



west virginia department of environmental protection

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

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

Monday, March 21, 2022
WELL WORK PERMIT
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359
SPRING, TX 773914954

Re: Permit approval for SHANNON FIELD OHI 210
47-069-00334-00-00

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.

A blue ink signature of James A. Martin.

James A. Martin
Chief

Operator's Well Number: SHANNON FIELD OHI 210
Farm Name: SHANNON FIELDS, LLC
U.S. WELL NUMBER: 47-069-00334-00-00
Horizontal 6A New Drill
Date Issued: 3/21/2022

Promoting a healthy environment.

03/25/2022



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Harold Ward, Cabinet Secretary
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**ORDER
ISSUED UNDER
WEST VIRGINIA CODE, CHAPTER 22, ARTICLE 6A**

TO: SWN Production Company, LLC
Post Office Box 12359
Spring, TX 77391-4954

DATE: March 21, 2022
ORDER NO.: 2022-W-5

INTRODUCTION

This Order (hereinafter "Order") is issued by the Office of Oil and Gas (hereinafter "OOG"), by and through its Chief, pursuant to the authority of W. Va. Code §§ 22-1-1, 22-6-1 and 22-6A-1 *et seq.* to SWN Energy, LLC (hereinafter "SWN" or "Operator"), collectively the "Parties."

FINDINGS OF THE CHIEF

In support of this Order, the Chief hereby finds the following:

1. OOG, an office within the West Virginia Department of Environmental Protection, is the agency with the duty and authority to execute and enforce W. Va. Code §22-6-1 and §22-6A-1 *et seq.*, and the rules and regulations promulgated thereunder.
2. SWN is a "person" as defined by W. Va. Code §22-6-1(n), with a corporate address as Post Office Box 12359, Spring, TX 77391-4954
3. On February 3, 2022, SWN submitted a well work permit application identified as API# 47-069-00334. The well is located on the Shannon Field OHI Pad in the Richland District of Ohio County, West Virginia.
4. On March 14, 2022, SWN requested a waiver for Wetlands W-1, W-2, W-3, W-4, W-5 and W-6 as outlined in Attachment 1, from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit application identified as API# 47-069-00334. Wetlands W-1, W-2, W-3, and W-6 are inside the LOD and will be removed during construction, therefore they will not be a part of this waiver. These wetlands will be covered by the ACOE permit for the pad construction.

CONCLUSIONS OF LAW

1. West Virginia Code §22-1-6(d) requires, in part, that “in addition to other powers, duties and responsibilities granted and assigned to the secretary by this chapter, the secretary is authorized and empowered to... (3) Enter private lands to make surveys and inspections for environmental protection purposes; to investigate for violations of statutes or rules which the Office of Oil and Gas is charged with enforcing; to serve and execute warrants and processes; to make arrests; issue orders, which for the purposes of this chapter include consent agreements; and to otherwise enforce the statutes or rules which the Office of Oil and Gas is charged with enforcing.”
2. West Virginia Code §22-6A-2(a)(6) requires, in part, that “Concomitant with the broad powers to condition the issuance of well work permits, the secretary should also have broad authority to waive certain minimum requirements of this article when, in his or her discretion, such waiver is appropriate: *Provided*, That the secretary shall submit a written report of the number of waivers granted to the Legislature commencing January 1, 2013, and each year thereafter.”
3. West Virginia Code §22-6A-12(b) requires, in part, that “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 Office of Oil and Gas 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 Office of Oil and Gas 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.”

ORDER

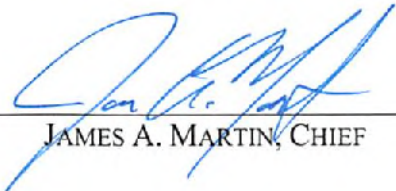
West Virginia Code §22-6A-12(b) requires, in part, that “no well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland. The Office of Oil and Gas grants the request for a waiver for Wetlands W-4 and W-5 from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit application identified as API# 47-069-00334. The Office of Oil and Gas hereby **ORDERS** that SWN shall meet the following site construction and operational requirements for the Shannon Field OHI Well Pad:

- a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least twenty-four inches (24”) in height.
- b. Erosion control blankets shall be installed on all slopes and down gradient locations of the pad as erosion and sediment controlling BMPs.
- c. Wetlands W-4 and W-5 shall be protected by a two layers twenty four-inch (24”) compost filter sock. This along with temporary and permanent vegetative cover will prevent sediment from reaching the wetland.
- d. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual.
- e. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill.
- f. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill.
- g. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls.
- h. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs.
- i. Inspections of the storm water and spill prevention measures shall be conducted after any major storm event defined as a half inch (½”) rain within any twenty-four (24) hour period.
- j. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies.
- k. All records from inspections shall be maintained on site for the life of the project and be available upon request.

Thus ORDERED, the 21st day of March 2022.

IN THE NAME OF THE STATE OF WEST VIRGINIA:

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

By: 

JAMES A. MARTIN, CHIEF

Well Operator: SWN Production Company, LLC
Well Number: _____ Well Pad Name: Shannon Fields Well Pad
County, District, Quadrangle of Well Location: Ohio County, Wheeling Quadrangle, WV

Answer the questions below to request a waiver from West Virginia Department of Environmental Protection for any wetlands or perennial streams which lie within one hundred feet of proposed project Limit of Disturbance (LOD), which includes any erosion and sediment control devices to be used.

This waiver shall be requested pursuant to Chapter 22 Article 6A Section 12 of West Virginia Code, which states:

§22-6A-12(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.

§22-6A-12(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.

Answer in the space provided, or use additional pages as necessary to fully answer the questions below:

- 1. Describe the proposed project location, including unique identifying names of all wetlands, and the names of perennial streams for which the waiver is sought.**

The proposed Shannon Fields Pad is located north of Wheeling, WV just north of Boggs Hill Road in Ohio County, WV. Approximate coordinates of the property are 40.088242, -80.657313. Additional information for the stream and wetlands is attached.

*Attachment A

- 2. Justify the proposed activity by describing alternatives to this project that were considered.**

- a. Include a No-Action Alternative as to show "the future without the project"
- b. Location Alternatives must be shown
- c. Must demonstrate why a one hundred foot buffer cannot be maintained
- d. Describe how the proposed project is the least environmentally damaging practicable alternative

The Shannon Fields well pad is not able to meet the 100' setback requirements from adjacent wetlands. The physical location of the pad has been approved by the surface owner. The well head locations have been strategically placed in order to be drilled through geological targeted formation(s), therefore, the well head locations cannot be moved. The current pad dimensions are necessary to safely setup the drilling rig. A long narrow pad could not be achieved and still maintain enough room for the drilling rig and associated equipment. The Limits of disturbance encroaching into the wetlands around the well pad is also necessary for proper construction and maintenance of the Erosion Control BMP's.

Refer to Attachment A for details related to location alternatives.

3. **Identify sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. This description should include all additional erosion and sediment control measures and devices that will be used.**

Refer to Attachment A for details.

4. **Provide mapping, plans, specifications and design analysis for the preferred alternative to the project.**
 - a. Specify in writing what additional controls, measures, devices, monitoring, etc. will be used to protect these wetlands and/or perennial streams for which the waiver is sought.

There is no preferred alternative available for this well pad due to specifics sited in #2 above.

Please refer to Attachment A.

Wetland and Perennial Stream Waiver Request – Attachment A

**SWN Production Company
Shannon Fields Pad
Ohio County, Wheeling Quadrangle, WV**

1. Describe the proposed project location, including unique identifying names of all wetlands, and the names of perennial streams for which the waiver is sought.

All streams and wetlands identified within the project area are identified on the Stream and Wetland Delineation Map. Four wetlands are being impacted within the limits of disturbance (LOD). One perennial stream, and two wetlands are located within 100 feet (ft) of the LOD. An Approved Jurisdictional Determination (AJD) and a Preliminary Jurisdictional Determination (PJD) were approved by the USACE for all features within the project area. The AJD states that the four wetlands within the LOD are non-jurisdictional. The PJD assumes all other features outside the LOD are jurisdictional. Coordination with the DEP also determined that the State Waters Permit would not be required for the impacted wetlands. Descriptions of the wetlands and perennial stream within 100 ft are included below.

W-1 is a 0.067 acres (AC) palustrine emergent (PEM) wetland located within the LOD. It is located on a hillslope. According to the AJD issued by the USACE this wetland is determined non-jurisdictional.

W-2 is a 0.009 AC PEM wetland located within the LOD. It is located on a hillslope. According to the AJD issued by the USACE this wetland is determined to be non-jurisdictional.

W-3 is a 0.008 AC PEM wetland located within the LOD. It is located on a hillslope. According to the AJD issued by the USACE this wetland is determined to be non-jurisdictional.

W-4 is a PEM wetland located 15 ft north of the LOD boundary. It is located at the head of a draw and is hydrologically connected to an intermittent stream downslope. Due to the PJD by the USACE this wetland is assumed to be a jurisdictional water of the United States (WOTUS).

W-5 is a PEM wetland located 90 ft north of the LOD boundary. It is isolated on a ridge between two draws containing streams. Due to the PJD by the USACE this wetland is assumed to be a WOTUS.

W-6 is a 0.016 AC PEM wetland located within the LOD. It is located on a hillslope. According to the AJD issued by the USACE this wetland is determined to be non-jurisdictional.

2. Justify the proposed activity by describing alternatives to this project that were considered.

There are no alternatives available for this well pad, however, two alternative sites were thoroughly vetted by SWN as well as property owners. Concepts were drafted on the following properties.

- a. Parkview Memorial Gardens Concept (Attached) - Dated 8/16/18
Located in Ohio Co, WV approximately 1.77 miles from the Shannon Fields Well Pad. Location was not selected due to landowner issues concerning bankruptcy. SWN was unable to secure access to the property.
*Center of pad Lat: 40.088171°, Long:-80.664312°

Wetland and Perennial Stream Waiver Request – Attachment A

**SWN Production Company
Shannon Fields Pad
Ohio County, Wheeling Quadrangle, WV**

- b. Shawnee Hill Concept (Attached) - Dated 4/28/21
Located in Ohio Co, WV approximately 0.36 miles from the Shannon Fields Well Pad. Location was not selected by SWN due to landowner concerns. The access to the well site was also located in a residential area.
*Center of pad Lat: 40.113733°, Long: -80.664906°
3. **Identify sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. This description should include all additional erosion and sediment control measures and devices that will be used.**

ROCK CONSTRUCTION ENTRANCE

A rock construction entrance will be provided at the location shown on the plans and in accordance with the standard detail provided in the Erosion and Sediment Control Plan. This measure proves effective removing sediment from vehicles before entering onto State, and county roads. The rock construction entrance thickness shall be constantly maintained to the specified dimensions by adding rock. A stockpile shall be maintained onsite for this purpose. At the end of each construction day, all sediment deposited on paved roadways shall be removed and returned to the construction site. If the crushed stone does not adequately remove sediment from vehicle tires, the tires should be hosed off before the vehicle enters a public street. The washings should be done on an area covered with crushed stone, and the water wash should drain to a sediment control device.

DIVERSION DITCHES

A channel will be used to convey stormwater runoff in a stable manner from the tank pad site construction area. The channel will be lined with erosion control matting to help keep seed in place once final grades are established. Channels shall be inspected twice a month until a uniform 70% perennial vegetative cover is established. Any damage to the channel or erosion control blanket shall be fixed immediately. The contractor is to place seed on all bare spots and areas not establishing ground cover.

COLLECTION / ROADSIDE DITCHES

Collection/roadside channels will be used to convey stormwater runoff in a stable manner from the tank pad site and access road. Depending on the velocity of flow in each channel, the channel will be vegetated or lined with riprap. See ditch calculation table provided in the attached Erosion and Sediment Control Plan for details.

If vegetated, channels shall be inspected twice a month until a uniform 70% perennial vegetative cover is established. Any damage to the channel or erosion control blanket shall be fixed immediately. The contractor is to place seed on all bare spots and areas not establishing ground cover.

If the channel is lined with riprap it shall be inspected within 24 hours after every storm event greater than 0.5 inches of rain per 24 hour period. Replace stone as necessary. If consistent washouts persist, install rock check dam to slow velocity of runoff in the washout area.

ROCK CHECK DAMS

Rock check dams are to be installed in each channel to reduce the velocity of stormwater flows, thereby reducing erosion of the channel and trapping sediment. Rock check dams are to be installed

Wetland and Perennial Stream Waiver Request – Attachment A

SWN Production Company
Shannon Fields Pad
Ohio County, Wheeling Quadrangle, WV

every 100 linear feet in any channel conveying sediment laden runoff. Inspect each check dam at a minimum once every seven (7) calendar days and within 24 hours after and storm event greater than 0.5 inches of rain per 24 hour period. Check to see if water has flowed around the edges of the structure. Replace stone and repair dams as necessary to maintain the correct height and configuration.

RIP RAP OUTLET PROTECTION

Rock Aprons will be used at storm sewer outfalls to dissipate the velocity coming from storm pipes, helping prevent erosion/scour of existing drainage ways and features.

The rock aprons shall be inspected weekly until a uniform 70% perennial vegetation has established. Any visible damage shall be fixed by the end of the working day by placing additional riprap in the damaged area with a layer of geotextile. Place additional stone as necessary to prevent further erosion.

