



---

west virginia department of environmental protection

---

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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Wednesday, January 6, 2021  
WELL WORK PLUGGING PERMIT  
Coal Bed Methane Well Plugging

LEATHERWOOD, LLC  
1000 CONSOL ENERGY DRIVE  
CANONSBURG, PA 15317

Re: Permit approval for MC51  
47-051-01059-00-00

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

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

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: MC51  
Farm Name: GOULDSBERRY, ROBERT  
U.S. WELL NUMBER: 47-051-01059-00-00  
Coal Bed Methane Well Plugging  
Date Issued: 1/6/2021

Promoting a healthy environment.

## PERMIT CONDITIONS

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

---

### CONDITIONS

---

1. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
3. Well work activities shall not constitute a hazard to the safety of persons.

WW-4B  
Rev. 2/01

1) Date November 16, 2020  
2) Operator's Well No. MC51P  
3) API Well No. 47-051-01059

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

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

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

5) Location: Elevation 1246.5' Watershed Unnamed Tributary to Grave Creek  
District Webster County Marshall Quadrangle Majorsville, WV 7.5

6) Well Operator Leatherwood LLC 7) Designated Agent Gina Newhouse  
Address 1000 CONSOL Energy Drive Address 1627 Quarrier Street  
Canonsburg, PA 15317 Charleston, WV 25311

8) Oil and Gas Inspector to be notified Name James Nicholson  
Address P.O. Box 44  
Moundsville, WV 26041  
9) Plugging Contractor Name Coastal Drilling East  
Address 130 Meadow Ridge Road, Suite 24  
Mount Morris, PA 15349

10) Work Order: The work order for the manner of plugging this well is as follows:  
**A cement plug will be set below the Pittsburgh coal seam. An expanding cement will be pumped from the surface into the laterals. The production hole will be cemented to the surface. MSHA 101C petition attached.**

*SEE ATTACHED WELL PATH SURVEY FOR VOLUMES OF WELL BORRS.  
A MONUMENT MUST BE SET PER WV CODE.*

*JWN*

RECEIVED  
Office of Oil and Gas  
NOV 30 2020  
WV Department of  
Environmental Protection

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

Work order approved by inspector *James Nicholson* Date 11/17/2020

## U.S. Department of Labor

Mine Safety and Health Administration  
1100 Wilson Boulevard  
Arlington, Virginia 22209-3939



**JUN 15 2011**  
In the matter of:

Consol Pennsylvania Coal Company

Bailey Mine

I.D. No. 36-07230

Petition for Modification

Docket No. M-2009-040-C

MSHA 101C  
EXEMPTION

*emailed  
J. Bunk  
6-27-11*

**Proposed Decision and Order**

On August 18, 2009, a petition was filed seeking a modification of the application of 30 C.F.R. § 75.1700 to Petitioner's Bailey Mine located in Washington County, Pennsylvania. The petitioner alleges that the alternative method outlined in the petition will at all times guarantee no less than the same measure of protection afforded by the standard.

Section 30 C.F.R. § 75.1700 provides:

Each operator of a coal mine shall take reasonable measures to locate oil and gas wells penetrating coalbeds or any underground area of a coal mine. When located, such operator shall establish and maintain barriers around such oil and gas wells in accordance with State laws and regulations, except that such barriers shall not be less than 300 feet in diameter, unless the Secretary or his authorized representative permits a lesser barrier consistent with the applicable State laws and regulations where such lesser barrier will be adequate to protect against hazards from such wells to the miners in such mine, or unless the Secretary or his authorized representative requires a greater barrier where the depth of the mine, other geologic conditions, or other factors warrant such a greater barrier.

The extraction of methane from coal seams and surrounding strata is a rapidly growing component of the domestic natural gas supply. Recent innovations in drilling techniques have resulted in development of several types of wells and production methods to extract coalbed methane (CBM) resources. Drill holes are deviated in both the horizontal and vertical planes using these techniques. These techniques differ from vertical gas wells and require different techniques in order to plug the wells. Procedures to address the potential hazards presented by CBM wells must be implemented to protect the coal miners who will be exposed to these wells. When coal mines intersect inadequately plugged CBM wells, methane inundations, ignitions and explosions are possible.

The alternative method proposed by Petitioner would include well plugging procedures, water infusion and ventilation methods, and procedures for mining through each CBM well and/or its branches.

### **Finding of Fact and Conclusion of Law**

The Bailey Mine is an underground coal mine that operates in the Pittsburgh Coal Seam. The mine includes 2 slopes and 14 shafts, employs nearly 770 people, and operates three shifts per day, six days per week. The mine currently has 10 producing sections which include 2 longwall units. On average, the Bailey Mine produces 38,000 tons of clean coal daily. The coal bed is approximately 80 inches in height and the mine is ventilated by exhausting mine fans. In the first quarter of 2011, total liberation for the mine was 13,579,526 cubic feet of methane in 24 hours.

Bailey Mine extracts CBM from the coal seam prior to mining in order to reduce methane emissions and, thus, the incidence of face ignitions. The wells are drilled from the surface using directional drilling technology to develop horizontal branches within the coal seam being mined. Drill holes may be deviated in both the horizontal and vertical planes using these techniques. Multiple horizontal branches may be developed from a single well and multiple seams may be developed from a single well. The drilling industry has trademarked several different proprietary names for these drilling processes. For purposes of this Order, these proprietary drilling processes will be referred to as generic "surface directional drilled" (SDD) wells.

There are no miners representatives; however comments were submitted by the United Mine Workers of America. Concern was expressed that all holes may not be accurately charted by the drilling company resulting in an accidental cut through and the gel may not adequately set up resulting in a methane inundation. MSHA believes these concerns have been addressed by establishing a probable error of location and requiring a minimum working barrier around the well prior to cut through, also this petition contains mandatory procedures for plugging or replugging of SDD wells which has proven effective in preventing methane inundations during cut through.

On February 3, 2010, MSHA conducted an investigation of the Bailey Mine petition and filed a report of its findings and recommendations with the Administrator for Coal Mine Safety and Health. Based on information gathered during the investigation, MSHA evaluated Petitioner's proposed alternative method and, as amended by the terms and conditions of MSHA, concluded that it would provide the same measure of protection afforded by 30 C.F.R. § 75.1700. The alternative method has been successfully used to prepare CBM wells for safe intersection by using one or more of the following methods: (1) Cement Plug, (2) Polymer Gel, (3) Bentonite Gel, (4) Active Pressure Management and Water Infusion, and (5) Remedial Work. The alternate method will prevent the CBM well methane from entering the underground mine.

Petitioner's proposed alternative method includes provisions from previously approved petition requests that permit a smaller barrier and/or permit mining through properly plugged oil and gas wells. These alternative methods have proven safe and effective when properly implemented. In addition, Bailey's petition request also includes additional provisions that are specific to SDD wells.

Accordingly, after a review of the entire record, including the petition and MSHA's investigative report, Consol Pennsylvania Coal Company is granted a modification of the application of 30 C.F.R. § 75.1700 to its Bailey Mine, and this Proposed Decision and Order (PDO) is issued.

### **ORDER**

Wherefore, pursuant to the authority delegated by the Secretary of Labor to the Administrator for Coal Mine Safety and Health, and pursuant to Section 101(c) of the Federal Mine Safety and Health Act of 1977, 30 U.S.C. § 811(c), and 30 C.F.R. Part 44, a modification of the application of 30 C.F.R. § 75.1700 at the Bailey Mine is hereby:

**GRANTED**, to allow mining within or through the 300 foot barrier around SDD oil and gas wells, conditioned upon compliance with the following terms and conditions:

1. **DISTRICT MANAGER APPROVAL REQUIRED**

A minimum working barrier of 300 feet in diameter shall be maintained around all SDD wells until approval to proceed with mining has been obtained from the District Manager. This barrier extends around all vertical and horizontal branches drilled in the coal seam. This barrier also extends around all vertical and horizontal branches within overlying coal seams subject to caving or subsidence from the coal seam being mined when methane leakage through the subsidence zone is possible. The District Manager may choose to approve each branch intersection, each well, or a group of wells as applicable to the conditions. The District Manager may require a certified review of the proposed methods to prepare the SDD wells for intersection by a professional engineer in order to assess the applicability of the proposed system(s) to the mine-specific conditions.

2. **MANDATORY PROCEDURES FOR PREPARING, PLUGGING, AND REPLUGGING SDD WELLS**

a. **MANDATORY COMPUTATIONS AND ADMINISTRATIVE PROCEDURES PRIOR TO PLUGGING OR REPLUGGING**

1. Probable Error of Location – Directional drilling systems rely on sophisticated angular measurement systems and computer models to calculate the estimated location of the well bore. This estimated hole location is subject to cumulative measurement errors so that the distance between actual and estimated location of the well bore increases with the depth of the hole. Modern directional drilling systems are typically accurate within one or two degrees depending on the specific equipment and techniques. The probable error of location is defined by a cone described by the average accuracy of angular measurement around the length of the hole. For example: a hole that is drilled 500 vertical feet and deviated into a coal seam at a depth of 700 feet would have a probable error of location at a point that is 4,000 feet from the hole collar (about 2,986 ft. horizontally from the well collar) of 69.8 ft. ( $4,000 \text{ ft.} \times \sin(1.0 \text{ degree})$ ) if the average accuracy of angular measurement was one degree and 139.6 ft if the average accuracy of angular measurement was two degrees. In addition to the probable error of location, the true hole location is also affected by underground survey errors, surface survey errors, and random survey errors.
  
2. Minimum Working Barrier Around Well – For purposes of this Order, the minimum working barrier around any coalbed methane well or branches of a coalbed methane well in the coal seam is 50 feet plus the probable error of location. For example: for a hole that is drilled 500 vertical feet and deviated into a coal seam at a depth of 700 feet using drilling equipment that has an average accuracy of angular measurement of one degree, the probable error of location at a point that is 4,000 feet from the hole collar is 69.8 ft. Therefore, the minimum working barrier around this point of the well bore is 120 ft. (69.8 ft. plus 50 ft., rounded up to the nearest foot). The 50 additional feet is a reasonable separation between the probable location of the well and mining operations. When mining is within the minimum working barrier distance from a coalbed methane well or branch, the mine operator must comply with the provisions of this Order. Coalbed methane wells must be prepared in advance for safe intersection and specific procedures must be followed on the mining section in order to protect the miners when mining within this minimum working barrier around the well. The District Manager may require a greater minimum working barrier around coalbed methane wells where geologic conditions, historical location errors, or other factors warrant a greater barrier.

3. Ventilation Plan Requirements - The ventilation plan shall contain a description of all SDD coalbed methane wells drilled in the area to be mined. This description should include the well numbers, the date drilled, the diameter, the casing information, the coal seams developed, maximum depth of the wells, abandonment pressures, and any other information required by the District Manager. All or part of this information may be listed on the 30 C.F.R. § 75.372 map. The ventilation plan shall include the techniques that the mine operator plans to use to prepare the SDD wells for safe intersection, the specifications and steps necessary to implement these techniques, and the required operational precautions that are required when mining within the minimum working barrier. In addition, the ventilation plan will contain any additional information or provisions related to the SDD wells required by the District Manager.
  
4. Ventilation Map - The ventilation map specified in 30 C.F.R. § 75.372 shall contain the following information:
  - i. The surface location of all coalbed methane wells in the active mining area and any projected mining area as specified in 30 C.F.R. § 75.372(b)(14);
  - ii. Identifying information of coalbed methane wells (i.e. API hole number or equivalent);
  - iii. The date that gas production began from the well;
  - iv. The coal seam intersection of all coalbed methane wells;
  - v. The horizontal extents in the coal seam of all coalbed methane wells and branches;
  - vi. The outline of the probable error of location of all coalbed methane wells; and
  - vii. The date of mine intersection and the distance between estimated and actual locations for all intersections of the coalbed methane well and branches.

b. MANDATORY PROCEDURES FOR PLUGGING OR REPLUGGING SDD WELLS

The mine operator shall include one or more of the following methods to prepare SDD wells for safe intersection in the mine ventilation plan. The methods approved in the ventilation plant must be completed on each SDD well before mining encroaches on the minimum working barrier around the well or branch of the well in the coal seam being mined. If methane leakage through subsidence cracks is a problem when retreat

mining, the minimum working barrier must be maintained around wells and branches in overlying coal seams or the wells and branches must be prepared for safe intersection as specified in the mine ventilation plan.

1. **Cement Plug** - Cement may be used to fill the entire SDD hole system. Squeeze cementing techniques are necessary for SDD plugging due to the lack of tubing in the hole. Cement should fill void spaces and eliminate methane leakage along the hole. Once the cement has cured, the SDD system may be intersected multiple times without further hole preparation. Gas cutting occurs if the placement pressure of the cement is less than the methane pressure in the coal seam. Under these conditions, gas will bubble out of the coal seam and into the unset cement creating a pressurized void or series of interconnected pressurized voids. Water cutting occurs when formation water and standing water in the hole invades or displaces the unset cement. Standing water has to be bailed out of the hole or driven into the formation with compressed gas to minimize water cutting. The cement pressure must be maintained higher than the formation pressure until the cement sets to minimize both gas and water cutting. The cementing program in the ventilation plan must address both gas and water cutting.

Due to the large volume to be cemented and potential problems with cement setting prior to filling the entire SDD system, adequately sized pumping units with back-up capacity must be used. Various additives such as retarders, lightweight extenders, viscosity modifiers, thixotropic modifiers, and fly ash may be used in the cement mix. The volume of cement pumped should exceed the estimated hole volume to ensure the complete filling of all voids. The complete cementing program, including hole dewatering, cement, additives, pressures, pumping times and equipment must be specified in the ventilation plan. The material safety data sheets (MSDS) for all cements, additives and components and any personal protective equipment and techniques to protect workers from the potentially harmful effects of the cement and cement components should be included in the ventilation plan. Records of cement mixes, cement quantities, pump pressures, and flow rates and times should be retained for each hole plugged.

SDD holes may be plugged with cement years in advance of mining. However, the District Manager shall require suitable documentation of the cement plugging in order to approve mining

within the minimum working barrier around coalbed methane wells.

2. Polymer Gel - Polymer gels start out as low viscosity, water-based mixtures of organic polymers that are crosslinked using time-delayed activators to form a water-insoluble, high-viscosity gel after being pumped into the SDD system. Although polymer gel systems never solidify, the activated gel should develop sufficient strength to resist gas flow. A gel that is suitable for treating SDD wells for mine intersection will reliably fill the SDD system and prevent gas-filled voids. Any gel chemistry used for plugging SDD wells should be resistant to bacterial and chemical degradation and remain stable for the duration of mining through a SDD system.

Water may dilute the gel mixture to the point where it will not set to the required strength. Water in the holes should be removed before injecting the gel mixture. Water removal can be accomplished by conventional bailing and then injecting compressed gas to squeeze the water that accumulates in low spots back into the formation. Gas pressurization should be continued until the hole is dry. Another potential problem with gels is that dissolved salts in the formation waters may interfere with the cross-linking reactions. Any proposed gel mixtures must be tested with actual formation waters.

Equipment to mix and pump gels should have adequate capacity to fill the hole before the gel sets. Back-up units should be available in case something breaks while pumping. The volume of gel pumped should exceed the estimated hole volume to ensure the complete filling of all voids and allow for gel to infiltrate the joints in the coal seam surrounding the hole. Gel injection and setting pressures should be specified in the ventilation plan. To reduce the potential for an inundation of gel, the final level of gel should be close to the level of the coal seam and the remainder of the hole should remain open to the atmosphere until mining in the vicinity of the SDD system is completed. Packers may be used to isolate portions of the SDD system.

The complete polymer gel program, including advance testing of the gel with formation water, dewatering systems, gel specifications, gel quantities, gel placement, pressures, and pumping equipment must be specified in the ventilation plan. The MSDS for all gel components and any personal protective

equipment and techniques to protect workers from the potentially harmful effects of the gel and gel components should be included in the ventilation plan. A record of the calculated hole volume, gel quantities, gel formulation, pump pressures, and flow rates and times should be retained for each hole that is treated with gel. Other gel chemistries other than organic polymers may be included in the ventilation plan with appropriate methods, parameters, and safety precautions.

3. Bentonite Gel - High-pressure injection of bentonite gel into the SDD system will infiltrate the cleat and butt joints of the coal seam near the well bore and effectively seal these conduits against the flow of methane. Bentonite gel is a thixotropic fluid that sets when it stops moving. Bentonite gel has a significantly lower setting viscosity than polymer gel. While the polymer gel fills and seals the borehole, the lower strength bentonite gel must penetrate the fractures and jointing in the coal seam in order to be effective in reducing formation permeability around the hole. The use of bentonite gel is restricted to depleted CBM applications that have low abandonment pressures and limited recharge potential. In general, these applications will be mature CBM fields with long production histories.

A slug of water should be injected prior to the bentonite gel in order to minimize moisture-loss bridging near the well bore. The volume of gel pumped should exceed the estimated hole volume to ensure that the gel infiltrates the joints in the coal seam for several feet surrounding the hole. Due to the large gel volume and potential problems with premature thixotropic setting, adequately sized pumping units with back-up capacity are required. Additives to the gel may be required to modify viscosity, reduce filtrates, reduce surface tension, and promote sealing of the cracks and joints around the hole. To reduce the potential for an inundation of bentonite gel, the final level of gel should be approximately the elevation of the coal seam and the remainder of the hole should remain open to the atmosphere until mining in the vicinity of the SDD system is completed. If a water column is used to pressurize the gel, it must be bailed down to the coal seam elevation prior to intersection.

The complete bentonite gel program, including formation infiltration and permeability reduction data, hole pretreatment, gel specifications, additives, gel quantities flow rates, injection

pressures and infiltration times, must be specified in the ventilation plan. The ventilation plan should list the equipment used to prepare and pump the gel. The MSDS for all gel components and any personal protective equipment and techniques to protect workers from the potentially harmful effects of the gel and additives should be included in the ventilation plan. A record of hole preparation, gel quantities, gel formulation, pump pressures, and flow rates and times should be retained for each hole that is treated with bentonite gel.

4. Active Pressure Management and Water Infusion - Reducing the pressure in the hole to less than atmospheric pressure by operating a vacuum blower connected to the wellhead may facilitate safe intersection of the hole by a coal mine. The negative pressure in the hole will limit the quantity of methane released into the higher pressure mine atmosphere. If the mine intersection is near the end of a horizontal branch of the SDD system, air will flow from the mine into the upstream side of the hole and be exhausted through the blower on the surface. On the downstream side of the intersection, if the open hole length is short, the methane emitted from this side of the hole may be diluted to safe levels with ventilation air. Conversely, safely intersecting this system near the bottom of the vertical hole may not be possible because the methane emissions from the multiple downstream branches may be too great to dilute with ventilation air. The methane emission rate is directly proportional to the length of the open hole. Successful application of vacuum systems may be limited by caving of the hole or water collected in dips in the SDD system. Another important factor in the success of vacuum systems is the methane liberation rate of the coal formation around the well—older, more depleted wells that have lower methane emission rates are more amenable to this technique. The remaining methane content and the formation permeability should be addressed in the ventilation plan.

