



January 13, 2020

CERTIFIED MAIL NO: 7019 0160 0000 7352 7648

Michael Arch, Vice President - Environmental Compliance
Range Resources-Appalachia, LLC
3000 Town Center Boulevard
Canonsburg, PA 15317

Dear Mr. Arch:

Enclosed is an Order of the Department dated January 13, 2020, which has been issued by the Department to Range Resources - Appalachia, LLC.

We believe that the order is self-explanatory, but if you have any questions concerning this matter, please feel free to contact me at 570.321.6557.

Sincerely,

A handwritten signature in black ink that reads "Jennifer W. Means". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

Jennifer W. Means
Environmental Program Manager
Eastern Oil and Gas District

Enclosure

Cc: File

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

IN THE MATTER OF:

Range Resources-Appalachia, LLC : Clean Streams Law and
Moreland Township : Oil and Gas Act
Lycoming County :

ORDER

Now this Thirteenth (13th) day of January 2020, the Commonwealth of Pennsylvania, Department of Environmental Protection (“Department”) has made and determined the following Findings and issues this Order to Range Resources-Appalachia, LLC.

FINDINGS

A. The Department is the agency with the duty and authority to administer and enforce The Clean Streams Law, Act of June 22, 1937, P.L. 1987, *as amended*, 35 P.S. §§ 691.1-691.1001 (“Clean Streams Law”); the Oil and Gas Act, Act of February 14, 2012, P.L. 87, No. 13, 58 Pa. C.S. §§ 3201-3274 (“Oil and Gas Act”); Section 1917-A of the Administrative Code, Act of April 9, 1929, P.L. 177, *as amended*, 71 P.S. § 510-17 (“Administrative Code”); and the rules and regulations promulgated thereunder (“Regulations”).

B. Range Resources-Appalachia, LLC is a Delaware limited liability company authorized to do business in Pennsylvania, which engages in various oil and gas exploration and production activities in Pennsylvania, and maintains a business address of 100 Throckmorton Street, Suite 1200, Fort Worth, Texas 76102 (“Range”).

C. On May 3, 2010, the Department issued a well drilling permit to Range for the Harman Lewis Unit 1H Well, Permit No. 081-20292, located in Moreland Township, Lycoming County (the “Gas Well”).

D. Range started drilling the Gas Well on or about February 12, 2011 and completed drilling the Gas Well on or about March 17, 2011. Range started stimulating the Gas Well on or

about June 18, 2011 and completed stimulating the Gas Well on or about July 1, 2011. Flow back activities commenced at the Gas Well on or about July 4, 2011.

E. The Gas Well has not been used to produce, extract, or inject any gas, petroleum, or other liquid.

Defective Cementing of the Gas Well

F. Between January 19, 2012 and February 7, 2012, Range conducted shut-in pressure tests at the Gas Well. Over the course of the shut-in pressure tests of the Gas Well, the Department observed the presence of methane and pressure in the cemented annular spaces of the Gas Well. Specifically, 325 psi of pressure was measured between the 5 1/2” and 9 5/8” casing strings and 14 psi of pressure was measured between the 13 3/8” and 9 5/8” casing strings.

G. The Department notified Range through an inspection report dated February 7, 2012, that the observations noted above in Paragraph F, indicate defective cement in the annuli of the Gas Well, and the Department requested a corrective action plan to correct the defects.

H. On March 8, 2012, Range responded to the Department’s February 7, 2012 inspection report, and proposed a corrective action plan to correct the defective cement.

I. The corrective actions proposed by Range in its March 8, 2012 response were inadequate to correct the defective cement.

J. On May 15, 2012, the Department detected methane gas outside of the surface casing of the Gas Well.

Water Resources

K. A private water well approximately 2,100 feet from the Gas Well located along Green Valley Road in Moreland Township, Lycoming County is used as a drinking water supply (“Water Supply”).

L. Range collected a water sample from the Water Supply on November 1, 2010 (“Pre-Drill Sample”).

M. On January 9, 2012, the Department was notified of discolored water in the Water Supply and started an investigation (“Department’s Investigation”).

N. On January 18, 2012, water samples from the Water Supply were collected for laboratory analyses by the Department (“Post-Drill Samples”).

