

June 11, 2018

CERTIFIED MAIL NO. 7017 2680 0000 2307 8461

Mr. Phil Stalnaker
Cabot Oil & Gas Corporation
2000 Park Lane, Suite 300
Pittsburgh, PA 15275

Re: December 15, 2010 Consent Order and Settlement Agreement
Continuing Compliance Issues

Dear Mr. Stalnaker:

This letter is in response to Cabot Oil & Gas Corporation's request to begin drilling new Gas Wells within the "Dimock/Carter Road Area" as defined in the Consent Order and Settlement Agreement dated December 15, 2010 ("2010 Agreement"). As you know, under Paragraph 4.d. of the 2010 Agreement, Cabot "may begin the drilling of any new Gas Wells within the Dimock/Carter Road Area *only* upon receipt of written notice from the Department" that, as of the date Cabot proposes to drill said Gas Well or Wells, Cabot is in compliance with: 1) "the applicable requirements of Paragraph 3.a.;" 2) "all of its obligations under Paragraph 5;" and 3) "all other obligations under [the 2010 Agreement] as of the date Cabot plans to drill said Gas Well or Well(s)."

In considering your request, the Department has again reviewed the voluminous amount of information obtained to date in this matter. This included documents and information obtained before, during, and after appeals of the 2010 Agreement before the Environmental Hearing Board that were finally resolved in 2014, the documents and chart that Cabot provided to the Department in August, 2015, as well as other gas well integrity and water quality data gathered by the Department since that time.

The Department's most recent review indicates that Cabot has complied with some, but not all, of the obligations under the 2010 Agreement. The obligations of the 2010 Agreement with which Cabot has not complied are summarized below. The unresolved compliance matters involve continuing issues with the integrity of some Cabot Gas Wells within the Dimock/Carter Road Area, and continuing issues with affected Water Supplies within and outside of the Dimock/Carter Road Area. Until these compliance matters are resolved, Cabot is not in compliance with its obligations under the 2010 Agreement and cannot begin drilling new Gas Wells within the Dimock/Carter Road Area.

Unresolved Obligations Under 2010 Agreement

Based on the information obtained to date, unresolved obligations exist under Paragraphs 3.a. and 5.b.iv—vi of the 2010 Agreement. Following is a description of the specific, continuing issues under each of these Paragraphs of the 2010 Agreement.

A. Unresolved Obligations Under Paragraph 3.a. of the 2010 Agreement

Paragraph 3.a. of the 2010 Agreement states that:

3. ***Compliance, Permits Inside the Dimock/Carter Road Area, Cabot Agreement and Statements.***

a. *Cabot hereby agrees that it shall take all actions necessary including, but not limited to, the requirements set forth in this Consent Order and Settlement Agreement, to comply with all applicable environmental laws and regulations, including all applicable provisions of the Clean Streams Law, Oil and Gas Act, and the Regulations.*

As of the date of this letter, the Department has identified the following unresolved obligations under Paragraph 3.a.:

1. On October 20, 2011, the Department issued a Notice of Violation (NOV) to Cabot for a gas migration incident and pollution of a water supply in Dimock Township, Susquehanna County. The governing statute presumes Cabot to be responsible for the pollution of one (1) water supply, identified as Water Supply #1 in Exhibit A, as a result of the stray gas migration associated with Cabot's G Shields 1V, G Shields 2H, G Shields 4H, and G Shields 5H Gas Wells. Cabot installed a treatment system on the water supply and conducted follow-up pre- and post-treatment sampling. However, the Department has no record of receiving a final report from Cabot on the ultimate satisfactory quality of the restored water supply, as requested in a January 28, 2013 letter from the Department to Cabot. Item numbers four (4) and five (5) of that letter remain unaddressed (attached as Exhibit B). Violations cited in the October 20, 2011 NOV for failure to prevent the migration of gas or other fluids into sources of fresh groundwater, 25 PA Code § 78.81(a)(2) and (3), the existence of defective casing or cementing, 25 PA Code § 78.86, and the unpermitted discharge of polluting substances, 35 P.S. § 691.401, remain unresolved to date.
2. On June 16, 2014, the Department issued an NOV to Cabot for a gas migration incident and pollution of water supplies in Dimock Township, Susquehanna County. The Department determined that one (1) additional water supply, identified as Water Supply #2 in Exhibit A, has been impacted as a result of the stray gas migration associated with Cabot's Costello 1V, Costello 2V, Gesford 4H, and Gesford 8H Gas Wells. Methane levels in the affected water supply remain elevated. Although a new water well has been drilled for the owner of the affected water supply, Cabot has not yet completed the process

