



APPROVED
 NAME: *Denise Grantham*
 DATE: *11/8/17*

SWN Production Company, LLC
 Box 12359
 Spring, Texas 77391-2359
 www.swn.com

RECEIVED
 Office of Oil and Gas
 SEP 20 2017
 WV Department of
 Environmental Protection

Via Federal Express

September 14, 2017

State of West Virginia
 Department of Environmental Protection
 Office of Oil & Gas
 601 57th Street
 Charleston, WV 25304

RE: SWN Production Company, LLC
 Operator ID: 494512924
 Regulatory Filings: WR-36 Filing

To Whom It May Concern:

Please find enclosed forms WR-34 No Discharge, WR-35 Well Operator's Report of Well Work for the following wells:

Quality Reclamation MRN 6H (API 47-049-02421)

If you have any questions or require additional information, please contact me via email at denise_grantham@swn.com or telephone at (832) 796-6139.

Sincerely,

Denise Grantham

Denise Grantham
 Regulatory Technician
 West Virginia Division

/dg
 Encl.

R² → V⁺
A

01/05/2018

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

API 47-049-02421 County MARION District PAW PAW
Quad GRANT TOWN 7 1/2' Pad Name QUALITY RECLAMATION-MRN-PAD1 Field/Pool Name OSAGE FIELD DRY
Farm name JAMES & DOROTHY ICE, ET AL Well Number QUALITY RECLAMATION MRN 6H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY, LLC
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,380,745.821 Easting 572,042.534
Landing Point of Curve Northing 4,380,645.502 Easting 571,733.853
Bottom Hole Northing 4,378,680.202 Easting 572,425.827

Elevation (ft) 1224.5' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
SOBM

Date permit issued 01/13/2017 Date drilling commenced 02/03/2017 Date drilling ceased 03/06/2017
Date completion activities began 05/03/2017 Date completion activities ceased 06/23/2017
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 354' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 643' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 547' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

RECEIVED
Office of Oil and Gas

SEP 21 2017

WV Department of Environmental Protection 01/05/2018

API 47-049 - 02421 Farm name JAMES & DOROTHY ICE, ET AL Well number QUALITY RECLAMATION MRN 6H

| CASING STRINGS | Hole Size | Casing Size | Depth | New or Used | Grade w/ft | Basket Depth(s) | Did cement circulate (Y/N) * Provide details below* |
|---------------------------|-------------|-------------|-------|-------------|-------------|-----------------|--|
| Conductor | 24 | 20 | 126 | NEW | J-55/94# | | Y |
| Surface | 17.5 | 13.375 | 589 | NEW | J-55/54.5# | | Y |
| Coal | SEE SURFACE | | | | | | |
| Intermediate 1 | 12.25 | 9.625 | 3220 | NEW | J-55/36# | | Y; 55 BBLs RETURNED |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | 8.75/8.50 | 5.5 | 15128 | NEW | HCP-110/20# | | Y |
| Tubing | | | | NEW | | | N |
| Packer type and depth set | | | | | | | |

Comment Details _____

| CEMENT DATA | Class/Type of Cement | Number of Sacks | Slurry wt (ppg) | Yield (ft ³ /sks) | Volume (ft ³) | Cement Top (MD) | WOC (hrs) |
|----------------|----------------------|------------------|-----------------|------------------------------|---------------------------|-----------------|-----------|
| Conductor | CLASS A | GROUT TO SURFACE | | | | SURFACE | 24 |
| Surface | CLASS A | 200 | 15.6 | 1.20 | 240 | SURFACE | 8 |
| Coal | SEE SURFACE | | | | | | |
| Intermediate 1 | CLASS A | 1246 | 15.60 | 1.18 | 1470.28 | SURFACE | 8 |
| Intermediate 2 | | | | | | | |
| Intermediate 3 | | | | | | | |
| Production | CLASS A | 2502 | 15.60 | 1.19 | 2977.38 | SURFACE | 24 |
| Tubing | | | | | | | |

Drillers TD (ft) 15128' Loggers TD (ft) 15128'
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure _____