O. A comparison of the Pre-Drill Sample and the Post-Drill Samples indicated that the level of dissolved methane in the Water Supply from the Post-Drill Samples were higher than the dissolved levels of methane in the Water Supply from the Pre-Drill Sample.

P. On September 5, 2012 and April 22, 2013, the Department issued letters to a total of five property owners, identified in the attached and incorporated Exhibit A, stating the Department’s determinations that their water supplies had been impacted by increased levels of methane resulting from oil and gas activity (the “Original Water Supplies”).

Q. On April 8, 2013, Range submitted a report to the Department alleging that its activities at the Gas Well did not have any impact on the methane levels in the Original Water Supplies.

R. In March 2014, Range installed treatment systems on four (4) of the Original Water Supplies. The property owner of the fifth Original Water Supply had previously installed a treatment system.

S. Since April 13, 2015, the Department has identified additional water supplies in the area of the Gas Well with detections of combustible gas in the headspaces of some water wells and elevated levels of dissolved methane in the water supplies. The Department has determined that the water supplies for seven (7) additional property owners, identified in the attached and incorporated

Exhibit B, have been affected by methane resulting from oil and gas activity (the “Additional Water Supplies”).

T. As of the date of this Order, Range has installed treatment systems on the seven (7) Additional Water Supplies. Hereinafter, the Original Water Supplies and the Additional Water Supplies shall be referred to collectively as the “Affected Water Supplies.”

U. In January of 2012, the Department identified surface expressions of combustible gas in the surface water of Sugar Run and in two privately-owned ponds near the Gas Well.

V. In April of 2015, the Department began conducting soil gas surveys in areas of dead vegetation in farm fields near the Gas Well and in farm fields near one of the Affected Water Supplies that revealed up to 100% combustible gas by volume.

W. In April 2015, the Department also identified surface expressions of combustible gas in the surface water of Greg’s Run.

Department’s 2015 Order

X. On May 11, 2015, the Department issued an administrative order directing Range to perform certain corrective actions regarding the Gas Well (“Department’s 2015 Order). A copy of the Department’s 2015 Order is attached and incorporated as Exhibit C.

Y. On June 5, 2015, Range appealed the Department’s 2015 Order to the Pennsylvania Environmental Hearing Board and the appeal was docketed at EHB Docket No. 2015-077-R.

Z. On May 21, 2015, Range submitted to the Department a remedial plan as required by the Department’s 2015 Order. After a revised remedial plan was submitted by Range on June 5, 2015, the Department modified and approved Range’s revised remedial plan on June 15, 2015.

AA. Pursuant to Range's approved remedial plan, Range set a Cast-Iron Bridge Plug ("CIBP") in the Gas Well at 3,205 feet below ground surface ("bgs") and placed 25 feet of cement above the CIBP from 3,205 feet to 3,180 feet bgs on August 5, 2015.

BB. On August 6, 2015, Range set a second CIBP in the Gas Well at 2,700 feet bgs.

CC. On August 8, 2015, Range cut and attempted to squeeze cement in the Gas Well through a total of four, 110 degree opposing slots; two slots were cut and squeezed at 2,599 feet bgs and two slots were cut and squeezed at 2,600 feet bgs.

DD. On August 12, 2015, Range cut and attempted to squeeze cement in the Gas Well through a second set of four, 110 degree opposing slots; two slots were cut and squeezed at 2,199 feet bgs and two slots were cut and squeezed at 2,200 feet bgs.

EE. From December 4, 2015 through December 14, 2015, Range section-milled the 5 ½ inch diameter production casing in the Gas Well and under-reamed the associated cement sheath from 2,510 feet to 2,540 feet bgs to expose the formation within the wellbore. Cement was then placed in the Gas Well from 2,309 feet to 2,644 feet bgs, which included the exposed formation within the wellbore from 2,510 feet to 2,540 feet bgs.

FF. Despite the actions implemented by Range described in Paragraphs AA through EE above, samples collected by the Department continued to indicate elevated levels of dissolved methane in the Affected Water Supplies and the Department continued to detect combustible gas in the headspaces of some of the water wells for the Affected Water Supplies.

GG. Following the actions implemented by Range described in Paragraphs AA through EE, the Department continued to observe 100% combustible gas by volume in soil gas surveys in areas of farm fields near the Gas Well and in farm fields near one of the Affected Water Supplies.

The Department also continued to observe surface expressions of combustible gas in the surface water of Greg's Run and Sugar Run.