4. **Provide mapping, plans, specifications and design analysis for the preferred alternative to the project.** Plans and specifications for the well pad and access road have been revised based on the comments from the WVDEP. See attached for reference.
 - a. **Specify in writing what additional controls, measures, devices, monitoring, etc. will be used to protect these wetlands and/or perennial streams for which the waiver is sought.**

COMPOST FILTER SOCK

Silt sock shall be installed in the locations shown on the plans and in accordance with the standard detail provided in the ESCP. Accumulated sediments shall be removed in all cases where accumulations have reached half the above ground height of the sock. If the sock has been damaged, it shall be repaired, or replaced if beyond repair. The filter media will be dispersed on site once the disturbed area has been permanently stabilized. Adhere to manufacturer's recommendations. The compost filter sock also has been doubled for added protection within the vicinity of the wetlands that are near the limits of disturbance.

EROSION CONTROL MATTING

The specified products or approved equivalent erosion control matting will be installed within all permanent channels and on all slopes 3:1 or greater. The erosion control matting shall be inspected weekly and after every rainfall event to look for scour/washout areas. Any scoured areas shall be fixed immediately by compacting soil in the washout area and placing seed. Any damaged erosion control matting shall be replaced immediately. Matting shall be maintained until a uniform 70% perennial vegetation has been established.

TEMPORARY VEGETATIVE STABILIZATION

Fertilizing, seeding, and mulching will be used as a temporary E&S control measure on all disturbed areas as needed. Exposed soils not subject to construction traffic shall not remain unseeded or covered by mulch for more than twenty-one (21) days, including stockpiled soil materials. Refer to the seeding mixtures provided on the erosion and sedimentation control general notes drawing of the Erosion and Sediment Control Plan for temporary seed mixtures.

The contractor shall vegetate all disturbed areas at the earliest appropriate times for establishment of temporary or permanent seed mixtures, respectively. When site development staging or season

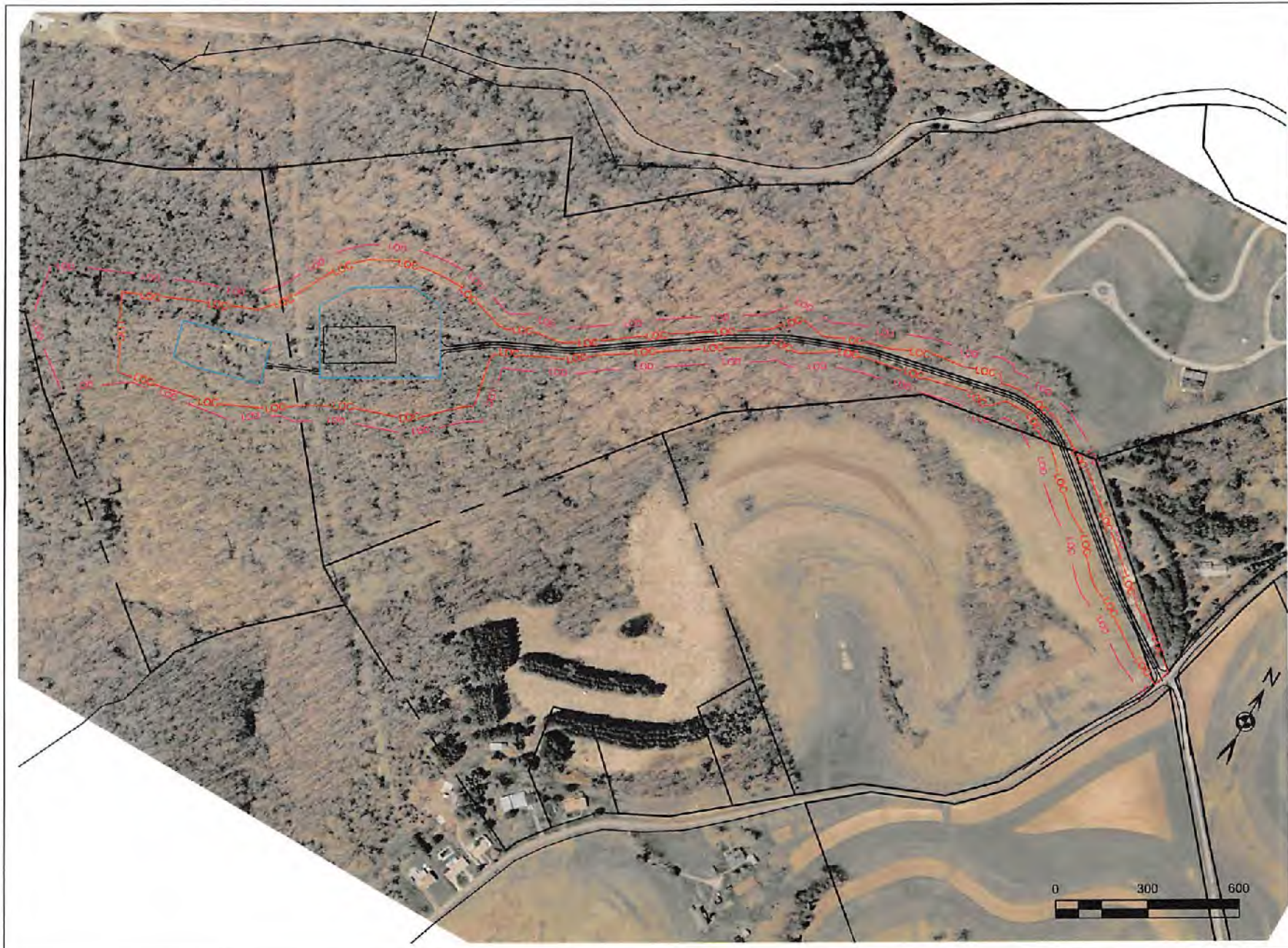
Wetland and Perennial Stream Waiver Request – Attachment A

**SWN Production Company
Shannon Fields Pad
Ohio County, Wheeling Quadrangle, WV**

will not permit timely sowing of the permanent seed mixture(s), prepare soils as for permanent seeding, seed with temporary seed mixture and mulch, and then over-sow the perennial seed mixture into the stubble of temporary vegetation at the next appropriate seeding season.

PERMANENT VEGETATIVE STABILIZATION

Fertilizing, seeding and mulching will be used as a permanent E&S control measure on all disturbed areas. Refer to the permanent seed mixture provided on the erosion and sediment control plan's general notes drawing. The contractor shall inspect the site twice a week until a 70% perennial vegetative cover is established. The contractor is to place seed on all bare spots and disturbed areas not establishing ground cover.



LOCATION MAP
NOT TO SCALE

NO.	DATE	DESCRIPTION

2 WORKING DAYS
BEFORE YOU DAY
CALL TOLL FREE
800-245-4845
Miss Utility of West Virginia

PREPARED FOR:

SEAL

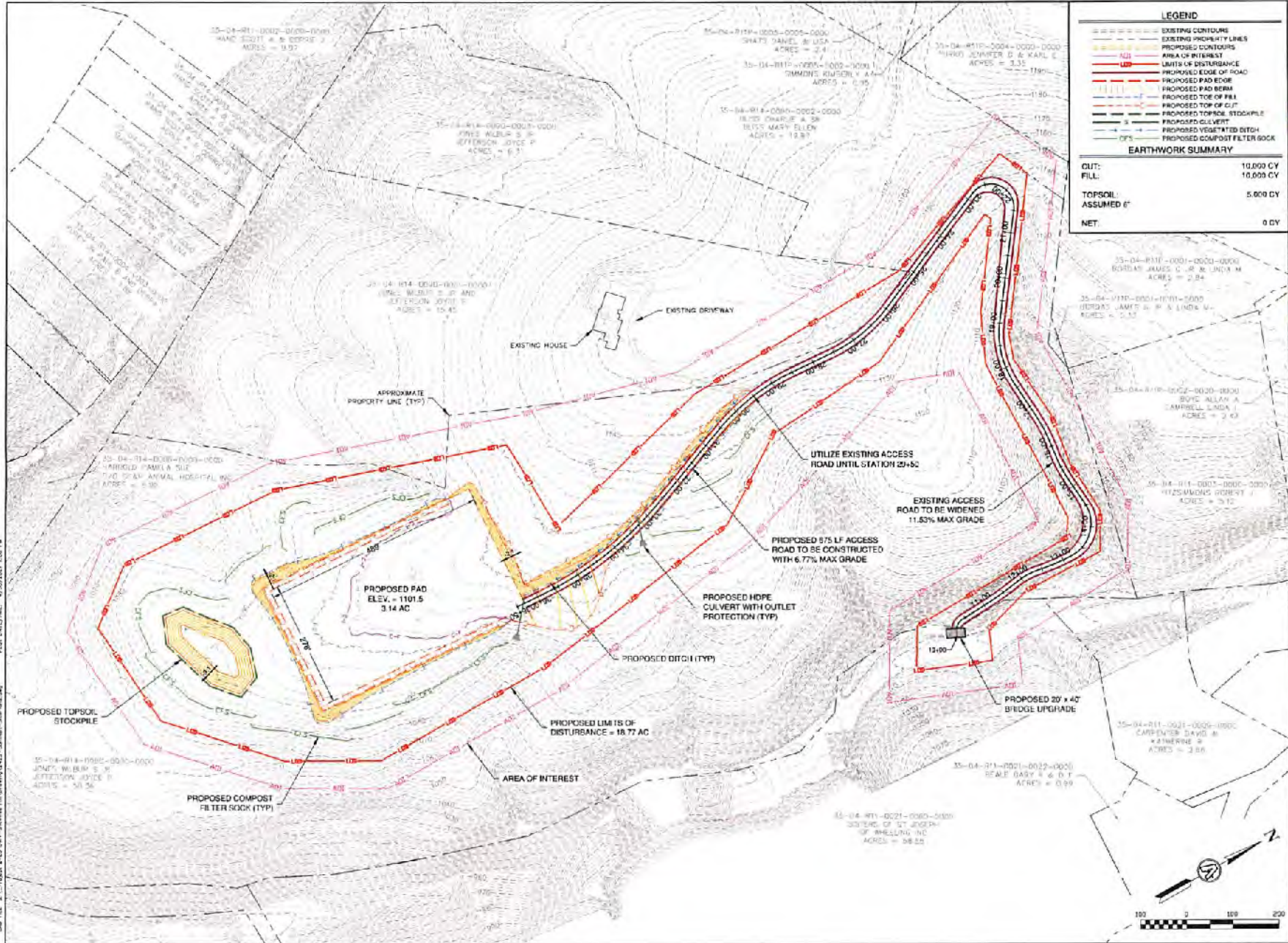
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ST. CLAIRSVILLE, OH 43950
(740) 695-6100
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PROJECT NO:	2018-224	DRAWN:	CLW
DATE:	09/16/18	CHECKED:	CLW
SCALE:	AS NOTED	CHECKED:	JPD

CONCEPT PLANS
FOR
PARKVIEW MEMORIAL GARDENS
LOCATED IN RICHLAND DISTRICT,
OHIO COUNTY, WEST VIRGINIA

TITLE:	
PLAN STATUS:	DRAFT
SHEET NO.:	



LEGEND

- EXISTING CONTOURS
- - - EXISTING PROPERTY LINES
- - - PROPOSED CONTOURS
- AREA OF INTEREST
- LIMITS OF DISTURBANCE
- PROPOSED EDGE OF ROAD
- PROPOSED PAD EDGE
- PROPOSED PAD BERM
- PROPOSED TOE OF FILL
- PROPOSED TOP OF CUT
- PROPOSED TOPSOIL STOCKPILE
- PROPOSED CULVERT
- PROPOSED VEGETATED DITCH
- PROPOSED COMPOST FILTER SOCK

EARTHWORK SUMMARY

CUT:	10,000 CY
FILL:	10,000 CY
TOPSOIL ASSUMED 6"	5,000 CY
NET:	0 CY



LOCATION MAP NOT TO SCALE

6		
5		
4		
3		
2		
1		

PREPARED FOR:
SWN
Southwestern Energy

SEAL:

NO.	DATE	DESCRIPTION

PREPARED BY:
ASCENT
Consulting & Engineering

201 DAVISON RUN ROAD
CLARKSBURG, WV 26301
WWW.ASCENTCONSULTINGENGINEERS.COM
(304) 853-5483

PROJECT NUMBER	2423	DRAWN:	DRS
DATE:	4/28/2021	DESIGN:	ZLA
SCALE:	AS SHOWN	CHECKED:	MRN
CONSTRUCTION PLANS FOR SWN SHAWNEE HILL WHEELING OHIO COUNTY, WV			
TITLE:	CONCEPT PLAN		
PLAN STATUS:	CONCEPT	SHEET NO.:	1

Dwg File: S:_Project_2423 DWG-Process\1803\Drawings\2423-Concept-04.dwg
 PLOT DATE/TIME: 4/30/2021 1:08 PM

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.

API Number: _____

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.