Kick off depth (ft) 7150'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

SURFACE: 7 CENTRALIZERS - EVERY THIRD JOINT OF CASING

INTERMEDIATE: 24 CENTRALIZERS - EVERY THIRD JOINT OF CASING

PRODUCTION: 191 CENTRALIZERS - EVERY THIRD JOINT FROM SURFACE TO TOP OF CURVE, THEN EVERY JOINT UNTIL TD

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

RECEIVED
Office of Oil and Gas

SEP 21 2017

**WELL NAME: QUALITY RECLAMATION MRN 6H
PERFORATION STAGE SUMMARY**

| STAGE NUM | Perf Date | Perf Top MD | Perf Bottom MD | # SHOTS PER STG |
|-----------|-----------|-------------|----------------|-----------------|
| 1 | 5/3/2017 | 14,794 | 14,986 | 42 |
| 2 | 5/4/2017 | 14,546 | 14,728 | 42 |
| 3 | 5/4/2017 | 14,282 | 14,498 | 42 |
| 4 | 5/4/2017 | 13,998 | 14,211 | 42 |
| 5 | 5/5/2017 | 13,710 | 13,875 | 42 |
| 6 | 5/5/2017 | 13,508 | 13,615 | 42 |
| 7 | 5/5/2017 | 13,289 | 13,465 | 42 |
| 8 | 5/5/2017 | 13,018 | 13,210 | 42 |
| 9 | 5/6/2017 | 12,776 | 12,967 | 42 |
| 10 | 5/6/2017 | 12,510 | 12,694 | 42 |
| 11 | 5/7/2017 | 12,268 | 12,444 | 42 |
| 12 | 5/7/2017 | 12,003 | 12,182 | 42 |
| 13 | 5/7/2017 | 11,774 | 11,958 | 42 |
| 14 | 5/7/2017 | 11,537 | 11,721 | 42 |
| 15 | 5/7/2017 | 11,285 | 11,468 | 42 |
| 16 | 5/8/2017 | 10,985 | 11,147 | 42 |
| 17 | 5/8/2017 | 10,670 | 10,908 | 42 |
| 18 | 5/9/2017 | 10,484 | 10,621 | 42 |
| 19 | 5/8/2017 | 10,208 | 10,415 | 42 |
| 20 | 5/9/2017 | 9,973 | 10,166 | 42 |
| 21 | 5/9/2017 | 9,723 | 9,926 | 42 |
| 22 | 5/9/2017 | 9,466 | 9,651 | 42 |
| 23 | 5/9/2017 | 9,212 | 9,405 | 42 |
| 24 | 5/10/2017 | 8,969 | 9,148 | 42 |
| 25 | 5/10/2017 | 8,682 | 8,892 | 42 |
| 26 | 5/11/2017 | 8,420 | 8,594 | 42 |
| 27 | 5/11/2017 | 8,167 | 8,332 | 42 |