Packers may be used to reduce methane inflow into the coal mine after intersection. All packers on the downstream side of the hole must be equipped with a center pipe so that the inby methane pressure may be measured or so that water may be injected. Subsequent intersections should not take place if pressure in a packer-sealed hole is excessive. Alternatively, methane produced by the downstream hole may be piped to an in-mine degas system to safely transport the methane out of the mine or may be piped to

the return air course for dilution. In-mine methane piping should be protected as stipulated in "Piping Methane in Underground Coal Mines," MSHA IR 1094, (1978). Protected methane diffusion zones may be established in return air courses if needed. Detailed sketches and safety precautions for methane collection, piping and diffusion systems must be included in the ventilation plan (30 C.F.R. § 75.371(ee)).

Water infusion prior to intersecting the well will temporarily limit methane flow. Water infusion may also help control coal dust levels during mining. High water infusion pressures may be obtained prior to the initial intersection by the hydraulic head resulting from the hole depth or by pumping. Water infusion pressures for subsequent intersections are limited by leakage around in-mine packers and limitations of the mine water distribution system. If water infused prior to the initial intersection, the water level in the hole must be lowered to the coal seam elevation before the intersection.

The complete pressure management strategy including negative pressure application, wellhead equipment, and use of packers, in-mine piping, methane dilution, and water infusion must be specified in the ventilation plan. Procedures for controlling methane in the downstream hole must be specified in the ventilation plan. The remaining methane content and formation permeability should be addressed in the ventilation plan. The potential for the coal seam to cave into the well should be addressed in the ventilation plan. Dewatering methods should be included in the ventilation plan. A record of the negative pressures applied to the system, methane liberation, use of packers and any water infusion pressures and application time should be retained for each intersection.

5. Remedial work - If problems are encountered in preparing the holes for safe intersection, then remedial measures must be taken to protect the miners. For example: if only one-half of the calculated hole volume of cement could be placed into a SDD well due to hole blockage, holes should be drilled near each branch that will be intersected and squeeze cemented using pressures sufficient to fracture into the potentially empty SDD holes. The District Manager will approve remedial work in the ventilation plan on a case-by-case basis.

3. **MANDATORY PROCEDURES AFTER APPROVAL HAS BEEN GRANTED BY THE DISTRICT MANAGER TO MINE WITHIN THE MINIMUM WORKING BARRIER AROUND THE WELL OR BRANCH OF THE WELL**
- a. The mine operator, the District Manager, the miners' representative, or the State may request a conference prior to any intersection or after any intersection to discuss issues or concerns. Upon receipt of any such request, the District Manager shall schedule a conference. The party requesting the conference shall notify all other parties listed above within a reasonable time prior to the conference to provide opportunity for participation.
  - b. The mine operator must notify the District Manager, the State and the miners' representative at least 48 hours prior to the intended intersection of any coalbed methane well.
  - c. The initial intersection of a well or branch of a well typically has a higher risk than subsequent intersections. The initial intersection typically indicates if the well preparation is sufficient to prevent the inundation of methane. For the initial intersection of a well or branch, the following procedures are mandatory:
    1. When mining advances within the minimum barrier distance of the well or branches of the well, the entries that will intersect the well or branches must be posted with a readily visible marking. For longwalls, both the head and tailgate entries must be so marked. Marks must be advanced to within 100 feet of the working face as mining progresses. Marks will be removed after well or branches are intersected in each entry or after mining has exited the minimum barrier distance of the well.
    2. Entries that will intersect vertical segments of a well shall be marked with drivage sights in the last open crosscut when mining is within 100 feet of the well. When a vertical segment of a well will be intersected by a longwall, drivage sights shall be installed on 10-foot centers starting 50 feet in advance of the anticipated intersection. Drivage sights shall be installed in both the headgate and tailgate entries of the longwall.
    3. The operator shall ensure that fire-fighting equipment, including fire extinguishers, rock dust, and sufficient fire hose to reach the working fact are of the mine-through (when either the conventional or the continuous mining method is used) is available and operable

during all well mine-throughs. The fire hose shall be located in the last open crosscut of the entry or room. The operator shall maintain the water line to the belt conveyor tailpiece along with a sufficient amount of fire hose to reach the farthest point of penetration on the section. When the longwall mining method is used, a hose to the longwall water supply is sufficient. All fire hoses shall be connected and ready for use, but do not have to be charged with water, during the cut-through.

4. The operator shall ensure that sufficient supplies of roof support and ventilation materials are available at the working section. In addition, emergency plugs, packers, and setting tools to seal both sides of the well or branch shall be available in the immediate area of the cut-through.
5. When mining advances within the minimum working barrier distance from the well or branch of the well, the operator shall service all equipment and check for permissibility at least once daily. Daily permissibility examinations must continue until the well or branch is intersected or until mining exits the minimum working barrier around the well or branch.
6. When mining advances within the minimum working barrier distance from the well or branch of the well, the operator shall calibrate the methane monitor(s) on the longwall, continuous mining machine, or cutting machine and loading machine at least once daily. Daily methane monitor calibration must continue until the well or branch is intersected or until mining exits the minimum working barrier around the well or branch.
7. When mining is in progress, the operator shall perform tests for methane with a handheld methane detector at least every 10 minutes from the time that mining with the continuous mining machine or longwall face is within the minimum working barrier around the well or branch. During the cutting process, no individual shall be allowed on the return side until the mine-through has been completed and the area has been examined and declared safe. The shearer must be idle when any miners are in by the tail drum.
8. When using continuous or conventional mining methods, the working place shall be free from accumulations of coal dust and coal spillages, and rock dust shall be placed on the roof, rib, and

floor within 20 feet of the face when mining through the well or branch. On longwall sections, rock dust shall be applied on the roof, rib, and floor up to both the headgate and tailgate pillared area.

9. Immediately after the well or branch is intersected, the operator shall de-energize all equipment, and the certified person shall thoroughly examine and determine the working place safe before mining is resumed.
10. After a well or branch has been intersected and the working place determined safe, mining shall continue inby the well a sufficient distance to permit adequate ventilation around the area of the well or branch.
11. No open flame shall be permitted in the area until adequate ventilation has been established around the well bore or branch. Any casing, tubing or stuck tools will be removed using the methods approved in the ventilation plan.
12. No person shall be permitted in the area of the mine-through operation inby the last open crosscut during active mining except those actually engaged in the operation, including company personnel, representatives of the miners, personnel from MSHA, and personnel from the appropriate State agency.
13. The operator shall warn all personnel in the mine to the planned intersection of the well or branch prior to their going underground if the planned intersection is to occur during their shift. This warning shall be repeated for all shifts until the well or branch has been intersected.
14. The mine-through operation shall be under the direct supervision of a certified person. Instructions concerning the mine-through operation shall be issued only by the certified person in charge.
15. All miners shall be in known locations and in constant two-way communications with the responsible person under 30 C.F.R. § 75.1501 when active mining occurs within the minimum working barrier of the well or branch.
16. The responsible person required under 30 C.F.R. § 75.1501 is responsible for well intersection emergencies. The well intersection

procedures must be reviewed by the responsible person prior to any planned intersection.

17. A copy of the order shall be maintained at the mine and be available to the miners.
  18. The provisions of this order do not impair the authority of representatives of MSHA to interrupt or halt the mine-through operation and to issue a withdrawal order when they deem it necessary for the safety of the miners. MSHA may order an interruption or cessation of the mine-through operation and/or a withdrawal of personnel by issuing either a verbal or a written order to that effect to a representative of the operator, which order shall include the basis for the order. Operations in the affected area of the mine may not resume until a representative of MSHA permits resumption of mine-through operations. The mine operator and miners shall comply with verbal or written MSHA orders immediately. All verbal orders shall be committed to writing within a reasonable time as conditions permit.
- d. For subsequent intersections of branches of a well, appropriate procedures to protect the miners shall be specified in the ventilation plan.

#### **4. MANDATORY PROCEDURES AFTER SDD INTERSECTIONS**

- a. All intersections with SDD wells and branches that are in intake air courses shall be examined as part of the pre-shift examinations required under 30 C.F.R. § 75.360.
- b. All other intersection with SDD wells and branches shall be examined as part of the weekly examinations required under 30 C.F.R. § 75.364.

#### **5. OTHER REQUIREMENTS**

- a. Within 30 days after this Order becomes final, the operator shall submit proposed revisions for its approved 30 C.F.R. Part 48 training plan to the District Manager. These proposed revisions shall include initial and refresher training regarding compliance with the terms and conditions stated in the Order. The operator shall provide all miners involved in the mine-through of a well or branch with training regarding the requirements of this Order prior to mining within the minimum working barrier of the next well or branch intended to be mined through.

- b. Within 30 days after this Order becomes final, the operator shall submit proposed revisions for its approved mine emergency evacuation and firefighting program of instruction required by 30 C.F.R § 75.1501. The operator shall revise the program to include the hazards and evacuation procedures to be used for well intersections. All underground miners shall be trained in this revised program within 30 days of the approval of the revised mine emergency evacuation and firefighting program of instruction.

Any party to this action desiring a hearing on this matter must file in accordance with 30 C.F.R. § 44.14, within 30 days. The request for hearing must be filed with the Administrator for Coal Mine Safety and Health, 1100 Wilson Boulevard, Arlington, Virginia 22209-3939.

If a hearing is requested, the request shall contain a concise summary of position on the issues of fact or law desired to be raised by the party requesting the hearing, including specific objections to the proposed decision. A party other than Petitioner who has requested a hearing may also comment upon all issues of fact or law presented in the petition, and any party to this action requesting a hearing may indicate a desired hearing site. If no request for a hearing is filed within 30 days after service thereof, the Proposed Decision and Order will become final and must be posted by the operator on the mine bulletin board at the mine.



---

Charles J. Thomas  
Deputy Administrator for  
Coal Mine Safety and Health

Certificate of Service

I hereby certify that a copy of this proposed decision was served personally or mailed, postage prepaid, this 21 day of June, 2011, to:

Ms. Suzanne M. Burt  
Paralegal and Litigation Representative  
CONSOL Energy, Inc.  
CNX Center  
1000 Consol Energy Drive  
Canonsburg, PA 15317-6506

Mr. Dennis O' Dell  
United Mine Workers of America  
18354 Quantico Gateway Dr., Suite 200  
Triangle, VA 22172-1179

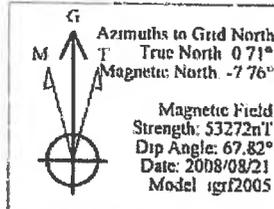
  
Shameka Green  
Secretary

cc: Mr. Joe Scaffoni, Director of Deep Mine Safety, PA Dept. of environmental Protection

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
West Leg TD	830.00	4907.59	171.27	512172.00	1688296.97	Rectangle (4166x200)
Intercept TD	830.00	402.35	74.40	507666.76	1688200.10	Circle (Radius: 1)
Center Leg TD	830.00	4288.00	2335.83	511552.41	1690461.53	Rectangle (3938x200)
East Leg TD	830.00	2781.59	3888.74	510046.00	1692014.44	Rectangle (3629x200)

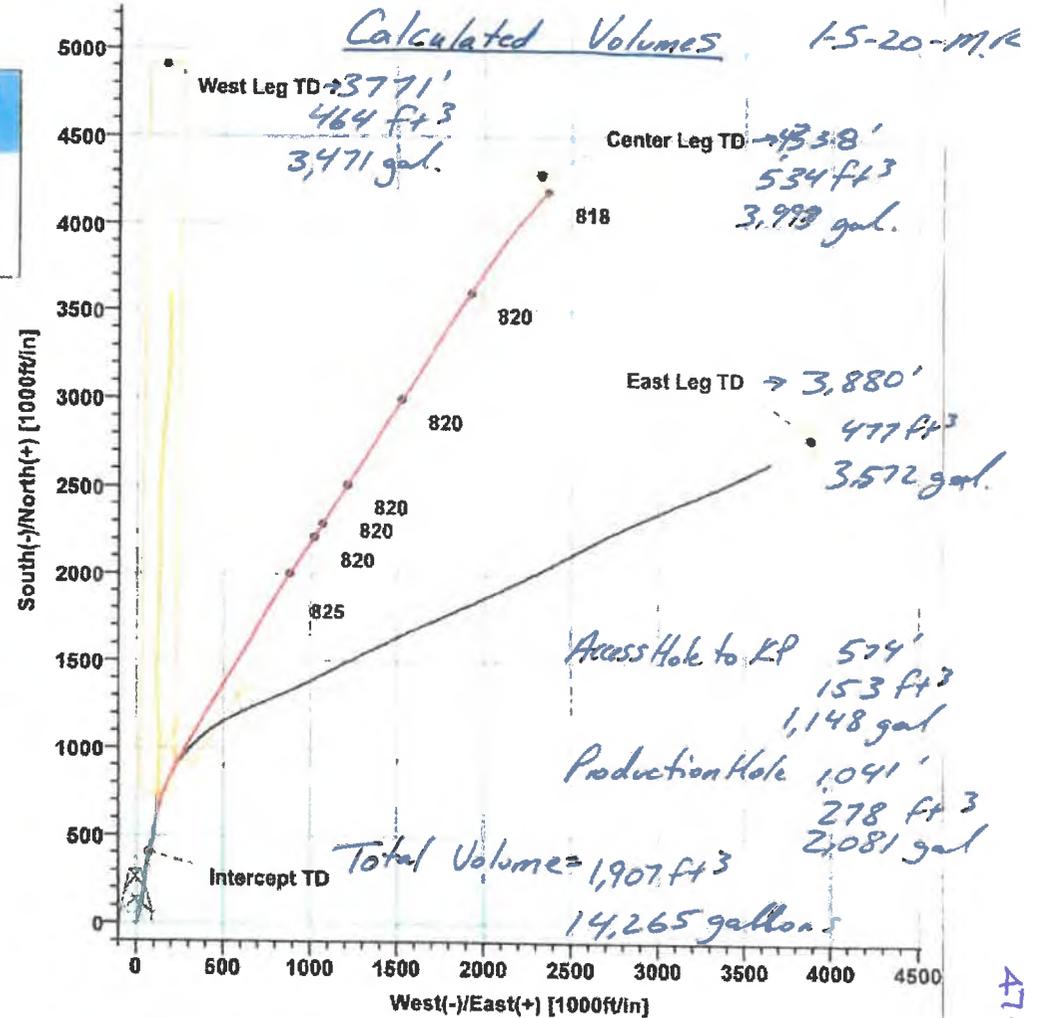
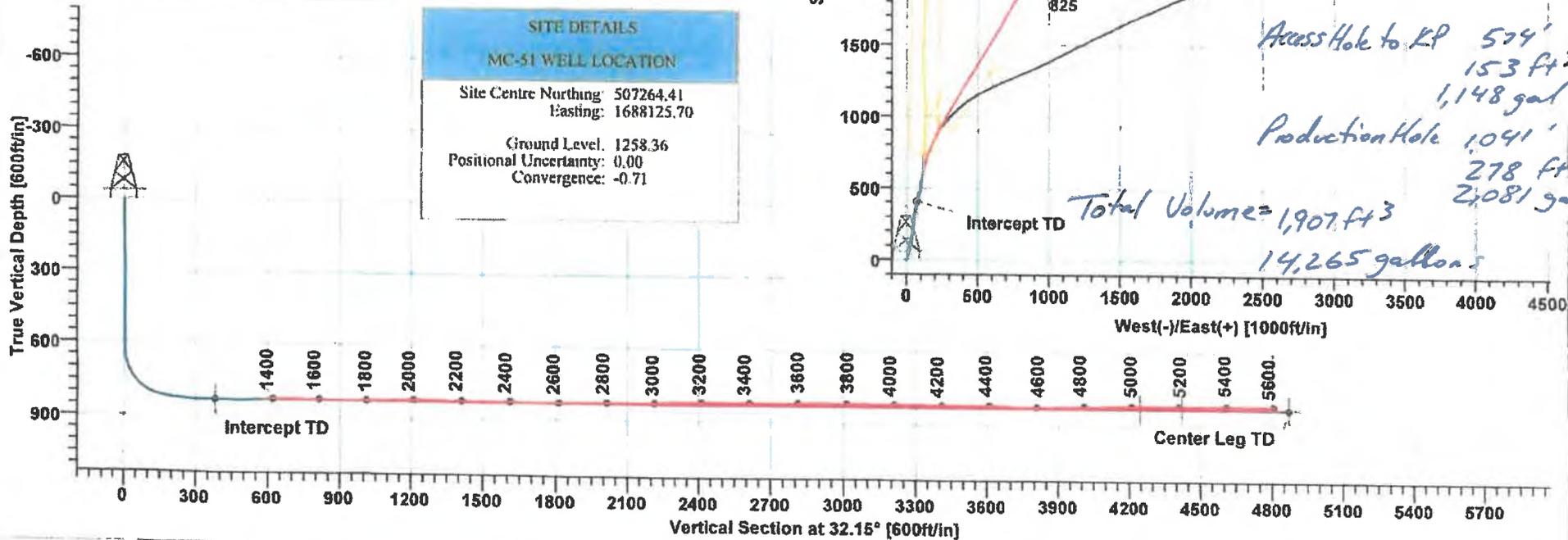
REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Centre, MC-51 Access, Grid North  
Vertical (TVD) Reference: 1258.36 + 12 1270 36  
Section (VS) Reference: Slot - (0.00N,0.00E)  
Measured Depth Reference: 1258.36 + 12 1270 36  
Calculation Method: Radius of Curvature



Plot Date: 9/10/2008  
By: Bob Feeney  
Scientific Drilling, Inc.  
800-678-7302  
bob.feeney@scientificdrilling.com

SITE DETAILS	
MC-51 WELL LOCATION	
Site Centre Northing:	507264.41
Easting:	1688125.70
Ground Level:	1258.36
Positional Uncertainty:	0.00
Convergence:	-0.71



47-051-01059P



# CNX Gas Company, LLC

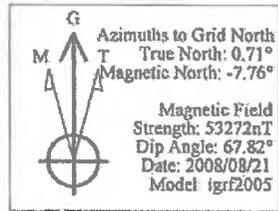
Field: MARSHALL COUNTY, WV  
 Site: MC-51 WELL LOCATION  
 Well: MC-51 Access  
 Wellpath: Center Leg  
 Survey: Survey #1



TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
West Leg TD	830.00	4907.59	171.27	512172.00	1688296.97	Rectangle (4166x200)
Intercept TD	830.00	402.35	74.40	507666.76	1688200.10	Circle (Radius: 1)
Center Leg TD	830.00	4288.00	2335.83	511552.41	1690461.53	Rectangle (3938x200)
East Leg TD	830.00	2781.59	3888.74	510046.00	1692014.44	Rectangle (3829x200)

**REFERENCE INFORMATION**

Co-ordinate (N/E) Reference: Well Centre: MC-51 Access, Grid North  
 Vertical (TVD) Reference: 1258.36 + 12 1270.36  
 Section (VS) Reference: Slot - (0.00N,0.00E)  
 Measured Depth Reference: 1258.36 + 12 1270.36  
 Calculation Method: Radius of Curvature