of permanently restoring or replacing the impacted water supply, and gas well integrity issues remain. Violations cited in the June 16, 2014 NOV for failure to prevent the migration of gas or other fluids into sources of fresh groundwater, 25 PA Code § 78.81(a)(2) and (3), and the unpermitted discharge of polluting substances, 35 P.S. § 691.401, remain unresolved to date.

3. On December 19, 2014, the Department issued an NOV to Cabot for a gas migration incident and pollution of water supplies in Dimock Township, Susquehanna County. The Department determined that at least two (2) additional water supplies, identified as Water Supplies #3 and #4 in Exhibit A, were impacted as a result of the stray gas migration associated with Cabot's Ratzel 1H, Ratzel 2H, and Ratzel 3V Gas Wells. Methane levels in the affected water supplies remain elevated. Cabot has not yet permanently restored or replaced the impacted water supplies. Violations cited in the December 19, 2014 NOV for failure to prevent the migration of gas or other fluids into sources of fresh groundwater, 25 PA Code § 78.81(a)(2) and (3), and the unpermitted discharge of polluting substances, 35 P.S. § 691.401, remain unresolved to date.
4. On June 20, 2017, the Department issued an NOV to Cabot for a gas migration incident and pollution of water supplies in Auburn Township, Susquehanna County. At least two (2) water supplies were impacted as a result of the stray gas migration associated with Cabot's Howell, G. 2H; Howell, G. 4H; Howell, G. 6H; and the Howell, G. 8H gas wells. Methane levels in the affected water supplies remain elevated but have shown improvement as remedial activities at the gas wells have progressed. Investigation of this gas migration, remediation of the gas wells, and restoration of the affected water supplies are on-going. Violations cited in the June 20, 2017 NOV for failure to prevent the migration of gas or other fluids into sources of fresh groundwater, 25 PA Code § 78.81a(a)(2) and (3); general well construction and operation, § 78a.73(b); cement standards, 78a.85(a)(5); and the unpermitted discharge of polluting substances, 35 P.S. § 691.401, remain unresolved to date.
5. On November 16, 2017, the Department issued an NOV to Cabot for a gas migration incident and pollution of water supplies in Harford Township, Susquehanna County. At least two (2) water supplies were impacted as a result of the stray gas migration associated with Cabot's Jeffers Farms 7H, 8H, 9H, 10H, 11H, 12H, 13H, 14H, 15H, 16H, 17H, and 18H gas wells. Methane levels in the affected water supplies remain elevated. Investigation of this gas migration, remediation of the gas wells, and restoration of the affected water supplies are on-going. Violations cited in the November 16, 2017 NOV for failure to prevent the migration of gas or other fluids into sources of fresh groundwater, 25 PA Code § 78.81a(a)(2) and (3); general well construction and operation, § 78a.73(b); cement standards, 78a.85(a)(5); and the unpermitted discharge of polluting substances, 35 P.S. § 691.401, remain unresolved to date.
6. On March 21, 2018, the Department issued an NOV to Cabot for a gas migration incident and pollution of a water supply in Dimock Township, Susquehanna County. At least one (1) water supply was impacted as a result of the stray gas migration associated with Cabot's Ely 4H and Ely 6H gas wells, which are subject to the provisions of the 2010