RECEIVED
Department of Oil and Gas

SEP 20 2017

Department of
Environmental Protection

01/05/2018

**WELL NAME: QUALITY RECLAMATION MRN 6H
FRAC STAGE SUMMARY**

| STAGE NUM | Stim Date | Ave Pump Rate (BPM) | Ave Treatment Pressure (PSI) | Max | | Amount of Proppant (lbs) | Amount of water bbls | Amount of nitrogen/other |
|--------------|-----------|------------------------|---------------------------------|-----------------------------|------------|-----------------------------|-------------------------|-----------------------------|
| | | | | Breakdown Pressure (PSI) | ISIP (PSI) | | | |
| 1 | 5/3/2017 | 82 | 8,459 | 8,694 | 6,187 | 496,560 | 9,268 | |
| 2 | 5/4/2017 | 84 | 8,587 | 8,805 | 6,469 | 498,720 | 7,603 | |
| 3 | 5/4/2017 | 85 | 8,521 | 8,794 | 6,638 | 496,400 | 7,494 | |
| 4 | 5/4/2017 | 85 | 8,591 | 8,762 | 6,906 | 498,880 | 7,402 | |
| 5 | 5/5/2017 | 88 | 8,494 | 8,669 | 5,947 | 497,280 | 7,318 | |
| 6 | 5/5/2017 | 87 | 8,568 | 8,680 | 6,956 | 500,700 | 7,308 | |
| 7 | 5/5/2017 | 91 | 8,599 | 9,205 | 7,088 | 502,800 | 8,771 | |
| 8 | 5/5/2017 | 93 | 8,700 | 8,930 | 6,795 | 502,480 | 7,395 | |
| 9 | 5/6/2017 | 91 | 8,794 | 8,980 | 6,373 | 494,600 | 7,466 | |
| 10 | 5/6/2017 | 95 | 8,685 | 8,891 | 7,027 | 494,640 | 7,179 | |
| 11 | 5/7/2017 | 92 | 8,728 | 8,894 | 6,974 | 496,740 | 7,195 | |
| 12 | 5/7/2017 | 93 | 8,816 | 8,909 | 7,260 | 498,200 | 7,245 | |
| 13 | 5/7/2017 | 96 | 9,793 | 8,962 | 7,174 | 499,900 | 7,259 | |
| 14 | 5/7/2017 | 98 | 8,727 | 8,851 | 6,974 | 500,220 | 7,137 | |
| 15 | 5/7/2017 | 100 | 8,655 | 8,862 | 6,906 | 502,620 | 7,041 | |
| 16 | 5/8/2017 | 100 | 8,583 | 8,833 | 6,852 | 500,440 | 7,072 | |
| 17 | 5/8/2017 | 99 | 8,225 | 8,419 | 6,816 | 500,420 | 7,023 | |
| 18 | 5/9/2017 | 101 | 8,508 | 8,769 | 6,571 | 499,148 | 6,871 | |
| 19 | 5/8/2017 | 98 | 8,691 | 8,851 | 7,106 | 497,855 | 7,098 | |
| 20 | 5/9/2017 | 99 | 8,649 | 8,851 | 6,258 | 428,449 | 6,563 | |
| 21 | 5/9/2017 | 101 | 8,328 | 8,472 | 6,419 | 496,631 | 6,877 | |
| 22 | 5/9/2017 | 100 | 8,393 | 8,633 | 6,541 | 501,480 | 6,867 | |
| 23 | 5/9/2017 | 100 | 8,331 | 8,683 | 6,294 | 499,520 | 6,803 | |
| 24 | 5/10/2017 | 100 | 8,462 | 8,719 | 6,634 | 503,300 | 6,826 | |
| 25 | 5/10/2017 | 101 | 8,308 | 8,605 | 6,561 | 505,520 | 6,874 | |
| 26 | 5/11/2017 | 98 | 8,185 | 8,540 | 6,516 | 503,000 | 6,798 | |
| 27 | 5/11/2017 | 98 | 8,124 | 8,461 | 6,609 | 501,920 | 6,845 | |

RECEIVED
Office of Oil and Gas.
SEP 20 2017
WV Department of
Environmental Protection

01/05/2018

Well Name:

QUALITY RECLAMATION MRN 6H

47049024210000

RECEIVED
Office of Oil and Gas

SEP 20 2017

WV Department of
Environmental Protection

| LITHOLOGY/FORMATION | TOP DEPTH, MD (FT) | TOP DEPTH, TVD (FT) | BOTTOM DEPTH, MD (FT) | BOTTOM DEPTH, TVD (FT) | QUANTITY AND TYPE OF FLUID |
|---------------------|--------------------|---------------------|-----------------------|------------------------|----------------------------|
| Base of Fresh Water | N. A. | N. A. | 354.00 | 354.00 | |
| Top of Salt Water | 643.00 | 643.00 | N. A. | N. A. | |
| Pittsburgh Coal | 547.00 | 547.00 | 554.00 | 554.00 | |
| Big Injun (ss) | 1866.00 | 1866.00 | 2007.00 | 2007.00 | |
| Berea (siltstone) | 2093.20 | 2093.20 | 2130.30 | 2130.30 | |
| Rhinestreet (shale) | N. A. | N. A. | N. A. | N. A. | |
| Cashaqua (shale) | 7017.54 | 7017.54 | 7375.14 | 7253.94 | |
| Middlesex (shale) | 7375.14 | 7253.94 | 7585.93 | 7454.66 | |
| Burket (shale) | 7585.93 | 7454.66 | 7624.86 | 7489.35 | |
| Tully (ls) | 7624.86 | 7489.35 | 7381.96 | 7538.22 | |
| Mahantango (shale) | 7381.96 | 7538.22 | 7948.56 | 7711.57 | |
| Marcellus (shale) | 7948.56 | 7711.57 | N. A. | N. A. | GAS |