03/25/2022

WW-6B
(04/15)

API NO. 47-
OPERATOR WELL NO. Shannon Fields OHI 210H
Well Pad Name: Shannon Fields OHI

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

- 1) Well Operator: SWN Production Co., LLC 494512924 069-Ohio 005-Rich 674-Wheeling
Operator ID County District Quadrangle
- 2) Operator's Well Number: Shannon Fields OHI 210H Well Pad Name: Shannon Fields OHI
- 3) Farm Name/Surface Owner: Shannon Fields, LLC Public Road Access: Boggs Hill Road (Country Route 15/1)
- 4) Elevation, current ground: 1232' Elevation, proposed post-construction: 1230'
- 5) Well Type (a) Gas Oil Underground Storage
Other
(b) If Gas Shallow Deep
Horizontal
- 6) Existing Pad: Yes or No No *MJE 1/24/2022*
- 7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Onondaga, Target Top TVD- 6100', Target Base TVD- 6199', Anticipated Thickness- 99', Associated Pressure- 4029
- 8) Proposed Total Vertical Depth: 6199' Vertical
- 9) Formation at Total Vertical Depth: Onondaga
- 10) Proposed Total Measured Depth: 6199'
- 11) Proposed Horizontal Leg Length: _____
- 12) Approximate Fresh Water Strata Depths: 351'
- 13) Method to Determine Fresh Water Depths: Deepest Nearby Water Well
- 14) Approximate Saltwater Depths: 601' Salinity Profile
- 15) Approximate Coal Seam Depths: 503'
- 16) Approximate Depth to Possible Void (coal mine, karst, other): Possible Void 503'
- 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: _____
Depth: _____
Seam: _____
Owner: _____

RECEIVED
Office of Oil and Gas
FEB 3 2022
WV Department of
Environmental Protection

WW-6B
(04/15)

4706900334
API NO. 47- _____
OPERATOR WELL NO. Shannon Fields OHI 210H
Well Pad Name: Shannon Fields OHI

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	20"	New	J-55	94#	126'	126'	CTS
Fresh Water	13 3/8"	New	H-40	48#	555'	555'	394 sx/CTS
Coal	See	Surface	Casing				
Intermediate	9 5/8"	New	J-55	36#	1930'	1930'	1047 sx/CTS
Production	5 1/2"	New	P-110 HP	20#	6199'	6199'	Tail 550cu/100 Inside Intermediate
Tubing							
Liners							

MJK 1/24/2022

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	20"	30"	0.25	2120	81	Class A	1.20/30% Excess
Fresh Water	13 3/8"	17.5"	0.380	2730	633	Class A	1.20/30% Excess
Coal	See	Surface	Casing				
Intermediate	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/40% Excess
Production	5 1/2"	8 3/4"-8 1/2"	0.361	14360	10500	Class A	1.19/5% Excess
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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WW-5B
(10/14)

API NO. 47- _____
 OPERATOR WELL NO. Shannon Fields OHI 210H
 Well Pad Name: Shannon Fields OHI

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

The well will be drilled to a depth approximately 100' below the top of the Onondaga Formation to allow for open hole logging and confirming Marcellus interval formation characteristics. If casing is run, it will be run to total depth of the hole and cemented per regulatory requirements. If the well is determined to be dry and abandoned, it will be plugged per regulatory requirements for plugging and abandoning.

If drilling encounters a void, drill 25' to 75' below depth of bottom of void. Run casing minimum of 20'/maximum of 75' below base of coal void. Place cement baskets above top of void and below base of void. Mix and pump balance plug to bottom of coal void interval and grout from cement basket to surface or run external casing packer/cementing stage tool above coal void and perform 2 stage cement operation dependent upon depth of coal void. (If freshwater is encountered deeper than anticipated, it must be protected. Set casing 50' below and cts.)

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

Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface. In some instances, additional toe prep may be performed by pumping additional water in the toe of the well prior to perforating and pumping Stage 1 to ensure that the toe guns/toe sleeves are fully open prior to pumping stage 1. The well is produced through surface facilities consisting of high pressure production units, horizontal separation units, water and oil storage tanks. Max press and anticipated max rate- 9000 lbs @ 100 barrels a minute.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.94

22) Area to be disturbed for well pad only, less access road (acres): 17

23) Describe centralizer placement for each casing string:

All casing strings will be ran with a centralizer at a minimum of 1 per every 3 joints of casing.

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

See Attachment ***

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25) Proposed borehole conditioning procedures:

All boreholes will be conditioned with circulation and rotation for a minimum of one bottoms up and continuing until operator is satisfied with borehole conditions.

*Note: Attach additional sheets as needed.

CEMENT ADDITIVES

INTERVAL	SCHLUMBERGER PRODUCT NAME	BJ PRODUCT NAME	NEXTier PRODUCT NAME	PRODUCT USE	CHEMICAL NAME	CAS-Number
SURFACE (FRESHWATER) <i>up to 3%</i>	XXXXXXXXXX	INTEGRA SEAL	CJ600	LOST CIRC MATERIAL	CELLOPHANE FLAKES	9005-81-6
	S001	A-7P	CJ110	ACCELERATOR	CALCIUM CHLORIDE	10043-52-4
COAL PROTECTION <i>up to 3%</i>	XXXXXXXXXX	INTEGRA SEAL	CJ600	LOST CIRC MATERIAL	CELLOPHANE FLAKES	9005-81-6
	S001	A-7P	CJ110	ACCELERATOR	CALCIUM CHLORIDE	10043-52-4
INTERMEDIATE	D020	BENTONITE	CJ020	EXTENDER	BENTONITE	1302-78-9
	D047	FP 28L	XXXXXXXXXX	LIQUID ANTIFOAM AGENT	POLYPROPYLENE GLYCOL	25322-69-4
	XXXXXXXXXX	INTEGRA SEAL	CJ600	LOST CIRC MATERIAL	CELLOPHANE FLAKES	9005-81-6
	CemNet	XXXXXXXXXX	XXXXXXXXXX	LOST CIRC MATERIAL	COATED FIBERGLASS FIBERS	PROPRIETARY
	SUGAR	SUGAR	CJ795	CMT RETARDER	SUCROSE	57-50-1
	S001	A-7P	CJ110	ACCELERATOR	CALCIUM CHLORIDE	10043-52-4
PRODUCTION	XXXXXXXXXX	XXXXXXXXXX	CJ111	ACCELERATOR	SODIUM CHLORIDE	7440-23-5
	XXXXXXXXXX	SS-11W	CJ880	SURFACTANT	NONIONIC SURFACTANT	6540-99-4
	D047	FP 28L	XXXXXXXXXX	LIQUID ANTIFOAM AGENT	POLYPROPYLENE GLYCOL	25322-69-4
	XXXXXXXXXX	XXXXXXXXXX	CJX157011	SOLID ANTIFOAM AGENT	FULLERS EARTH(ATTAPULGITE)	8031-18-3
	XXXXXXXXXX	XXXXXXXXXX	CJ540	HP FLUID LOSS ADDITIVE	ALIPHATIC AMIDE POLYMER	PROPRIETARY
	D255	XXXXXXXXXX	XXXXXXXXXX	MED TEMP FLUID LOSS ADDITIVE	POLYACRILIC POLYMER	PROPRIETARY
	XXXXXXXXXX	XXXXXXXXXX	CJ213	RETARDER	CHRYSTALLINE SILICA	14808-60-7
	XXXXXXXXXX	FL-66	CJ501	LOW TEMP FLUID LOSS ADD	POWDERED POLYSACCHARIDE	PROPRIETARY
	XXXXXXXXXX	BENTONITE	CJ020	EXTENDER	BENTONITE	1302-78-9
	D208	ASA-301	XXXXXXXXXX	VISCOSIFIER/ANTI- SETTLING AGENT	REFINED POLYMER/ CHRYSTALLINE SILICA	PROPRIETARY
	D198	R-3		CEMENT RETARDER	LIGNIN	8068-51-6
	SUGAR	SUGAR	CJ795	CEMENT RETARDER	SUCROSE	57-50-1

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03/25/2022

Southwestern Energy Company

Proposed Drilling Program

Well: SHANNON FIELDS OHI 210
 Field: PANHANDLE FIELD \\
 County: OHIO
 SHL: 40.0884 Latitude -80.6578 Longitude
 BHL: 40.0884 Latitude -80.6578 Longitude
 KB Elev: 1,151 ft MSL

Re-entry Rig: TBD
 Prospect: Marcellus Shale
 State: WV



KB: -81 ft AGL GL Elev: 1,232 ft MSL

Coal Void @ 503' MD

PROD TOC Tail @ 3,800' MD

TUBULAR DETAIL

Casing String	Casing Size (in)	Weight (Min)	Grade (Min)	Planned Interval	
				From	To
Conductor	20	94.0 #	J-55	0'	126'
Surface	13.375	48.0 #	H-40	0'	555'
Intermediate	9.625	36.0 #	J-55	0'	1,930'
Production	5.5	20.0 #	P-110 HP	0'	6,199'

CEMENT DETAIL

	Sacks	Class	Density
Conductor:	151	A	19.3
Surface:	394	A	15.6
Intermediate:	1047	A	15.6
Production:	550	A	15.6-16.0

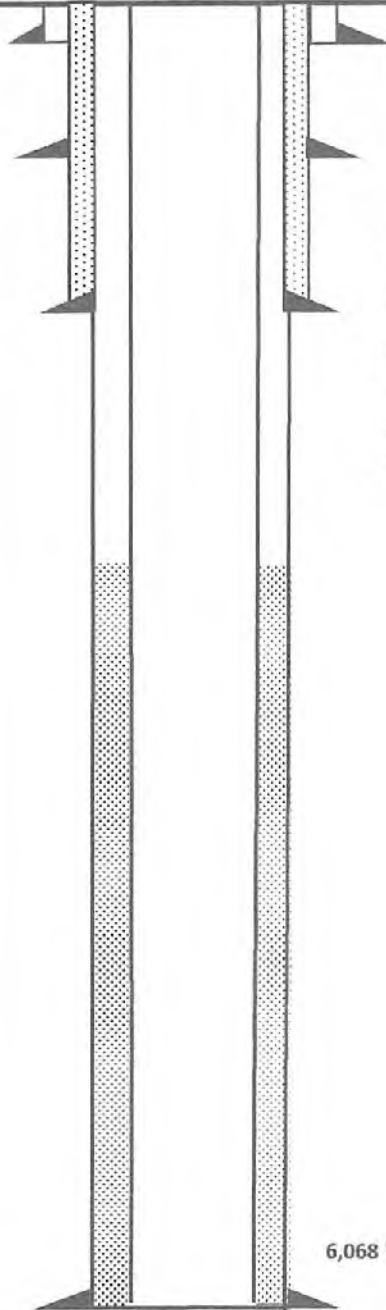
Freshwater Depth - 351' TVD
 Coal Void Depth - 503' TVD
 Saltwater Depth - 601' TVD
 TVD - 6,199'
 TMD - 6,199'

126' to 575'
Air/Mist

575' to 1,950'
Air/Mist

1,950' to 5,455'
Air/Mist

5,455' to 6,150'
12.0-12.5 ppg SOB M



Marcellus 6,048' MD
 Onondaga 6,099' TVD
 Well TD 6,150' TVD

6,068' Target Center

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TD @ 6,150'

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4706900334

WW-9
(4/16)

API Number 47 - 069 - _____
Operator's Well No. Shannon Fields OH1 21011

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name SWN Production Co., LLC OP Code 494512924

Watershed (HUC 10) Upper Ohio South Quadrangle Wheeling

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 Various Approved Facilities)
- Reuse (at API Number At the next anticipated well)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain recovery and solidification on site)

Will closed loop system be used? If so, describe: Yes- See Attachment 3A

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air drill to KOP, fluid drill with SOEM from KOP to TD

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

Additives to be used in drilling medium? Attachment 3B

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

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

-Landfill or offsite name/permit number? Meadowfill SWF- 1032, Short Creek SWF-1034, Carbon Limestone MSWL018781, Watzel County 1021

Apex Sanitary Landfill 06-08438, Brooke Co SWF-1013,

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 Brittany Woody

Company Official (Typed Name) Brittany Woody

Company Official Title Senior Regulatory Analyst

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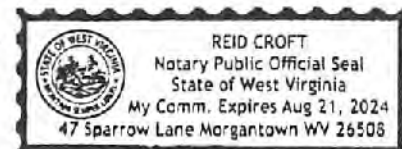
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Subscribed and sworn before me this 1st day of November, 20 21

Keith Craft Notary Public

My commission expires August 21, 2024



03/25/2022

Attachment 3A

CLOSED LOOP SYSTEM

The closed loop system is designed to eliminate the use of reserve pits by providing a higher level of solids control processing and using steel pits for capture of drill cuttings. The cuttings are then processed to achieve landfill requirements before hauling to approved landfills. The liquids are processed to recycle into the active mud system or to transfer to onsite temporary storage as needed.

The closed loop system consists of several sets of a shale gas separator (often called a 'methana'), several banks of solids shakers, high speed centrifuges (1 or 2) used to process the fluid portion of the mud system to remove low gravity solids, low speed centrifuge used for barite recovery in high weight liquid drilling systems, a dewatering system (for air intervals and if freshwater mud systems are in use) used to further clean liquids by flocculation and additional mechanical separation, associated open top tanks for processing liquids and capturing solids for disposal, and transfer pumps to move fluids through the processes. There is an area adjacent to the cuttings tanks (Red Zone) where a track hole is utilized to recover the processed cuttings for loading into containers for hauloff. (See attached schematic of a generic closed loop system layout)

Below are discussions of the processes used when drilling the air interval or liquids interval.

