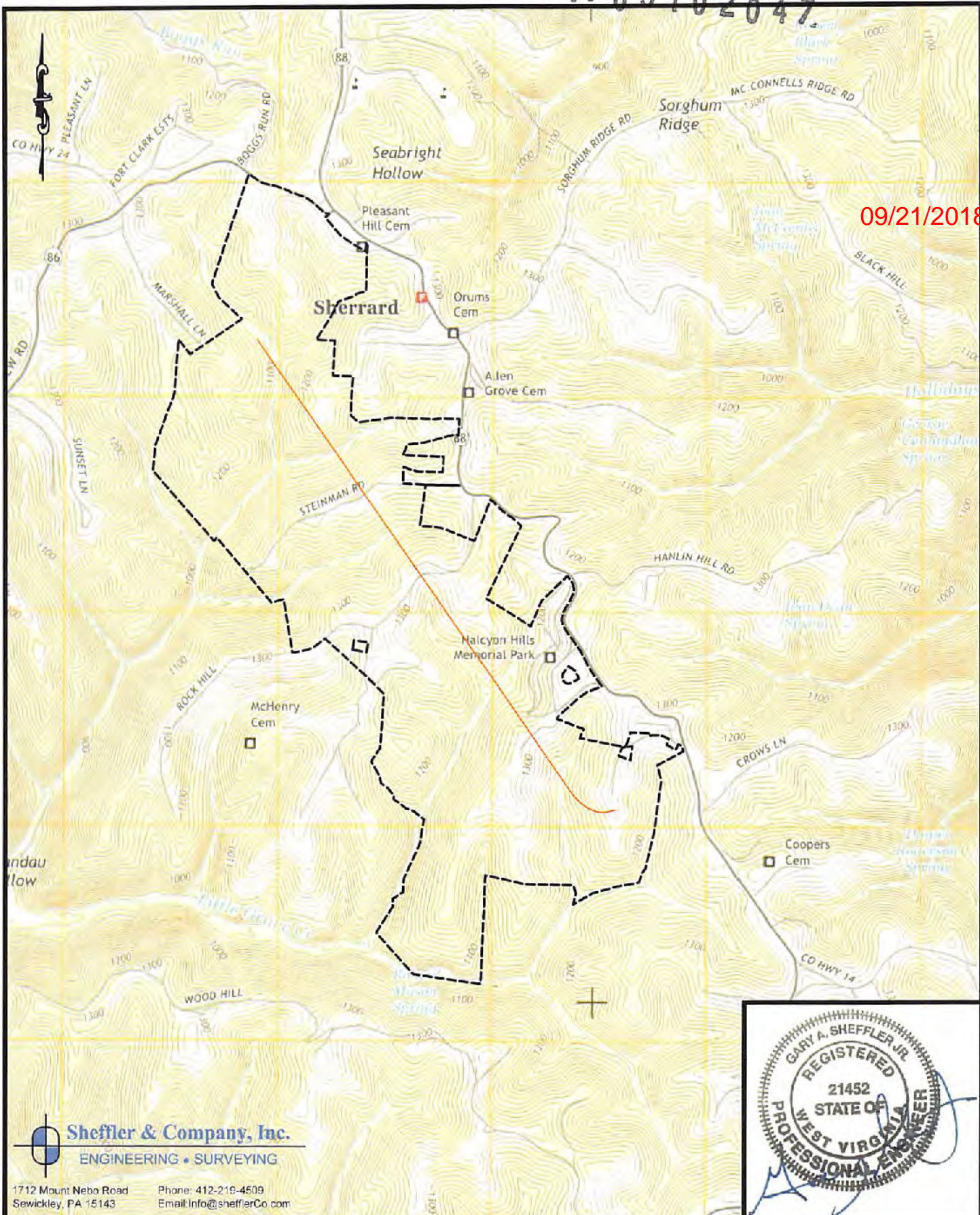
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31	WV-MAR-0197	David W. Kahlbaugh and Delores J. Kahlbaugh	American Petroleum Partners Operating, LLC	Not less than 1/8	911/511	13-7-34
33	WV-MAR-0547	Esther M. Gamble	American Petroleum Partners Operating, LLC	Not less than 1/8	939/635	13-7-35
34	WV-MAR-0748	Amy J. Gamble	American Petroleum Partners Operating, LLC	Not less than 1/8	946/153	13-7-36
34	WV-MAR-0749	Charles Ray Meredith	American Petroleum Partners Operating, LLC	Not less than 1/8	946/145	13-7-36
34	WV-MAR-0750	Douglas I. Gamble	American Petroleum Partners Operating, LLC	Not less than 1/8	946/157	13-7-36
34	WV-MAR-0751	Shelley L. Tuskey	American Petroleum Partners Operating, LLC	Not less than 1/8	946/149	13-7-36
34	WV-MAR-0766	Sherry L. Gamble	American Petroleum Partners Operating, LLC	Not less than 1/8	946/257	13-7-36
34	WV-MAR-0767	Donna Sue Kirch	American Petroleum Partners Operating, LLC	Not less than 1/8	946/250	13-7-36
34	WV-MAR-0768	Martha Ann Migliorini	American Petroleum Partners Operating, LLC	Not less than 1/8	946/246	13-7-36
34	WV-MAR-0799	Cynthia M. Gamble	American Petroleum Partners Operating, LLC	Not less than 1/8	948/354	13-7-36
34	WV-MAR-0843	Kathryn J. Mercurio	American Petroleum Partners Operating, LLC	Not less than 1/8	951/458	13-7-36
35	WV-MAR-0646	Charles W. Caldwell	American Petroleum Partners Operating, LLC	Not less than 1/8	945/58	13-7-38
35	WV-MAR-0648	Christian A. Caldwell	American Petroleum Partners Operating, LLC	Not less than 1/8	945/68	13-7-38
35	WV-MAR-0647	Richard J. Caldwell	American Petroleum Partners Operating, LLC	Not less than 1/8	945/63	13-7-38
36	WV-MAR-0648	Christian A. Caldwell	American Petroleum Partners Operating, LLC	Not less than 1/8	945/68	13-7-37
36	WV-MAR-0647	Richard J. Caldwell	American Petroleum Partners Operating, LLC	Not less than 1/8	945/63	13-7-37
36	WV-MAR-0646	Charles W. Caldwell	American Petroleum Partners Operating, LLC	Not less than 1/8	945/58	13-7-37

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09/21/2018



Sheffler & Company, Inc.
ENGINEERING • SURVEYING

1712 Mount Nebo Road Phone: 412-219-4509
Sewickley, PA 15143 Email: info@shefflerco.com



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



DATE: May 22, 2018 --- REV ---

OPERATOR'S WELL #: CASTERLY ROCK-1UH

API WELL # 47 051
STATE COUNTY PERMIT

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

WATERSHED: SHORT CREEK - OHIO RIVER ELEVATION: 1,338.53'

COUNTY/DISTRICT: MARSHALL / UNION QUADRANGLE: MOUNDVILLE, WV

SURFACE OWNER: LESLIE B. & LORI D. SCHABER ACREAGE: 71.75

OIL & GAS ROYALTY OWNER: CAROL A. WENSYEL A/K/A CAROL A. MILLER, ACTING AS TRUSTEE FOR THE CAROL A. WENSYEL IRREVOCABLE TRUST DATED OCTOBER 28, 2010 AND JOHN F. MILLER, SR. TRUSTEE OF THE JOHN F. MILLER, SR. IRREVOCABLE TRUST, DATED OCTOBER 28, 2010. TRUST ACREAGE: 73.74