Agreement. Paragraph 5.c. of the 2010 Agreement specifically required Cabot to “complete any and all actions... to bring the Ely 2H Gas Well and Ely 6H Gas Well into compliance with the Oil and Gas Act, the Clean Streams Law, and the Regulations.” Methane levels in the water supply remain elevated. Investigation of this gas migration, remediation of the gas wells, and restoration of the affected water supply are on-going. Violations cited in the March 21, 2018 NOV for failure to prevent the migration of gas or other fluids into sources of fresh groundwater, 25 PA Code § 78.81a(a)(2) and (3); general well construction and operation, § 78a.73(b); and the unpermitted discharge of polluting substances, 35 P.S. § 691.401, remain unresolved to date.

7. On January 21, 2011, the Department issued NOVs to Cabot for defective casing and cementing at Cabot’s Greenwood 6, Greenwood 7, and Greenwood 8 Gas Wells, in violation of the Department’s regulations, 25 PA Code § 78.86. The violations on the Greenwood 8 remain unresolved to date.
8. On April 28, 2013, an estimated 42 gallons of flowback fluid (brine) was released to the soil as a vacuum truck was loading a frac tank at the Aldrich 1 well site located in Gibson Township, Susquehanna County. Cabot has not demonstrated attainment of a cleanup standard under the Land Recycling and Environmental Remediation Standards Act, 35 P.S. § § 6026.101-6026.908 (“Act 2”). A final report for the remediation has not yet been received by the Department.
9. On December 12, 2011, the Department received a final report submitted in response to a release of drilling mud that was discovered on August 28, 2008, at the Black 1H/2H well site in Springville Township, Susquehanna County. Between January 2012, and December 2013, the Department and Cabot corresponded on various deficiencies in the report. The Department acknowledged Cabot’s Act 2 relief from liability for soil contamination from the release on January 3, 2014. Cabot has not yet demonstrated attainment of an Act 2 cleanup standard for groundwater contamination from this release.
10. On December 22, 2014, an estimated 500 gallons of base oil flowed into the J Foltz 8H well located in Brooklyn Township, Susquehanna County, while Precision Drilling Rig #531 was in the process of drilling the surface string. An NOV was issued on January 30, 2015 for a violation of 25 PA Code § 78.83(c). The Department received a work plan on February 27, 2015 and additional information from Cabot’s consultants in March 2016. However, Cabot has not demonstrated attainment of an Act 2 cleanup standard for this release.
11. On March 16, 2016, the Department observed water with high conductivity readings on Cabot’s Friedland Farms tank pad located in Lenox Township, Susquehanna County. A release of treated flowback fluid is suspected. The volume and date of the release are not known. An NOV was issued on May 2, 2016, for violations of 25 PA Code §§ 78.56(a) and 91.33(a); Section 402(b) of the Clean Streams Law, 35 P.S. § 691.402(b); Section 301 of the Solid Waste Management Act, 35 P.S. § 6018.301; and Section 3218.2(a) of the

2012 Oil and Gas Act, 58 Pa.C.S. § 3218.2(a). The Department received a final report from Cabot on May 29, 2018, which is currently under review.

B. Unresolved Obligations Under Paragraph 5.a.iv. of the 2010 Agreement

Paragraph 5.a.iv. of the 2010 Agreement states that:

5.a. ***Gas Well Pressure Testing.***

iv. If the pressure data required to be provided above indicates that the Gas Well in question is in compliance with Chapter 78 of the proposed regulations or such regulations that are finally enacted, then said Gas Well shall, absent contradictory data reviewed by the Department, be considered to not be discharging natural gas into the aquifer.