Hydraulic Fracturing Fluid Product Component Information Disclosure

RECEIVED
 Office of Oil and Gas
 SEP 20 2017
 WV Department of
 Environmental Protection

| | |
|--------------------------------|----------------------------|
| Job Start Date: | 5/3/2017 |
| Job End Date: | 5/11/2017 |
| State: | West Virginia |
| County: | Marion |
| API Number: | 47-049-02421-00-00 |
| Operator Name: | Southwestern Energy |
| Well Name and Number: | Quality Reclamation MRN 6H |
| Latitude: | 39.57339300 |
| Longitude: | -80.16121400 |
| Datum: | NAD83 |
| Federal Well: | NO |
| Indian Well: | NO |
| True Vertical Depth: | 7,925 |
| Total Base Water Volume (gal): | 8,104,281 |
| Total Base Non Water Volume: | 0 |



Hydraulic Fracturing Fluid Composition:

| Trade Name | Supplier | Purpose | Ingredients | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments |
|------------------------|-------------------------|--------------------|--|--|--|--|----------|
| Water | Southwestern Energy | Carrier/Base Fluid | Water | 7732-18-5 | 100.00000 | 82.33640 | |
| | | | Crystalline Silica, quartz | 14808-60-7 | 100.00000 | 16.34605 | |
| Sand | U.S. Well Services, LLC | Proppant | Crystalline Silica, quartz | 14808-60-7 | 100.00000 | 16.34605 | |
| | | | | | | | |
| HCL Acid (12.6%-17.5%) | U.S. Well Services, LLC | Bulk Acid | Water | 7732-18-5 | 87.40000 | 0.98464 | |
| | | | Hydrogen Chloride | 7647-01-0 | 17.50000 | 0.22893 | |
| WFRA-2000 | U.S. Well Services, LLC | Friction Reducer | Water | 7732-18-5 | 60.00000 | 0.05304 | |
| | | | 2-Propenoic acid, polymer with 2 propenamide | 9003-06-9 | 30.00000 | 0.02652 | |
| | | | Hydrated light distillate (petroleum) | 64742-47-8 | 30.00000 | 0.02175 | |
| OPTI-FLEX | U.S. Well Services, LLC | Friction Reducer | Trade Secret | Proprietary | 50.00000 | 0.00104 | |
| | | | Distillates, petroleum, hydrotreated light | 64742-47-8 | 50.00000 | 0.00084 | |

| | | | | | | |
|--------|-------------------------|---------------------------|--|------------|-----------|---------|
| AI-303 | J.S. Well Services, LLC | Acid Corrosion Inhibitors | | | | |
| | | | Ethylene glycol | 107-21-1 | 40.00000 | 0.00032 |
| | | | Cinnamaldehyde | 104-55-2 | 20.00000 | 0.00012 |
| | | | Formic acid | 64-18-6 | 20.00000 | 0.00011 |
| | | | Butyl cellosolve | 111-76-2 | 20.00000 | 0.00010 |
| | | | Polyether | 60828-78-6 | 10.00000 | 0.00006 |
| | | | Acetophenone, thiourea, formaldehyde polymer | 68527-49-1 | 5.00000 | 0.00003 |
| AP One | J.S. Well Services, LLC | Gel Breakers | | | | |
| | | | Ammonium Persulfate | 7727-54-0 | 100.00000 | 0.00006 |

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

- * Total Water Volume sources may include fresh water, produced water, and/or recycled water
- ** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

RECEIVED
 Office of Oil and Gas
 SEP 2 2017
 MN Department of Environment and Natural Resources

JACKSON SURVEYING INC.