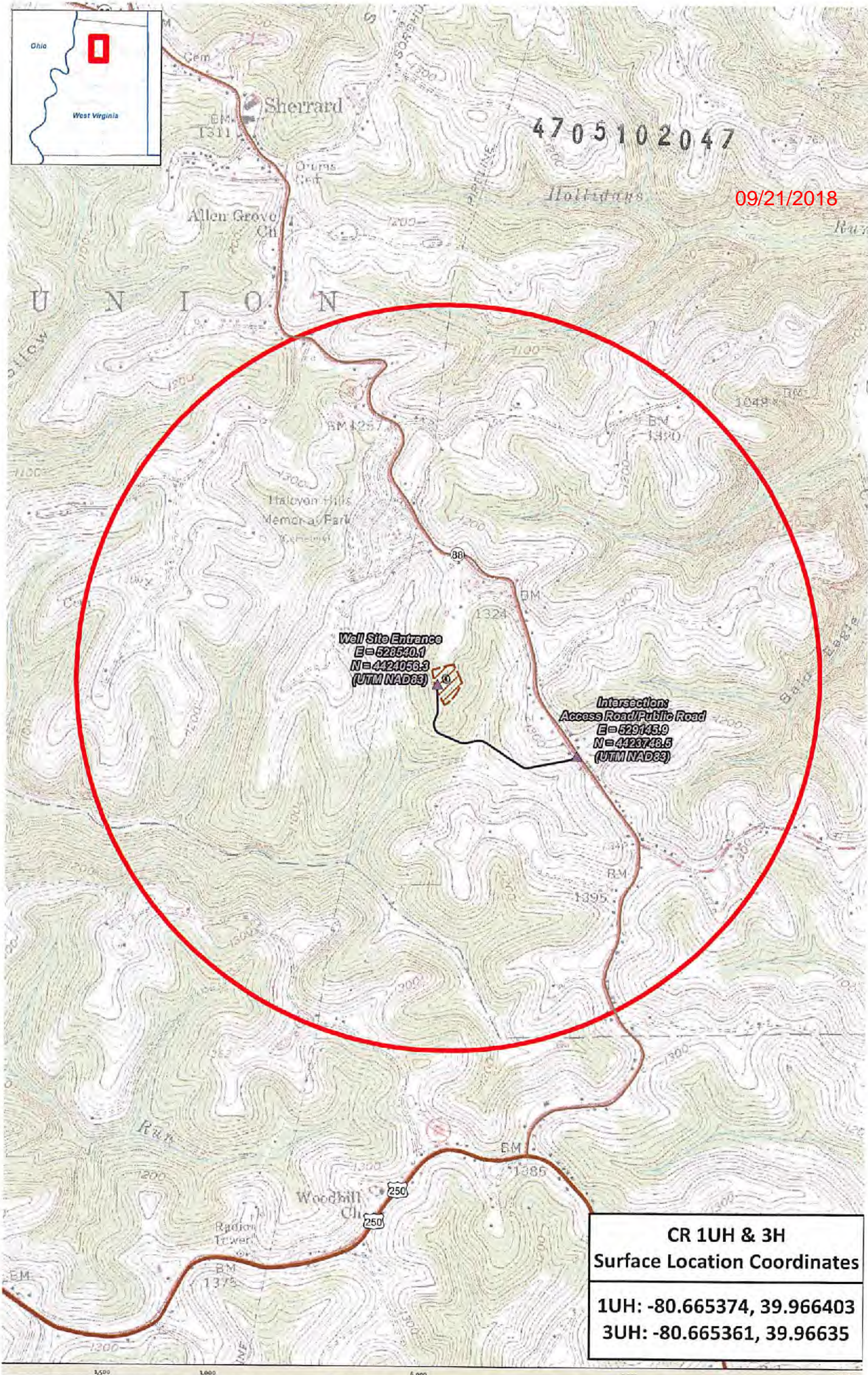
DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON
CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY)

TARGET FORMATION: POINT PLEASANT ESTIMATED DEPTH: TVD: 11,395' ± TMD: 20,271.09' ±

WELL OPERATOR: AMERICAN PETROLEUM PARTNERS, LLC DESIGNATED AGENT: STEVEN GREEN

Address: 4600 J. BARRY COURT, SUITE 310 Address: 300 SUMMERS ST, SUITE 1000

City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301



4705102047

09/21/2018

Well Site Entrance
 E=528540.1
 N=4424056.9
 (UTM NAD83)

**Intersection:
 Access Road/Public Road**
 E=529143.9
 N=4423743.5
 (UTM NAD83)

CR 1UH & 3H
Surface Location Coordinates
 1UH: -80.665374, 39.966403
 3UH: -80.665361, 39.96635

CR 1UH & 3UH - Well Site

Marshall County	Coordinate System: NAD 1983 UTM Zone 18N Projection: Transverse Mercator Datum: North American 1983	Map Scale Units: 1:18,000	Map Author: JKS Map Date: 5/1/2018	<ul style="list-style-type: none"> Well SHL Well Pad 1 mile Buffer Access Rd Intersection Access Road US Route 	
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09/21/2018



4705102047

Office of Oil & Gas
601 57th street, SE
Charleston, WV 25304-2345

May 05, 2018

Re: Drilling Under Roads

To Whom It May Concern:

American Petroleum Partners Operating, LLC. has the right to drill, stimulate and produce wells that are drilled under the County and State Roads as designated on the plats.

Should you have any questions or desire additional information, please do not hesitate to contact me at regulatory@app-lp.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Braulio Silva", written over a stylized leaf graphic.

05-03-2019

Braulio Silva
VP- Drilling

BS/djs

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: _____

API No. 47- 051 -
Operator's Well No. Casterly Rock-1UH (CRN1-UH)
Well Pad Name: Casterly Rock

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>528577.623</u>
County: <u>Marshall</u>		Northing: <u>4424081.954</u>
District: <u>Union</u>	Public Road Access: <u>State Route 88</u>	
Quadrangle: <u>Moundsville</u>	Generally used farm name: <u>Leslie B. & Lori D. Schaber</u>	
Watershed: <u>Short Creek-Ohio River, Upper Ohio South</u>		

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:

*PLEASE CHECK ALL THAT APPLY

1. NOTICE OF SEISMIC ACTIVITY or NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED

2. NOTICE OF ENTRY FOR PLAT SURVEY or NO PLAT SURVEY WAS CONDUCTED

3. NOTICE OF INTENT TO DRILL or NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or

WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)

4. NOTICE OF PLANNED OPERATION

5. PUBLIC NOTICE

6. NOTICE OF APPLICATION

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WV Department of
Environmental Protection

OOG OFFICE USE ONLY

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RECEIVED

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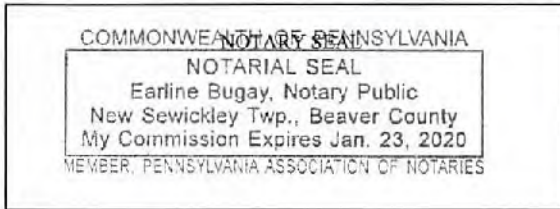
Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

Certification of Notice is hereby given:

THEREFORE, I Braulio Silva, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, 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 and imprisonment.

Well Operator:	<u>American Petroleum Partners Operating, LLC</u>	Address:	<u>4600 J. Barry Court Suite 310</u>
By:	<u>Braulio Silva</u> <i>Bugay</i> <u>05-05-2018</u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Vice President-Drilling</u>	Facsimile:	<u>na</u>
Telephone:	<u>1-724-338-8629</u>	Email:	<u>Regulatory@app-lp.com</u>



Subscribed and sworn before me this 5th day of May 2018.