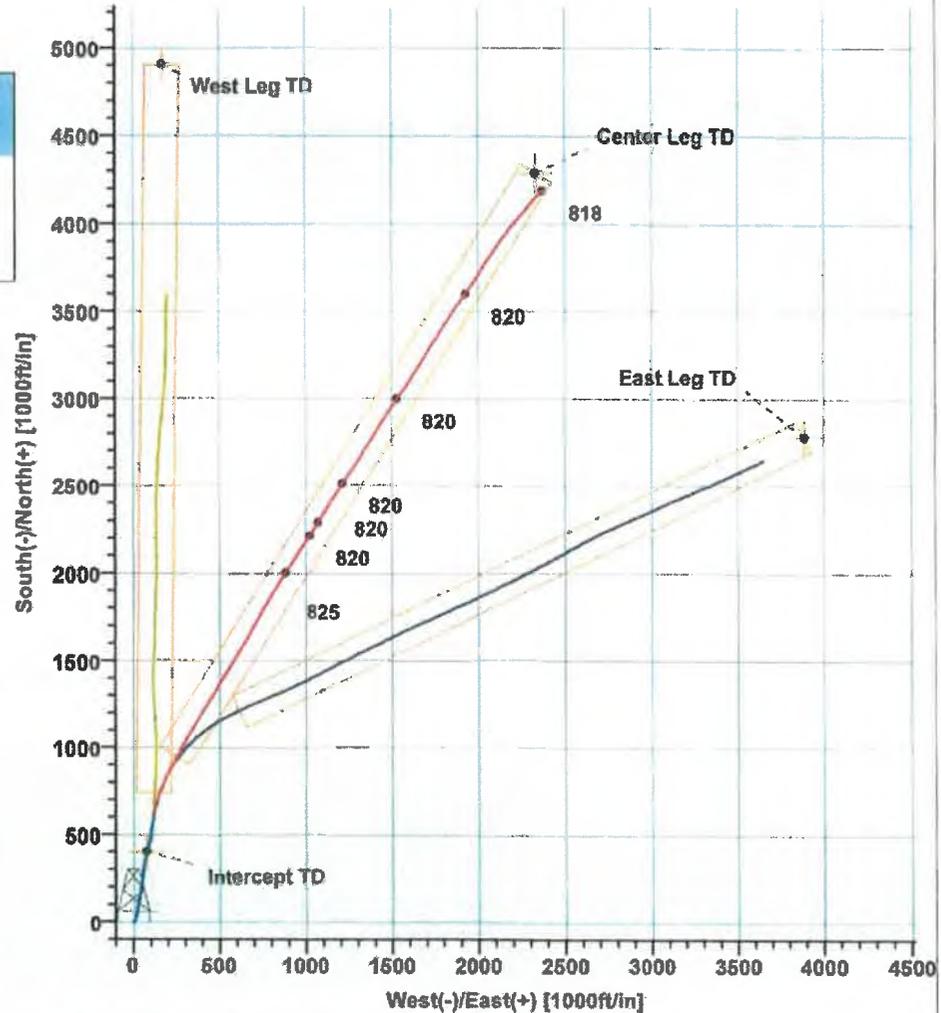
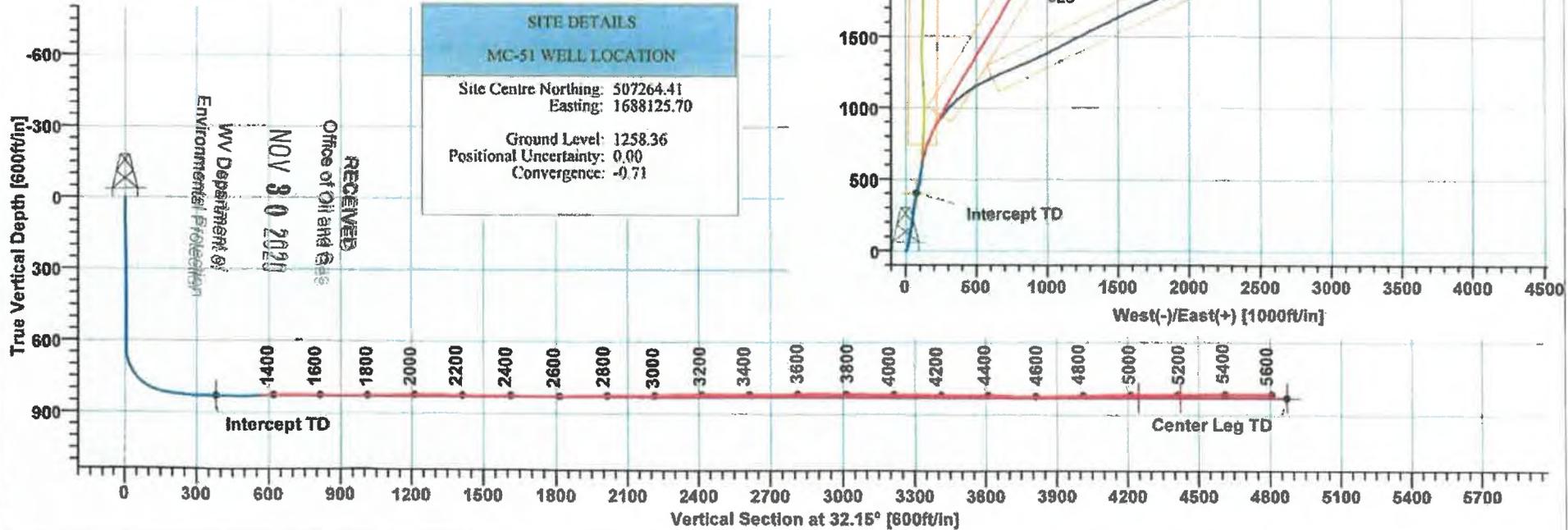


Plot Date: 9/10/2008  
 By: Bob Feeney  
 Scientific Drilling, Inc.  
 800-676-7302  
 bob.feeney@scientificdrilling.com

**SITE DETAILS**  
 MC-51 WELL LOCATION

Site Centre Northing: 507264.41  
 Easting: 1688125.70

Ground Level: 1258.36  
 Positional Uncertainty: 0.00  
 Convergence: -0.71





# CNX Gas Company, LLC

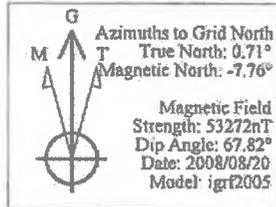
Field: MARSHALL COUNTY, WV  
 Site: MC-51 WELL LOCATION  
 Well: MC-51 Access  
 Wellpath: West Leg  
 Survey: Survey #2



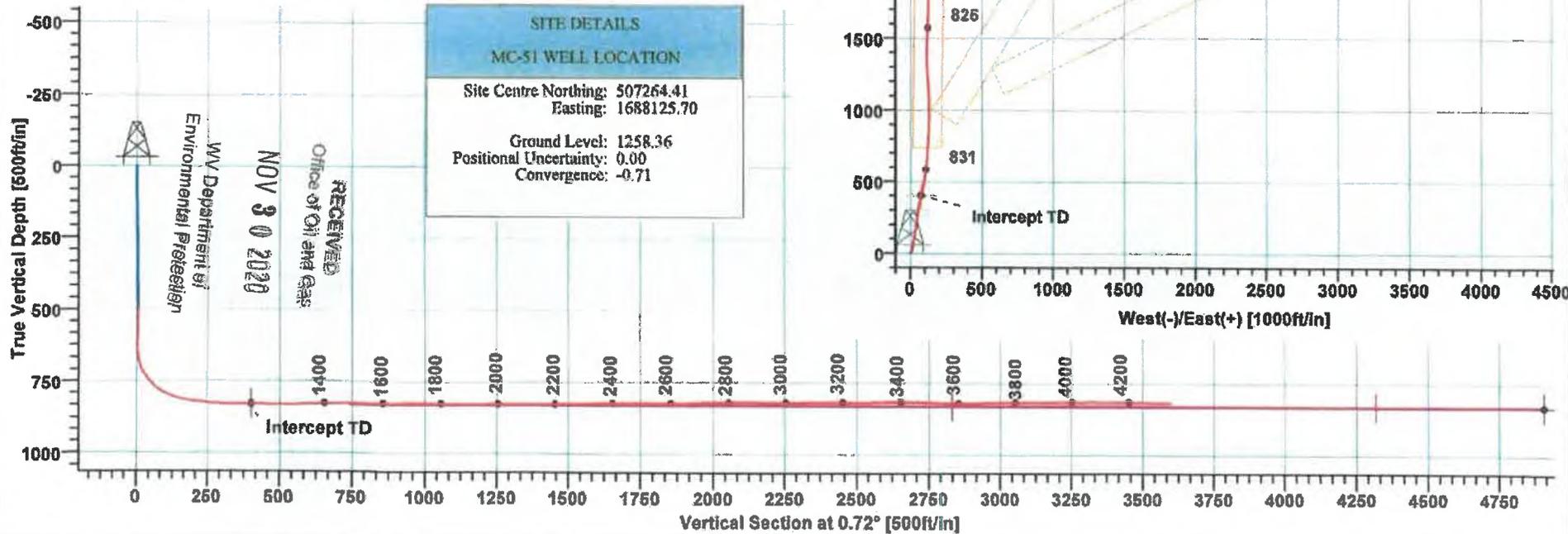
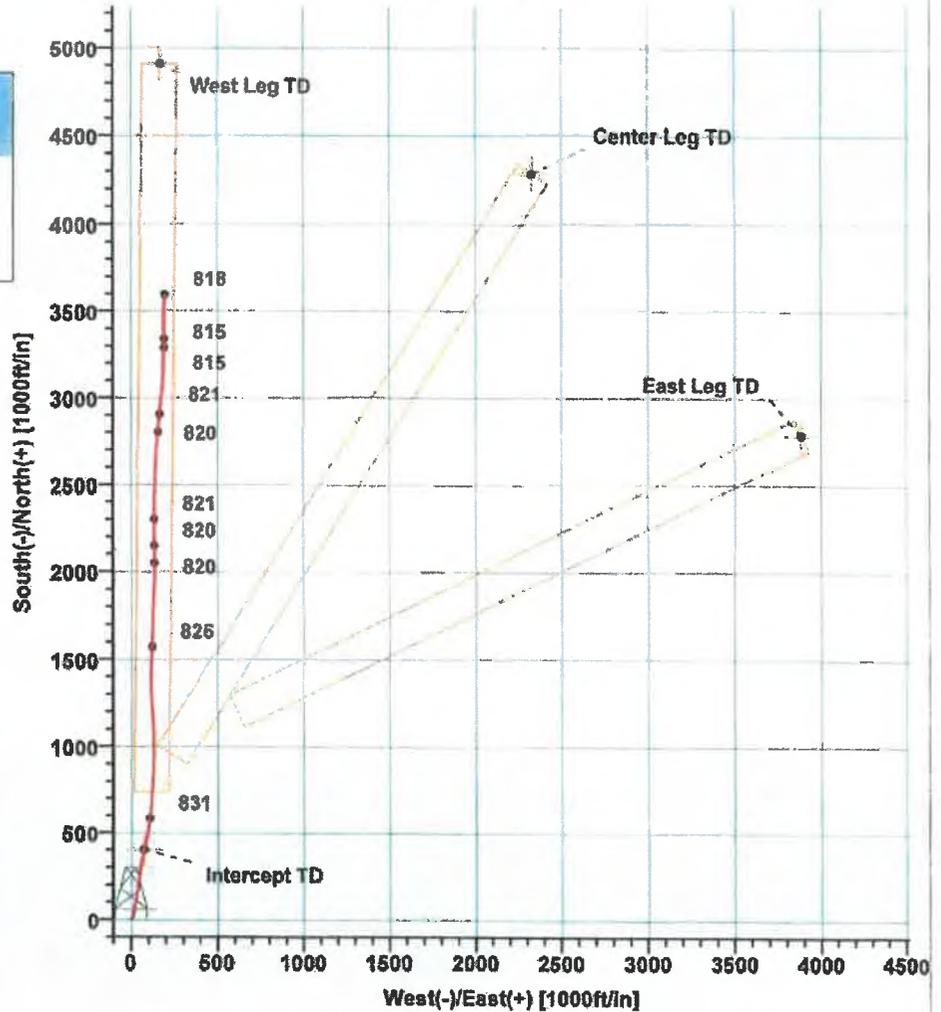
TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Intercept TD	830.00	402.35	74.40	507666.78	1688200.10	Circle (Radius: 1)
West Leg TD	830.00	4907.59	171.27	512172.00	1688296.97	Rectangle (4166x200)
Center Leg TD	830.00	4288.00	2335.83	511552.41	1690461.53	Rectangle (3938x200)
East Leg TD	830.00	2781.59	3888.74	510046.00	1692014.44	Rectangle (3629x200)

**REFERENCE INFORMATION**

Co-ordinate (N/E) Reference: Well Centre: MC-51 Access, Grid North  
 Vertical (TVD) Reference: 1258.36 + 12 1270.36  
 Section (VS) Reference: Slot- (0,00N,0.00E)  
 Measured Depth Reference: 1258.36 + 12 1270.36  
 Calculation Method: Radius of Curvature



Plot Date: 9/10/2008  
 By: Bob Feeney  
 Scientific Drilling, Inc.  
 800-676-7302  
 bob.feeney@scientificdrilling.com



## Scientific Drilling Survey Report

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 2008/09/10	<b>Time:</b> 11:11:29	<b>Page:</b> 1
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b> Well: MC-51 Access, Grid North		
<b>Site:</b> MC-51 WELL LOCATION	<b>Vertical (TVD) Reference:</b> 1258.36 + 12 1270.4		
<b>Well:</b> MC-51 Access	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.72Azi)		
<b>Wellpath:</b> West Leg	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

<b>Field:</b> MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.			
<b>Map System:</b> US State Plane Coordinate System 1927		<b>Map Zone:</b> West Virginia, Northern Zone	
<b>Geo Datum:</b> NAD27 (Clarke 1866)		<b>Coordinate System:</b> Well Centre	
<b>Sys Datum:</b> Mean Sea Level		<b>Geomagnetic Model:</b> igrf2005	

<b>Site:</b> MC-51 WELL LOCATION			
<b>Site Position:</b>	<b>Northing:</b> 507264.41 ft	<b>Latitude:</b> 39 53 14.720 N	
<b>From: Map</b>	<b>Easting:</b> 1688125.70 ft	<b>Longitude:</b> 80 36 41.110 W	
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid	
<b>Ground Level:</b> 1258.36 ft		<b>Grid Convergence:</b> -0.71 deg	

<b>Well:</b> MC-51 Access				<b>Slot Name:</b>			
<b>Well Position:</b>	<b>+N/-S</b> 0.00 ft	<b>Northing:</b> 507264.41 ft	<b>Latitude:</b> 39 53 14.720 N	<b>+E/-W</b> 0.00 ft	<b>Easting:</b> 1688125.70 ft	<b>Longitude:</b> 80 36 41.110 W	
<b>Position Uncertainty:</b> 0.00 ft							

<b>Wellpath:</b> West Leg				<b>Drilled From:</b> Surface			
<b>Current Datum:</b> 1258.36 + 12	<b>Height</b> 1270.36 ft	<b>Tie-on Depth:</b> 0.00 ft		<b>Above System Datum:</b> Mean Sea Level			
<b>Magnetic Data:</b> 2008/08/20		<b>Declination:</b> -8.47 deg		<b>Mag Dip Angle:</b> 67.82 deg			
<b>Field Strength:</b> 53272 nT		<b>+E/-W</b> ft		<b>Direction</b> deg			
<b>Vertical Section:</b> Depth From (TVD) ft	<b>+N/-S</b> ft	<b>+E/-W</b> ft	<b>ft</b>	<b>deg</b>	<b>deg</b>	<b>deg</b>	<b>deg</b>
0.00	0.00	0.00	0.00	0.72			

<b>Survey:</b> Survey #2	<b>Start Date:</b> 2008/09/10
<b>Company:</b> SDI	<b>Engineer:</b> Bob Feeney
<b>Tool:</b> MWD-SDI-SYS, Scientific MWD Systematic	<b>Tied-to:</b> User Defined

Survey: Survey #2										
MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
500.00	1.02	62.20	499.93	5.72	4.92	5.78	0.00	0.00	0.00	MWD-SDI-SYS
600.00	1.37	152.49	599.92	5.03	6.25	5.10	1.72	0.35	90.29	MWD-SDI-SYS
700.00	20.31	16.70	698.65	14.28	10.46	14.41	21.32	18.94	-135.78	MWD-SDI-SYS
800.00	53.10	9.61	777.58	71.93	23.82	72.22	33.01	32.79	-7.09	MWD-SDI-SYS
900.00	77.39	8.58	815.50	162.47	38.55	162.94	24.31	24.29	-1.03	MWD-SDI-SYS
1000.00	84.52	6.45	827.21	260.85	51.36	261.48	7.43	7.13	-2.13	MWD-SDI-SYS
1100.00	89.43	13.02	831.15	359.58	65.80	360.38	8.19	4.90	6.57	MWD-SDI-SYS
1200.00	89.35	11.23	831.93	457.17	87.58	458.23	1.79	-0.08	-1.78	MWD-SDI-SYS
1300.00	91.24	8.10	831.80	555.73	104.37	557.00	3.66	1.89	-3.13	MWD-SDI-SYS
1400.00	92.43	4.50	828.18	655.05	115.26	656.45	3.79	1.19	-3.60	MWD-SDI-SYS
1500.00	88.83	3.80	826.37	754.77	122.33	756.24	3.67	-3.60	-0.70	MWD-SDI-SYS
1600.00	90.13	2.15	827.80	854.63	127.25	856.16	2.10	1.30	-1.65	MWD-SDI-SYS
1700.00	90.37	1.26	826.20	954.55	130.68	956.12	0.92	0.24	-0.89	MWD-SDI-SYS
1800.00	89.79	358.33	826.82	1054.53	130.63	1056.09	2.99	-0.57	-2.93	MWD-SDI-SYS
1900.00	89.65	356.51	827.83	1154.39	125.58	1155.88	1.82	-0.14	-1.81	MWD-SDI-SYS
2000.00	90.44	356.63	827.46	1254.22	119.78	1255.62	0.79	0.79	0.12	MWD-SDI-SYS
2100.00	90.18	358.70	826.84	1354.10	115.01	1355.43	2.08	-0.26	2.07	MWD-SDI-SYS
2200.00	90.52	0.98	826.82	1454.08	115.74	1455.42	2.31	0.34	2.29	MWD-SDI-SYS
2300.00	90.50	3.41	825.52	1554.00	119.07	1555.38	2.43	-0.02	2.43	MWD-SDI-SYS
2400.00	90.99	1.26	824.23	1653.89	123.45	1655.31	2.21	0.49	-2.15	MWD-SDI-SYS
2500.00	90.11	1.97	823.47	1753.85	125.83	1755.30	1.13	-0.88	0.71	MWD-SDI-SYS
2600.00	89.00	2.95	824.03	1853.81	128.42	1855.28	1.49	-1.12	0.98	MWD-SDI-SYS
2700.00	91.81	2.23	821.93	1953.61	134.01	1955.14	2.90	2.81	-0.72	MWD-SDI-SYS
2800.00	91.53	359.15	820.17	2053.56	135.84	2055.11	3.09	-0.28	-3.08	MWD-SDI-SYS