AIR DRILLING INTERVALS

During air drilling operations, flow from the rig will pass down the flowline to the Shale Gas Separator (sometimes called a methane) where gas and liquids/solids are separated. Gas is sent to the flare scrubber tank and is flared at the flare stack. Solids and fluids pass across a shaker system to separate solids from liquids. Solids pass into the cuttings tanks where they are captured for drying and hauloff to an approved landfill site. Liquids fall into a shaker tank and are collected by a centrifugal pump to be processed by the high speed centrifuge to further separate liquids and solids. Solids are then dumped into the cuttings tank for drying and hauloff. Liquids are further processed to remove additional low gravity solids before being reused or transferred to onsite storage.

LIQUIDS DRILLING (FRESHWATER, BRINE, SOBM)

When drilling is converted to liquids drilling, the shale gas separator and associated shaker tank are bypassed, and the liquids system is processed over the primary and drying shaker systems. Cuttings drop into the cuttings tank for additional processing. Any recoverable associated liquids attached to the cutting are recovered out the tank and processed through the low gravity (high speed) and barite recovery centrifuges (low speed) to further remove low gravity solids and to recover barite for reuse in the mud systems.

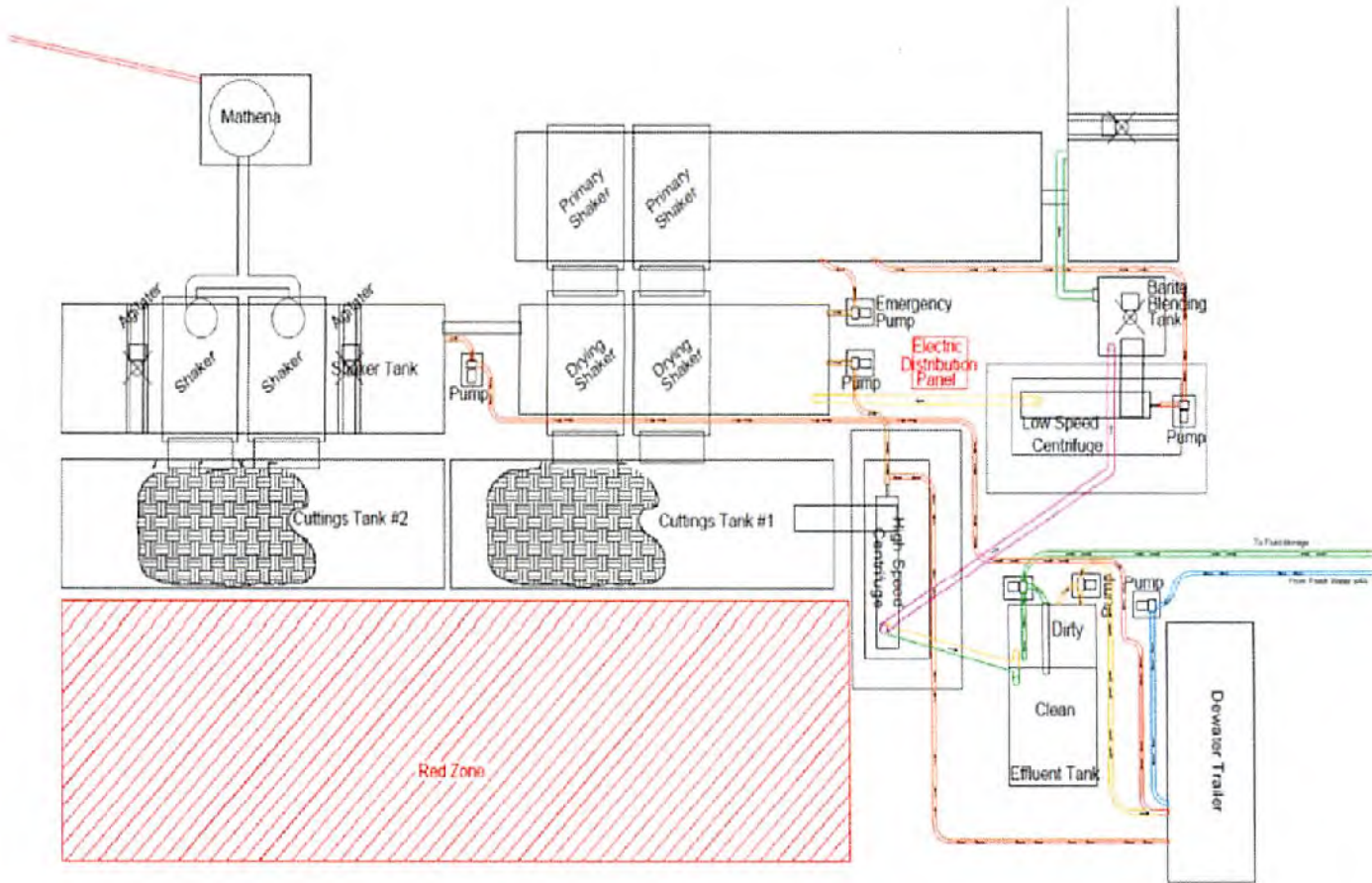
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Solids Control Layout



EXAMPLE SCHEMATIC FOR CLOSED LOOP SOLIDS CONTROL SYSTEM



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Attachment 3B

Drilling Mediums

Surface/Coal(if present)/Freshwater Intervals:

Air

Freshwater (if needed based on conditions)

Intermediate/Coal (if present):

Air

Production Hole:

Air

Synthetic Oil (Base Fluid for mud system)

Barite

Calcium Chloride

Lime

Organophilic Bentonite

Primary and Secondary Emulsifiers

Gilsonite

Calcium Carbonate

Friction Reducers

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SWN Production Co., LLC

Proposed Revegetation Treatment: Acres Disturbed 20.94 Prevegetation pH _____

Lime as determined by pH test min.2 Tons/acre or to correct to pH 17

Fertilizer type 10-20-20

Fertilizer amount 600/500 lbs/acre

Mulch Hay/Straw Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Attachment 3C			

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: Gayne Knitowski Digitally signed by Gayne Knitowski
Date: 2022.01.25 08:04:19 -0500

Comments: _____

Title: Oil & Gas Inspector

Date: 1-25-2022

Field Reviewed? Yes No

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WVD Seeding Specification

$\frac{R^2}{A} \rightarrow V^+$

To Order Seed contact Lyndsi Eddy Flippo office 570-996-4271 cell 501-269-5451 lyndsi_eddy@swn.com (please allow 7 to 10 days for delivery)

NON-ORGANIC PROPERTIES

Seed Mixture: ROW Mix	SWN Supplied	
Orchardgrass	40%	
Timothy	15%	
Annual Ryegrass	15%	
Brown Top Millet	5%	
Red Top	5%	
Medium Red Clover	5%	All legumes are innoculated at 5x normal rate
White Clover	5%	
Birdsfoot Trefoil	5%	
Rough Bluegrass	5%	
Apply @ 100lbs per acre April 16th- Oct. 14th		Apply @ 200lbs per acre Oct. 15th- April 15th PLUS 50lbs per acre of Winter Wheat

SOIL AMENDMENTS

10-20-20 Fertilizer	*Apply @ 500lbs per Acre	
Pelletized Lime	Apply @ 2 Tons per Acre	
*unless otherwise dictated by soil test results		

Seeding Calculation Information:

1452' of 30' ROW/LOD is One Acre
 871' of 50' ROW/LOD is One Acre
 622' of 70' ROW/LOD is One Acre

Synopsis:

Every 622 linear feet in a 70' ROW/LOD, you should be using (2) 50lb bags of seed, (4) 50lb bags of fertilizer and (80) 50lb bags of Lime (2x seed in winter months + 50lb Winter Wheat/ac).

Special Considerations:

Landowner Special Considerations including CREP program participants require additional guidance that is not given here. Discuss these requirements with SWN supervision at the beginning of the project to allow time for special seed delivery.

ORGANIC PROPERTIES

Seed Mixture: SWN Production Organic Mix	SWN Supplied	
Organic Timothy	50%	
Organic Red or White Clover	50%	
OR		
Organic Perennial Ryegrass	50%	
Organic Red or White Clover	50%	
Apply @ 100lbs per acre April 16th- Oct. 14th		Apply @ 200lbs per acre Oct. 15th- April 15th
Organic Fertilizer @ 200lbs per Acre		Pelletized Lime @ 2 Tons per Acre

WETLANDS (delineated as jurisdictional wetlands)

Seed Mixture: Wetland Mix	SWN Supplied	
VA Wild Ryegrass	20%	
Annual Ryegrass	20%	
Fowl Bluegrass	20%	
Cosmos 'Sensation'	10%	
Redtop	5%	
Golden Tickseed	5%	
Maryland Senna	5%	
Showy Tickseed	5%	
Fox Sedge	2.5%	
Soft Rush	2.5%	
Woolgrass	2.5%	
Swamp Verbena	2.5%	
Apply @ 25lbs per acre April 16th- Oct. 14th		Apply @ 50lbs per acre Oct. 15th- April 15th
NO FERTILIZER OR LIME INSIDE WETLAND LIMITS		

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November 1, 2021

Mr. Charles Brewer
Office of Oil & Gas
601 57th Street
Charleston, WV 25304

RE: Proposed New Well: Shannon Fields OHI 210H

Dear Mr. Brewer

SWN has reviewed the area of the above mentioned well and discovered no shallow wells within 500' of the lateral. This well is situated on the Shannon Field's property, in Richland District, Ohio County, West Virginia.

If you have any questions or desire additional information, please me at 304-884-1613.

Thank you.

Sincerely,



Brittany Woody
Senior Regulatory Analyst
Southwestern Energy Production Company, LLC

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MARCELLUS WELL DRILLING PROCEDURES AND WELL SITE SAFETY PLAN



SWN Production Company, LLC
1300 Fort Pierpont Drive, Suite 201
Morgantown, West Virginia 26508

API NO. 47-XXX-XXXXX
WELL NAME: Shannon Fields OHI 210H
Wheeling QUAD
Richland DISTRICT
Ohio COUNTY, WEST VIRGINIA

Submitted by:

Name: Brittany Woody

Date: 11/1/2021

Brittany Woody

Title: Senior Regulatory Analyst

SWN Production Co., LLC

Approved by:

Name: *Haynes Knott*

Date: *1/24/2022*

Title: *Inspector*

Approved by:

Name: _____

Date: _____

Title: _____

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CITY OF WHEELING
04 R:4001500000000

PARK VIEW MEMORIAL
GARDENS INC
04 R:1700680000000

GOVINBAN ANNA M
10W27A000100000000

MULL JAMES R
& MARILYN C
04 R:1700240000000

COULLING CLARK
H & MOLLY B
04 R:1700510000000

NUTTING
GEORGE OGDEN
04 R:1700490000000

HUFFNER EARL P
04 R:1700240000000

MINCH ROBERT
WILLIAM JR
04 R:1700570000000

**SHANNON
FIELDS-OHI-PAD1**

TOPIMARY CARTER
04 R:1700230000000

BENEKE GEORGE F
04 R:1700190000000

BENEKE NADAE E
04 R:1700220000000

LEWIS RUTH CARTER
04 R:1700230000000

WHARRY JOHN
C & VIRGINIA M
04 R:1700200000000

O'LEARY CRAIG
V & EMMA L
04 R:1700170000000

CARTER HARLAN P III
04 R:1700260000000



1 in = 417 ft

0 0.025 0.05 0.1 0.2

Coordinate System: NAD 1983 UTM Zone 17N

Official
FEB 3 2022
WV Department of
Environmental Protection

- Shannon Fields Pad Point
- Ⓢ Spring
- Ⓜ Water Well
- Ⓟ Pond
- ▭ Parcel
- ▭ 1500' Buffer