Earline Bugay Notary Public

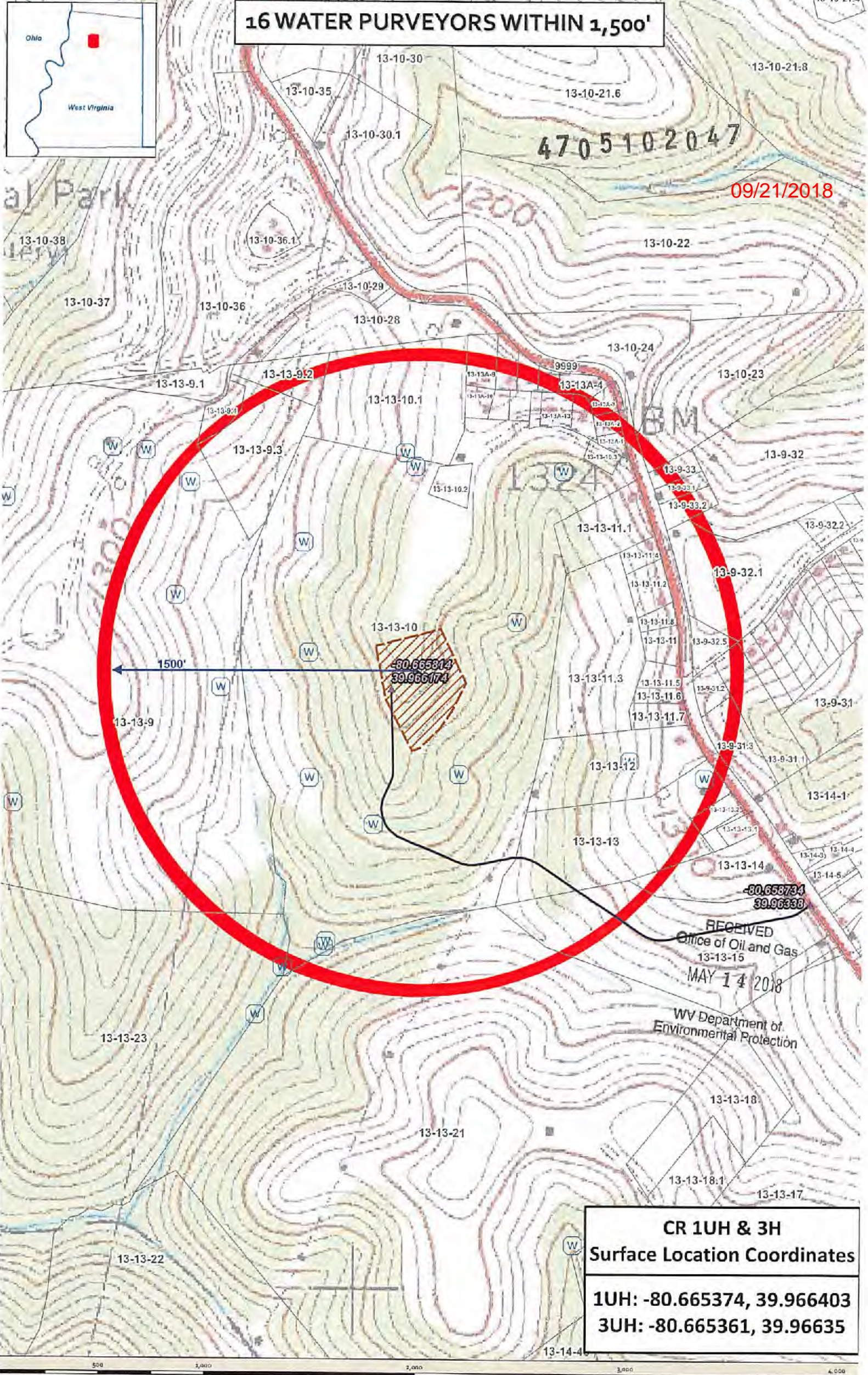
My Commission Expires 1/23/2020

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as 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 or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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16 WATER PURVEYORS WITHIN 1,500'



09/21/2018

1500'

-80.665374
39.966174

-80.658734
39.96338

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13-13-15
MAY 14 2018

WV Department of
Environmental Protection

CR 1UH & 3H
Surface Location Coordinates
1UH: -80.665374, 39.966403
3UH: -80.665361, 39.96635

CR 1UH & 3UH - Water Source

<p>Marshall County West Virginia</p>	<p>Coordinate System: NAD 83 UTM Zone 17N Projection: Transverse Mercator Datum: North American 1983</p>	<p>Map Scale Units: 1:6,000</p>	<p>Map Author: JKS Map Date: 5/22/2018</p>	<p>Well SHL Well Pad</p>	<p>Access Rd Intersection Access Road Parcels</p>	<p>Water Well 1,500' Buffer</p>	
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**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION**

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 5/8/18 **Date Permit Application Filed:** 5/9/18

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
 Name: Leslie B. & Lori D. Schaber
 Address: 46 Ken Mar Drive
Wheeling, WV 26003
 Name: _____
 Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
 Name: Rosemary M. Brown
 Address: 5743 Fairmont Pike Road
Wheeling, WV 26003
 Name: Cober R. Gross and Beverly T. Stromatoes
 Address: 5609 Fairmont Pike Road
Wheeling, WV 26003

SURFACE OWNER(s) (Impoundments or Pits)
 Name: None
 Address: _____

COAL OWNER OR LESSEE
 Name: Murray American Energy and Consolidation Coal Company
 Address: 46226 National Road
St. Clairsville, OH 43950

COAL OPERATOR
 Name: The Ohio County Mine - Murray Energy
 Address: 46226 National Road
St. Clairsville, OH 43950

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
 Name: See attached sheet.
 Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
 Name: None
 Address: _____

*Please attach additional forms if necessary

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(8-13)

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Office of Oil and Gas

MAY 14 2018

4,05102047
API NO. 47-051 - 2047
OPERATOR WELL NO. Casterly Rock-101 (CRN-101)
Well Pad Name: Casterly Rock

09/21/2018

WV Department of
Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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(8-13)

API NO. 47-051 - 09/21/2018
OPERATOR WELL NO. Casterly Rock-1UH (CRN1-UH)
Well Pad Name: Casterly Rock

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

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WV Department of
Environmental Protection

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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WW-6A
(8-13)

4705102047
API NO. 47-051-2047 09/21/2018
OPERATOR WELL NO. Casterly Rock-1UH (CRN1-UH)
Well Pad Name: Casterly Rock

Notice is hereby given by:

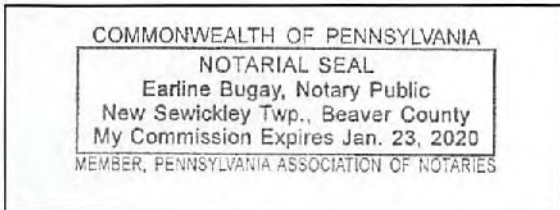
Well Operator: American Petroleum Partners Operating, LLC
Telephone: 1-724-338-8629
Email: Regulatory@APP-LP.com

Address: 4600 J. Barry Court, Suite 310
Canonsburg, PA 15317
Facsimile: na

[Handwritten Signature]
0503-2018

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as 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 or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.