**RECEIVED**  
 Office of Oil and Gas  
**NOV 30 2021**  
 WV Department of  
 Environmental Protection

## Scientific Drilling Survey Report

<b>Company:</b> CNX Gas Company, LLC <b>Field:</b> MARSHALL COUNTY, WV <b>Site:</b> MC-51 WELL LOCATION <b>Well:</b> MC-51 Access <b>Wellpath:</b> West Leg	<b>Date:</b> 2008/09/10 <b>Co-ordinate(NE) Reference:</b> <b>Vertical (TVD) Reference:</b> <b>Section (VS) Reference:</b> <b>Survey Calculation Method:</b>	<b>Time:</b> 11:11:29 <b>Well:</b> MC-51 Access, Grid North 1258.36 + 12 1270.4 <b>Well (0.00N,0.00E,0.72Azi)</b> <b>Minimum Curvature</b>	<b>Page:</b> 2 <b>Db:</b> Sybase
---	---	--	-------------------------------------

**Survey:** Survey #2

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2900.00	89.01	0.11	820.08	2153.54	134.70	2155.06	2.70	-2.52	0.96	MWD-SDI-SYS
3000.00	90.00	359.82	820.94	2253.54	134.56	2255.05	1.03	0.98	-0.29	MWD-SDI-SYS
3100.00	90.46	0.22	819.55	2353.52	133.68	2355.01	0.61	0.47	0.40	MWD-SDI-SYS
3200.00	89.23	3.13	819.34	2453.47	136.22	2454.99	3.16	-1.23	2.92	MWD-SDI-SYS
3300.00	92.42	2.62	818.36	2553.27	142.26	2554.86	3.23	3.19	-0.51	MWD-SDI-SYS
3400.00	90.67	2.87	815.65	2653.13	146.57	2654.76	1.77	-1.75	0.25	MWD-SDI-SYS
3500.00	87.78	3.36	818.43	2752.80	153.81	2754.52	2.92	-2.88	0.49	MWD-SDI-SYS
3600.00	89.87	6.76	821.14	2852.31	163.00	2854.14	3.99	2.08	3.40	MWD-SDI-SYS
3700.00	92.80	5.97	818.70	2951.56	174.86	2953.53	3.04	2.93	-0.80	MWD-SDI-SYS
3800.00	90.12	4.93	816.82	3051.14	183.62	3053.21	2.88	-2.68	-1.04	MWD-SDI-SYS
3900.00	90.11	2.14	816.38	3150.92	190.03	3153.06	2.78	-0.01	-2.78	MWD-SDI-SYS
4000.00	90.12	2.04	815.58	3250.89	192.20	3253.05	0.10	0.01	-0.10	MWD-SDI-SYS
4100.00	88.19	1.43	815.33	3350.85	194.69	3353.03	2.02	-1.93	-0.61	MWD-SDI-SYS
4200.00	90.18	0.14	815.36	3450.84	195.10	3453.02	2.37	1.99	-1.29	MWD-SDI-SYS
4300.00	89.76	2.16	817.67	3550.76	197.62	3552.96	2.07	-0.42	2.02	MWD-SDI-SYS
4345.00	89.76	2.16	817.86	3595.73	199.32	3597.95	0.00	0.00	0.00	MWD-SDI-SYS

**Targets**

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →	
							Deg	Min Sec	Deg	Min Sec
Intercept TD		830.00	402.35	74.40	507666.76	1688200.10	39	53 18.705 N	80	36 40.219 W
-Circle (Radius: 1)										
West Leg TD		830.00	4907.59	171.27	512172.00	1688296.97	39	54 3.240 N	80	36 39.691 W
-Rectangle (4166x200)										
Center Leg TD		830.00	4288.00	2335.83	511552.41	1690461.53	39	53 57.381 N	80	36 11.821 W
-Rectangle (3938x200)										
East Leg TD		830.00	2781.59	3888.74	510046.00	1692014.44	39	53 42.682 N	80	35 51.661 W
-Rectangle (3629x200)										

RECEIVED  
 Office of Oil and Gas  
 NOV 30 2020  
 WV Department of  
 Environmental Protection

# Scientific Drilling Survey Report - Geographic

Company: CNX Gas Company, LLC	Date: 2008/09/10	Time: 11:12:33	Page: 1
Field: MARSHALL COUNTY, WV	Co-ordinate(NE) Reference:	Well: MC-51 Access, Grid North	
Site: MC-51 WELL LOCATION	Vertical (TVD) Reference:	1258.36 + 12 1270.4	
Well: MC-51 Access	Section (VS) Reference:	Well (0.00N,0.00E,0.72Azi)	
Wellpath: West Leg	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Field: MARSHALL COUNTY, WV  
Northern West Virginia and Pennsylvania Operations  
U.S.A.

Map System: US State Plane Coordinate System 1927  
Geo Datum: NAD27 (Clarke 1866)  
Sys Datum: Mean Sea Level

Map Zone: West Virginia, Northern Zone  
Coordinate System: Well Centre  
Geomagnetic Model: igrf2005

Site: MC-51 WELL LOCATION

Site Position:	Northing: 507264.41 ft	Latitude: 39 53 14.720 N
From: Map	Easting: 1688125.70 ft	Longitude: 80 36 41.110 W
Position Uncertainty: 0.00 ft		North Reference: Grid
Ground Level: 1258.36 ft		Grid Convergence: -0.71 deg

Well: MC-51 Access

Slot Name:

Well Position: +N/-S 0.00 ft	Northing: 507264.41 ft	Latitude: 39 53 14.720 N
+E/-W 0.00 ft	Easting: 1688125.70 ft	Longitude: 80 36 41.110 W
Position Uncertainty: 0.00 ft		

Wellpath: West Leg

Current Datum: 1258.36 + 12	Height 1270.36 ft	Drilled From: Surface	Tie-on Depth: 0.00 ft
Magnetic Data: 2008/08/20		Above System Datum: Mean Sea Level	
Field Strength: 53272 nT		Declination: -8.47 deg	
Vertical Section: Depth From (TVD)	+N/-S	Mag Dip Angle: 67.82 deg	
ft	ft	+E/-W	Direction
		ft	deg
0.00	0.00	0.00	0.72

Survey: Survey #2

Start Date: 2008/09/10

Company: SDI  
Tool: MWD-SDI-SYS, Scientific MWD Systematic

Engineer: Bob Feeney  
Tied-to: User Defined

Survey: Survey #2

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →		
								Deg	Min	Sec	Deg	Min	Sec
500.00	1.02	82.20	499.93	5.72	4.92	507270.13	1688130.62	39 53	14.777 N	80 36	41.047 W		
600.00	1.37	152.49	599.92	5.03	6.25	507269.44	1688131.95	39 53	14.771 N	80 36	41.030 W		
700.00	20.31	16.70	698.65	14.28	10.46	507276.69	1688136.16	39 53	14.862 N	80 36	40.978 W		
800.00	53.10	9.61	777.58	71.93	23.82	507336.34	1688149.52	39 53	15.434 N	80 36	40.815 W		
900.00	77.39	8.58	815.50	162.47	38.55	507426.88	1688164.25	39 53	16.330 N	80 36	40.641 W		
1000.00	84.52	6.45	827.21	260.85	51.36	507525.26	1688177.06	39 53	17.304 N	80 36	40.492 W		
1100.00	89.43	13.02	831.15	359.58	65.80	507623.99	1688191.50	39 53	18.282 N	80 36	40.323 W		
1200.00	89.35	11.23	831.93	457.17	87.58	507721.58	1688213.28	39 53	19.249 N	80 36	40.059 W		
1300.00	91.24	8.10	831.80	555.73	104.37	507820.14	1688230.07	39 53	20.225 N	80 36	39.859 W		
1400.00	92.43	4.50	828.18	655.05	116.26	507919.46	1688240.96	39 53	21.208 N	80 36	39.735 W		
1500.00	88.83	3.80	826.37	754.77	122.33	508019.18	1688248.03	39 53	22.194 N	80 36	39.660 W		
1600.00	90.13	2.15	827.80	854.63	127.25	508119.04	1688252.95	39 53	23.181 N	80 36	39.613 W		
1700.00	90.37	1.26	826.20	954.55	130.68	508218.96	1688256.38	39 53	24.169 N	80 36	39.585 W		
1800.00	89.79	358.33	826.82	1054.53	130.63	508318.94	1688256.33	39 53	25.157 N	80 36	39.601 W		
1900.00	89.65	356.51	827.83	1154.39	125.58	508418.80	1688251.28	39 53	26.144 N	80 36	39.682 W		
2000.00	90.44	356.63	827.46	1254.22	119.78	508518.63	1688245.48	39 53	27.129 N	80 36	39.772 W		
2100.00	90.18	358.70	826.84	1354.10	115.01	508618.51	1688240.71	39 53	28.116 N	80 36	39.849 W		
2200.00	90.52	0.98	826.82	1454.08	115.74	508718.49	1688241.44	39 53	29.104 N	80 36	39.856 W		
2300.00	90.50	3.41	825.52	1554.00	119.07	508818.41	1688244.77	39 53	30.092 N	80 36	39.829 W		
2400.00	90.99	1.26	824.23	1653.89	123.45	508918.30	1688249.15	39 53	31.080 N	80 36	39.788 W		
2500.00	90.11	1.97	823.47	1753.85	125.83	509018.26	1688251.53	39 53	32.068 N	80 36	39.774 W		
2600.00	89.00	2.95	824.03	1853.81	128.42	509118.22	1688254.12	39 53	33.056 N	80 36	39.756 W		
2700.00	91.81	2.23	821.93	1953.61	134.01	509218.02	1688259.71	39 53	34.043 N	80 36	39.700 W		

RECEIVED  
Office of Oil and Gas  
NOV 30 2020  
WV Department of  
Environmental Protection

## Scientific Drilling Survey Report - Geographic

Company: CNX Gas Company, LLC  
 Field: MARSHALL COUNTY, WV  
 Site: MC-51 WELL LOCATION  
 Well: MC-51 Access  
 Wellpath: West Leg

Date: 2008/09/10 Time: 11:12:33 Page: 2  
 Co-ordinate(N/E) Reference: Well: MC-51 Access, Grid North  
 Vertical (TVD) Reference: 1258.36 + 12 1270.4  
 Section (VS) Reference: Well (0.00N,0.00E,0.72Azi)  
 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: Survey #2

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	Latitude		Longitude					
								Deg	Min Sec	Deg	Min Sec				
2800.00	91.83	359.15	820.17	2053.56	135.84	509317.97	1688261.54	39	53	35.031	N	80	36	39.693	W
2900.00	89.01	0.11	820.08	2153.54	134.70	509417.95	1688260.40	39	53	36.019	N	80	36	39.723	W
3000.00	90.00	359.82	820.94	2253.54	134.56	509517.95	1688260.26	39	53	37.007	N	80	36	39.741	W
3100.00	90.46	0.22	819.55	2353.52	133.68	509617.93	1688259.38	39	53	37.995	N	80	36	39.768	W
3200.00	89.23	3.13	819.34	2453.47	136.22	509717.88	1688261.92	39	53	38.983	N	80	36	39.751	W
3300.00	92.42	2.62	818.36	2553.27	142.26	509817.68	1688267.98	39	53	39.970	N	80	36	39.690	W
3400.00	90.67	2.87	815.65	2653.13	146.57	509917.54	1688272.27	39	53	40.957	N	80	36	39.650	W
3500.00	87.78	3.36	818.43	2752.80	153.81	510017.21	1688279.51	39	53	41.943	N	80	36	39.573	W
3600.00	89.87	6.76	821.14	2852.31	163.00	510116.72	1688288.70	39	53	42.928	N	80	36	39.471	W
3700.00	92.80	5.97	818.70	2951.56	174.86	510215.97	1688300.56	39	53	43.910	N	80	36	39.335	W
3800.00	90.12	4.93	816.82	3051.14	183.62	510315.55	1688309.32	39	53	44.895	N	80	36	39.238	W
3900.00	90.11	2.14	816.38	3150.92	190.03	510415.33	1688315.73	39	53	45.882	N	80	36	39.172	W
4000.00	90.12	2.04	815.58	3250.89	192.20	510515.30	1688317.90	39	53	46.870	N	80	36	39.160	W
4100.00	88.19	1.43	815.33	3350.85	194.69	510615.26	1688320.39	39	53	47.858	N	80	36	39.144	W
4200.00	90.18	0.14	815.36	3450.84	195.10	510715.25	1688320.80	39	53	48.847	N	80	36	39.154	W
4300.00	89.76	2.16	817.67	3550.76	197.62	510815.17	1688323.32	39	53	49.834	N	80	36	39.138	W
4345.00	89.76	2.16	817.86	3595.73	199.32	510860.14	1688325.02	39	53	50.279	N	80	36	39.123	W

**Targets**

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	Latitude		Longitude						
							Deg	Min Sec	Deg	Min Sec					
Intercept TD		830.00	402.35	74.40	507666.76	1688200.10	39	53	18.705	N	80	36	40.219	W	
-Circle (Radius: 1)															
West Leg TD		830.00	4907.59	171.27	512172.00	1688296.97	39	54	3.240	N	80	36	39.691	W	
-Rectangle (4166x200)															
Center Leg TD		830.00	4288.00	2335.83	511552.41	1690461.53	39	53	57.381	N	80	36	11.821	W	
-Rectangle (3936x200)															
East Leg TD		830.00	2781.59	3888.74	510046.00	1692014.44	39	53	42.682	N	80	35	51.661	W	
-Rectangle (3629x200)															

RECEIVED  
 Office of Oil and Gas  
 NOV 30 2020  
 WV Department of  
 Environmental Protection

## Scientific Drilling Survey Report

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 2008/09/10	<b>Time:</b> 11:48:30	<b>Page:</b> 1
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b> Well: MC-51 Access, Grid North		
<b>Site:</b> MC-51 WELL LOCATION	<b>Vertical (TVD) Reference:</b> 1258.36 + 12 1270.4		
<b>Well:</b> MC-51 Access	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,32.15Azi)		
<b>Wellpath:</b> Center Leg	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

<b>Field:</b> MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.		
<b>Map System:</b> US State Plane Coordinate System 1927	<b>Map Zone:</b> West Virginia, Northern Zone	
<b>Geo Datum:</b> NAD27 (Clarke 1866)	<b>Coordinate System:</b> Well Centre	
<b>Sys Datum:</b> Mean Sea Level	<b>Geomagnetic Model:</b> igr2005	

**Site:** MC-51 WELL LOCATION

<b>Site Position:</b>	<b>Northing:</b> 507264.41 ft	<b>Latitude:</b> 39 53 14.720 N
<b>From:</b> Map	<b>Easting:</b> 1688125.70 ft	<b>Longitude:</b> 80 36 41.110 W
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid
<b>Ground Level:</b> 1258.36 ft		<b>Grid Convergence:</b> -0.71 deg

<b>Well:</b> MC-51 Access	<b>Slot Name:</b>
<b>Well Position:</b> +N-S 0.00 ft	<b>Northing:</b> 507264.41 ft
+E-W 0.00 ft	<b>Easting:</b> 1688125.70 ft
<b>Position Uncertainty:</b> 0.00 ft	
	<b>Latitude:</b> 39 53 14.720 N
	<b>Longitude:</b> 80 36 41.110 W

<b>Wellpath:</b> Center Leg	<b>Drilled From:</b> West Leg
<b>Current Datum:</b> 1258.36 + 12	<b>Tie-on Depth:</b> 1352.44 ft
<b>Magnetic Data:</b> 2008/08/21	<b>Above System Datum:</b> Mean Sea Level
<b>Field Strength:</b> 53272 nT	<b>Declination:</b> -8.47 deg
<b>Vertical Section:</b> Depth From (TVD)	<b>Mag Dip Angle:</b> 67.82 deg
ft	+N-S
	ft
0.00	0.00
	+E-W
	ft
	0.00
	<b>Direction</b>
	deg
	32.15

<b>Survey:</b> Survey #1	<b>Start Date:</b> 2008/09/10
<b>Company:</b> SDI	<b>Engineer:</b> Bob Feeney
<b>Tool:</b> MWD-SDI-SYS,Scientific MWD Systematic	<b>Tied-to:</b> User Defined

**Survey: Survey #1**

MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Tura deg/100ft	Tool/Comment
1400.00	91.91	14.56	829.39	653.22	126.64	620.44	0.00	0.00	0.00	MWD-SDI-SYS
1500.00	89.41	19.20	827.50	748.89	156.22	717.01	5.27	-2.49	4.64	MWD-SDI-SYS
1600.00	89.89	26.66	829.04	840.85	194.79	815.57	7.47	0.48	7.46	MWD-SDI-SYS
1700.00	89.13	28.04	829.28	928.22	243.40	915.40	1.58	-0.77	1.38	MWD-SDI-SYS
1800.00	91.38	28.79	828.64	1016.67	290.01	1015.10	2.37	2.25	0.76	MWD-SDI-SYS
1900.00	90.57	31.55	826.24	1103.07	340.28	1115.00	2.87	-0.80	2.75	MWD-SDI-SYS
2000.00	89.46	31.65	826.36	1188.09	392.91	1214.99	1.12	-1.11	0.10	MWD-SDI-SYS
2100.00	89.23	31.62	825.80	1273.41	445.07	1314.98	0.24	-0.23	-0.03	MWD-SDI-SYS
2200.00	90.08	31.75	826.49	1358.40	497.75	1414.97	0.86	0.85	0.13	MWD-SDI-SYS
2300.00	89.64	31.27	826.41	1443.53	550.22	1514.96	0.65	-0.44	-0.48	MWD-SDI-SYS
2400.00	88.79	31.53	826.95	1529.10	601.95	1614.94	0.89	-0.85	0.26	MWD-SDI-SYS
2500.00	90.30	30.47	828.05	1614.76	653.51	1714.90	1.85	1.51	-1.06	MWD-SDI-SYS
2600.00	90.00	29.68	829.53	1701.32	703.54	1814.82	0.84	-0.30	-0.79	MWD-SDI-SYS
2700.00	91.01	30.10	826.76	1787.78	753.70	1914.71	1.10	1.01	0.42	MWD-SDI-SYS
2800.00	91.43	30.53	826.74	1874.05	804.26	2014.65	0.60	0.42	0.43	MWD-SDI-SYS
2900.00	90.49	32.67	825.23	1958.63	857.56	2114.63	2.34	-0.93	2.14	MWD-SDI-SYS
3000.00	92.20	32.80	824.25	2043.06	911.12	2214.62	1.71	1.70	0.13	MWD-SDI-SYS
3100.00	90.74	33.92	820.83	2126.49	966.13	2314.53	1.83	-1.45	1.11	MWD-SDI-SYS
3200.00	90.84	32.84	820.17	2209.65	1021.66	2414.48	1.09	0.10	-1.08	MWD-SDI-SYS
3300.00	89.70	32.12	820.03	2294.20	1075.05	2514.47	1.35	-1.14	-0.71	MWD-SDI-SYS
3400.00	89.46	32.32	820.37	2378.45	1128.91	2614.47	0.31	-0.24	0.20	MWD-SDI-SYS
3500.00	89.15	33.53	820.88	2462.44	1183.17	2714.45	1.25	-0.31	1.21	MWD-SDI-SYS
3600.00	91.86	35.12	819.33	2546.62	1238.63	2814.39	3.14	2.71	1.59	MWD-SDI-SYS
3700.00	89.45	33.58	817.55	2627.82	1295.52	2914.26	2.86	-2.41	-1.54	MWD-SDI-SYS