HH. On October 31, 2016, the Department requested that Range conduct further corrective actions at the Gas Well by submitting plans to rework and flare the Gas Well and monitor various water wells and surface sites during the flaring operation.

II. On November 15, 2016, the Department approved Range's plans for reworking and flaring the Gas Well.

JJ. On December 1, 2016, Range began drilling into the cement within the Gas Well in accordance with the plan approved by the Department.

KK. Range did not successfully reenter the well bore below the first re-cemented section of the Gas Well.

LL. Range's attempt to reenter the well bore of the Gas Well resulted in an open bore hole outside the casing of the Gas Well from an approximate depth of 2,546 feet to 3,180 feet bgs ("Bore Hole").

MM. After drilling stopped on December 20, 2016, Range investigated the Bore Hole and determined that the casing for the Gas Well maintained mechanical integrity throughout the length of the well bore except for the casing in the area of 2,540 feet to approximately 2,950 feet bgs.

NN. After completion of the actions described in paragraph JJ through MM, above, Range and the Department requested that the appeal before the Pennsylvania Environmental Hearing Board at EHB Docket No. 2015-077-R be marked settled and the appeal was marked settled on August 29, 2017.

OO. Since January 2018, the Department and Range have continued to discuss corrective actions necessary to alleviate the gas volume and rock pressure in the producing formation of the

Gas Well in an effort to reduce the migration of methane from the Gas Well into the fresh groundwater and to address the compromised casing integrity resulting from the Bore Hole.

PP. As of the date of this Order, Range has not taken the actions necessary to reduce the migration of methane from the Gas Well into the fresh groundwater nor to address the compromised casing integrity resulting from the Bore Hole.

Applicable Law

QQ. Range is the “owner” and “operator,” as those terms are defined in Section 3203 of the Oil and Gas Act, 58 Pa. C.S. § 3203, of the Gas Well.

RR. Range is a “person,” as that term is defined in Section 3203 of the Oil and Gas Act, 58 Pa. C.S. § 3203, and Section 1 of the Clean Streams Law, 35 P.S. § 691.1.

SS. Pursuant to 25 Pa. Code § 78a.81(a)(2) and (a)(3), an operator shall case and cement a well to prevent the migration of gas or other fluids into sources of fresh groundwater.

TT. Pursuant to 25 Code 78a.85(a)(5) the operator shall cement the surface casing with cement that will prevent gas flow in the annulus.

UU. Pursuant to 25 Pa. Code § 78a.86, an operator shall report to the Department within 24 hours of discovering a well that has defective, insufficient, or improperly cemented casing and shall correct the defect. The operator shall correct the defect or submit a plan to correct the defect for approval by the Department within 30 days. If the defect cannot be corrected or an alternate method is not approved by the Department, the well shall be plugged under 25 Pa. Code §§ 78a.91-78a.98 (relating to plugging).

VV. Pursuant to 25 Pa. Code § 78a.73(a), an operator shall construct and operate a well in accordance with this chapter and ensure that the integrity of the well is maintained, and health, safety, environment, and property are protected.

WW. Pursuant to 25 Pa. Code § 78a.73(b), an operator shall prevent gas, oil, brine, completion and servicing fluids, and any other fluids or materials from below the casing seat from entering fresh groundwater and shall otherwise prevent pollution or diminution of fresh groundwater.

XX. Pursuant to Section 3218 of the Oil and Gas Act, 58 Pa. C.S. § 3218(a), and 25 Pa. Code § 78a.51(a), a well operator who affects a water supply by pollution or diminution shall restore or replace the affected supply with an alternate source of water adequate in quantity and quality for the purposes served by the supply.

YY. The Gas Well is an “abandoned well,” as that term is defined in Section 3203 of the Oil and Gas Act, 58 Pa. C.S. § 3203.

ZZ. Greg’s Run, Sugar Run, the two privately owned ponds, and the groundwater supplying the Affected Water Supplies are each a “water of the Commonwealth” as that term is defined in Section 1 of the Clean Streams Law, 35 P.S. § 691.1. Greg’s Run and Sugar Run have the protected water uses of Cold Water Fishes and Migratory Fishes.