Water Purveyor Map
Well Pad: Shannon Fields
County: OH

SWN
Southwestern Energy®

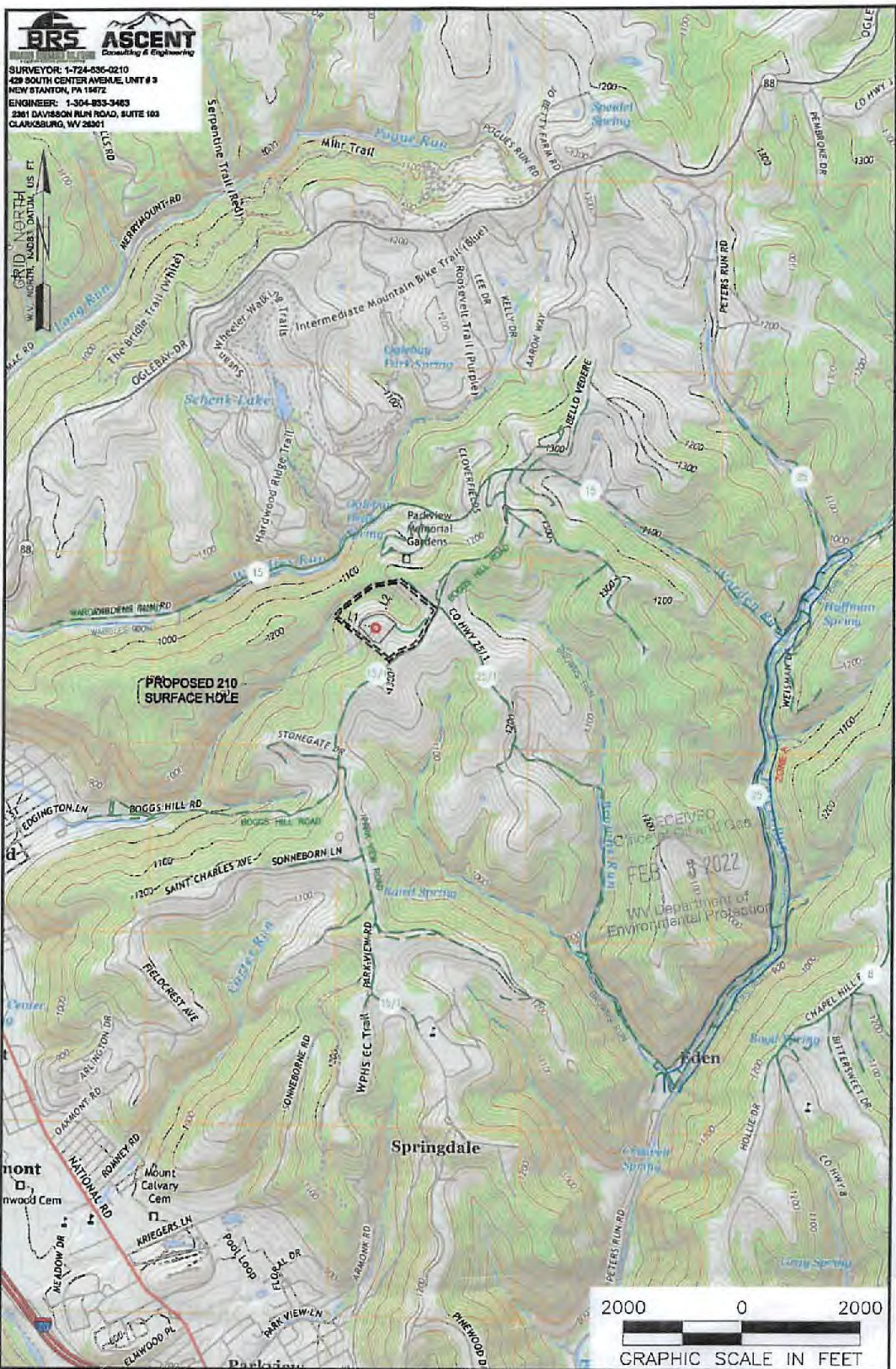
03/25/2022

Date: 11/1/2021 Author: willie



SURVEYOR: 1-724-836-0210
 428 SOUTH CENTER AVENUE, UNIT # 3
 NEW STANTON, PA 15672
 ENGINEER: 1-304-833-3483
 2381 DAVISSON RUN ROAD, SUITE 103
 CLARKSBURG, WV 26301

GRID NORTH
 W.V. NORTH, NAD83 DATUM, US FT



NOTES ON SURVEY

1. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
2. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. ALL INSERTS ARE GRID NORTH UNLESS OTHERWISE DEPICTED.

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- LANDING POINT LOCATION
- FLOOD PLAN
- ACCESS ROAD
- PUBLIC ROAD
- ACCESS ROAD TO PREV. SITE
- LEASE BOUNDARY
- PROPOSED PATH

WELL OPERATOR:
 SWN PRODUCTION COMPANY, LLC
 ADDRESS:
 P.O. BOX 1300 JANE LEW, WV 26378
 SURFACE OWNER:
 SHANNON FIELDS, LLC

WELL (FARM) NAME: SHANNON FIELD OHI	WELL # 210	SERIAL # XXXX
COUNTY - CODE OHIO - 35	DISTRICT: RICHLAND	
USGS 7 1/2 QUADRANGLE MAP NAME WHEELING, WV		

03/25/2022

BRS ASCENT
 GEOSPATIAL SOLUTIONS
 Consulting & Engineering
 SURVEYOR: 1-724-935-0210
 429 SOUTH CENTER AVENUE, UNIT # 3
 NEW STANTON, PA 15672
 ENGINEER: 1-304-933-3463
 2361 DAVISSON RUN ROAD, SUITE 103
 CLARKSBURG, WV 26301

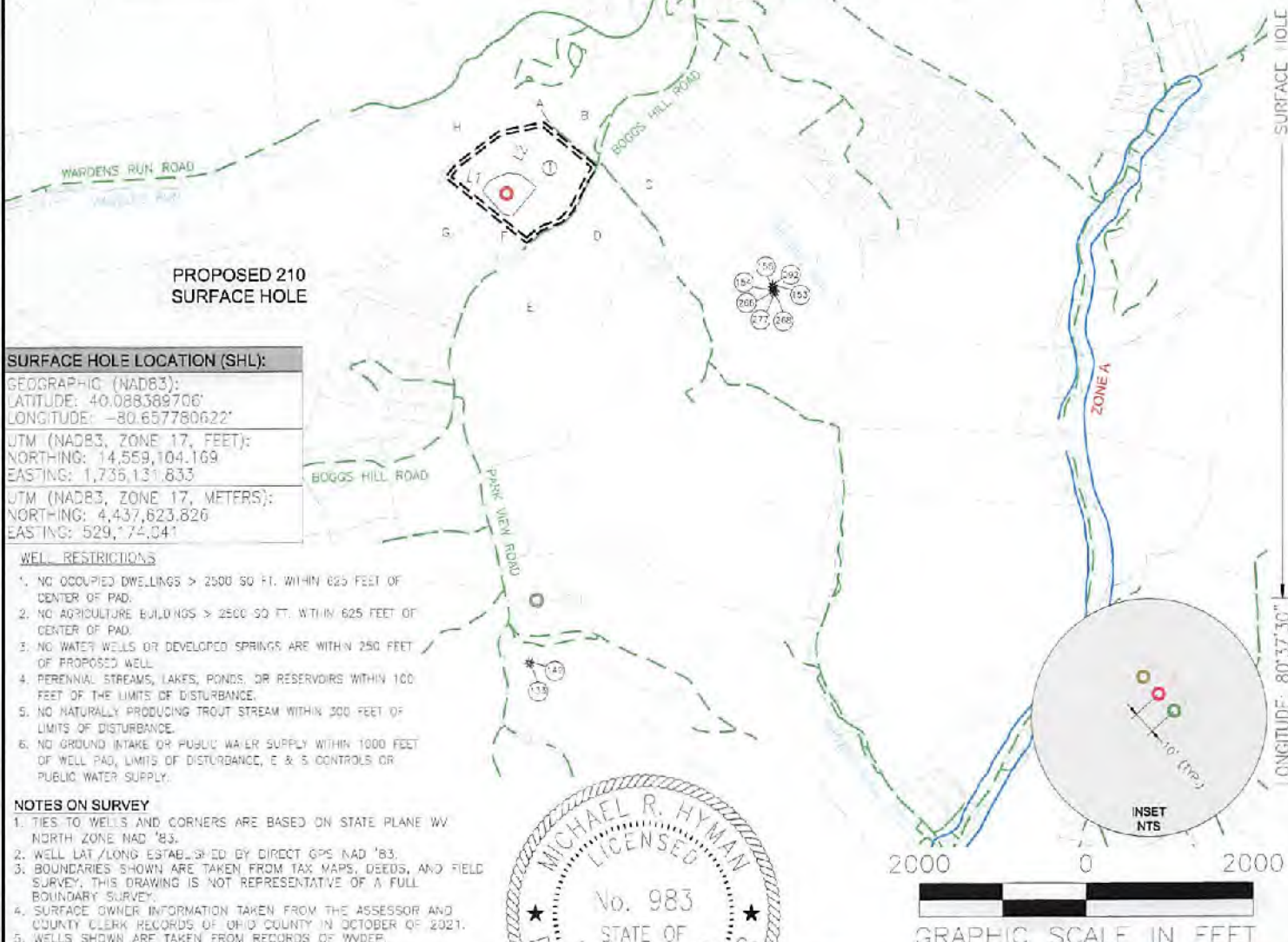
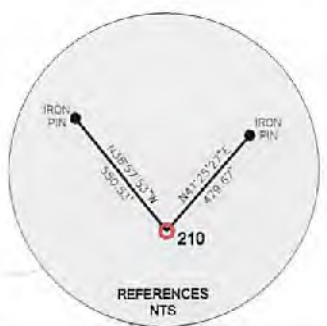
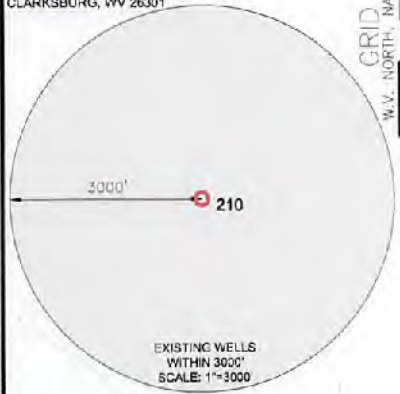
LATITUDE: 40°07'30" SURFACE HOLE 9,171'

LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	N 75°21'17" W	761.22'	SHL TO LANDMARK	STONE FOUND
L2	N 27°44'09" E	958.99'	SHL TO LANDMARK	CONCRETE MONUMENT

WELL BORE TABLE FOR SURFACE / ROYALTY OWNERS			
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	SHANNON FIELDS, LLC (S),(R)	4-R17-23.02	35.07

ADJOINERS TABLE FOR SURFACE OWNERS			
TRACT	SURFACE OWNER	TAX PARCEL	ACRES
A	EAR. P. HUFFNER	4-R-7-24.1	1.00
B	JAMES R. MULL	4-R-7-24	9.79
C	ROBERT W. MINCH, JR. & HERBERT PAUL MINCH	4-R-7-57	31.33
D	RUTH CARTER LEWIS REVOCABLE TRUST	4-R-7-23	25.168
E	RICHARD P. CARTER	4-R-7-23.3	63.27
F	NADA E. BENEKE	4-R-7-22	1.83
G	NADA E. BENEKE, et al	4-R17-19	24.3
H	PARK VIEW MEMORIAL GARDENS, INC.	4-R17-8	72.243

GRID NORTH
 W.V. NORTH, NAD83 DATUM, US FT



SURFACE HOLE LOCATION (SHL):
 GEOGRAPHIC (NAD83):
 LATITUDE: 40.088389706'
 LONGITUDE: -80.657780622'
 JTM (NAD83, ZONE 17, FEET):
 NORTHING: 14,559,104.169
 EASTING: 1,735,131.833
 JTM (NAD83, ZONE 17, METERS):
 NORTHING: 4,437,823.826
 EASTING: 529,174.041

- WELL RESTRICTIONS**
1. NO OCCUPIED DWELLINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
 2. NO AGRICULTURE BUILDINGS > 2500 SQ FT. WITHIN 625 FEET OF CENTER OF PAD.
 3. NO WATER WELLS OR DEVELOPED SPRINGS ARE WITHIN 250 FEET OF PROPOSED WELL.
 4. PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
 5. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
 6. NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.

- NOTES ON SURVEY**
1. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE WV NORTH ZONE NAD '83.
 2. WELL LAT/LONG ESTABLISHED BY DIRECT GPS NAD '83.
 3. BOUNDARIES SHOWN ARE TAKEN FROM TAX MAPS, DEEDS, AND FIELD SURVEY. THIS DRAWING IS NOT REPRESENTATIVE OF A FULL BOUNDARY SURVEY.
 4. SURFACE OWNER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF OHIO COUNTY IN OCTOBER OF 2021.
 5. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
- 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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



COMPANY:
SWN **SWN** *R₂-V⁺*
 Production Company, LLC Production Company™

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200
 PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)

SHANNON FIELD OHI
 OPERATOR'S WELL #: 210
 API WELL #: 47 69 00334 H6A
 STATE COUNTY PERMIT

WELL TYPE: OIL WASTE DISPOSAL PRODUCTION DEEP GAS LIQUID INJECTION STORAGE SHALLOW
 WATERSHED: UPPER OHIO SOUTH ELEVATION: 1232.0'
 DISTRICT: RICHLAND COUNTY: OHIO QUADRANGLE: WHEELING 7.5, WV
 SURFACE OWNER: SHANNON FIELDS, LLC ACREAGE: ± 35.07
 OIL & GAS ROYALTY OWNER: SHANNON FIELDS, LLC ACREAGE: ± 35.07
 DRILL DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION
 CONVERT PLUG & ABANDON CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY) **03/25/2022**
 TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 6,199 TVD 6,199 TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: BRITANY WOODY
 ADDRESS: 1300 FORT PIERPONT DRIVE SUITE 201 ADDRESS: 1300 FORT PIERPONT DRIVE SUITE 201
 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508 CITY: MORGANTOWN STATE: WV ZIP CODE: 26508

LEGEND:
 ○ PROPOSED SURFACE HOLE / BOTTOM HOLE
 * EXISTING / PRODUCING WELLHEAD
 LPL* LANDING POINT LOCATION
 W EXISTING WATER WELL
 S EXISTING SPRING
 — SURVEYED BOUNDARY
 — DRILLING UNIT
 — LEASE BOUNDARY
 — PROPOSED PATH

REVISIONS:
 DATE: 10-22-2021
 DRAWN BY: NRG
 SCALE: 1" = 2000'
 DRAWING NO: ACE-2326
 WELL LOCATION PLAT

WW-6A1
(5/13)

Operator's Well No. SHANNON FIELDS OHI 210H

**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 Exhibit A				

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Office of Oil and Gas

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WV Department of
Environmental Protection

**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

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: SWN Production Co., LLC
 By: Gavin Nadeau, RPL
 Its: Landman

4706900334

EXHIBIT "A"
Shannon Fields OH 210H
Ohio County, West Virginia

Attached to and made a part of the State of West Virginia Oil and Gas Permit Form, WW-6A1, by SWN Production Company, LLC., Operator

#	TMP	LESSOR	LESSEE	ROYALTY	BK/PG
1)	04-OR17-0023-0002	Shannon Field, LLC Mary Carter Topp, married, dealing in her sole and separate property	SWN Production Company, LLC Chesapeake Appalachia, L.L.C.	17.00%	883/415 805/270

Note: Shannon Field, LLC (current Mineral Owner) obtained mineral interest by deed dated March 12, 2013 recorded at Book 854 and Page 769 in the Office of Recorders of Ohio County, West Virginia. Mineral Owner is subject to the original Chesapeake Appalachia, L.L.C. lease executed by Mary Carter Topp recorded in the Office of Recorders of Ohio County, West Virginia at Book 805 and Page 270, in which SWN Production Company, LLC operates thereunder by assignment recorded at Book 883 and Page 415.