RECEIVED  
Office of Oil and Gas  
NOV 30 2021  
WV Department of  
Environmental Protection

## Scientific Drilling Survey Report

<b>Company:</b> CNX Gas Company, LLC <b>Field:</b> MARSHALL COUNTY, WV <b>Site:</b> MC-51 WELL LOCATION <b>Well:</b> MC-51 Access <b>Wellpath:</b> Center Leg	<b>Date:</b> 2008/09/10 <b>Time:</b> 11:48:30 <b>Page:</b> 2 <b>Co-ordinate(NE) Reference:</b> Well: MC-51 Access, Grid North <b>Vertical (TVD) Reference:</b> 1258.36 + 12 1270.4 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,32.15Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Sybase
---	---

Survey: Survey #1

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
3800.00	90.42	32.24	818.44	2712.10	1349.33	3014.25	1.65	0.97	-1.34	MWD-SDI-SYS
3900.00	88.96	30.90	818.16	2797.07	1402.04	3114.24	1.97	-1.45	-1.34	MWD-SDI-SYS
4000.00	89.29	33.36	818.86	2882.21	1454.46	3214.22	2.48	0.33	2.46	MWD-SDI-SYS
4100.00	89.33	34.87	819.43	2964.95	1510.61	3314.15	1.51	0.04	1.51	MWD-SDI-SYS
4200.00	89.41	35.21	820.88	3046.44	1568.55	3413.98	0.35	0.08	0.34	MWD-SDI-SYS
4300.00	90.35	32.32	821.88	3129.78	1623.77	3513.92	3.03	0.94	-2.88	MWD-SDI-SYS
4400.00	90.36	31.50	820.28	3214.36	1677.09	3613.90	0.82	0.00	-0.82	MWD-SDI-SYS
4500.00	87.71	32.22	824.06	3299.31	1729.67	3713.81	2.74	-2.64	0.72	MWD-SDI-SYS
4600.00	90.25	32.70	824.22	3383.64	1783.39	3813.80	2.58	2.53	0.47	MWD-SDI-SYS
4700.00	91.20	32.47	823.79	3467.44	1837.95	3913.78	0.98	0.95	-0.23	MWD-SDI-SYS
4800.00	91.18	36.14	821.64	3550.12	1894.12	4013.67	3.67	-0.02	3.67	MWD-SDI-SYS
4900.00	90.98	33.65	819.71	3632.00	1951.47	4113.52	2.50	-0.20	-2.49	MWD-SDI-SYS
5000.00	90.23	31.47	819.15	3716.07	2005.58	4213.49	2.30	-0.75	-2.18	MWD-SDI-SYS
5100.00	90.29	33.12	818.07	3800.07	2059.83	4313.47	1.64	0.06	1.64	MWD-SDI-SYS
5200.00	90.35	35.66	818.31	3881.90	2117.27	4413.32	2.54	0.07	2.54	MWD-SDI-SYS
5300.00	90.48	38.36	817.96	3962.56	2176.36	4513.06	2.70	0.13	2.70	MWD-SDI-SYS
5400.00	90.51	39.46	817.83	4039.94	2239.71	4612.28	1.10	0.03	1.10	MWD-SDI-SYS
5500.00	90.05	40.60	817.35	4116.72	2303.76	4711.37	1.23	-0.46	1.14	MWD-SDI-SYS
5600.00	89.70	44.21	817.76	4189.12	2372.72	4809.36	3.62	-0.35	3.61	MWD-SDI-SYS
5605.00	89.70	44.21	817.79	4192.71	2376.20	4814.25	0.00	0.00	0.00	MWD-SDI-SYS

**Targets**

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →				
							Deg	Min	Sec	Deg	Min	Sec		
West Leg TD	-Rectangle (4166x200)	830.00	4907.59	171.27	512172.00	1688296.97	39	54	3.240	N	80	36	39.691	W
Intercept TD	-Circle (Radius: 1)	830.00	402.35	74.40	507666.76	1688200.10	39	53	18.705	N	80	36	40.219	W
Center Leg TD	-Rectangle (3938x200)	830.00	4288.00	2335.83	511552.41	1690461.53	39	53	57.381	N	80	36	11.821	W
East Leg TD	-Rectangle (3629x200)	830.00	2781.59	3888.74	510046.00	1692014.44	39	53	42.682	N	80	35	51.661	W

RECEIVED  
 Office of Oil and Gas  
 NOV 30 2020  
 WV Department of  
 Environmental Protection

# Scientific Drilling Survey Report - Geographic

<b>Company:</b> GNX Gas Company, LLC	<b>Date:</b> 2008/09/10	<b>Time:</b> 11:49:23	<b>Page:</b> 1
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b> Well: MC-51 Access, Grid North		
<b>Site:</b> MC-51 WELL LOCATION	<b>Vertical (TVD) Reference:</b> 1258.36 + 12 1270.4		
<b>Well:</b> MC-51 Access	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,32.15Azi)		
<b>Wellpath:</b> Center Leg	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

<b>Field:</b> MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.		
<b>Map System:</b> US State Plane Coordinate System 1927	<b>Map Zone:</b> West Virginia, Northern Zone	
<b>Geo Datum:</b> NAD27 (Clarke 1866)	<b>Coordinate System:</b> Well Centre	
<b>Sys Datum:</b> Mean Sea Level	<b>Geomagnetic Model:</b> igrf2005	

<b>Site:</b> MC-51 WELL LOCATION		
<b>Site Position:</b>	<b>Northing:</b> 507264.41 ft	<b>Latitude:</b> 39 53 14.720 N
<b>From:</b> Map	<b>Easting:</b> 1688125.70 ft	<b>Longitude:</b> 80 36 41.110 W
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid
<b>Ground Level:</b> 1258.36 ft		<b>Grid Convergence:</b> -0.71 deg

<b>Well:</b> MC-51 Access			<b>Slot Name:</b>		
<b>Well Position:</b>	<b>+N-S</b> 0.00 ft	<b>Northing:</b> 507264.41 ft	<b>Latitude:</b> 39 53 14.720 N		
	<b>+E-W</b> 0.00 ft	<b>Easting:</b> 1688125.70 ft	<b>Longitude:</b> 80 36 41.110 W		
<b>Position Uncertainty:</b> 0.00 ft					

<b>Wellpath:</b> Center Leg			<b>Drilled From:</b> West Leg		
<b>Current Datum:</b> 1258.36 + 12	<b>Height</b> 1270.36 ft		<b>Tie-on Depth:</b> 1352.44 ft		
<b>Magnetic Data:</b> 2008/08/21			<b>Above System Datum:</b> Mean Sea Level		
<b>Field Strength:</b> 53272 nT			<b>Declination:</b> -8.47 deg		
<b>Vertical Section:</b> Depth From (TVD)	<b>+N-S</b> ft	<b>+E-W</b> ft	<b>Mag Dip Angle:</b> 67.82 deg	<b>Direction</b> deg	
0.00	0.00	0.00		32.15	

<b>Survey:</b> Survey #1	<b>Start Date:</b> 2008/09/10
<b>Company:</b> SDI	<b>Engineer:</b> Bob Feeney
<b>Tool:</b> MWD-SDI-SYS, Scientific MWD Systematic	<b>Tied-to:</b> User Defined

Survey: Survey #1													
MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →		
								Deg	Min	Sec	Deg	Min	Sec
1400.00	91.91	14.56	829.39	653.22	126.64	507917.63	1688252.34	39 53	21.191 N	80 36	39.589 W		
1500.00	89.41	19.20	827.50	748.69	156.22	508013.10	1688281.92	39 53	22.138 N	80 36	39.224 W		
1600.00	89.89	26.66	829.04	840.85	194.79	508105.26	1688320.49	39 53	23.054 N	80 36	38.744 W		
1700.00	89.13	28.04	829.28	928.22	243.40	508192.63	1688369.10	39 53	23.923 N	80 36	38.134 W		
1800.00	91.38	28.79	828.64	1016.67	290.01	508281.08	1688415.71	39 53	24.803 N	80 36	37.550 W		
1900.00	90.57	31.55	826.24	1103.07	340.28	508367.48	1688465.98	39 53	25.663 N	80 36	36.919 W		
2000.00	89.46	31.65	825.36	1188.09	392.91	508452.50	1688518.61	39 53	26.509 N	80 36	36.258 W		
2100.00	89.22	31.62	825.80	1273.41	445.07	508537.82	1688570.77	39 53	27.359 N	80 36	35.602 W		
2200.00	90.08	31.75	826.49	1358.40	497.75	508622.81	1688623.45	39 53	28.205 N	80 36	34.940 W		
2300.00	89.64	31.27	826.41	1443.53	550.22	508707.94	1688675.92	39 53	29.053 N	80 36	34.280 W		
2400.00	88.79	31.53	826.95	1529.10	601.95	508793.51	1688727.65	39 53	29.905 N	80 36	33.630 W		
2500.00	90.30	30.47	828.05	1614.76	653.51	508879.17	1688779.21	39 53	30.758 N	80 36	32.982 W		
2600.00	90.00	29.68	829.53	1701.32	703.54	508965.73	1688829.24	39 53	31.619 N	80 36	32.354 W		
2700.00	91.01	30.10	826.76	1787.78	753.70	509052.19	1688879.40	39 53	32.480 N	80 36	31.724 W		
2800.00	91.43	30.53	826.74	1874.05	804.26	509138.46	1688929.96	39 53	33.338 N	80 36	31.089 W		
2900.00	90.49	32.67	825.23	1958.63	857.56	509223.04	1688983.26	39 53	34.181 N	80 36	30.419 W		
3000.00	92.20	32.80	824.25	2043.08	911.12	509307.47	1689036.82	39 53	35.022 N	80 36	29.745 W		
3100.00	90.74	33.92	820.83	2126.49	966.13	509390.90	1689091.83	39 53	35.853 N	80 36	29.053 W		
3200.00	90.84	32.84	820.17	2209.65	1021.66	509474.06	1689147.36	39 53	36.682 N	80 36	28.353 W		
3300.00	89.70	32.12	820.03	2294.20	1075.05	509558.61	1689200.75	39 53	37.524 N	80 36	27.682 W		
3400.00	89.46	32.32	820.37	2378.45	1128.91	509642.86	1689254.61	39 53	38.363 N	80 36	27.004 W		
3500.00	89.15	33.53	820.88	2462.44	1183.17	509726.85	1689308.87	39 53	39.199 N	80 36	26.321 W		
3600.00	91.86	35.12	819.33	2545.62	1238.63	509810.03	1689364.33	39 53	40.028 N	80 36	25.623 W		

RECEIVED  
Office of Oil and Gas  
WV 30 2021  
Department of  
Environmental Protection

## Scientific Drilling Survey Report - Geographic

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 2008/09/10	<b>Time:</b> 11:49:23	<b>Page:</b> 2
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> MC-51 Access, Grid North	
<b>Site:</b> MC-51 WELL LOCATION	<b>Vertical (TVD) Reference:</b>	1258.36 + 12 1270.4	
<b>Well:</b> MC-51 Access	<b>Section (VS) Reference:</b>	<b>Well (0.00N,0.00E,32.15Azi)</b>	
<b>Wellpath:</b> Center Leg	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

Survey: Survey #1

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →				
								Deg	Min	Sec	Deg	Min	Sec		
3700.00	89.45	33.58	817.55	2627.82	1295.52	509892.23	1689421.22	39	53	40.847	N	80	36	24.906	W
3800.00	90.42	32.24	818.44	2712.10	1349.33	509976.51	1689475.03	39	53	41.887	N	80	36	24.229	W
3900.00	88.96	30.90	818.16	2797.07	1402.04	510061.48	1689527.74	39	53	42.533	N	80	36	23.566	W
4000.00	89.29	33.36	818.86	2882.21	1454.46	510146.62	1689580.16	39	53	43.381	N	80	36	22.907	W
4100.00	89.33	34.87	819.43	2964.95	1510.61	510229.36	1689636.31	39	53	44.205	N	80	36	22.200	W
4200.00	89.41	35.21	820.88	3046.44	1568.55	510310.85	1689694.25	39	53	45.018	N	80	36	21.469	W
4300.00	90.35	32.32	821.88	3129.78	1623.77	510394.19	1689749.47	39	53	45.848	N	80	36	20.774	W
4400.00	90.36	31.50	820.28	3214.36	1677.09	510478.77	1689802.79	39	53	46.690	N	80	36	20.103	W
4500.00	87.71	32.22	824.06	3299.31	1729.67	510563.72	1689855.37	39	53	47.536	N	80	36	19.442	W
4600.00	90.25	32.70	824.22	3383.64	1783.39	510648.05	1689909.09	39	53	48.376	N	80	36	18.766	W
4700.00	91.20	32.47	823.79	3467.44	1837.95	510731.85	1689963.65	39	53	49.211	N	80	36	18.080	W
4800.00	91.18	36.14	821.64	3550.12	1894.12	510814.53	1690019.82	39	53	50.035	N	80	36	17.372	W
4900.00	90.98	33.65	819.71	3632.00	1951.47	510896.41	1690077.17	39	53	50.851	N	80	36	16.649	W
5000.00	90.23	31.47	819.15	3716.07	2005.58	510980.48	1690131.28	39	53	51.688	N	80	36	15.968	W
5100.00	90.29	33.12	818.07	3800.07	2059.83	511064.48	1690185.53	39	53	52.525	N	80	36	15.285	W
5200.00	90.35	35.66	818.31	3881.90	2117.27	511146.31	1690242.97	39	53	53.341	N	80	36	14.561	W
5300.00	90.48	38.36	817.96	3962.56	2176.36	511226.97	1690302.06	39	53	54.145	N	80	36	13.816	W
5400.00	90.51	39.46	817.83	4039.94	2239.71	511304.35	1690365.41	39	53	54.917	N	80	36	13.015	W
5500.00	90.05	40.60	817.35	4116.72	2303.76	511381.13	1690429.46	39	53	55.684	N	80	36	12.206	W
5600.00	89.70	44.21	817.76	4189.12	2372.72	511453.53	1690498.42	39	53	56.408	N	80	36	11.332	W
5605.00	89.70	44.21	817.79	4192.71	2376.20	511457.12	1690501.90	39	53	56.444	N	80	36	11.288	W

Targets

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →				
							Deg	Min	Sec	Deg	Min	Sec		
West Leg TD		830.00	4907.59	171.27	512172.00	1688296.97	39	54	3.240	N	80	36	39.691	W
-Rectangle (4166x200)														
Intercept TD		830.00	402.35	74.40	507688.76	1688200.10	39	53	18.705	N	80	36	40.219	W
-Circle (Radius: 1)														
Center Leg TD		830.00	4288.00	2335.83	511552.41	1690461.53	39	53	57.381	N	80	36	11.821	W
-Rectangle (3938x200)														
East Leg TD		830.00	2781.59	3888.74	510046.00	1692014.44	39	53	42.682	N	80	35	51.661	W
-Rectangle (3629x200)														

**RECEIVED**  
 Office of Oil and Gas  
**NOV 30 2020**  
 WV Department of  
 Environmental Protection

# Scientific Drilling Survey Report

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 2008/09/10	<b>Time:</b> 11:26:53	<b>Page:</b> 1
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b> Well: MC-51 Access, Grid North		
<b>Site:</b> MC-51 WELL LOCATION	<b>Vertical (TVD) Reference:</b> 1258.36 + 12 1270.4		
<b>Well:</b> MC-51 Access	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,54.03Azi)		
<b>Wellpath:</b> East Leg	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

<b>Field:</b> MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.	
<b>Map System:</b> US State Plane Coordinate System 1927	<b>Map Zone:</b> West Virginia, Northern Zone
<b>Geo Datum:</b> NAD27 (Clarke 1866)	<b>Coordinate System:</b> Well Centre
<b>Sys Datum:</b> Mean Sea Level	<b>Geomagnetic Model:</b> igrf2005

**Site:** MC-51 WELL LOCATION

<b>Site Position:</b>	<b>Northing:</b> 507264.41 ft	<b>Latitude:</b> 39 53 14.720 N
<b>From:</b> Map	<b>Easting:</b> 1688125.70 ft	<b>Longitude:</b> 80 36 41.110 W
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid
<b>Ground Level:</b> 1258.36 ft		<b>Grid Convergence:</b> -0.71 deg

<b>Well:</b> MC-51 Access	<b>Slot Name:</b>
<b>Well Position:</b> +N-S 0.00 ft	<b>Northing:</b> 507264.41 ft
+E-W 0.00 ft	<b>Easting:</b> 1688125.70 ft
<b>Position Uncertainty:</b> 0.00 ft	
	<b>Latitude:</b> 39 53 14.720 N
	<b>Longitude:</b> 80 36 41.110 W

<b>Wellpath:</b> East Leg	<b>Drilled From:</b> West Leg
<b>Current Datum:</b> 1258.36 + 12	<b>Tie-on Depth:</b> 1252.44 ft
<b>Magnetic Data:</b> 2008/08/21	<b>Above System Datum:</b> Mean Sea Level
<b>Field Strength:</b> .53272 nT	<b>Declination:</b> -8.47 deg
<b>Vertical Section:</b> Depth From (TVD)	<b>Mag Dip Angle:</b> 67.82 deg
ft	+N-S
	ft
0.00	0.00
	0.00
	54.03
	deg

<b>Survey:</b> Survey #1	<b>Start Date:</b> 2008/09/10
<b>Company:</b> SDI	<b>Engineer:</b> Bob Feeny
<b>Tool:</b> MWD-SDI-SYS, Scientific MWD Systematic	<b>Tied-to:</b> User Defined