AAA. Section 401 of the Clean Streams Law, 35 P.S. § 691.401, makes it unlawful for any person or municipality to put or place into any of the waters of the Commonwealth, or allow or permit to be discharged from property owned or occupied by such person or municipality into any of the waters of the Commonwealth, any substance of any kind or character resulting in pollution.

BBB. The methane and combustible free gas discharged to the waters of the Commonwealth by Range’s oil and gas activities at the Gas Well are “pollution,” as that term is defined in Section 1 of the Clean Streams Law, 35 P.S. § 691.1.

Unlawful Conduct

CCC. Range's failure to case and cement the Gas Well to prevent the migration of gas or other fluids into sources of fresh groundwater or to prevent pollution or diminution of fresh groundwater violates 25 Pa. Code § 78a.81(a)(2) and (a)(3).

DDD. Range's failure to cement the surface casing with cement that would prevent gas flow in the annulus violates 25 Pa Code § 78a.85(a)(5).

EEE. Range's failure to correct the defective cement or submit an adequate plan to correct the defective cement of the Gas Well violates 25 Pa. Code § 78a.86.

FFF. The unpermitted pollution of the groundwater from gas well activities by Range at the Gas Well violates Section 401 of the Clean Streams Law, 35 P.S. § 691.401, and is contrary to the requirements of 25 Pa. Code § 78a.73(a) and (b).

GGG. On September 20, 2013, the Department issued a Notice of Violation ("NOV") to Range for the violations described in Paragraphs CCC, EEE, and FFF above.

HHH. The violations described in Paragraphs CCC, DDD, and EEE, above, constitute unlawful conduct and a public nuisance pursuant to Sections 3252 and 3259 of the Oil and Gas Act, 58 Pa. C.S. §§ 3252 and 3259, and subject Range to civil penalty liability pursuant to Section 3256 of the Oil and Gas Act, 58 Pa. C.S. § 3256.

III. The violations described in Paragraph FFF, above, constitute unlawful conduct and a public nuisance pursuant to Sections 401 and 611 of the Clean Streams Law, 35 P.S. §§ 691.401 and 611, and subject Range to civil penalty liability pursuant to Section 605 of the Clean Streams Law, 35 P.S. § 691.605

JJJ. As of the date of this Order, Range has not corrected the violations set forth above.

ORDER

NOW, THEREFORE, pursuant to Section 3253 of the Oil and Gas Act, 58 Pa. C.S. § 3253; Section 5 of the Clean Streams Law, 35 P.S. § 691.5; and Section 1917-A of the Administrative Code, 71 P.S. § 510-17, the Department hereby ORDERS the following:

1. *Affected Water Supplies*

a. Range shall confirm the restoration or replacement of the Additional Water Supplies by submitting within **45 days**, after the date of this Order, the following:

- i. Confirmatory Sampling Plan. Range shall submit to the Department, in writing, a plan for confirmatory samples of the restored and/or replaced Affected Water Supplies (“Confirmatory Sampling Plan”). The Confirmatory Sampling Plan shall, at a minimum:
 - a) be designed to and demonstrate that the restored and/or replaced Affected Water Supplies meet the standards set forth in Section 3218(a) of the Oil and Gas Act, 58 Pa. C.S. § 3218(a), and 25 Pa. Code § 78a.51(d);
 - b) provide for split samples with the Department, specify that sampling will only take place Monday through Thursday during Department working hours, and specify that Range will notify the Department at least three working days before any scheduled sampling of the restored and/or replaced Affected Water Supplies; and
 - c) provide an implementation schedule for sampling the restored or replaced Affected Water Supplies.
- ii. Operation and Maintenance Plan. Range shall submit to the Department a plan to provide, on a permanent basis, for any increased operating and maintenance costs for the replaced or restored Additional Water Supplies in comparison to the maintenance costs of the Additional Water Supplies before they were affected.