END OF EXHIBIT "A"

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OHIO OIL & Gas
FEB 17 2022
Department of
Environmental Protection

03/25/2022

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

Date of Notice Certification: 2/2/2022

API No. 47- _____
Operator's Well No. Shannon Fields OHI 210H
Well Pad Name: Shannon Fields OHI

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>529,174.011</u>
County: <u>069-Ohio</u>		Northing: <u>4,437,623.826</u>
District: <u>Richland</u>	Public Road Access: <u>Boggs Hill Road (Country Route 15/1)</u>	
Quadrangle: <u>Wheeling</u>	Generally used farm name: <u>Shannon Fields</u>	
Watershed: <u>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.

<p>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:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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WV Department of
Environmental Protection

Required Attachments:

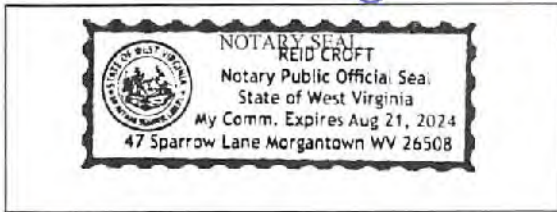
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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 Brittany Woody, 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>SWN Production Co., LLC</u>	Address:	<u>1300 Fort Pierpont Dr., Suite 201</u>
By:	<u>Brittany Woody</u>		<u>Morgantown, WV 26508</u>
Its:	<u>Senior Regulatory Analyst</u>	Facsimile:	<u>304-884-1690</u>
Telephone:	<u>304-884-1610</u>	Email:	<u>Brittany_Woody@swn.com</u>

Brittany Woody



Subscribed and sworn before me this 7th day of November, 2021
Reid Croft Notary Public
 My Commission Expires August 21, 2024

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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 WV Department of
 Environmental Protection

WW-6A
(9-13)

4706900334
API NO. 47- -
OPERATOR WELL NO. Shannon Fields OH 210H
Well Pad Name: Shannon Fields OH

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: 2/2/2022 Date Permit Application Filed: 2/3/2022

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: Shannon Fields LLC
Address: 10268 Amberwood Court
Cincinnati, OH 45241

COAL OWNER OR LESSEE
Name: H3 LLC
Address: 1483 Johns Creek Road
Milton, WV 25541

Name: _____
Address: _____

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: _____
Address: _____
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: None
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary. RECEIVED Office of Oil and Gas

FEB 3 2022

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 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

WW-6A
(8-13)

API NO. 4706900334
OPERATOR WELL NO. Shannon Fields OHI 210H
Well Pad Name: Shannon Fields OHI

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

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.**

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Office of Oil and Gas

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Environmental Protection

03/25/2022

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.

FEB 25 2022
WV Department of
Environmental Protection

WW-6A
(8-13)

API NO. 4706900334
OPERATOR WELL NO. Shannon Fields OHI 2101
Well Pad Name: Shannon Fields OHI

Notice is hereby given by:

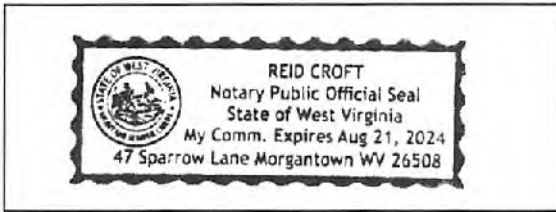
Well Operator: SWN Production Co., LLC
Telephone: 304-884-1610
Email: Brittany_Woody@swn.com

Brittany Woody

Address: 1300 Fort Pierpont Dr, Suite 201
Morgantown, WV 26508
Facsimile: 304-884-1690

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 deprivacyofficer@wv.gov.



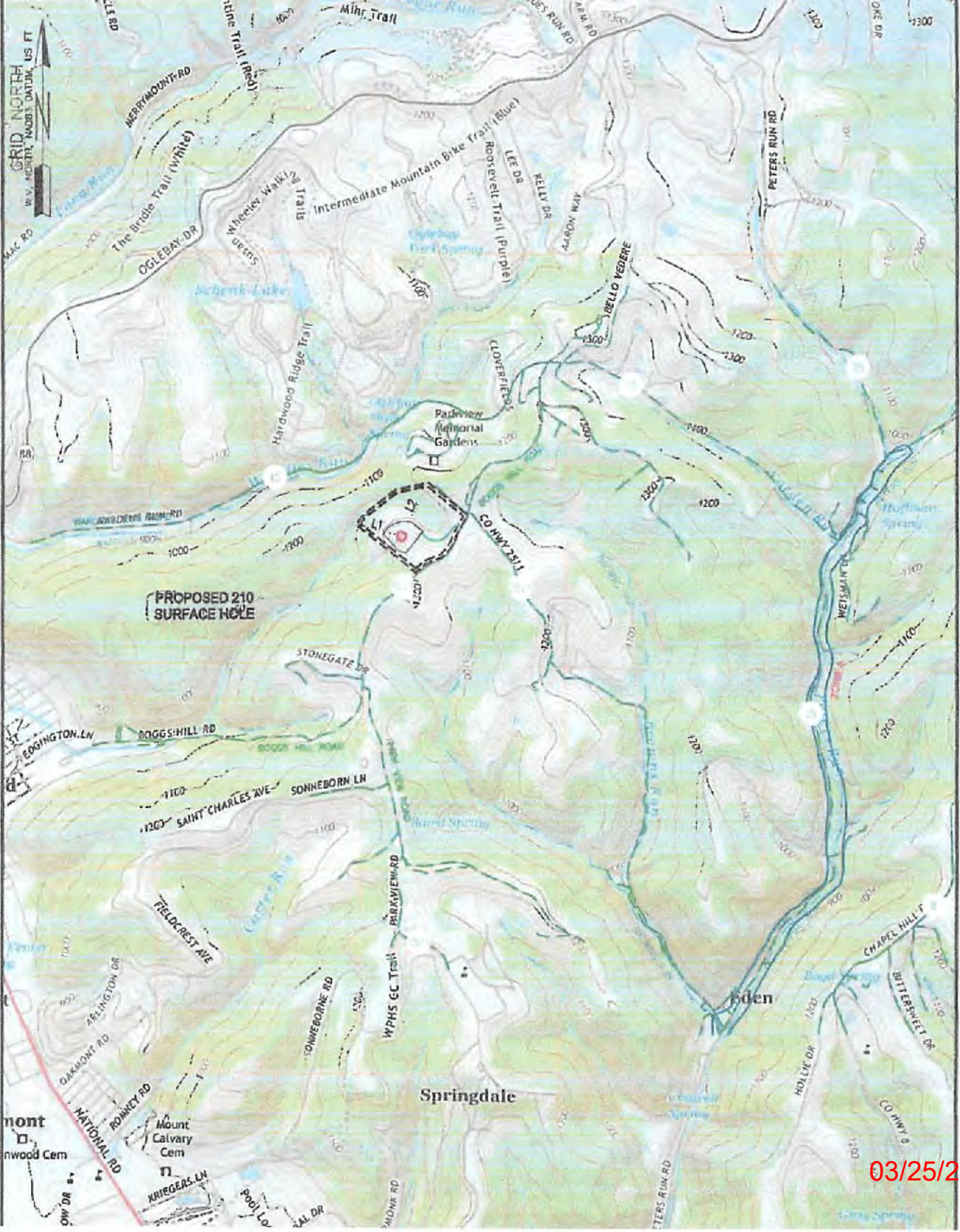
Subscribed and sworn before me this 1st day of Nov. 2021.
Reid Croft Notary Public
My Commission Expires August 21, 2024

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WV Department of
Environmental Protection

03/25/2022



SURVEYOR: 1-724-835-0210
429 SOUTH CENTER AVENUE, UNIT # 3
NEW STANTON, PA 19772
ENGINEER: 1-304-933-3483
2301 DAVISSON RUN ROAD, SUITE 103
CLARKSBURG, WV 26301



03/25/2022

4706900334

04 R17002300030000	CARTER HARLAN P III	190 BOGGS HILL RD	WHEELING WV 26003	1
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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: 10/5/2021 **Date of Planned Entry:** 10/12/2021

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: Shannon Field, LLC
 Address: 10288 Amberwood Court
 Cincinnati, OH 45241
 Name: _____
 Address: _____
 Name: _____
 Address: _____

COAL OWNER OR LESSEE

Name: H3, LLC
 Address: 1483 Johns Creek Rd
 Milton, WV 25541

MINERAL OWNER(s)

Name: Shannon Field, LLC
 Address: 10288 Amberwood Court
 Cincinnati, OH 45241

*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: West Virginia	Approx. Latitude & Longitude: 40.038496, -80.6567667
County: Ohio	Public Road Access: Boggs Hill Road (Country Route 15/1)
District: Richland	Watershed: Upper Ohio- Wheeling
Quadrangle: Wheeling	Generally used farm name: Shannon Field

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: SWN PRODUCTION COMPANY, LLC
 Telephone: 304-884-1610
 Email: Britlany_Woody@swn.com

Address: 1300 Fort Pierpont Dr., Suite 201
 Morgantown, WV 26508
 Facsimile: 304-884-1690

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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.

03/25/2022

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least TEN (10) days prior to filing a permit application.

Date of Notice: 10/21/2021 **Date Permit Application Filed:** 2/3/2022

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

HAND DELIVERY CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: Shannon Field, LLC
Address: 10288 Amberwood Court
Cincinnati, OH 45241

Name: _____
Address: _____

Notice is hereby given:

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

State: West Virginia UTM NAD 83 Easting: 529,174.041
County: Ohio Northing: 4,437,623.826
District: Richland District Public Road Access: Boggs Hill Road
Quadrangle: Wheeling Generally used farm name: Shannon Fields-OHI
Watershed: Upper Ohio South

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. 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.

Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: 1300 Fort Pierpont Drive, Suite 201
Morgantown, WV 26508
Telephone: 304-884-1714
Email: michael_yates@swn.com
Facsimile: _____

Authorized Representative: Michael Yates
Address: 1300 Fort Pierpont Drive, Suite 201
Morgantown, WV 26508
Telephone: 304-884-1714
Email: michael_yates@swn.com
Facsimile: _____

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF INTENT TO DRILL

Pursuant to W. Va. Code § 22-6A-16(b), the Notice of Intent to Drill is only required if the notice requirements of W. Va. Code § 22-6A-10(a) have NOT been met or if the Notice of Intent to Drill requirement has NOT been waived in writing by the surface owner.

Notice Time Requirement: Notice shall be provided at least **TEN (10)** days prior to filing a permit application.

Date of Notice: 10/21/2021 **Date Permit Application Filed:** _____

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

HAND DELIVERY **CERTIFIED MAIL RETURN RECEIPT REQUESTED**

Pursuant to W. Va. Code § 22-6A-16(b), at least ten days prior to filing a permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner notice of its intent to enter upon the surface owner's land for the purpose of drilling a horizontal well: *Provided*, That notice given pursuant to subsection (a), section ten of this article satisfies the requirements of this subsection as of the date the notice was provided to the surface owner: *Provided, however*, That the notice requirements of this subsection may be waived in writing by the surface owner. The notice, if required, shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative.

Notice is hereby provided to the SURFACE OWNER(s):

Name: H3, LLC
Address: 1483 Johns Creek Rd
Millon, West Virginia 25541

Name: _____
Address: _____

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Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(b), notice is hereby given that the undersigned well operator has an intent to enter upon 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>529,174.041</u>
County:	<u>Ohio</u>		Northing:	<u>4,437,623.826</u>
District:	<u>Richland District</u>	Public Road Access:		<u>Boggs Hill Road</u>
Quadrangle:	<u>Wheeling</u>	Generally used farm name:		<u>Shannon Fields-OHI</u>
Watershed:	<u>Upper Ohio South</u>			

WV Department of
Environmental Protection

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(b), this notice shall include the name, address, telephone number, and if available, facsimile number and electronic mail address of the operator and the operator's authorized representative. 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.