**Survey:** Survey #1

MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
1300.00	90.57	11.07	832.00	555.59	105.24	411.52	0.00	0.00	0.00	MWD-SDI-SYS
1400.00	91.91	14.56	829.40	653.15	126.93	486.39	3.73	1.34	3.49	MWD-SDI-SYS
1500.00	89.41	19.20	827.51	748.62	156.52	566.41	5.27	-2.49	4.64	MWD-SDI-SYS
1600.00	89.89	26.66	829.05	840.79	195.09	651.77	7.47	0.48	7.46	MWD-SDI-SYS
1700.00	91.57	35.09	827.89	926.48	246.43	743.65	8.59	1.67	8.43	MWD-SDI-SYS
1800.00	90.15	42.49	825.08	1004.22	309.15	840.08	7.53	-1.41	7.40	MWD-SDI-SYS
1900.00	88.90	49.39	827.73	1073.77	380.86	938.96	7.02	-1.25	6.90	MWD-SDI-SYS
2000.00	90.87	57.36	828.00	1133.42	461.02	1038.88	8.20	1.96	7.96	MWD-SDI-SYS
2100.00	89.34	62.97	826.16	1181.50	548.62	1138.01	5.82	-1.52	5.62	MWD-SDI-SYS
2200.00	87.78	65.52	827.97	1224.76	638.73	1236.35	2.99	-1.57	2.55	MWD-SDI-SYS
2300.00	91.59	67.30	829.20	1264.97	730.24	1334.02	4.21	3.81	1.78	MWD-SDI-SYS
2400.00	87.94	66.26	828.72	1304.42	822.09	1431.53	3.80	-3.65	-1.04	MWD-SDI-SYS
2500.00	89.69	65.54	830.24	1345.56	913.20	1529.44	1.89	1.75	-0.72	MWD-SDI-SYS
2600.00	90.35	63.51	830.82	1388.05	1003.72	1627.65	2.14	0.66	-2.03	MWD-SDI-SYS
2700.00	89.56	62.45	831.54	1433.47	1092.80	1726.42	1.32	-0.79	-1.06	MWD-SDI-SYS
2800.00	91.20	62.63	830.53	1479.12	1181.76	1825.23	1.65	1.64	0.18	MWD-SDI-SYS
2900.00	90.64	64.14	830.01	1524.23	1271.00	1923.95	1.61	-0.56	1.51	MWD-SDI-SYS
3000.00	90.20	64.22	828.67	1568.02	1360.89	2022.42	0.45	-0.44	0.08	MWD-SDI-SYS
3100.00	89.87	63.60	828.23	1611.59	1450.89	2120.85	0.70	-0.32	-0.62	MWD-SDI-SYS
3200.00	90.00	64.21	828.11	1655.56	1540.70	2219.36	0.62	0.13	0.61	MWD-SDI-SYS
3300.00	92.71	66.75	826.71	1696.90	1631.70	2317.29	3.71	2.71	2.54	MWD-SDI-SYS
3400.00	90.40	67.04	824.27	1736.16	1723.62	2414.75	2.32	-2.31	0.29	MWD-SDI-SYS
3500.00	89.73	65.16	825.80	1776.03	1815.30	2512.36	1.99	-0.67	-1.88	MWD-SDI-SYS
3600.00	90.71	65.99	825.16	1817.44	1906.33	2610.35	1.28	0.98	0.83	MWD-SDI-SYS

RECEIVED  
Office of Oil and Gas  
NOV 30 2020  
WV Department of  
Environmental Protection

# Scientific Drilling Survey Report - Geographic

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 2008/09/10	<b>Time:</b> 11:27:47	<b>Page:</b> 1
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b> Well: MC-51 Access, Grid North		
<b>Site:</b> MC-51 WELL LOCATION	<b>Vertical (TVD) Reference:</b> 1258.36 + 12 1270.4		
<b>Well:</b> MC-51 Access	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,54.03Azi)		
<b>Wellpath:</b> East Leg	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

**Field:** MARSHALL COUNTY, WV  
Northern West Virginia and Pennsylvania Operations  
U.S.A.

**Map System:** US State Plane Coordinate System 1927  
**Geo Datum:** NAD27 (Clarke 1866)  
**Sys Datum:** Mean Sea Level

**Map Zone:** West Virginia, Northern Zone  
**Coordinate System:** Well Centre  
**Geomagnetic Model:** igrf2005

**Site:** MC-51 WELL LOCATION

<b>Site Position:</b>	<b>Northing:</b> 507264.41 ft	<b>Latitude:</b> 39 53 14.720 N	
<b>From: Map</b>	<b>Easting:</b> 1688125.70 ft	<b>Longitude:</b> 80 36 41.110 W	
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid	
<b>Ground Level:</b> 1258.36 ft		<b>Grid Convergence:</b> -0.71 deg	

**Well:** MC-51 Access

**Slot Name:**

<b>Well Position:</b>	<b>+N/-S</b> 0.00 ft	<b>Northing:</b> 507264.41 ft	<b>Latitude:</b> 39 53 14.720 N
	<b>+E/-W</b> 0.00 ft	<b>Easting:</b> 1688125.70 ft	<b>Longitude:</b> 80 36 41.110 W
<b>Position Uncertainty:</b> 0.00 ft			

**Wellpath:** East Leg

<b>Current Datum:</b> 1258.36 + 12	<b>Height</b> 1270.36 ft	<b>Drilled From:</b> West Leg	<b>Tie-on Depth:</b> 1252.44 ft
<b>Magnetic Data:</b> 2008/08/21		<b>Above System Datum:</b> Mean Sea Level	
<b>Field Strength:</b> 53272 nT		<b>Declination:</b> -8.47 deg	
<b>Vertical Section:</b> Depth From (TVD)	<b>+N/-S</b>	<b>Mag Dip Angle:</b> 67.82 deg	
ft	ft	<b>+E/-W</b>	<b>Direction</b>
		ft	deg
0.00	0.00	0.00	54.03

**Survey:** Survey #1

**Start Date:** 2008/09/10

**Company:** SDI  
**Tool:** MWD-SDI-SYS, Scientific MWD Systematic

**Engineer:** Bob Feehey  
**Tied-to:** User Defined

**Survey:** Survey #1

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude --->			<--- Longitude --->		
								Deg	Min	Sec	Deg	Min	Sec
1300.00	90.57	11.07	832.00	555.59	105.24	507820.00	1688230.94	39 53	20.224	N	80 36	39.848	W
1400.00	91.91	14.56	829.40	653.15	126.93	507917.56	1688252.63	39 53	21.190	N	80 36	39.585	W
1500.00	89.41	19.20	827.51	748.62	156.52	508013.03	1688282.22	39 53	22.137	N	80 36	39.220	W
1600.00	89.89	26.66	829.05	840.79	195.09	508105.20	1688320.79	39 53	23.053	N	80 36	38.740	W
1700.00	91.57	35.09	827.89	926.48	246.43	508190.89	1688372.13	39 53	23.906	N	80 36	38.095	W
1800.00	90.15	42.49	825.08	1004.22	309.15	508268.63	1688434.85	39 53	24.682	N	80 36	37.303	W
1900.00	88.90	49.39	827.73	1073.77	380.86	508338.18	1688506.56	39 53	25.378	N	80 36	36.394	W
2000.00	90.87	57.36	828.00	1133.42	461.02	508397.83	1688586.72	39 53	25.977	N	80 36	35.375	W
2100.00	89.34	62.97	826.16	1181.50	548.62	508445.91	1688674.32	39 53	26.463	N	80 36	34.259	W
2200.00	87.78	65.52	827.97	1224.76	638.73	508489.17	1688764.43	39 53	26.902	N	80 36	33.110	W
2300.00	91.59	67.30	829.20	1264.97	730.24	508529.38	1688855.94	39 53	27.310	N	80 36	31.942	W
2400.00	87.94	66.26	828.72	1304.42	822.09	508568.83	1688947.79	39 53	27.711	N	80 36	30.770	W
2500.00	89.69	65.54	830.24	1345.56	913.20	508609.97	1689038.90	39 53	28.129	N	80 36	29.608	W
2600.00	90.35	63.51	830.82	1388.05	1003.72	508652.46	1689129.42	39 53	28.560	N	80 36	28.453	W
2700.00	89.56	62.45	831.54	1433.47	1092.80	508697.88	1689218.50	39 53	29.020	N	80 36	27.318	W
2800.00	91.20	62.63	830.53	1479.12	1181.76	508743.53	1689307.46	39 53	29.482	N	80 36	26.184	W
2900.00	90.64	64.14	830.01	1524.23	1271.00	508788.64	1689396.70	39 53	29.938	N	80 36	25.046	W
3000.00	90.20	64.22	828.67	1568.02	1360.89	508832.43	1689486.59	39 53	30.382	N	80 36	23.900	W
3100.00	89.87	63.60	828.23	1611.59	1450.89	508876.00	1689576.59	39 53	30.823	N	80 36	22.752	W
3200.00	90.00	64.21	828.11	1655.56	1540.70	508919.97	1689666.40	39 53	31.269	N	80 36	21.607	W
3300.00	92.71	66.75	826.71	1696.90	1631.70	508961.31	1689757.40	39 53	31.689	N	80 36	20.446	W
3400.00	90.40	67.04	824.27	1736.16	1723.62	509000.57	1689849.32	39 53	32.088	N	80 36	19.273	W
3500.00	89.73	65.16	825.80	1776.03	1815.30	509040.44	1689941.00	39 53	32.493	N	80 36	18.103	W

RECEIVED  
Office of Oil and  
NDV 30 202  
WV Department of  
Environmental Protection

## Scientific Drilling Survey Report

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 2008/09/10	<b>Time:</b> 11:26:53	<b>Page:</b> 2
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	Well: MC-51 Access, Grid North	
<b>Site:</b> MC-51 WELL LOCATION	<b>Vertical (TVD) Reference:</b>	1258.36 + 12 1270.4	
<b>Well:</b> MC-51 Access	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,54.03Azi)	
<b>Wellpath:</b> East Leg	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

**Survey: Survey #1**

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
3700.00	92.47	64.56	821.74	1859.49	1996.98	2708.41	2.27	1.77	-1.42	MWD-SDI-SYS
3800.00	90.48	62.98	819.42	1903.80	2086.59	2806.96	2.54	-2.00	-1.58	MWD-SDI-SYS
3900.00	88.38	63.85	821.15	1948.20	2176.16	2905.53	2.27	-2.10	0.87	MWD-SDI-SYS
4000.00	89.40	63.40	822.65	1992.27	2265.91	3004.05	1.11	1.02	-0.44	MWD-SDI-SYS
4100.00	90.57	63.05	821.23	2037.83	2354.91	3102.84	1.22	1.17	-0.35	MWD-SDI-SYS
4200.00	89.88	61.05	820.93	2084.88	2443.14	3201.88	2.11	-0.69	-2.00	MWD-SDI-SYS
4300.00	89.57	61.56	821.20	2132.78	2530.91	3301.05	0.59	-0.30	0.51	MWD-SDI-SYS
4400.00	88.67	61.85	823.65	2180.56	2618.72	3400.19	0.95	-0.90	0.29	MWD-SDI-SYS
4500.00	90.64	64.27	824.64	2225.55	2708.00	3498.87	3.12	1.97	2.42	MWD-SDI-SYS
4600.00	91.44	65.04	823.51	2268.26	2798.41	3597.12	1.11	0.80	0.77	MWD-SDI-SYS
4700.00	90.81	66.10	821.82	2309.59	2889.45	3695.08	1.24	-0.63	1.06	MWD-SDI-SYS
4800.00	88.86	67.18	821.58	2348.99	2981.36	3792.60	2.23	-1.95	1.08	MWD-SDI-SYS
4900.00	90.84	65.84	820.68	2389.28	3072.87	3890.33	2.39	1.98	-1.34	MWD-SDI-SYS
5000.00	90.32	67.75	819.15	2428.70	3164.75	3987.84	1.97	-0.52	1.91	MWD-SDI-SYS
5100.00	91.42	66.58	817.65	2466.47	3257.32	4084.95	1.60	1.09	-1.17	MWD-SDI-SYS
5200.00	90.67	67.03	814.79	2505.58	3349.31	4182.36	0.87	-0.75	0.45	MWD-SDI-SYS
5300.00	89.54	65.09	815.13	2546.35	3440.62	4280.20	2.24	-1.13	-1.93	MWD-SDI-SYS
5400.00	89.64	64.52	815.12	2588.65	3531.23	4378.38	0.58	0.11	-0.57	MWD-SDI-SYS
5500.00	88.49	62.19	817.33	2633.24	3620.69	4476.98	2.60	-1.15	-2.33	MWD-SDI-SYS
5530.00	88.49	62.19	818.12	2647.23	3647.22	4506.66	0.00	0.00	0.00	MWD-SDI-SYS

**Targets**

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map	Map	← Latitude →			← Longitude →				
					Northing ft	Easting ft	Deg	Min	Sec	Deg	Min	Sec		
Center Leg TD	-Rectangle (3938x200)	830.00	4288.00	2335.83	511552.41	1690461.53	39	53	57.381	N	80	36	11.821	W
Intercept TD	-Circle (Radius: 1)	830.00	402.35	74.40	507666.76	1688200.10	39	53	18.705	N	80	36	40.219	W
West Leg TD	-Rectangle (4166x200)	830.00	4907.59	171.27	512172.00	1688296.97	39	54	3.240	N	80	36	39.691	W
East Leg TD	-Rectangle (3629x200)	830.00	2781.59	3888.74	510046.00	1692014.44	39	53	42.682	N	80	35	51.661	W

RECEIVED  
Office of Oil and G  
NOV 30 2021  
WV Department of  
Environmental Protection

## Scientific Drilling Survey Report - Geographic

Company: CNX Gas Company, LLC  
Field: MARSHALL COUNTY, WV  
Site: MC-51 WELL LOCATION  
Well: MC-51 Access  
Wellpath: East Leg

Date: 2008/09/10 Time: 11:27:47 Page: 2  
Co-ordinate(NE) Reference: Well: MC-51 Access, Grid North  
Vertical (TVD) Reference: 1258.36 + 12 1270.4  
Section (VS) Reference: Well (0.00N,0.00E,54.03Azi)  
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: Survey #1

MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →					
								Deg	Min	Sec	Deg	Min	Sec		
3600.00	90.71	65.99	825.16	1817.44	1906.33	509081.85	1690032.03	39	53	32.913	N	80	36	16.942	W
3700.00	92.47	64.56	821.74	1859.49	1996.98	509123.90	1690122.68	39	53	33.340	N	80	36	15.786	W
3800.00	90.48	62.98	819.42	1903.80	2086.59	509168.21	1690212.29	39	53	33.789	N	80	36	14.643	W
3900.00	88.38	63.85	821.15	1948.20	2176.16	509212.61	1690301.86	39	53	34.238	N	80	36	13.501	W
4000.00	89.40	63.40	822.65	1992.27	2265.91	509256.68	1690391.61	39	53	34.685	N	80	36	12.356	W
4100.00	90.57	63.05	821.23	2037.83	2354.91	509302.24	1690480.61	39	53	35.146	N	80	36	11.222	W
4200.00	89.88	61.05	820.93	2084.88	2443.14	509349.29	1690568.84	39	53	35.621	N	80	36	10.097	W
4300.00	89.57	61.56	821.20	2132.78	2530.91	509397.19	1690656.61	39	53	36.105	N	80	36	8.979	W
4400.00	88.67	61.85	823.65	2180.56	2618.72	509444.97	1690744.42	39	53	36.588	N	80	36	7.860	W
4500.00	90.64	64.27	824.64	2225.55	2708.00	509489.96	1690833.70	39	53	37.044	N	80	36	6.722	W
4600.00	91.44	65.04	823.51	2268.26	2798.41	509532.67	1690924.11	39	53	37.477	N	80	36	5.568	W
4700.00	90.81	66.10	821.82	2309.59	2889.45	509574.00	1691015.15	39	53	37.896	N	80	36	4.407	W
4800.00	88.86	67.18	821.58	2348.99	2981.36	509613.40	1691107.06	39	53	38.297	N	80	36	3.234	W
4900.00	90.84	65.84	820.68	2389.28	3072.87	509653.69	1691198.57	39	53	38.706	N	80	36	2.066	W
5000.00	90.32	67.75	819.15	2428.70	3164.75	509693.11	1691290.45	39	53	39.107	N	80	36	0.894	W
5100.00	91.42	66.58	817.65	2466.47	3257.32	509730.88	1691383.02	39	53	39.491	N	80	35	59.712	W
5200.00	90.67	67.03	814.79	2505.58	3349.31	509769.99	1691475.01	39	53	39.889	N	80	35	58.538	W
5300.00	89.54	65.09	815.13	2546.35	3440.62	509810.76	1691566.32	39	53	40.303	N	80	35	57.373	W
5400.00	89.64	64.52	815.12	2588.65	3531.23	509853.06	1691656.93	39	53	40.732	N	80	35	56.217	W
5500.00	88.49	62.19	817.33	2633.24	3620.69	509897.65	1691746.39	39	53	41.183	N	80	35	55.077	W
5530.00	88.49	62.19	818.12	2647.23	3647.22	509911.64	1691772.92	39	53	41.325	N	80	35	54.738	W

**Targets**

Name	Description	TVD ft	+N-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →					
							Deg	Min	Sec	Deg	Min	Sec		
Center Leg TD		830.00	4288.00	2335.83	511552.41	1690461.53	39	53	57.381	N	80	36	11.821	W
-Rectangle (3938x200)														
Intercept TD		830.00	402.35	74.40	507666.76	1688200.10	39	53	18.705	N	80	36	40.219	W
-Circle (Radius: 1)														
West Leg TD		830.00	4907.59	171.27	512172.00	1688296.97	39	54	3.240	N	80	36	39.691	W
-Rectangle (4166x200)														
East Leg TD		830.00	2781.59	3888.74	510046.00	1692014.44	39	53	42.682	N	80	35	51.661	W
-Rectangle (3629x200)														

RECEIVED  
Office of Oil and  
NOV 30 2008  
WV Department of  
Environmental Protection

47-051-01059 P

WR-35  
Rev (5-01)

DATE: 11/17/2008  
API #: 47-5101059

State of West Virginia  
Department of Environmental Protection  
Office of Oil and Gas

Well Operator's Report of Well Work

*MS*

Farm name: ROBERT & BETTY GOULDSBERRY Operator Well No.: MC-51

LOCATION: Elevation: 1245.77' Quadrangle: MAJORSVILLE WV 7.5'

District: WEBSTER County: MARSHALL  
Latitude: 10258' Feet South of 39 Deg. 53 Min. 18.96 Sec.  
Longitude: 7832' Feet West of 80 Deg. 36 Min. 39.64 Sec.

Company: CNX Gas Company, LLC

	Casing & Tubing	Used in drilling	Left in well	Cement Fill Up (# of Sacks)
Address: 2481 John Nash BLVD	13 3/8"	42'	42'	SANDED IN
Bluefield Wv 24701	9 5/8"	361.9'	361.9'	125 SKS
Agent: Les Arrington	7"	1040.8'	1040.8'	105 SKS
Inspector: Bill Hatfield				
Date Permit Issued: 7/31/2008				
Date Well Work Commenced: 8/14/2008				
Date Well Work Completed: 9/12/2008				
Verbal Plugging:				
Date Permission granted on:				
Rotary Cable <u>Rig</u>				
Total Depth (feet): 1080'				
Fresh Water Depth (ft.): 300'				
Salt Water Depth (ft.): N/A				
Is coal being mined in area (N/Y)? No				

RECEIVED  
Office of Oil & Gas

JAN 16 2009

WV Department of  
Environmental Protection

Coal Depths (ft.): 510'-513', 789'-793', 812'-820'

OPEN FLOW DATA

Producing formation Pittsburgh COAL STREAM depth (ft) 789'-793'

Gas: Initial open flow \_\_\_\_\_ MCF/d Oil: Initial open flow \_\_\_\_\_ Bbl/d  
Final open flow \_\_\_\_\_ MCF/d Final open flow \_\_\_\_\_ Bbl/d  
Time of open flow between initial and final tests \_\_\_\_\_ Hours  
Static rock Pressure \_\_\_\_\_ psig (surface pressure) after \_\_\_\_\_ Hours

Second producing formation \_\_\_\_\_ Pay zone depth (ft) \_\_\_\_\_  
Gas: Initial open flow \_\_\_\_\_ MCF/d Oil: Initial open flow \_\_\_\_\_ Bbl/d  
Final open flow \_\_\_\_\_ MCF/d Final open flow \_\_\_\_\_ Bbl/d  
Time of open flow between initial and final tests \_\_\_\_\_ Hours  
Static rock Pressure \_\_\_\_\_ psig (surface pressure) after \_\_\_\_\_ Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Gas Well DOE MC-51 (API No. 47-5101059)s a horizontal well for CNX Gas Company, LLC. Refer to the attached information for additional information.