2. *Gas Well Remedial Investigation*. Range shall investigate the migration of natural gas from the Gas Well as follows:

a. Within **60 days**, after the date of this Order, Range shall submit to the Department for its approval a plan to investigate and eliminate the gas migration from the Gas Well (“Remedial Investigation Plan”). The Remedial Investigation Plan shall include, at a minimum:

- i. Identified remedial actions to be implemented at or near the Gas Well that will result in the reduction of both migrating gas volume and subsurface reservoir rock pressure to below the hydrostatic pressure of fresh water for a period of no less than 90 days;
- ii. A plan to monitor: the levels of combustible gas in the headspaces of the water wells of the Affected Water Supplies, levels of dissolved methane in the Affected Water Supplies, the surface water of Greg’s Run and Sugar Run for combustible gas, and the surface expression of gas identified in Paragraph U, above, during the activities proposed under Paragraph 2.a.i., above; and
- iii. A proposed implementation schedule for the identified remedial actions and monitoring.

b. Range shall implement the Department-approved Remedial Investigation Plan in accordance with the approved implementation schedule.

c. Within **60 days** after completing the implementation of the Department-approved Remedial Investigation Plan, Range shall submit to the Department a report documenting and analyzing the results of the implemented remedial actions and documenting and analyzing the results of monitoring conducted (“Remedial Investigation Report”). The Remedial Investigation Report shall also identify any additional corrective actions necessary to eliminate the gas migration from the Gas Well. Range shall include an implementation schedule for such additional corrective actions within the Remedial Investigation Report and shall implement the additional corrective actions in accordance with the implementation schedule as approved by the Department. The Remedial Investigation Report submitted to the Department shall be reviewed, signed, and sealed by a Pennsylvania-licensed Professional Engineer and a Pennsylvania-licensed Professional Geologist.

d. Within **120 days** after the Department's approval of the Remedial Investigation Report, submitted in accordance with Paragraph 2.c., above, Range shall submit a plugging plan and implementation schedule, for review and approval by the Department, to completely plug the Gas Well and the Bore Hole to stop all vertical flow of gas and/or fluids in the well bore, in accordance with the requirements of 25 Pa. Code §§ 78a.91-78a.98, as applicable. After the implementation of any additional corrective actions identified in the Remedial Investigation Report, Range shall implement the Department-approved plugging plan in accordance with the implementation schedule as approved by the Department.

3. ***Document Review and Approval by the Department.***

a. Regarding any document that Range submits to the Department pursuant to Paragraphs 1, and 2, above, the Department will review such document and will approve or comment on and disapprove the document or portion thereof, in writing.

b. If the document, or any portion thereof, is disapproved by the Department, Range shall, within 14 days after the date of the Department's written disapproval, submit to the Department a revised document, or portion thereof, that addresses the Department's basis for disapproval.

c. Upon the Department's approval of a document, or any portion thereof, such approved document, including any identified corrective action and schedule contained therein, shall become an obligation of this Order and shall be enforceable as such.

5. ***Correspondence with the Department.*** All contact and/or correspondence with the Department regarding this Order shall be addressed to:

Jennifer W. Means
Environmental Program Manager
Eastern District Oil and Gas Operations
Department of Environmental Protection

208 W. Third Street, Suite 101
Williamsport, PA 17701
Telephone: (570) 321-6557
e-Mail: jenmeans@pa.gov

Any person aggrieved by this action may appeal the action to the Environmental Hearing Board (Board) pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. § 7514, and the Administrative Agency Law, 2 Pa. C.S. Chapter 5A. The Board's address is:

Environmental Hearing Board
Rachel Carson State Office Building, Second Floor
400 Market Street
P.O. Box 8457
Harrisburg, PA 17105-8457

TDD users may contact the Environmental Hearing Board through the Pennsylvania Relay Service, 800-654-5984.

Appeals must be filed with the Board within 30 days of receipt of notice of this action unless the appropriate statute provides a different time. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

A Notice of Appeal form and the Board's rules of practice and procedure may be obtained online at <http://ehb.courtapps.com> or by contacting the Secretary to the Board at 717-787-3483. The Notice of Appeal form and the Board's rules are also available in braille and on audiotape from the Secretary to the Board.

IMPORTANT LEGAL RIGHTS ARE AT STAKE. YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD AT 717-787-3483 FOR MORE INFORMATION. YOU

DO NOT NEED A LAWYER TO FILE A NOTICE OF APPEAL WITH THE BOARD.

**IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST
BE FILED WITH AND RECEIVED BY THE BOARD WITHIN 30 DAYS OF
RECEIPT OF NOTICE OF THIS ACTION.**

FOR THE COMMONWEALTH OF
PENNSYLVANIA, DEPARTMENT OF
ENVIRONMENTAL PROTECTION:



Jennifer W. Means
Environmental Program Manager
Eastern Oil and Gas District Office