Subscribed and sworn before me this 5th day of May, 2018.
Earline Bugay Notary Public
My Commission Expires January 23, 2020

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09/21/2018
4705102047

Water Purveyors within 1500'

Leslie B. and Lori D. Schaber

46 Ken Mar Drive

Wheeling, WV 2603

James Shannon, Et Ux

5581 Fairmont Pike Road

Wheeling, WV 26003

Edgar Heller

301 Penny Lane

Wheeling, WV 26003

Cober R. Gross and Beverly T. Stromatoes

5609 Fairmont Pike Road

Wheeling, WV 26003

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4705102047

09/21/2018

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AGREEMENT
FOR
COAL WAIVER AND CONDITIONAL DRILLING ACTIVITY

This Agreement, effective this 9th day of February, 2018, by and between, CONSOLIDATION COAL COMPANY, a Delaware Corporation, and Murray American Energy, Inc., a Delaware Corporation, both of whose mailing address is 46226 National Road, St. Clairsville, OH 43905, hereinafter collectively referred to as "COMPANY,"

A N D

American Petroleum Partners Operating, LLC., a Delaware limited liability company, having a place of business at 4600 J. Barry Ct Suite 310, Canonsburg, PA 15317, hereinafter referred to as "APP."

PREAMBLE

WHEREAS, COMPANY intends to apply to the West Virginia Department of Environmental Protection for a permit to drill gas wells listed in Table 1 on the pad known as the CASTERLY ROCK wells at a location in Union District, Marshall County, West Virginia; and

WHEREAS, COMPANY through itself and/or any one or more of its affiliates, owns or controls the Pittsburgh #8 seam of coal at the proposed location of the proposed CASTERLY ROCK wells and said wells when drilled will penetrate the Pittsburgh #8 seam of coal; and

WHEREAS, APP has a regulatory obligation and responsibility to notify coal seam owners of its intent to drill and develop oil/gas wells through such coal seams; and

WHEREAS, APP has requested COMPANY to sign a WW-6AW Voluntary Statement of No Objection form, which COMPANY is willing to sign subject to the conditions set forth in this agreement.

NOW, THEREFORE, in consideration of the commitments set forth herein and intending to be legally bound hereby the parties do hereby agree as follows:

1. The approved surface locations of the proposed CASTERLY ROCK wells are listed in Table 1 in WV State Plane North NAD 27 coordinate system. The CASTERLY ROCK wells shall only be drilled at these surface locations.

Table 1: Well Locations

Well Name	Northing	Easting
CASTERLY ROCK 1 UH	536196.967	1673303.753
CASTERLY ROCK 2 UH	536202.032	1673333.322
CASTERLY ROCK 3 UH	536177.254	1673307.13
CASTERLY ROCK 4 UH	536182.319	1673336.699
CASTERLY ROCK 5 UH	536157.541	1673310.507
CASTERLY ROCK 6 UH	536162.606	1673340.076
CASTERLY ROCK 7 UH	536137.828	1673313.885
CASTERLY ROCK 8 UH	536142.893	1673343.453
CASTERLY ROCK 9 UH	536118.115	1673317.262
CASTERLY ROCK 10 UH	536123.18	1673346.83

2. The proposed CASTERLY ROCK wells are located in an existing perimeter barrier of the active Ohio County Mine. Hence, the drilling of the proposed CASTERLY ROCK wells shall strictly follow the procedures set forth in the Agreement. RECEIVED
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3. COMPANY shall develop procedures and submit well protection pillar permit applications to the applicable coal mining regulatory authorities to secure approval to drill the proposed CASTERLY ROCK near, around, or adjacent to existing mine workings. COMPANY will design the protection pillar to provide a minimum coal barrier of fifty feet (50') from its existing underground mining activities to the location of the active CASTERLY ROCK wells within the Pittsburgh #8 coal seam. WV Department of
Environmental Protection
4. COMPANY shall provide APP with a copy of the procedures and well protection pillar permit applications for APP's review prior to submittal to the applicable coal mining regulatory agencies.

5. Once all the required approvals are received to drill the proposed CASTERLY ROCK wells near, around, or adjacent to the existing mine workings, APP may proceed with the drilling of CASTERLY ROCK wells in accordance to the procedures and requirements of this Agreement, provided that APP shall also comply with any and all requirements applicable to APP imposed by the coal mining regulatory agencies within the approvals.
6. APP agrees that if a coal mining regulatory agency does not approve the proposed well protection pillar permit or the procedures and plans to drill the proposed CASTERLY ROCK wells near, around or adjacent to the existing mine workings, this Agreement is voided and is no longer in effect and COMPANY rescinds its consent to drill the CASTERLY ROCK wells.
7. APP shall provide COMPANY with written notification at least two (2) weeks prior to the commencement of well drilling activities to provide sufficient time for COMPANY to verify and approve the surveyed location of the proposed wells. APP and COMPANY shall maintain continued communication during the well drilling process.
8. Once the surveyed surface location is verified, APP may drill from the surface pad to a depth no closer than twenty feet (20') from the top of the Pittsburgh #8 coal seam.
9. APP shall then, at its expense, have a well deviation survey conducted in the well boring from the surface to the drilled depth approximately twenty feet (20') above the Pittsburgh #8 coal seam and shall promptly provide the certified results of the deviation survey to COMPANY. The well shall be limited to a total deviation not to exceed one percent (1%) to assure the well boring will penetrate through the Pittsburgh #8 coal seam within the area approved by the coal mining regulatory agencies.
10. APP shall use water, water sprays, drilling soap or other approved drilling fluids while drilling after the surface casing is installed through the Pittsburgh #8 coal seam and continue drilling with fluids until the steel coal protection casing is effectively installed and cemented in place below the Pittsburgh #8 coal seam in accordance with all rules, regulations, and approvals for the drilling operation.
11. If the drilled well boring is less than or equal to the required one percent (1%) maximum deviation, APP may proceed with its planned drilling activities in accordance to all applicable laws and regulations. APP and COMPANY shall continue to maintain communication through the completion of the well drilling and installation processes.
12. If the well boring deviation exceeds one percent (1%), APP may elect to take measures within the well boring above the coal seam to correct the well drilling deviation to assure the well boring will penetrate through the

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Pittsburgh #8 coal seam within the required one percent (1%) deviation area. If APP is unable to make the necessary corrections to limit the well deviation to one percent (1%), APP shall cease drilling activities and, at its expense, grout the well boring completely from the bottom of the well boring to the surface using approved procedures to assure a uniform and complete sealing of the drilled well boring.

13. APP shall immediately provide all records and certified results of the deviation surveys to COMPANY.
14. COMPANY plans to mine its coal reserve utilizing full extraction techniques to fully mine and remove the entire coal seam in those areas where such mining is planned and COMPANY has acquired the legal property rights and regulatory permits to conduct such mining activities. Full extraction mining causes surface subsidence that may affect surface structures. The mining subsidence may also create lateral stresses within the geologic overburden above the coal seam.
 - a. APP accepts all responsibility to monitor, maintain, mitigate, and repair all of its facilities including wells, pipelines, compressor stations, all surface facilities, and appurtenant facilities from the effects of subsidence from the underground mining activities of COMPANY.
 - b. APP shall be solely responsible for all costs and expenses to monitor, maintain, mitigate and repair any and all of its facilities that are constructed and installed after the effective date of this Agreement from the effects of subsidence from the underground mining activities of COMPANY.
 - c. COMPANY and APP agree to employ the principals of common law property rights (the party that does not have superior property rights is responsible) for all subsidence related costs and expenses relating to surface facilities that are in place and operational on the effective date of this Agreement.
15. COMPANY and APP agree to fully cooperate and support each other's permitting and regulatory approval activity. Each party agrees that it will not object to any permit submittal nor will it appeal any permit approval provided that the terms and conditions of this Agreement are followed.
16. This agreement shall extend to and be binding upon the heirs, successors, assigns, legal representatives, affiliates and joint venture partners of the parties hereto.