Signed: Geoff Fanning  
By: Geoff Fanning Drilling Manager  
Date: 11/19/09

RECEIVED  
Office of Oil and Gas

NOV 30 2020

WV Department of  
Environmental Protection

**ATTACHMENT A****Marshall County CBM Well No. MC-51 PG Drill Log**

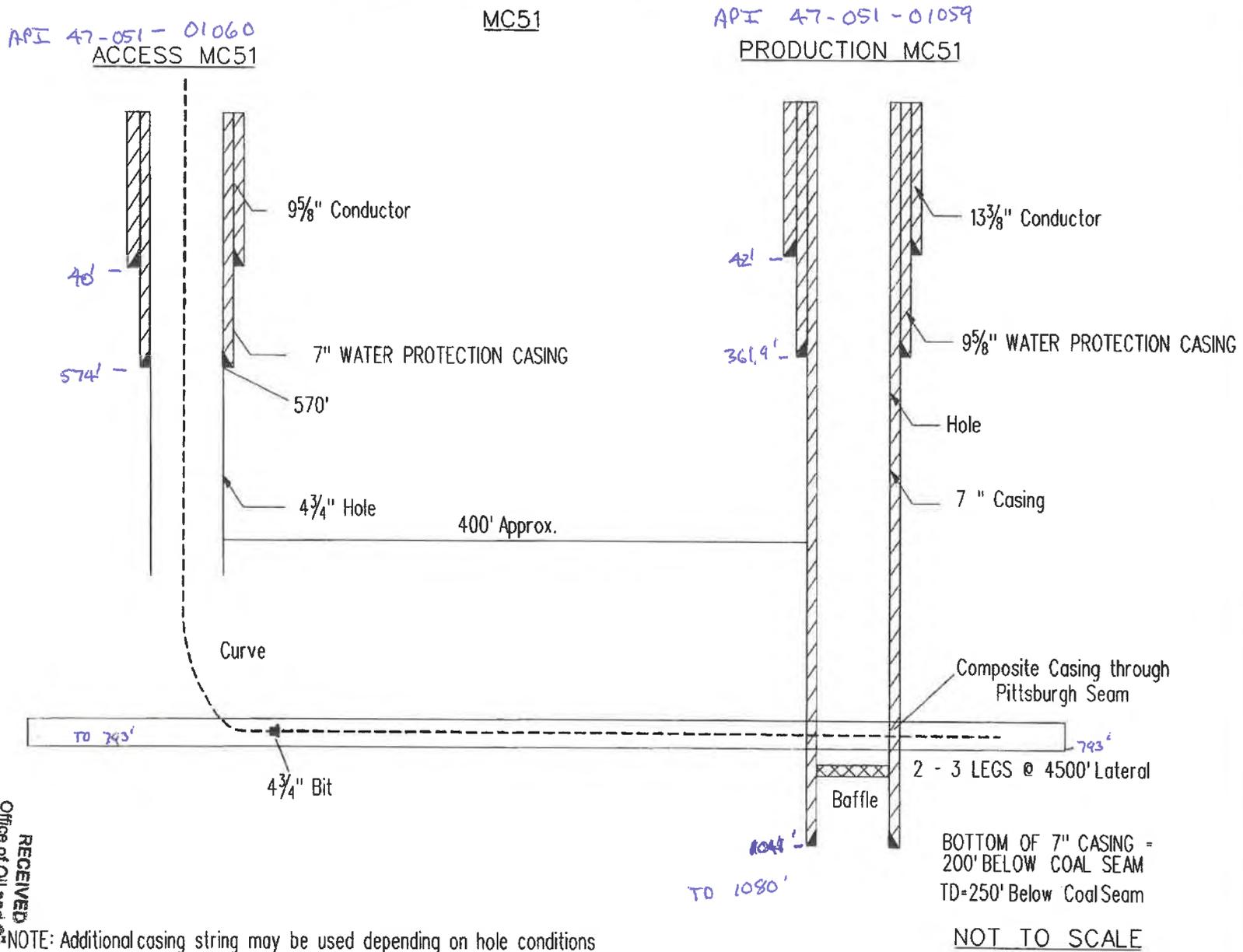
API #47-5101059

<b>Depth</b>	<b>Description</b>
GL-15'	FILL
15'-25'	BROWN SAND
25'-32'	SHALE
32'-36'	BROWN SAND
36'-39'	SHALE
39'-47'	SAND
47'-92'	SHALE
92'-205'	SAND/SHALE
205'-244'	SHALE
244'-315'	SAND
315'-342'	SAND/SHALE
342'-390'	SAND
390'-460'	SAND/SHALE
460'-475'	SAND
475'-510'	SAND/SHALE
510'-513'	COAL
513'-540'	SAND/SHALE
540'-570'	SAND
570'-610'	SAND/SHALE
610'-789'	SAND
789'-793'	COAL
793'-812'	SAND/SHALE
812'-820'	COAL
820'-824'	SAND

RECEIVED  
Office of Oil and Gas  
NOV 30 2020  
WV Department of  
Environmental Protection



FIGURE 1  
CNX GAS COMPANY LLC



NOTE: Additional casing string may be used depending on hole conditions

WV Department of  
Environmental Protection

NOV 30 2020

RECEIVED  
Office of Oil and Gas

6/22/0

47-051-01059P

47-051-01059 P

WW-4A  
Revised 6-07

1) Date: 11-16-20  
2) Operator's Well Number  
MC51P

3) API Well No.: 47 - 051 - 01059

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

4) Surface Owner(s) to be served:		5) (a) Coal Operator	
(a) Name	John M. and Patricia L. Kulavik	Name	Consol Pennsylvania Coal Co.
Address	10398 Middle Grave Creek Road Cameron, WV 26033	Address	192 Crabapple Rd. Wind Ridge, PA 15380
(b) Name		(b) Coal Owner(s) with Declaration	
Address		Name	
		Address	
(c) Name		Name	
Address		Address	
6) Inspector	James Nicholson	(c) Coal Lessee with Declaration	
Address	P.O. Box 44 Moundsville, WV 26041	Name	
Telephone	304-552-3847	Address	

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

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

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

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

Commonwealth of Pennsylvania - Notary Seal  
 Scott Whipkey, Notary Public  
 Greene County  
 My commission expires September 23, 2022  
 Commission number 1285876  
 Member, Pennsylvania Association of Notaries

Well Operator Leatherwood LLC  
 By: Matthew Ruckle  
 Its: Project Engineer  
 Address 1000 CONSOL Energy Drive  
Canonsburg, PA 15317  
 Telephone 724-663-7165

RECEIVED  
 Office of Oil and Gas  
 NOV 30 2020

Subscribed and sworn before me this 16 day of November  
Scott Whipkey Notary Public  
 My Commission Expires 9/23/2022

WV Department of Environmental Protection

**Oil and Gas Privacy Notice**

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



**Leatherwood LLC**  
1000 CONSOL Energy Drive  
Canonsburg, PA 15317

John M. and Patricia L. Kulavik  
10398 Middle Grave Creek Road  
Cameron, WV 26033

December 1, 2020

Certified Mail # 9489 0090 0027 6147 1257 94

RE: MC 51 A and MC 51 P Plugging Application  
API #47-051-01060 & 47-051-01059

Dear Mr. and Mrs. Kulavik,

Please find attached a copy of our application to plug MC 51A and MC 51P CBM wells.

If you have any questions, please feel free to contact Scott Whipkey-Land Agent at 724-663-7138 or myself at 724-663-7165.

Sincerely,

A handwritten signature in blue ink that reads "Matthew Ruckle".

Matthew Ruckle  
Project Engineer  
Leatherwood LLC/CONSOL Pennsylvania Coal Company LLC

RECEIVED  
Office of Oil and Gas

DEC 09 2020

WV Department of  
Environmental Protection

47-051-01059f

Tracking Number: 9489009000276147125794

Your item was delivered to an individual at the address at 3:08 pm on December 3, 2020 in CAMERON, WV 26033.

**Status**

 **Delivered**

December 3, 2020 at 3:08 pm  
Delivered, Left with Individual  
CAMERON, WV 26033

**Get Updates** 

**Delivered**

---

**Text & Email Updates**



---

**Tracking History**



---

**Product Information**



WW-4B

API No.	<u>47-051-01059 P</u>
Farm Name	<u>Robert &amp; Betty Gouldsberry</u>
Well No.	<u>MC 51P</u>

**INSTRUCTIONS TO COAL OPERATORS  
OWNERS AND LESSEE**

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

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

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

**WAIVER**

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

Date: November 16, 2020

Consol PA Coal Co

By: Matthew Rille  
Its Project Engineer

RECEIVED  
Office of Oil and Gas  
NOV 30 2020  
WV Department of  
Environmental Protection

47-051-01059 P

WW-9  
(5/16)

API Number 47 - 051 - 01059  
Operator's Well No. \_\_\_\_\_

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

Operator Name Leatherwood, LLC OP Code \_\_\_\_\_

Watershed (HUC 10) unnamed tributary to Grave Creek Quadrangle Majorsville WW-PA 7.5

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

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: \_\_\_\_\_

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application (if selected provide a completed form WW-9-GPP)
- Underground Injection ( UIC Permit Number \_\_\_\_\_ )
- Reuse (at API Number \_\_\_\_\_ )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain Tanks will be used, See attached)

Will closed loop system be used? If so, describe: Yes, cement circulated from pumps through well bore and returned to tank

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

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

Additives to be used in drilling medium? Bentonite

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

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

-Landfill or offsite name/permit number? PA DEP Permit #30020701

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

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

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

Company Official Signature Matthew Ruckle

Company Official (Typed Name) Matthew Ruckle

Company Official Title Project Engineer

RECEIVED  
Office of Oil and Gas

NOV 30 2020

WV Department of  
Environmental Protection

Subscribed and sworn before me this 16 day of November, 20 20

Scott Whipkey

Notary Public

My commission expires 9/23/2022

Commonwealth of Pennsylvania - Notary Seal  
Scott Whipkey, Notary Public  
Greene County  
My commission expires September 23, 2022  
Commission number 1285876  
Member, Pennsylvania Association of Notaries

47-051-01059A

Form WW-9

Operator's Well No. MC 51 P

Proposed Revegetation Treatment: Acres Disturbed 2 Prevegetation pH \_\_\_\_\_

Lime 3 Tons/acre or to correct to pH 6.0

Fertilizer type 10-20-20 or equivalent

Fertilizer amount 500 lbs/acre

Mulch 2 Tons/acre

**Seed Mixtures**

**Temporary**

**Permane**

Seed Type lbs/acre

Seed Type

Seed mix in accordance with WVDEP oil  
and gas Erosion and Sedimentation Control

Seed mix in accordance with WVDEP oil  
and gas Erosion and Sedimentation Control

Field Manual

Field Manual

**Attach:**

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: \_\_\_\_\_

*Jim Wickham*

Comments: Oil & Gas Inspector, signed 11/17/2020

RECEIVED  
Office of Oil and Gas

NOV 30 2020

Title: \_\_\_\_\_

Date: \_\_\_\_\_

WV Department of  
Environmental Protection

Field Reviewed? ( ) Yes

( ) No

N/A

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

Operator Name: Leatherwood, LLC  
Watershed (HUC 10): Unnamed Tributary to Grave Creek Quad: Majorsville WV-PA 7.5  
Farm Name: Robert and Betty Gouldsberry

- 1. List the procedures used for the treatment and discharge of fluids. Include a list of all operations that could contaminate the groundwater.

- 2. Describe procedures and equipment used to protect groundwater quality from the list of potential contaminant sources above.

- 3. List the closest water body, distance to closest water body, and distance from closest Well Head Protection Area to the discharge area.

- 4. Summarize all activities at your facility that are already regulated for groundwater protection.

RECEIVED  
Office of Oil and Gas  
NOV 30 2020  
WV Department of  
Environmental Protection

- 5. Discuss any existing groundwater quality data for your facility or an adjacent property.

6. Provide a statement that no waste material will be used for deicing or fill material on the property.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

8. Provide provisions and frequency for inspections of all GPP elements and equipment.

RECEIVED  
Office of Oil and Gas  
NOV 30 2020

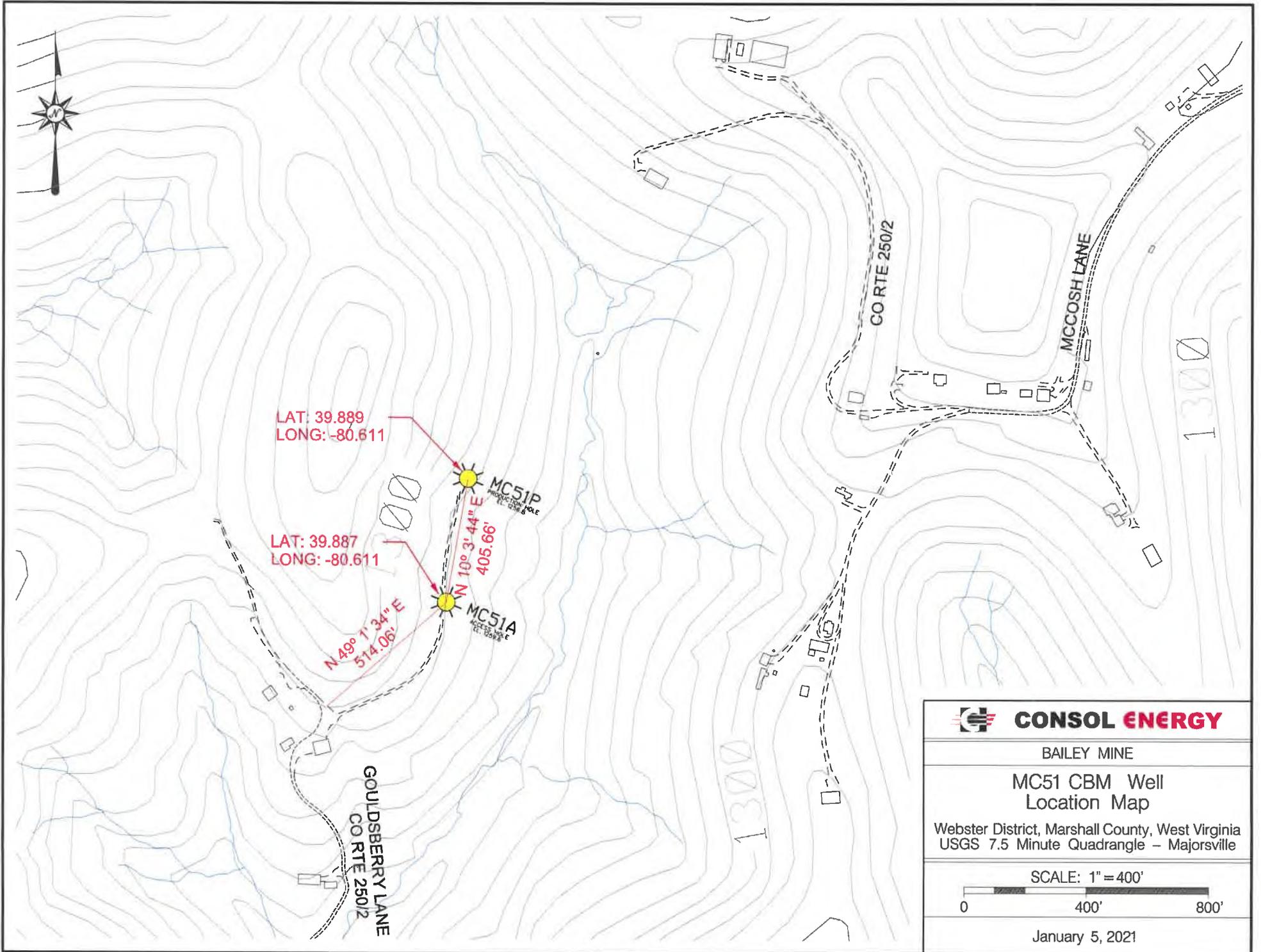
Signature: Matthew Rella

Date: 11-16-20

WV Department of  
Environmental Protection



47-051-01059P



LAT: 39.889  
LONG: -80.611

LAT: 39.887  
LONG: -80.611

N 49° 1' 34" E  
514.06'

N 10° 3' 44" E  
405.66'

MC51P  
APPROXIMATE WELL LOCATION

MC51A  
APPROXIMATE WELL LOCATION

GOLDSBERRY LANE  
CO RTE 250/2

CO RTE 250/2

MCCOSH LANE

1300

**CONSOL ENERGY**

BAILEY MINE

MC51 CBM Well  
Location Map

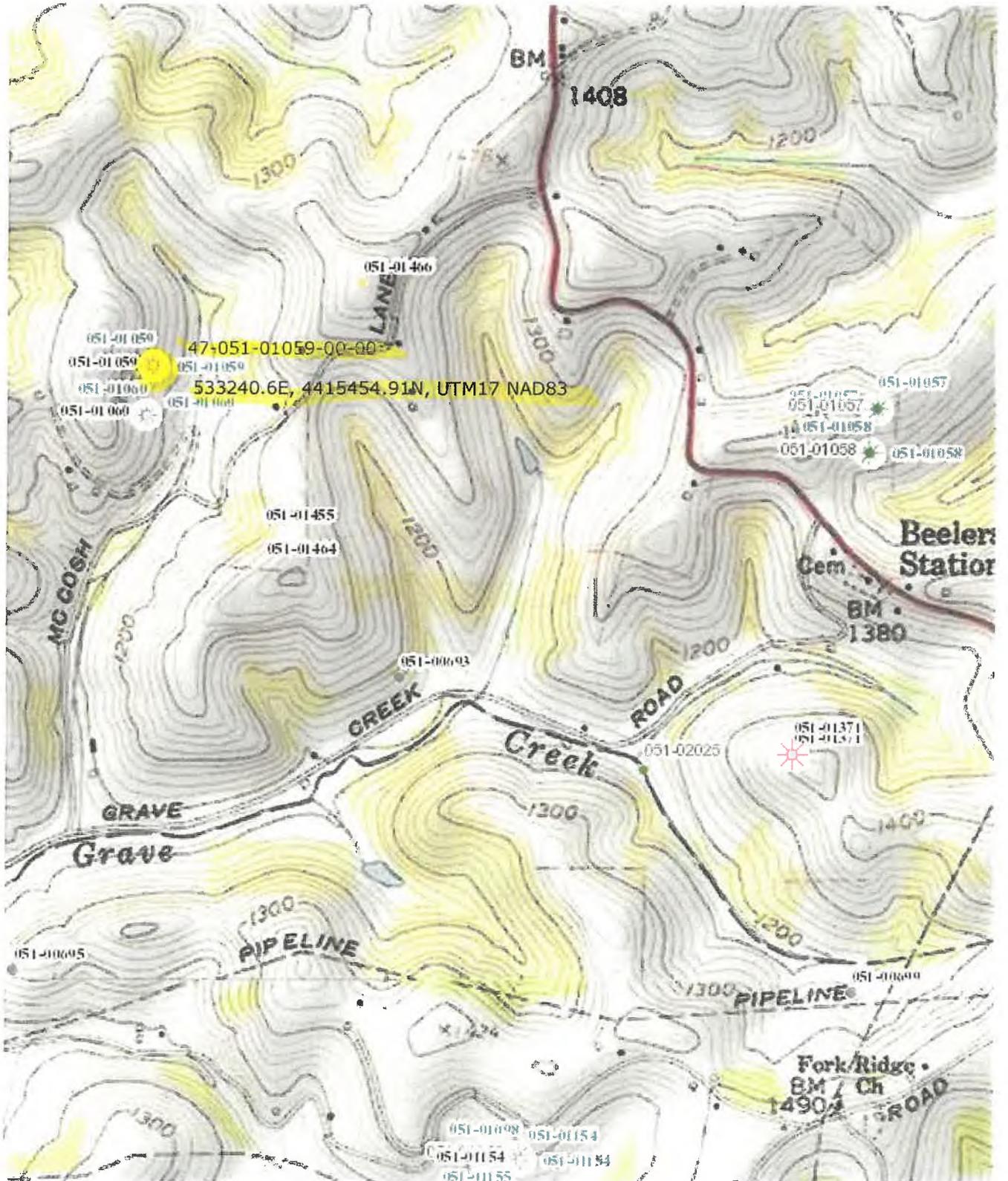
Webster District, Marshall County, West Virginia  
USGS 7.5 Minute Quadrangle - Majorsville

SCALE: 1" = 400'



January 5, 2021

47-051-01059 P



47-051-01059 P

WW-7  
8-30-06



West Virginia Department of Environmental Protection  
Office of Oil and Gas

WELL LOCATION FORM: GPS

API: 47-051-01059 WELL NO.: MC 51P  
FARM NAME: Robert and Betty Gloudsberry  
RESPONSIBLE PARTY NAME: Leatherwood, LLC  
COUNTY: Marshall DISTRICT: Webster  
QUADRANGLE: Majorsville WV-PA 7.5  
SURFACE OWNER: John M. and Patricia L. Kulavik  
ROYALTY OWNER: Unknown  
UTM GPS NORTHING: 4415454.91  
UTM GPS EASTING: 533240.60 GPS ELEVATION: 1246.5'

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

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

Survey grade GPS  : Post Processed Differential \_\_\_\_\_  
Real-Time Differential

Mapping Grade GPS \_\_\_\_\_ : Post Processed Differential \_\_\_\_\_  
Real-Time Differential \_\_\_\_\_

- Letter size copy of the topography map showing the well location.