In a technical deficiency letter to Cabot, dated May 9, 2011, the Department identified multiple Cabot Gas Wells that had natural gas in the cemented annuli. As a general rule, gas in an annular space of a gas well indicates that the well has defective, insufficient or improperly cemented casing. The regulations under the Oil and Gas Act at 25 PA. Code § 78a.86, require that “[i]n a well that has defective, insufficient or improperly cemented casing, the operator shall report the defect to the Department within 24 hours of discovery by the operator and shall correct the defect.”

The Department’s May 9, 2011 letter placed 43 Cabot gas wells into 4 categories as follows:

- Category I – six (6) Cabot gas wells with gas present in the annular space(s) between the intermediate casing and the surface casing.
- Category II- eight (8) Cabot gas wells with gas present in the annular space(s) between the production and intermediate or surface casing;
- Category III – eight (8) Cabot gas wells with gas present in the annular space(s) between the production casing and the intermediate casing, but open formations/intervals may explain the presence of gas in the space(s); and
- Category IV – twenty-one (21) Cabot gas wells with no gas present in any annular space.

Cabot responded to the May 9, 2011 technical deficiency letter, and took some corrective actions regarding some of the gas wells.

On May 6-12, 2015, the Department and Cabot conducted further inspections of Cabot gas wells, including some of the Dimock/Carter Road Gas Wells listed in Exhibit B of the 2010 Agreement. The memorandum attached to this letter as Exhibit C documents the results of those inspections, including the procedure utilized, and the Department’s findings.

The inspections conducted by the Department indicate that natural gas continues to exist in the cemented annuli of multiple Cabot gas wells. The Department’s May 6-12, 2015 inspections focused on the well sites identified as having Category I and II wells. This included the 14

original Dimock/Carter Road Gas Wells in Category I and II, in addition to any other gas wells then-present on those same well pads. Six (6) additional gas wells were inspected based on the Department's empirical modelling tool, which considers local fracture orientations, intervening structural geology and distance from the source well to receptor. As a result of these inspections, the Department has placed twenty-two (22) gas wells into Category I and eight (8) gas wells into Category II, as identified in the attached Exhibit C. Through additional evaluation of available data, including presence of gas shows, casing depths, and the Department's empirical modelling, the Department has identified fourteen (14) of the thirty (30) total Category I and II gas wells, and one (1) of the Category IV gas wells (due to proximity to an impacted water supply) as Priority Gas Wells for further evaluation and potential remediation.

Based on the information obtained to date, including from the May 6-12, 2015 inspections, further information from, testing by, and/or corrective actions by Cabot are necessary before a final determination can be made as to whether the Cabot wells with natural gas in their annular space(s) comply with 25 PA. Code Chapter 78a, and the 2010 Agreement.

Following is a list of the Priority Cabot Gas Wells requiring further immediate action:

- Gesford 7H – API#: 115-20163
- Grimsley 1V – API#: 115-20095
- Grimsley 2H – API#: 115-20171
- Ely 4H – API#: 115-20034
- Ely 5H – API#: 115-20054
- Ely 6H – API#: 115-20041
- Gesford 2V – API#: 115-20033
- Ratzel 3V – API#: 115-20117
- Ratzell 1H – API# 115-20047
- Ratzell 2H – API#115-20152
- Greenwood 1V- API#: 115-20008
- Greenwood 6H – API#: 115-20223
- Greenwood 7H – API#: 115-20224
- Greenwood 8H – API#: 115-20284
- Costello 1V – API#: 115-20036

In addition to the Priority Gas Wells identified above, further evaluation of the following previously plugged gas wells is required:

- Gesford 3 – API#: 115-20019
- Gesford 9 – API#: 115-20187

Pending the outcome of further diagnostic testing and remedial actions on these gas wells, other Category I and II wells or well locations predicted by the Department's empirical modelling to be potentially problematic may need to be considered for further evaluation based upon a detailed review of available well information.