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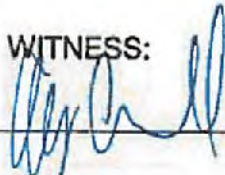
- 17. This Agreement represents the entire understanding of the parties with respect to the matters referred to herein and supersedes all other understandings, written or oral, between the parties with respect thereto.
- 18. No amendment, modification, or waiver of any provision of the Agreement shall be valid, unless in writing signed by both parties.

In WITNESS WHEREOF, each of CONSOLIDATION COAL COMPANY, MURRAY AMERICAN ENERGY, INC. and American Petroleum Partners Operating, LLC. has executed this Agreement intending to be legally bound hereby.


WITNESS:


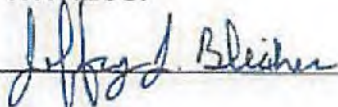
CONSOLIDATION COAL COMPANY

By: 
 Name: JASON O. WITT
 Title: SECRETARY

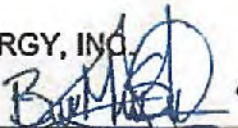
WITNESS:


MURRAY AMERICAN ENERGY, INC.

By: 
 Name: JASON O. WITT
 Title: SECRETARY

WITNESS:


APP ENERGY, INC.

By: 
 Name: Braulio Silva
 Title: VP. Drilling

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY

Notice Time Requirement: Notice shall be provided at least SEVEN (7) days but no more than FORTY-FIVE (45) days prior to entry

Date of Notice: 12/5/2017 **Date of Planned Entry:** 12/15/2017

Delivery method pursuant to West Virginia Code § 22-6A-10a

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

- SURFACE OWNER(s)
 - Name: Rosemary M. Brown
 - Address: 5743 Fairmont Pike RD
Wheeling, WV 26003
 - Name: Cober R. Gross and Beverly L. Stromatoes
 - Address: 5609 Fairmont Pike
Wheeling, WV 26003
 - Name: Leslie B. Schaber and Lori D. Schaber
 - Address: 46 Ken Mar DR
Wheeling, WV 26003

- COAL OWNER OR LESSEE
 - Name: Murray Energy
 - Address: 46226 National Road
St. Clairsville, OH 43950
- MINERAL OWNER(s)
 - Name: Rosemary M. Brown
 - Address: 5743 Fairmont Pike RD
Wheeling, WV 26003

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*please attach additional forms if necessary

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.966 - 80.865</u>
County: <u>051-Marshall</u>	Public Road Access: <u>RT 88 Fairmont Pike Rd</u>
District: <u>Union</u>	Watershed: <u>Upper Ohio South</u>
Quadrangle: <u>Moundsville, WV</u>	Generally used farm name: <u>Schaber</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: <u>American Petroleum Partners Operating, LLC and APP Midstream LLC</u>	Address: <u>4800 J. Berry CT., Suite 310</u>
Telephone: <u>1-844-835-5277</u>	<u>Canonsburg, PA 15317</u>
Email: <u>mleehr@app-lp.com</u>	Facsimile: _____

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as 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 or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

WW-6A3
(1/12)

Operator Well No. Casterly Rock A-UH, B-UH, F-UH

**SUPPLEMENTAL TO THE STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY**

MINERAL OWNER(S)

Name: Cober R. Gross and Beverly L. Stromatoes

Address: 5609 Fairmont Pike

Wheeling, WV 26003

Name: Carol A. Wensyel a/k/a Carol A. Miller, acting as Trustee for the Carol A. Wensyel Irrevocable Trust dated October 28, 2010

Address: 8669 Patterson RD

Hilliard, OH 43026

Name: John F. Miller, Sr. Trustee of the John F. Miller, Sr. Irrevocable Trust, dated October 28, 2010

Address: 8669 Patterson RD

Hilliard, OH 43026

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 5-8-18 Date Permit Application Filed: 5-9-18

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

- CERTIFIED MAIL RETURN RECEIPT REQUESTED
- HAND DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Leslie B. & Lori D. Schaber
Address: 46 Ken Mar Drive
Wheeling, WV 26003

Name: Rosemary M. Brown
Address: 5743 Fairmont Pike Road
Wheeling, WV 26003

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>529577.623</u>
County: <u>Marshall</u>	Northing: <u>4424081.954</u>
District: <u>Union</u>	Public Road Access: <u>State Route 88</u>
Quadrangle: <u>Moundsville</u>	Generally used farm name: <u>Leslie B. & Lori D. Schaber</u>
Watershed: <u>Short Creek-Ohio River, Upper Ohio South</u>	

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: American Petroleum Partners Operating, LLC
Telephone: 1-724-338-8629
Email: Regulatory@app-1p.com

Address: 4600 J. Barry Court Suite 310
Canonsburg, PA 15317
Facsimile: na

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application.

Date of Notice: 5/8/18 Date Permit Application Filed: 5/9/18

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- CERTIFIED MAIL
RETURN RECEIPT REQUESTED
- HAND DELIVERY

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Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: <u>Cober R. Gross and Beverly T. Stromatoes</u>	Name: _____
Address: <u>5609 Fairmont Pike Road</u> <u>Wheeling, WV 26003</u>	Address: _____

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>5285877.623</u>
County: <u>Marshall</u>	Northing: <u>4424081.954</u>
District: <u>Union</u>	Public Road Access: <u>State Route 88</u>
Quadrangle: <u>Moundsville</u>	Generally used farm name: <u>Leslie B. & Lori D. Schaber</u>
Watershed: <u>Short Creek, Ohio River</u>	

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: <u>American Petroleum Partners Operating, LLC</u>	Address: <u>4600 J. Barry Court Suite 310</u>
Telephone: <u>1-844-835-5277</u>	<u>Canonsburg, PA 15317</u>
Email: <u>Regulatory@app-lp.com</u>	Facsimile: _____

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Thomas J. Smith, P. E.
Secretary of Transportation/
Commissioner of Highways

April 13, 2018

Jill M. Newman
Deputy Commissioner

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the Casterly Rock Pad, Marshall County
Casterly Rock 1UH Well site

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Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2018-0221 which has been issued to American Petroleum Partners for access to the State Road for a well site located off of WV 88 in Marshall County.

The operator has signed a DISTRICT WIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

A handwritten signature in blue ink that reads "Gary K. Clayton".