I the undersigned, hereby certify this data is correct to the best of my knowledge and belief and shows all the information required by law and the regulations issued and prescribed by the Office of Oil and Gas.

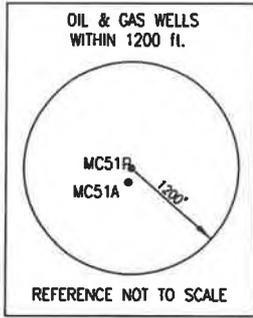
Matthew Rella Project Engineer 11/16/2020  
Signature Title Date

RECEIVED  
Office of Oil and Gas  
NOV 30 2020  
WV Department of  
Environmental Protection

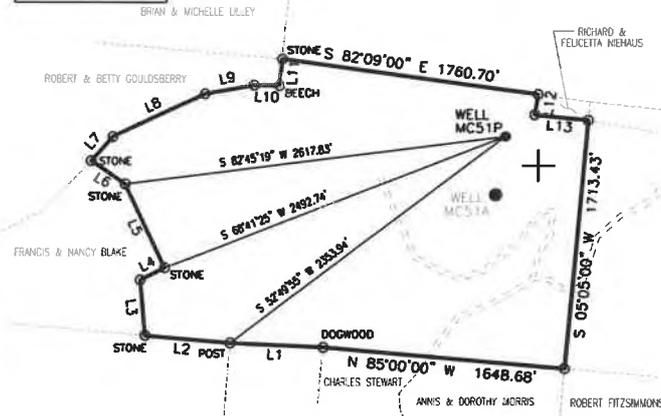
47-051-01059 P

BHL is located on topo map 10,258 feet south of Latitude: 39° 43' 19"

BHL is located on topo map 7,832 feet west of Longitude: 80° 36' 40"



**SURFACE HOLE LOCATION (94)**  
**UTM 17-NAD83(M)**  
 N:4415454.91  
 E:533240.60  
**NAD83 WY NORTH**  
 N:507668.090  
 E:1656696.310  
**LAT/LON-NAD83**  
 LAT:39°53'18.6212"  
 LON:80°36'40.3710"



- NOTES:
- There are no water wells or developed springs within 250' of proposed well.
  - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
  - There are no radial lead streams within 300' of proposed well.
  - Proposed well is greater than 1000' from surface groundwater intake or public water supply.
  - It is not the purpose or intention of this plat to represent surveyed locations of this surface or mineral parcels depicted herein. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.
  - There are no existing buildings within 525' of proposed well.

LINE	BEARING	DISTANCE
R1	S 76°25'10" W	270.33'
R2	N 05°28'14" E	217.21'
R3	S 44°34'56" E	264.22'

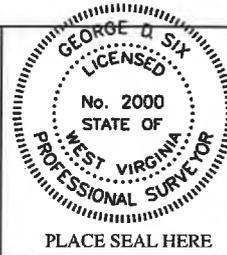
LINE	BEARING	DISTANCE
L1	N 87°24'55" W	641.59'
L2	N 85°00'00" W	580.92'
L3	N 05°15'00" W	383.83'
L4	N 63°30'00" E	186.94'
L5	N 25°30'00" W	637.89'
L6	N 55°45'00" W	283.04'
L7	N 41°30'00" E	219.90'
L8	N 64°45'00" E	694.49'
L9	N 80°00'00" E	343.86'
L10	S 89°00'00" E	174.90'
L11	N 06°00'00" E	183.98'
L12	S 08°51'00" W	142.00'
L13	S 84°09'00" E	363.25'

- NOTES:
- THERE ARE NO OCCUPIED DWELLINGS WITHIN 200' OF PROPOSED WELL.
  - PROPOSED WELL IS GREATER THAN 100' FROM THE MINERAL LINE.

FILE #: MC51A  
 DRAWING #: MC51A  
 SCALE: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/2500  
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: George D. Six  
 R.P.E.: \_\_\_\_\_ L.L.S.: P.S. No. 2000



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



DATE: NOVEMBER 12, 2020  
 OPERATOR'S WELL #: MC51A  
 API WELL #: 47 51 01059-C  
 STATE COUNTY PERMIT

Well Type:  Oil  Waste Disposal  Production  Deep  Gas  Liquid Injection  Storage  Shallow  
 WATERSHED: UNNAMED TRIBUTARY TO GRAVE CREEK ELEVATION: 1246.5'  
 COUNTY/DISTRICT: MARSHALL/WEBSTER QUADRANGLE: MAJORSVILLE, WV 7.5'  
 SURFACE OWNER: JOHN M. AND PATRICIA L. KULAVIK ACREAGE: 125.500±  
 OIL & GAS ROYALTY OWNER: UNKNOWN ACREAGE: \_\_\_\_\_  
 DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION   
 PERFORATE NEW FORMATION  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE   
 (SPECIFY): \_\_\_\_\_

TARGET FORMATION: PITTSBURGH COAL ESTIMATED DEPTH: 802'±  
 WELL OPERATOR LEATHERWOOD LLC DESIGNATED AGENT GINA NEWHOUSE  
 Address 1000 CONSOL ENERGY DRIVE Address 1627 QUARRIER STREET  
 City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25311

RECEIVED  
 Office of Oil and Gas  
 NOV 30 2020  
 WV Department of Environmental Protection

47-051-01059 P

OP-77 (05-01)

Record No. \_\_\_\_\_

State of West Virginia  
Department of Environmental Protection  
Charleston, WV 25301

This is to acknowledge that the well: API no. 47-051-01059

District Webster

Well No MC-51 Farm name Gouldsberry, Robert

Is hereby transferred from:

The transferor Company: CNX Gas Company

Code # 494458046 Address 1000 CONSOL Energy Drive, Canonsburg, PA 15317-6506

To:

The transferee Company: Leatherwood, LLC

Code # 494476721 Address 1000 CONSOL Energy Drive, Canonsburg, PA 15317-6506

Transfer approval and responsibility for any noncompliance matter not resolved in this document will be addressed in the thirty day circular that will be issued after review of your application for transfer, or as otherwise set forth by agreement with the Chief.

If this well has been out of production for the period in excess of 12 months, the transferee agrees to bring the well into compliance by producing or plugging within 120 days of approval of the application.  Yes  No

The transferee has registered and designated an agent on form OP-1, which is on file with the Office of Oil and Gas. The agent is:

Designated agent (name) Gina Newhouse

Address: c/o CT Corporation System; 1627 Quarrier St.; Charleston, WV 25311-21244

The transferee has bonded the said well by ( check one ):

Securities  Cash  Surety bond  Letter of credit

Identified by:

Amount: <u>\$50,000</u>	Effective date : <u>3/18/2019</u>
Issuing authority: <u>Lexon Insurance Company</u>	Id. No: <u>1138626</u>

Transferor: CNX Gas Company LLC

By: [Signature]

Its: VP BUSINESS DEVELOPMENT

Taken, subscribed and sworn before me this 19 day of August 2020

Notary Public Christopher A. Rabbitt

My Commission Expires 1/18/2024

Commonwealth of Pennsylvania - Notary Seal  
Christopher A. Rabbitt, Notary Public  
Washington County  
My commission expires January 18, 2024  
Commission number 1266666  
Member, Pennsylvania Association of Notaries

Transferee: Leatherwood, LLC

By: [Signature]

Its: VICE PRESIDENT

Taken, subscribed and sworn before me this 19 day of August 2020

Notary Public Christopher A. Rabbitt

My Commission Expires 1/18/2024

RECEIVED  
Office of Oil and Gas  
AUG 20 2020

RECEIVED  
Office of Oil and Gas

NOV 30 2020

WV Department of  
Environmental Protection

Commonwealth of Pennsylvania - Notary Seal  
Christopher A. Rabbitt, Notary Public  
Washington County  
My commission expires January 18, 2024  
Commission number 1266666  
Member, Pennsylvania Association of Notaries

47-051-01059P

# WVDEP Office of Oil and Gas - Well Search

RECEIVED  
Office of Oil and Gas  
NOV 30 2020  
WV Department of Environmental Protection

**Disclaimer:** Per §22-6-6. Permit required for all well work; permit fee; application; soil erosion control plan.

(a) It is unlawful for any person to commence any well work, including site preparation work, which involves any disturbance of land, without first securing a well work permit from the Director of the WVDEP Office of Oil and Gas.

The appearance of an API number on the web page does not signify that a permit has been issued. The API number is used as a tracking mechanism until the permit has been issued. Under no circumstances should well work be commenced without a signed permit.

## Current Operator

Well API	Operator	Surface Owner	Well Number	Well Status	Well Type	Last Permit Issue Date
4705101059	LEATHERWOOD, LLC	GOULDSBERRY, ROBERT	MC51	Active Well	Coal Bed Methane Well	07/31/2008

**Note:** The operator listed above is the CURRENT operator of the well. This operator may or may not have recorded production for this well for the years listed below. The production listed below spans the years shown, regardless of the operator who originally recorded a particular year's production numbers.

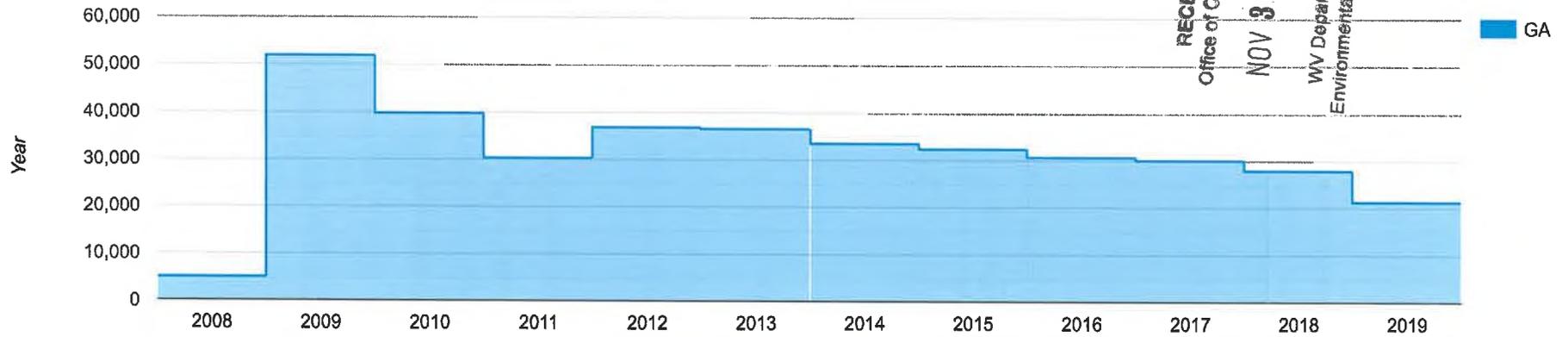
## Production by Energy Type

### Well Lifetime Gas Production

All amounts expressed in mcfg (thousand cubic feet)

Reporting Operator	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CNX GAS COMPANY LLC	2019	1,453	1,092	1,850	2,103	2,662	1,452	966	1,732	1,661	2,214	2,117	2,058	21,360
CNX GAS COMPANY LLC	2018	1,974	2,050	2,112	1,943	2,315	2,511	2,447	2,662	2,578	2,843	2,365	2,125	27,925
CNX GAS COMPANY LLC	2017	1,847	1,987	2,213	2,248	2,976	2,185	2,509	3,319	2,864	2,834	2,514	2,563	30,059
CNX GAS COMPANY LLC	2016	2,490	2,157	2,382	2,614	3,073	2,582	2,436	2,424	2,364	2,880	2,634	2,693	30,727
CNX GAS COMPANY LLC	2015	2,237	1,648	2,714	2,706	3,199	2,850	2,923	2,861	2,721	2,859	2,718	2,952	32,388
CNX GAS COMPANY LLC	2014	2,539	2,299	2,503	2,607	3,058	2,957	3,018	2,931	2,798	3,157	2,967	2,674	33,508
CNX GAS COMPANY LLC	2013	2,700	2,789	3,072	2,746	3,487	3,291	3,081	3,319	3,244	3,305	2,986	2,533	36,553
CNX GAS COMPANY LLC	2012	2,966	2,966	2,940	3,124	3,169	2,957	3,011	3,106	3,184	3,238	2,974	3,198	36,833
CNX GAS COMPANY LLC	2011	2,843	2,581	2,705	2,782	342	0	0	4,857	3,857	3,801	3,152	3,419	30,339
CNX GAS COMPANY LLC	2010	3,759	2,967	3,394	3,235	3,577	3,483	3,435	3,270	3,227	3,256	3,103	3,080	39,786
CNX GAS COMPANY LLC	2009	4,404	4,920	5,342	4,848	5,002	4,405	4,320	4,068	3,764	3,725	3,571	3,529	51,898
CNX GAS COMPANY LLC	2008	0	0	0	0	0	0	0	0	0	477	2,267	2,279	5,023

47-051-01059P



### Well Lifetime Oil Production

All amounts expressed in barrels

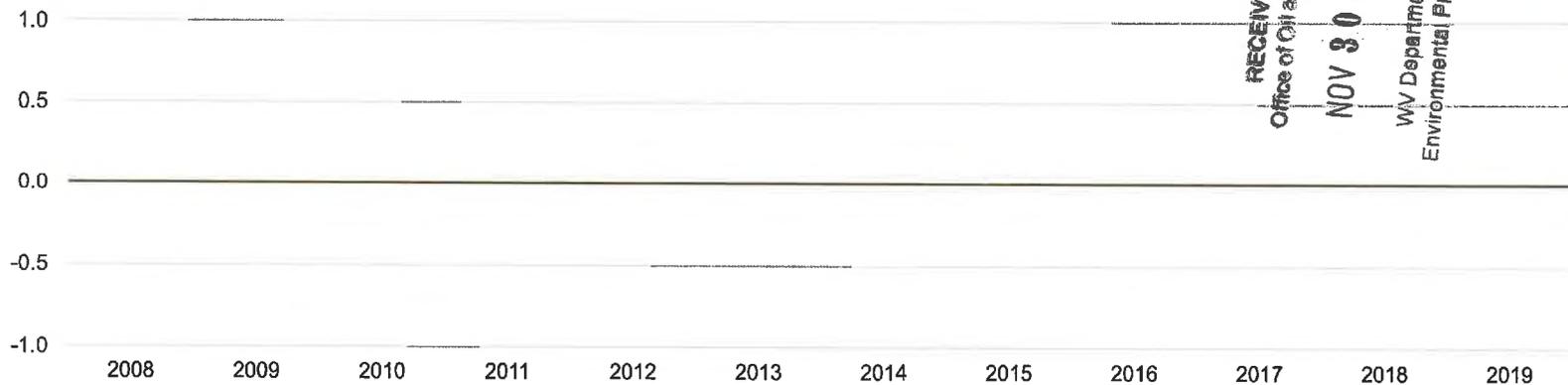
Reporting Operator	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CNX GAS COMPANY LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2016	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2012	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2011	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
CNX GAS COMPANY LLC	2008	0	0	0	0	0	0	0	0	0	0	0	0	0

47-051-01059P

W€

No F

Year



The West Virginia Department of Environmental Protection (WVDEP) makes oil and gas well information and production data available to the general public through this internet service free of charge.

The oil and gas related data originate from the information reported to the Office of Oil and Gas at WVDEP by West Virginia oil and gas operators. The WVDEP does not guarantee their accuracy, precision, or completeness.

Neither the West Virginia Department of Environmental Protection nor its staff members are liable or responsible for any damage or loss resulting from the use of these data or from inaccuracies contained in the data.

We encourage you to report any problems, inconsistencies, or errors noted in using this data to the Office of Oil and Gas so that we can correct them and provide better service.

Office of Oil and Gas  
Department of Environmental Protection  
601 57th St  
Charleston, West Virginia 25304  
Phone: (304) 926-0499  
Fax: (304) 926-0452

47-051-010591

ACTIVE CBM WELL

11/10/2016

PLUGGING PERMIT CHECKLIST

Plugging Permit

- WW-4B
- WW-4B signed by inspector
- WW-4A
- SURFACE OWNER WAIVER or PROOF THAT APPLICATION WAS SENT BY REGISTERED OR CERTIFIED MAIL
- COAL OWNER/COAL OPERATOR/COAL LESSEE WAIVERS or PROOF THAT APPLICATION WAS SENT BY REGISTERED OR CERTIFIED MAIL
- WW-9 PAGE 1 (NOTARIZED)
- WW-9 PAGE 2 with attached drawing of road, location, pit and proposed area for land application
- W/A WW-9 GPP PAGE 1 and 2 if well effluent will be land applied
- RECENT MYLAR PLAT OR WW-7
- WELL RECORDS/COMPLETION REPORT
- TOPOGRAPHIC MAP OF WELL, SHOWING PIT IF PIT IS USED
- MUST HAVE VALID BOND IN OPERATOR'S NAME
- CHECK FOR \$100 IF PIT IS USED *NO PIT*

RECEIVED  
Office of Oil and Gas

NOV 30 2020

WV Department of  
Environmental Protection