P.O. Box 1460
677 W. Main St.
Clarksburg, WV 26302
304-623-5851

Table with 2 columns: Location Name and UTM Coordinates (Northings, Eastings). Includes Surface Hole Location (SHL), Landing Point Location (LPL), and Bottom Hole Location (BHL).

Table with 4 columns: TRACT, ADJOINING SURFACE OWNER (S), TAX PARCEL, ACRES. Lists various land parcels and owners.

Table with 4 columns: LINE, BEARING, DISTANCE, DESCRIPTION. Lists boundary lines and distances.

NOTES ON SURVEY

- 1. COORDINATE SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED CENTER OF PAD.
5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
6. NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
7. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
8. ALL WELLS WITHIN 500' OF THE HORIZONTAL LEG ARE SHOWN ON THIS MAP BASED UPON INFORMATION TAKEN FROM DEP MAPPING, WELL PLATS AND AERIAL PHOTOS.

LEGEND: WATERWELL (W), SPRING (S), STREAM (ST), SURFACE OWNER (S), DIVISION LINES BETWEEN LEASE TRACTS (---), ADJOINERS LINES (---), ASBUILT PATH (---), PROPOSED PATH (---)

REFERENCES: 12" BLACK WALNUT, QUALITY RECLAMATION MRN 6H, 20" POPLAR. Includes a diagram showing well locations relative to trees.

Table with 2 columns: Location Name and UTM Coordinates. Includes SHL, LPL, and BHL locations.



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.

P.S. 708 David L. Jackson

WEST VIRGINIA STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP) OFFICE OF OIL & GAS, 601 57TH STREET, CHARLESTON, WV 25034.

Table with 2 columns: Property and Accuracy. Includes Minimum Degree of Accuracy (1/200), Proven Source of Elevation (Survey Grade GPS), and Survey Method (NAVD 88, US FT).

COMPANY: SWN Production Company, LLC. Quality Reclamation Operator's Well #: MRN 6H. API Well #: 47, 049, 02421.

WELL TYPE: OIL, WASTE DISPOSAL, PRODUCTION, DEEP, GAS, LIQUID INJECTION, STORAGE, SHALLOW. WATERSHED: ARNETT RUN OF MONONGAHELA RIVER. DISTRICT: PAW PAW. COUNTY: MARION. SURFACE OWNER: QUALITY RECLAMATION SERVICES, LLC. OIL & GAS ROYALTY OWNER: JAMES & DOROTHY ICE, ET AL. DRILL, DRILL DEEPER, REDRILL, FRACTURE OR STIMULATE, PLUG OFF OLD FORMATION, PERFORATE NEW FORMATION. CONVERT, PLUG & ABANDON, CLEAN OUT & REPLUG, OTHER CHANGE (SPECIFY) ASDRILLED. TARGET FORMATION: MARCELLUS. ESTIMATED DEPTH: 7,925' TVD 15,128' TMD.

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC. ADDRESS: P.O. BOX 1300. CITY: JANE LEW. STATE: WV. ZIP CODE: 26378. DESIGNATED AGENT: DEE SOUTHALL. ADDRESS: P.O. BOX 1300. CITY: JANE LEW. STATE: WV. ZIP CODE: 26378.

LEGEND: PROPOSED SURFACE HOLE / BOTTOM HOLE, EXISTING / PRODUCING WELLHEAD, LPL, EXISTING WATER WELL, EXISTING SPRING, SURVEYED BOUNDARY, DRILLING UNIT, LEASE BOUNDARY, ASDRILLED PATH, PROPOSED PATH. REVISIONS: DATE: 09-08-2017, FILE NO., DRAWN BY: N. MANO, SCALE: 1" = 2000', DRAWING NO., WELL LOCATION PLAT.