Notice is hereby given by:

Well Operator: SWN Production Company, LLC
Address: 1300 Fort Pierpont Drive, Suite 201
Morgantown, WV 26508
Telephone: 304-884-1714
Email: michael_yates@swn.com
Facsimile: _____

Authorized Representative: Michael Yates
Address: 1300 Fort Pierpont Drive, Suite 201
Morgantown, WV 26508
Telephone: 304-884-1714
Email: michael_yates@swn.com
Facsimile: _____

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(1/12)

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: 10/21/2021 Date Permit Application Filed: 2/3/2022

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: <u>Shannon Field, LLC</u>	Name: _____
Address: <u>10268 Amberwood Court</u>	Address: _____
<u>Cincinnati, OH 45241</u>	

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>529,174.041</u>
County: <u>Ohio</u>		Northing: <u>4,437,623.826</u>
District: <u>Richland District</u>	Public Road Access: <u>Boggs Hill Road</u>	
Quadrangle: <u>Wheeling</u>	Generally used farm name: <u>Shannon Fields-OH</u>	
Watershed: <u>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: <u>SWN Production Company, LLC</u>	Address: <u>1300 Fort Pierpont Drive, Suite 201</u>
Telephone: <u>304-884-1714</u>	<u>Morgantown, WV 26508</u>
Email: <u>michael_yates@swn.com</u>	Facsimile: _____

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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: 10/21/2021 Date Permit Application Filed: 2/3/2022

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

- 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: H3, LLC
Address: 1483 Johns Creek Rd
Milton, WV 25541

Name: _____
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>529,174.041</u>
County:	<u>Ohio</u>		Northing:	<u>4,437,623.826</u>
District:	<u>Richland District</u>	Public Road Access:	<u>Boggs Hill Road</u>	
Quadrangle:	<u>Wheeling</u>	Generally used farm name:	<u>Shannon Fields-OHI</u>	
Watershed:	<u>Upper Ohio South</u>			

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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: SWN Production Company, LLC
Telephone: 304-884-1714
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Address: 1300 Fort Pierpont Drive, Suite 201
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Facsimile: _____

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WV Department of
Environmental Protection
03/25/2022



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

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

D. Alan Reed, P.E.
 State Highway Engineer

Jimmy Wriston, P. E.
 Secretary of Transportation
 Commissioner of Highways

January 28, 2022

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 Shannon Fields Pad, Ohio County
 Shannon Fields OHI 210H Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2022-0043 which has been issued to Southwestern Energy for access to the State Road for a well site located off Ohio County Route 15/1 SLS MP 3.41.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a STATEWIDE 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 October 1, 2018. This letter is valid for permitting purposes for one year from the date of this letter.

Very Truly Yours,

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

Cc: Brittany Woody
 Southwestern Energy
 CH, OM, D-6
 File

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Attachment VI Frac Additives

4706900334

Product Name	Product Use	Chemical Name	CAS Number
AI-303 (U.S. Well Services)	Mixture	Ethylene glycol	107-21-1
		Cinnamaldehyde	104-55-2
		Butyl cellosolve	111-76-2
		Formic acid	64-18-6
		Polyether	Proprietary
		Acetophenone, thiourea, formaldehyde polymer	68527-49-1
AP ONE (U.S. Well Services)	Breaker	Ammonium persulfate	7727-54-0
Bactron K-139 (Champion Technologies)	Biocide	Glutaraldehyde	111-30-8
		Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides	68424-85-1
		Ethanol	64-17-5
Bactron K-219 (Champion Technologies)	Biocide	Methanol	67-56-1
		Quaternary Ammonium Compounds, Benzyl-C12-16-Alkyldimethyl, Chlorides	68424-85-1
CarboNRT	Tracer	Ceramic Proppant	66402-68-4
EC5486A (Nalco Champion)	Scale Inhibitor	Amine Triphosphate	Proprietary
		Ethylene Glycol	107-21-1
EC5734A (Champion Technologies)	Biocide	Hydrogen Peroxide	7722-84-1
		Acetic Acid	64-19-7
		Peroxyacetic Acid	79-21-0
Econa-C1200 (SWN Well Services)	Corrosion Inhibitor	Methanol	67-56-1
		Oxyalkylated fatty acid	68951-67-7
		Fatty acids	61790-12-3
		Modified thiourea polymer	68527-49-1
		Water	7732-18-5
		Hydrochloric acid	7647-01-0
		Potassium acetate	127-08-2
Formaldehyde	50-00-0		
Ecopol-PEAC (SWN Well Services)	Iron Control	Acetic Acid	64-19-7
		Citric Acid	77-92-9
		Water	7732-18-5
FDP-S1176-15 (Halliburton)	Friction Reducer	Polyacrylate	Proprietary
		Hydrotreated light petroleum distillate	64742-47-8
FLOJET DR900 LPP (SWN Well Services)	Friction Reducer	Distillates (petroleum) hydrotreated light	64674-47-8
		Ethylene Glycol	107-21-1
		Alcohols, C12-16, Exoxylated propoxylated	68213-24-1
		Fatty Alcohols ethoxylated	Proprietary
		Water	7732-18-5
FLOJET DRP 1130X (SWN Well Services)	Friction Reducer	Proprietary	Proprietary
FR-76 (Halliburton)	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8
		Inorganic Salt	Proprietary
GYPTRON T-390 (Champion Technologies)	Scale Inhibitor	Methanol	67-56-1
		Nonylphenol Ethoxylate	Proprietary
HAI-150E (Halliburton)	Corrosion inhibitor	No hazardous substance	N/A
HCL (SWN Well Services)	Hydrochloric Acid	Hydrochloric Acid	7647-01-0
		Water	7732-18-5
LP-65 MC (Halliburton)	Scale Inhibitor	Organic phosphonate	Proprietary
		Ammonium Chloride	12125-02-9
OPTI-FLEX (U.S. Well Services)	Viscosifying Agent	Distillates, petroleum, hydrotreated light	64742-47-8
Plexslick 930	Friction Reducer	Copolymer of 2-propenamide	Proprietary
		Hydrotreated Distillate	64742-47-8
		Sodium Chloride	7647-14-5
		Alcohols, C12-16, Exoxylated	68551-12-2
		Oleic Acid Diethanolamide	93-83-4
		Ammonium Chloride	12125-02-9
Plexslick 953	Friction Reducer	Petroleum Distillate	64742-47-8
		Sodium Chloride	7647-14-5
		Ammonium Chloride	12125-02-9
		N,N-bis (2-hydroxyethyl) oleamide	93-83-4
Plexslick 957	Friction Reducer	Petroleum Distillate	64742-47-8
		Ammonium Chloride	12125-02-9
		Oleic Acid Diethanolamide	93-83-4
		Alcohols, C12-15, Exoxylated	68551-12-2
		Water	7732-15-5
WFRA-20C0 (U.S. Well Services)	Anionic Friction Reducer	Hydrotreated light distillate (petroleum)	64742-47-8
		Propenoic acid, polymer with propenamide	9303-06-9
Plexaid 655 NM	Scale Inhibitor	Diethylenetriamine penta (methylene phosphonic acid)	15827-30-8
Plexslick 922	no data available	Copolymer of 2-propenamide	69418-26-4
		Distillates (petroleum), hydrotreated light	64742-47-8
		Ammonium chloride ((NH4)Cl)	12125-02-9
		Oleic Acid Diethanolamide	93-83-4
Toicide P550A	Biocidal product	Tetrakis (hydroxymethyl) phosphonium sulphate	55566-30-8
		Acrylic acid terpolymer containing carboxylate phosphonate and sulfonate groups	397256-50-7
LD-2950	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8
		Ethoxylated alcohol	Proprietary
		Poly (oxy-1,2-ethanediyl) alpha.-tridecyl-omega.-hydroxy-, branched	69011-36-5
Legend LD-7750W	Scale Control	Methanol	67-56-1
		Phosphonic Acid Salt	Proprietary
MC MX 8-4745	Specialty Product	Sodium Nitrate	7631-99-4

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- 47-49 BORING LOGS
- 50 HAUL ROUTE

APPROVED
WVDEP OOG
3/18/2022

SOUTHWESTERN PRODUCTION COMPANY, LLC PROPOSED CONSTRUCTION PLANS FOR SHANNON FIELDS PAD OHIO COUNTY, WV FEBRUARY 2022

LOCAL EMERGENCY SERVICES	
NAME	NUMBER
AMBULANCE	911
HOSPITAL EMERGENCY ROOM	(304) 243-3000
FIRE DEPARTMENT	911
POLICE DEPARTMENT	911
PERSON CONTROL CENTER	(800) 222-1222

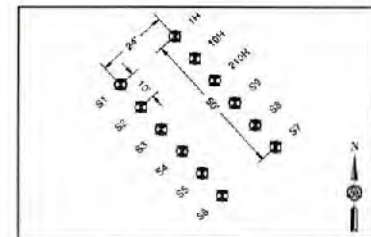


LOCATION COORDINATES		
ACCESS ROAD ENTRANCE		
LATITUDE: 40 084853 N	LONGITUDE: 80 054074 W	(DECIMAL DEGREES)
LATITUDE: 40 0518 907 N	LONGITUDE: 80 0515 397 W	(DEGREES-MINUTES-SECONDS)
NORTHING: 500600.2990	EASTING: 154552.9118	(WV SP 43, FEET)
NORTHING: 443709.933	EASTING: 524327.709	(UTM ZONE 17, METERS)
WELL PAD CENTER		
LATITUDE: 40 088496 N	LONGITUDE: 80 057667 W	(DECIMAL DEGREES)
LATITUDE: 40 0518 507 N	LONGITUDE: 80 0322 807 W	(DEGREES-MINUTES-SECONDS)
NORTHING: 500771.582	EASTING: 154561.275	(WV SP 43, FEET)
NORTHING: 443765.659	EASTING: 529163.728	(UTM ZONE 17, METERS)

LIMITS OF DISTURBANCE BY PROPERTY:		
PROPERTY #	PROPERTY OWNER	ACRES DISTURBED
35-04-3017-0025-002	SHANNON FIELDS, LLC	20.94

TOTAL DISTURBED AREA: 20.94 ACRES	
ROAD DISTURBED AREA	3.94 ACRES
PAD DISTURBED AREA	17.00 ACRES

EARTH WORK SUMMARY	
TOTAL CUT	11,200 CY
TOTAL FILL	46,800 CY
EXPORT (CARBONACEOUS MATERIAL)	5,500 CY
WASTE	10,000 CY
TOPSOIL ASSUMED 9" (AVG. DEPTH):	
	14,800 CY



SWN QUICK ESTIMATE		
ITEM DESCRIPTION	UNIT	QUANTITY
MOBILIZATION & DEMOBILIZATION (LIMITED TO 5% OF BASE BID)		
CELEBRATING & CLEANING	AC	1.0
TOPSOIL: 1" TO 4" SD, STOCKPILING AND DISTRIBUTION (LARGED 8" DEEP)	CY	14,800
PAVEMENT	CY	117,300
EXPORT (COAL / CARBONACEOUS MATERIAL)	CY	5,500
STRUCTURAL GEGRID	SY	20,970
SOIL TO KEY 7' DEEP (INCLUDES EXCAVATION, PIPE, STONE, FABRIC, & COLLECTION DRUMS) - (STONE BY SWN)	LF	2,350
SOIL TO KEY 7' DEEP (INCLUDES EXCAVATION, PIPE, STONE, FABRIC, & COLLECTION DRUMS) - (STONE BY SWN)	LF	400
INTERSTATE FOR EXCAVATION, EL. 1200 (INCLUDES EXCAVATION, PIPE, STONE L, & FABRIC) - (STONE BY SWN)	LF	1,090
WELL PAD CONCREMENT FORM	LF	1,750
SEEDING & MULCHING (INCLUDES HAY GUARD)	AC	7.50
1" CRUSHER RUN Limestone FOR WELL PAD (4") - (PLACEMENT ONLY, STONE IS PURCHASED AND DELIVERED BY SWN)	BN	4,675
ASPHALT 1 1/2" - (PLACEMENT ONLY, STONE IS PURCHASED AND DELIVERED BY SWN)	BN	5,200
6% CEMENT STABILIZATION FOR WELL PAD (12")	SY	22,340
2" CH 12.5 MM WASH IN PLACE ASPHALT	BN	400
3" OF 20 MM BASE COURSE ASPHALT	BN	700
6% CEMENT STABILIZATION FOR ACCESS ROAD (12")	SY	4,800
STABILIZED CONSTRUCTION ENTRANCE - (STONE BY SWN)	EA	1
GRADEABLE, INCLUDING TERMINAL ENDS	LF	360
ROCK LINED DITCH - (PLACEMENT ONLY - (STONE BY SWN)	LF	1,185
ROCK CHECK DAM, PLACEMENT ONLY - (STONE BY SWN)	EA	5
GRASS LINED DITCH WITH PROSOLOV CONTROL INLET	LF	400
8" COMPOST FILTER SOCK	LF	1,300
34" COMPOST FILTER SOCK	LF	3,575
34" MORE CLAVES	LF	518
DEWATERING SUMP, COMPLETE (LIND, SLIDE PIPE, PIPE LEVEL SPREADERS, BOLLARDS, ETC. PER DETAIL SHEET 28) - (STONE BY SWN)	EA	6
OUTLET PROTECTION - (PLACEMENT ONLY - (STONE BY SWN)	EA	4
2" GAS LINE CROSSING AT ENTRANCE (ECCO DESIGN BY MOJAVITE ENERGY COMPANY, NORTHERN OPERATIONS)	EA	1