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office O&G Coordinator

Cc: Braulio Silva
American Petroleum Partners
CH, OM, D-6
File

Hydraulic Fracturing Fluid Product Component Information Disclosure

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)
Water	Operator	Carrier/Base Fluid			
			Water	7732-18-5	100.00000
Terraprop Plus 30/50	Baker Hughes	Proppant			
			Aluminum Oxide	1344-28-1	100.00000
			Amorphous Silica	7631-86-9	20.00000
			Titanium Dioxide	13463-67-7	5.00000
			Iron Oxide	1309-37-1	5.00000
Sand (Proppant)	Stingray	Proppant			
			Silica Substrate	14808-60-7	87.00000
ProLite 40/70	Imerys	Proppant			
			Mullite	1302-93-8	70.00000
			Cristobalite	14464-46-1	30.00000
			Amorphous Silica	7631-86-9	15.00000
Hydrochloric Acid (HCl)	FTSI	Acid			
			Hydrogen Chloride	7647-01-0	15.00000
SI-117	WST	Scale Inhibitor			
			Copolymer of Maleic and Acrylic Acid	52255-49-9	70.00000
			Ethylene glycol	107-21-1	40.00000
			DETA phosphonate	15827-60-8	20.00000
			Hexamethylene Triamine Penta (Methylene Phosphonic Acid)	34690-00-1	20.00000
			Phosphino carboxylic acid polymer	71050-82-9	20.00000
K-BAC 1020 DBNPA	WST	Bactericide			
			Polyethylene glycol	25322-66-3	50.00000
			Water	7732-18-5	30.00000
			2,2-Dibromo-3-nitropropionamide	10222-01-2	21.00000
NEFE-180	Stingray	Acid Inhibitor/Iron Control			
			Acetic Acid	64-19-7	60.00000
			Methanol	67-56-1	30.00000
			2-Ethylhexanol	104-76-7	7.50000
			Cocunut Oil Acid diethanolamine	68603-42-9	3.00000
			Alcohols, C15-15, ethoxylated	68951-87-7	3.00000
			Olefin	64743-02-8	3.00000
			Fatty Acids, tall oil	61790-12-3	3.00000
			2-Propyn-1-ol	107-19-7	3.00000
FRA-408	Stingray	Friction Reducer			
			Copolymer of 2-propenamide	Proprietary	30.00000
			Distillates (petroleum), Hydrotreated Light	64742-47-8	20.00000
			Alcohols, C12-18, Ethoxylated	68551-12-2	2.00000
			Alkanolamide	93-83-4	2.00000
			Ammonium Chloride	12125-02-6	1.00000
CSL-30	Stingray	pH Control			
			Sodium Hydroxide	1310-73-2	30.00000
WG-38 GELLING AGENT	Halliburton	Gelling Agent			
			Guar gum	9000-30-0	100.00000
SP BREAKER	Halliburton	Breaker			
			Sodium persulfate	7775-27-1	100.00000
LOSURF-300D	Halliburton	Non-Ionic Surfactant			
			Ethanol	64-17-5	60.00000
			Heavy aromatic petroleum	64742-94-5	30.00000
			Naphthalene	91-20-3	5.00000
			Poly(oxy-1,2-ethanediyl), alpha-	127087-87-0	5.00000
			1,2,4 Trimethylbenzene	95-63-6	1.00000

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CASTERLY ROCK WELL PAD UNION DISTRICT, MARSHALL COUNTY, WV MARCH 2018

4705102047



TWO WORKING DAYS PRIOR TO EXCAVATION, THE CONTRACTOR MUST CONTACT THE WV ONE CALL SYSTEM, INC., 1-800-245-4848 (WV ONE CALL TICKET#1701749131)

OWNER



AMERICAN PETROLEUM PARTNERS OPERATING, LLC
4600 J. BARRY COURT, SUITE 310,
CANONSBURG, PA 15317



SHEET INDEX

- TITLE SHEET
- 3-4. EVACUATION ROUTE/PREVAILING WIND
4. E&S CONTROL LAYOUT OVERVIEW
- 5-7. E&S CONTROL LAYOUT
8. E&S CONTROL AND SITE PLAN OVERVIEW
- 9-11. E&S CONTROL AND SITE PLAN
12. WELL PAD CROSS-SECTIONS AND UNDERDRAIN PROFILES
13. ACCESS ROAD PROFILE
- 14-17. ACCESS ROAD CROSS-SECTIONS
18. STREAM CROSSINGS #1 AND #2 CROSS-SECTIONS AND PROFILES
- 19-22. DETAILS
23. RECLAMATION PLAN OVERVIEW
- 22-26. RECLAMATION PLAN

TOTAL DISTURBED AREA: 22.6 AC.
ACCESS ROAD DISTURBED AREA: 12.7 AC.
WELL PAD DISTURBED AREA: 9.9 AC.

PLANS PREPARED BY:
BOORD BENCHEK & ASSOCIATES, INC.
ENGINEERING, SURVEYING, CONSTRUCTION AND MINING SERVICES
SOUTHPOINTE, PA 15317 PHONE: 724-746-1055



Andrew Benchek 3-20-18
ANDREW BENCHEK
P.E.

PROPERTY OWNER DISTURBANCE
ROSEMARY M BROWN (TAX MAP AND PARCEL 13-13-15): 6.0 AC.
COBER R GROSS (13-13-13): 1.3 AC.
LESLIE SCHABER AND LORI SCHABER (13-13-10): 15.3 AC.

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PROJECT LOCATION

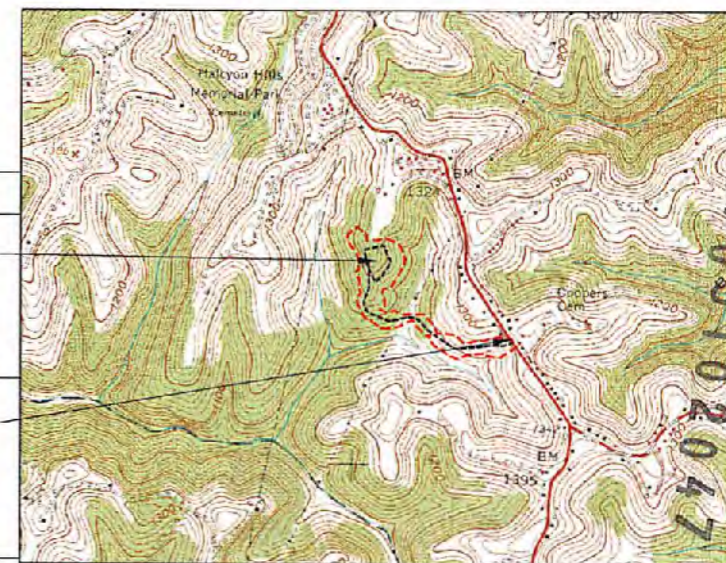


IN ACCORDANCE WITH WV 35 CSR 8 THE FOLLOWING EROSION & SEDIMENT CONTROL PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES ESTABLISHED BY THE CHIEF AND PROVIDED IN THE OFFICE'S EROSION AND SEDIMENT CONTROL FIELD MANUAL. A GENERAL CONSTRUCTION SEQUENCE, DESCRIPTION OF STABILIZATION METHODS, AND DETAILS & SPECIFICATIONS FOR EROSION & SEDIMENT BEST MANAGEMENT PRACTICES HAVE BEEN INCLUDED IN THE PROVIDED DETAIL SHEETS.

REVISIONS	
NO.	DATE

TITLE SHEET
CASTERLY ROCK WELL PAD
UNION DISTRICT, MARSHALL COUNTY, WV

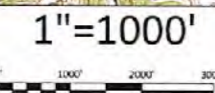
SHEET
1
OF
26



COORDINATES

CENTER OF WELLS (NAD 83)
LAT: 39° 57' 58.69"
LONG: 80° 39' 55.06"
(NAD 27)
LAT: 39° 57' 58.42"
LONG: 80° 39' 55.77"

SITE ENTRANCE (NAD 83)
LAT: 39° 57' 47.58"
LONG: 80° 39' 30.64"
(NAD 27)
LAT: 39° 57' 47.31"
LONG: 80° 39' 31.35"