- DRIVING DIRECTIONS**
- 1) HEAD NORTH ON FORT PIERPONT DR
 - 2) TURN RIGHT ONTO N PIERPONT RD. 482 FEET
 - 3) TURN RIGHT ONTO CHEAT RD. 0.8 MILES
 - 4) TURN LEFT TO MERGE ONTO I-48 W TOWARD I-79 0.5 MILES
 - 5) MERGE ONTO I-48 W. 6.1 MILES
 - 6) TAKE THE EXIT ONTO I-79 N TOWARD WASHINGTON. 45.3 MILES
 - 7) TAKE THE EXIT ONTO I-79 W TOWARD WASHINGTON. 30.1 MILES
 - 8) TAKE THE EXIT FOR US-40 TOWARD VAH SCUL GROVE TRACT CO. P.B.A. 0.3 MILES
 - 9) KEEP RIGHT, MERGE ONTO US-40 NATIONAL ROAD. 17.1 FT
 - 10) MERGE ONTO US-40 NATIONAL ROAD. 0.6 MILES
 - 11) TURN LEFT ONTO PETERS RUN ROAD. 3.8 MILES
 - 12) TURN LEFT ONTO WARDEN RUN ROAD. 1.1 MILES
 - 13) TURN LEFT ONTO BOGGS HILL ROAD, CONTINUE TO SITE ON RIGHT. 0.7 MILES

PROJECT COORDINATOR
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PROJECT MANAGER
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ENVIRONMENTAL
WETLANDS OR SURFACE WATER
INFORMATION WAS DELIVERED BY
ENVIRONMENTAL, INC.
DATED MARCH 2021

(TOPOGRAPHIC INFORMATION)
HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE
NAD83 WEST VIRGINIA STATE PLANS NORTH
ZONE 18 U.S. SURVEY FEET

UTILITY CONTACT INFORMATION:
ALEXANDER SCHLHAMM
ENGINEER, NORTHERN OPERATIONS
MOUNTAIN ENERGY COMPANY
P.O. BOX 4252 WARRIEN, WV 26061
1-800-425-4427
EMAIL: ALEXSCH@MMEBCO.WV.COM



2361 EDWARDS RUN ROAD
CLARKSBURG, WV 26301
WWW.ASCENTCONSULTINGENGINEERS.COM
(304) 933-3483

PROJECT NUMBER	2326	ISSUED	EMS
DATE	03/09/2022	REVISED	EMS
SCALE:	AS SHOWN	DRAWN	MRN
CONSTRUCTION PLANS FOR SWN PRODUCTION COMPANY, LLC SHANNON FIELDS PAD TRIADELPHIA OHIO COUNTY, WV			
TITLE:	COVER SHEET		
PLAN STATUS:	APPROVED FOR BIDDING	SHEET NO.:	1

WEST VIRGINIA 811
CALL BEFORE YOU DIG!
IT'S THE LAW!

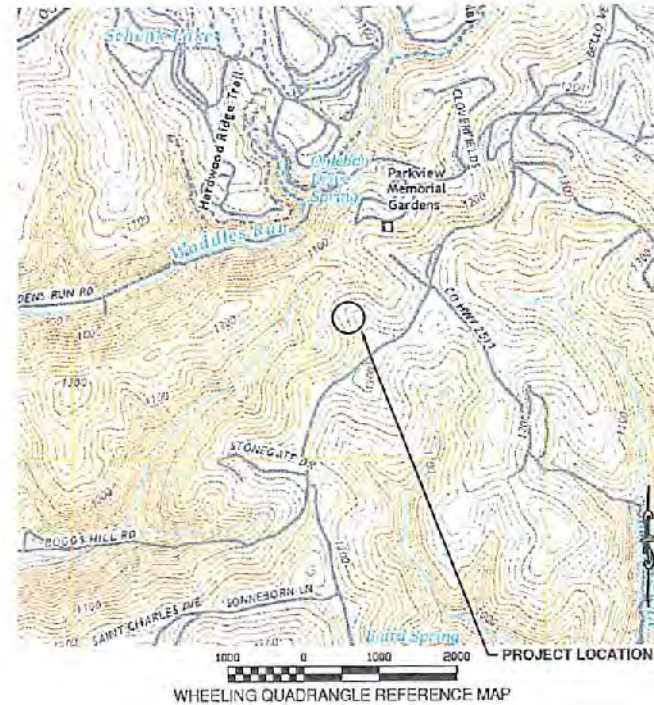
MASS UTILITY OF WEST VIRGINIA
1-800-80-8888
WEST VIRGINIA STATE LAW
(SECTION XV, CHAPTER 24 C)
REQUIRES THAT YOU CALL TWO
BUSINESS DAYS BEFORE YOU DIG IN
THE STATE OF WEST VIRGINIA

SHEET INDEX

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- 3 EVACUATION PLAN WITHOUT USGS MAP
- 4 EVACUATION PLAN WITH USGS MAP
- 5 EXISTING CONDITIONS
- 6 BOREHOLE LOCATIONS
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- 8 GEOMETRIC LAYOUT PLAN
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- 14 WELL PAD SUBGRADE PLAN
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SOUTHWESTERN PRODUCTION COMPANY, LLC PROPOSED CONSTRUCTION PLANS FOR SHANNON FIELDS PAD OHIO COUNTY, WV NOVEMBER 2021

SWN QUICK ESTIMATE		
ITEM DESCRIPTION	UNIT	QTY
MOBILIZATION & DEMOBILIZATION (LIMITED TO 80% OF BASE BID)	LS	1
CONSTRUCTION LAYOUT	LS	1
CLEARING & GRUBBING	AC	18.5
TOPSOIL STRIPPING, STOCKPILING, AND REDISTRIBUTION (AS LIMITED BY DEEP)	CY	14,800
EARTHWORK	CY	187,200
EXPORT (COAL / CARBONACEOUS MATERIAL)	CY	5,500
COAL CAP OVEREXCAVATION WITH SELECT BACKFILL	CY	855
STRUCTURAL GEOGRID	SY	70,050
SOILTIE KEY 3' DEEP (INCLUDES EXCAVATION, PIPE, STONE, FABRIC, & COLLECTION DRAINS)	LF	2,350
SOILTIE KEY 5' DEEP (INCLUDES EXCAVATION, PIPE, STONE, FABRIC, & COLLECTION DRAINS)	LF	990
INTERMEDIATE BATTERY LAFFRIDE (1" - 3/8") (INCLUDES EXCAVATION, PIPE, STONE, & FABRIC)	LF	1,090
WELL PAD CONTAINMENT BERM	LF	1,250
SEEDING & MULCHING (INCLUDES FERTILIZER)	AC	7.20
1.5" CRUSHER RUN LIMESTONE FOR WELL PAD #1	TN	4,675
ASHTO NO. 1 STONE	TN	5,377
3% CEMENT STABILIZATION FOR WELL PAD (#2)	SY	22,150
3" OF 12.5 MILL WEARING COURSE ASPHALT	TN	415
3" OF 25 MILL BASE COURSE ASPHALT	TN	600
1.5" CRUSHER RUN LIMESTONE FOR ACCESS ROAD (#2)	TN	270
3% CEMENT STABILIZATION FOR ACCESS ROAD (#2)	SY	3,800
STABILIZED CONSTRUCTION ENTRANCE	EA	1
GUARDRAIL	LF	820
ROCK LINED DITCH	LF	1,155
ROCK CHECK DAMS	EA	5
GRASS LINED DITCH WITH EROSION CONTROL BLANKET	LF	430
24" CONCRETE PATER ROCK	LF	3,075
36" HDPE CULVERT	EA	310
FLOWATING BASIN, COMPLETE (INCLUDES SLOPE PIPE, PIPE LEVEL SPREADERS, BOLLARDS, ETC. PER DETAIL)	EA	6
12" THICK RIP-RAP SLUMP	SY	475
OUTLET PROTECTION	EA	4



LOCAL EMERGENCY SERVICES	
NAME	NUMBER
AMBULANCE	911
HOSPITAL EMERGENCY ROOM	(304) 243-3000
FIRE DEPARTMENT	911
POLICE DEPARTMENT	911
POISON CONTROL CENTER	(800) 222-1222

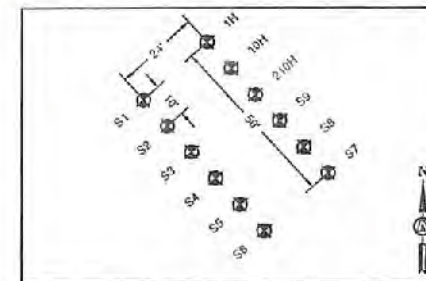
LOCATION COORDINATES		
ACCESS ROAD ENTRANCE:		
LATITUDE: 40.08985 N	LONGITUDE: 80.85474 W	(DECIMAL DEGREES)
LATITUDE: 40°05'16.56" N	LONGITUDE: 80°50'15.36" W	(DEGREES/MINUTES/SECONDS)
NORTHING: 520300.290	EASTING: 165552.010	(WV SP-85, FEET)
NORTHING: 443769.630	EASTING: 529472.790	(UTM ZONE 17, METERS)
WELL PAD CENTER:		
LATITUDE: 40.085490 N	LONGITUDE: 80.85767 W	(DECIMAL DEGREES)
LATITUDE: 40°05'18.59" N	LONGITUDE: 80°50'27.60" W	(DEGREES/MINUTES/SECONDS)
NORTHING: 560677.392	EASTING: 164350.12759	(WV SP-85, FEET)
NORTHING: 443769.630	EASTING: 529163.720	(UTM ZONE 17, METERS)

LIMITS OF DISTURBANCE BY PROPERTY:		
PROPERTY#	PROPERTY OWNER	ACRES DISTURBED
35-04-0R17-0023-0002	SHANNON FIELDS, LLC	20.94

TOTAL DISTURBED AREA: 20.94 ACRES
ROAD DISTURBED AREA: 5.94 ACRES
PAD DISTURBED AREA: 17.00 ACRES

EARTH WORK SUMMARY

TOTAL CUT: 117,200 CY
TOTAL FILL: 89,500 CY
EXPORT: (CARBONACEOUS MATERIAL) 5,500 CY
WASTE: 10,000 CY
TOPSOIL: ASSUMED 8" (AVG. DEPTH) 14,800 CY



WELL HEAD LAYOUT
NOT TO SCALE

- DRIVING DIRECTIONS**
- 1) HEAD NORTH ON FORT PIERPONT DR, 0.9 MILES
 - 2) TURN RIGHT ONTO N FIERPONT RD, 492 FEET
 - 3) TURN RIGHT ONTO CHEAT RD, 0.6 MILES
 - 4) TURN LEFT TO MERGE ONTO I-60 W TOWARD I-70, 0.5 MILES
 - 5) MERGE ONTO I-68 W, 6.1 MILES
 - 6) TAKE THE EXIT ONTO I-79 N TOWARD WASHINGTON, 45.3 MILES
 - 7) TAKE THE EXIT ONTO I-79 W-I-70 N TOWARD WASHINGTON, 30.8 MILES
 - 8) KEEP RIGHT AT THE FORK TO STAY ON I-70 W, 1.0 MILES
 - 9) TAKE EXIT 28 FOR WASHINGTON AVENUE, 0.2 MILES
 - 10) TURN RIGHT ONTO WASHINGTON AVENUE, 0.8 MILES
 - 11) TURN LEFT ONTO NATIONAL ROAD, 0.3 MILES
 - 12) TURN RIGHT ONTO EDGINGTON LANE, 0.5 MILES
 - 13) TURN RIGHT TO STAY ON EDGINGTON LANE, 0.1 MILES
 - 14) CONTINUE ONTO BOGGS HILL ROAD, 1.4 MILES

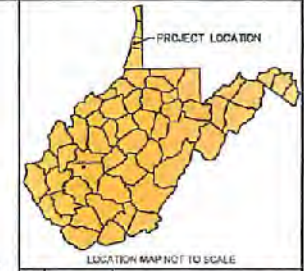
PROJECT COORDINATOR:
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ENGINEER:
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PROJECT MANAGER:
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ENVIRONMENTAL:
WETLANDS OR SURFACE WATER
INFORMATION WAS DELINEATED BY
ENVIRONMENTAL, INC.
DATED MARCH 2021

TOPOGRAPHIC INFORMATION:
HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE
BASED WEST VIRGINIA STATE PLANES, NORTH
ZONE, IN U.S. SURVEY FEET.



LOCATION MAP NOT TO SCALE

NO.	DATE	DESCRIPTION

PREPARED FOR



PREPARED BY:

2361 DAVISSON RUN ROAD
CLARKSBURG, WV 26301
WWW.ASCENTCONSULTINGENGINEERS.COM
(304) 933-3493

PROJECT NUMBER:	2326	DRAWN BY:	EMS
DATE:	11/17/2021	DESIGN:	EMS
SCALE:	AS SHOWN	CHECKED:	MRN
CONSTRUCTION PLANS FOR SWN PRODUCTION COMPANY, LLC SHANNON FIELDS PAD TRIADDELPHIA OHIO COUNTY, WV			
TITLE: COVER SHEET			
PLAN STATUS:	APPROVED FOR PERMITS	SHEET NO.:	1

WEST VIRGINIA 811
CALL BEFORE YOU DIG!
IT'S THE LAW!

MESS UTILITY OF WEST VIRGINIA
1-800-45-4246
WEST VIRGINIA STATE LAW
(SECTION XV, CHAPTER 24C)
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MRK 1/24/2022