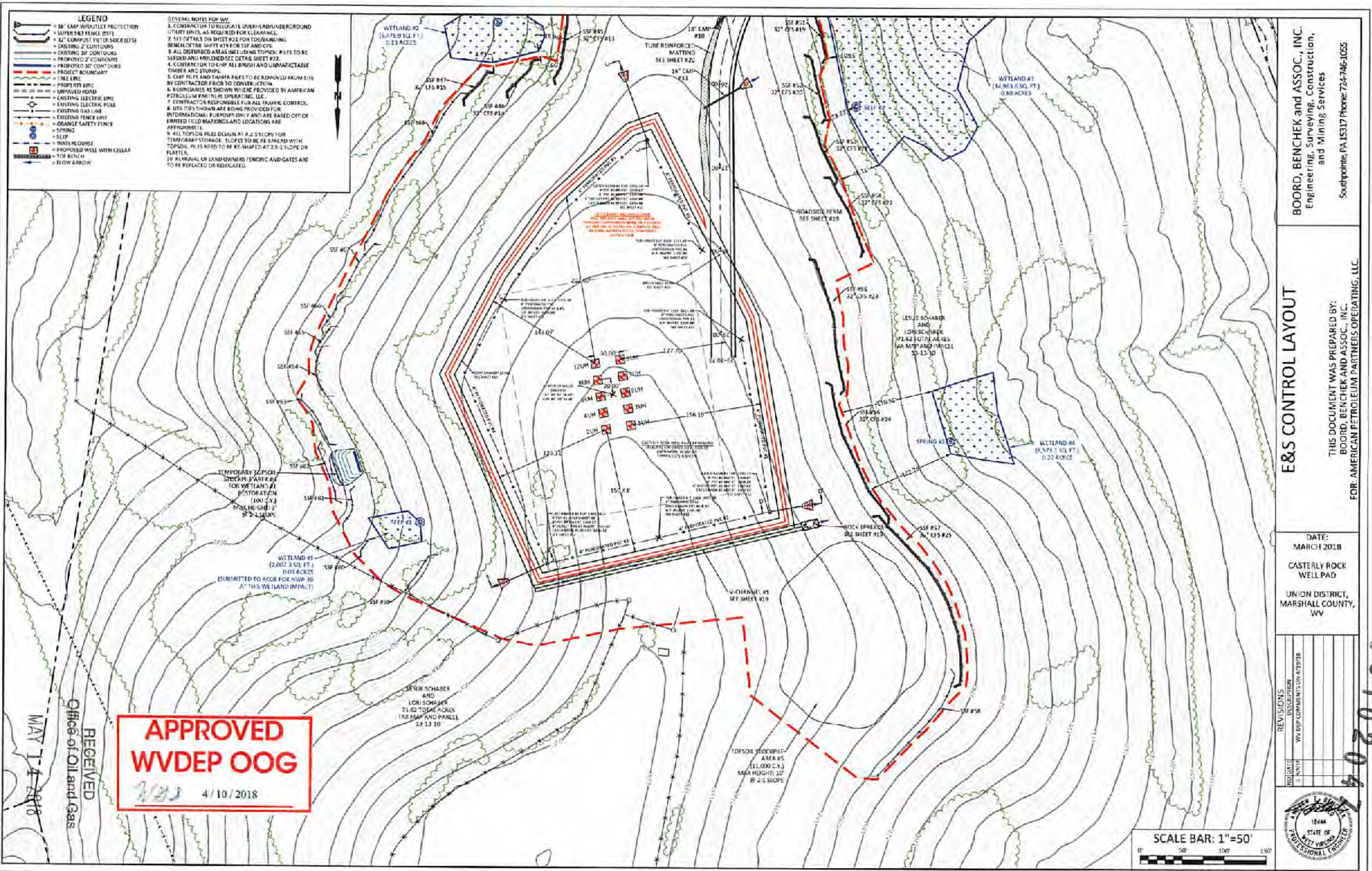
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WVDEP OOG**

4/10/2018



E&S CONTROL LAYOUT

BOARD, BENCHEK and ASSOC., INC.
Engineering, Surveying, Construction,
and Mining Services
Southpointe, PA 15317 Phone: 724-746-1055

THIS DOCUMENT WAS PREPARED BY:
BOARD, BENCHEK AND ASSOC., INC.
FOR: **AMERICAN PETROLEUM PARTNERS OPERATING, LLC.**

DATE:
MARCH 2018
**CASTERLY ROCK
WELL PAD**
UN/ON DISTRICT,
MARSHALL COUNTY,
WV

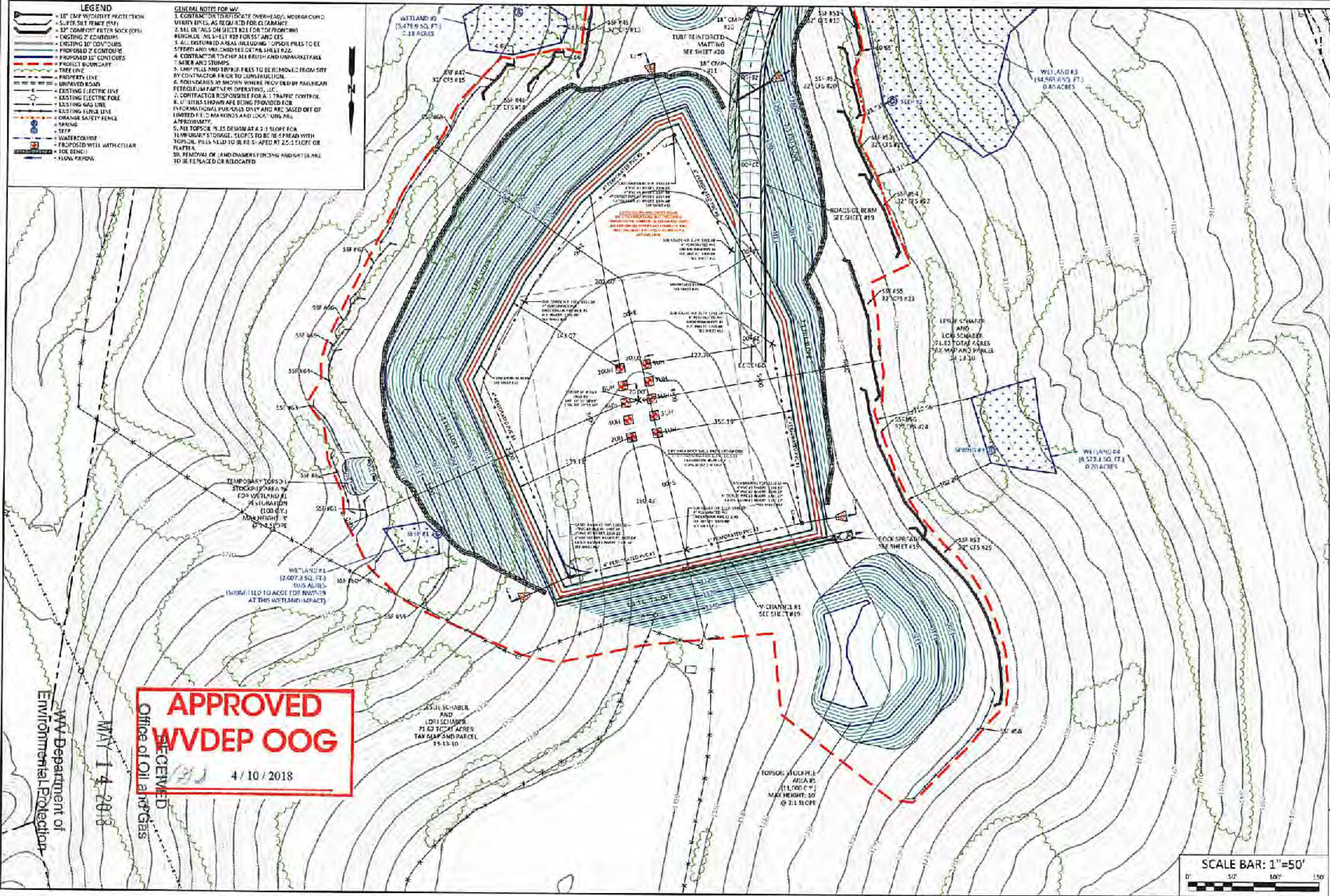
NO.	DATE	DESCRIPTION
1		WV DEP COMMENTS ON APPROVAL

WV DEPARTMENT OF ENVIRONMENTAL PROTECTION
1844
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER

470510204

- LEGEND**
- 10" CMP W/SHIELD PROTECTION
 - 6" PIPE SET WITH 2" RISER
 - 32" CONCRETE FILTER ROCK (CFS)
 - EXISTING 2" CONTOURS
 - EXISTING 10" CONTOURS
 - PROPOSED 2" CONTOUR
 - PROPOSED 10" CONTOUR
 - PROJECT BOUNDARY
 - TREE LINE
 - PROPERTY LINE
 - UNPAVED ROAD
 - EXISTING ELECTRIC LINE
 - EXISTING ELECTRIC POLE
 - EXISTING GAS LINE
 - EXISTING FURROW LEVEL
 - ORANGE SAFETY FENCE
 - WATER COLUMN
 - WELL
 - WATER COLUMN
 - PROPOSED WELL WITH CELLAR
 - WELL BENCH
 - WELL PAD

- GENERAL NOTES FOR WWP**
1. CONTRACTOR TO VERIFY OVERHEAD UNDERGROUND UTILITIES BY AS REQUIRED FOR CLARIFICATION.
 2. SEE DETAILS ON SHEET #21 FOR DEFORMING RICHFIELD 10" SLOTTED PIPE FORSS AND CFS.
 3. ALL EXISTING DRAINAGE INCLUDING TRENCHES TO BE STRENGTHENED AND VULNERABLE SEE DETAIL SHEET #22.
 4. CONTRACTOR TO CMP ALL BRUSH AND UNMARKETABLE STUMP AND STUMPS.
 5. CMP FILES AND TRIPFILES TO BE REMOVED FROM SITE BY CONTRACTOR PRIOR TO COMPLETION.
 6. ROW BARRIERS AS SHOWN WERE PROVIDED BY AMERICAN PETROLEUM PARTNERS OPERATING, LLC.
 7. CONTRACTOR RESPONSIBLE FOR ALL TRAFFIC CONTROL.
 8. UTILITIES SHOWN ARE BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED OFF OF LIMITED FIELD MARKINGS AND LOCATIONS ARE APPROXIMATE.
 9. ALL TOPSOIL SLOPS DESIGN AT A 2:1 SLOPE FOR TEMPORARY STORAGE. SLOPS TO BE RE-SPREAD WITH TOPSOIL. PILLS NEED TO BE RE-SPREAD AT 25:1 SLOPE OR FLATTER.
 10. REMOVAL OF LANDOWNER FENCING AND GATES ARE TO BE FIELD-PLACED OR RELOCATED.



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 4/10/2018
 OFFICE OF OIL AND GAS

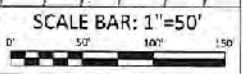
WV Department of Environmental Protection
 MAY 14 2018

BOORD, BENCHER and ASSOC., INC.
 Engineering, Surveying, Construction,
 and Mining Services
 Southpointe, PA 15517 Phone: 724-746-1055

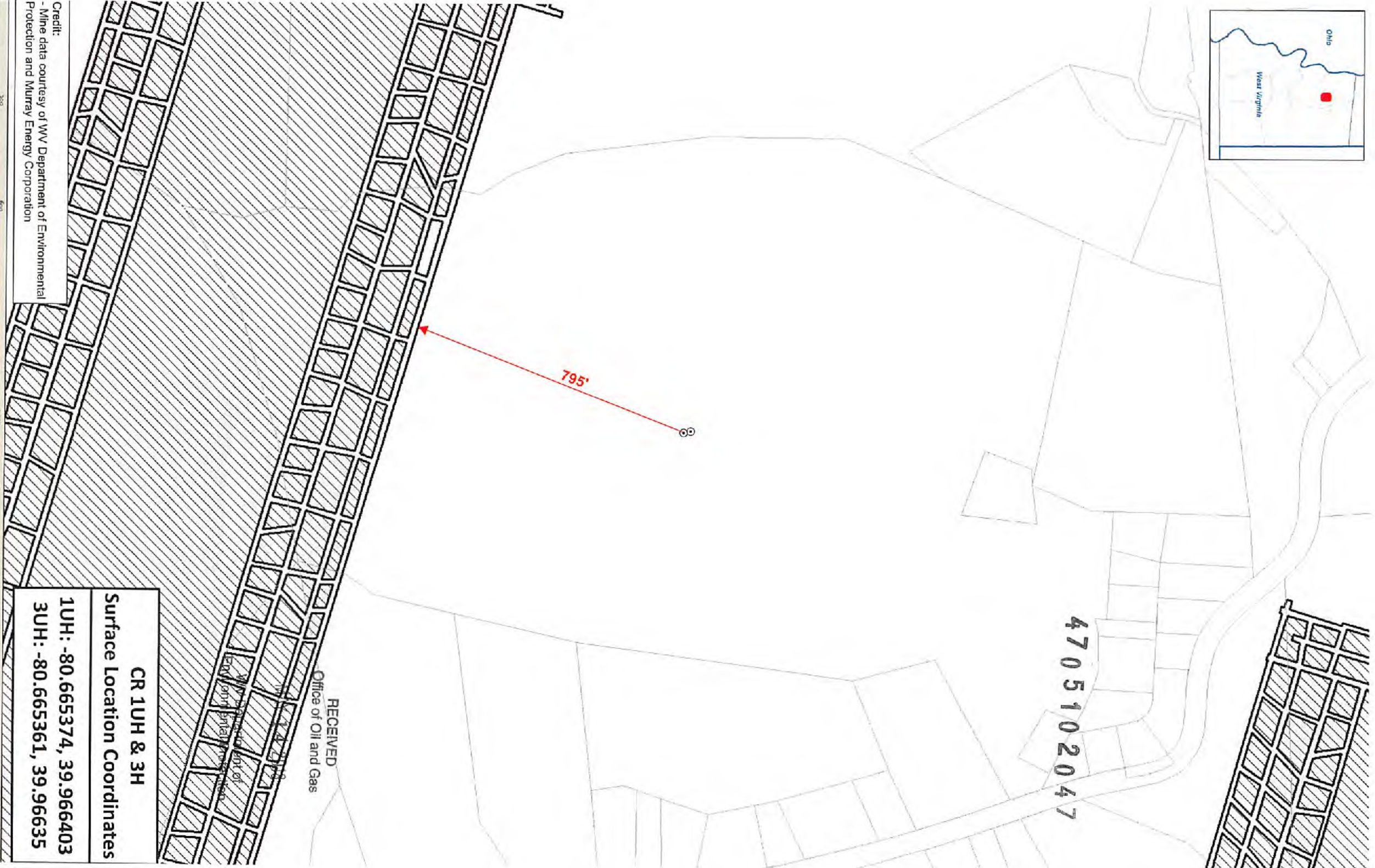
E&S CONTROL AND SITE PLAN
 THIS DOCUMENT WAS PREPARED BY:
 BOORD, BENCHER AND ASSOC., INC.
 FOR: AMERICAN PETROLEUM PARTNERS OPERATING, LLC.

DATE: MARCH 2018
 CASTERLY ROCK WELL PAD
 UNION DISTRICT, MARSHALL COUNTY, WV

NO.	DATE	REVISIONS	DESCRIPTION



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795'

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Marshall County
Department of Environmental
Protection

CR 1UH & 3H

Surface Location Coordinates

1UH: -80.665374, 39.966403
3UH: -80.665361, 39.96635

Credit:
- Mine data courtesy of WV Department of Environmental Protection and Murray Energy Corporation

CR 1UH & 3UH - Coal Areas

Marshall County
Coordinate System: DTMN: North American 1983
Coordinate Projection: Transverse Mercator
Map Scale Units: 13.500
Map Author: J.S.
Map Date: 05/2008

- Well SHL
- Approximate Well to Coal length
- Coal Pillars