C. Unresolved Obligations Under Paragraph 5. b.iv.-vi. of the 2010 Agreement

Paragraph 5.b.iv.-vi. of the 2010 Agreement states that:

5.b. **Screening/Water Sampling.**

iv. *Cabot shall continue to conduct the screening and sampling under Paragraph 5.b.i., above, once every two weeks at each Water Supply until the results of the screenings and sampling done by the Department in the past and by Cabot under Paragraph 5.b.i., above, show that either no combustible free gas is present at the wellhead for the Water Supply or that such levels of combustible free gas, if properly vented pursuant to applicable regulations and Department practice, do not pose a danger to persons or property and the concentration of dissolved methane is below 7 milligrams/liter ("mg/l"), or meets the standard then prescribed by applicable regulations. However, Cabot may petition the Department, based on information obtained in accordance with this Paragraph for a determination that the concentration of methane in the Water Supply is at background levels for the aquifer that supplies that Water Supply. Cabot may further petition the Department for a determination that the concentration of combustible free gas at the wellhead is at levels that do not present a danger to persons or property if properly vented according to applicable regulations and Department practice;*

v. *for each Water Supply that meets the standards under Paragraph 5.b.iv, above, Cabot shall continue to screen each such Water Supply for free combustible gas and shall sample each such Water Supply at least once per quarter, and shall have the water sample analyzed in a Pennsylvania-licensed laboratory for dissolved methane only. Cabot shall provide the Department a copy of the results of the screening for free combustible gas, and the laboratory analyses of each water sample within five (5) days of Cabot's receipt of the screening results and water sample analyses by its laboratory; and*

vi. *unless the Department determines that the concentration of methane in the Water Supply is at background levels for the aquifer that supplies that Water Supply, Cabot shall continue such screenings and sampling under Paragraph 5b.v., above, for each quarter until the results of the screenings and sampling done by the Department in the past and by Cabot under this Paragraph 5 show that, for eight consecutive quarters, seventy-five percent of the water samples within each monitoring point over time contain 7 mg/l or less of dissolved methane (or meets the standard then prescribed by applicable regulations), and no individual water sample exceeds two times this standard.*

The unresolved obligations under Paragraphs 5.b.iv. – vi. are as follows:

Name

Continuing Obligations Under Paragraph 5.b.iv.-vi.

[REDACTED]

Based on data provided by Cabot, Water Supply may be at background levels for the aquifer that supplies the Water Supply and the concentration of combustible free gas at the well head is at levels that do not present a danger to persons or property if properly vented according to applicable regulations and Department practice. While the Department believes that this supply may comply with paragraph 5.b.vi., the Water Supply has not been sampled continuously since 2010. The Department is requesting that Cabot resume quarterly sampling at this water supply in accordance with Paragraph 5.b.v and vi. If warranted, Cabot may also petition the Department for a determination that the Water Supply is at background based on available data.

[REDACTED]

Based on data provided by Cabot, Water Supply may be at background levels for the aquifer that supplies the Water Supply and the concentration of combustible free gas at the well head is at levels that do not present a danger to persons or property if properly vented according to applicable regulations and Department practice. While the Department believes that this supply may comply with paragraph 5.b.vi., the Water Supply has not been sampled continuously since 2010. The Department is requesting that Cabot resume quarterly sampling at this water supply in accordance with Paragraph 5.b.v. and vi. If warranted, Cabot may also petition the Department for a determination that the Water Supply is at background based on available data.

[REDACTED]

Based on data provided by Cabot, Water Supply may be at background levels for the aquifer that supplies the Water Supply and the concentration of combustible free gas at the well head is at levels that do not present a danger to persons or property if properly vented according to applicable regulations and Department practice. While the Department believes that this supply may comply with paragraph 5.b.vi., the Water Supply has not been sampled continuously since 2010. The Department

is requesting that Cabot resume quarterly sampling at this water supply in accordance with Paragraph 5.b.v. and vi. If warranted, Cabot may also petition the Department for a determination that the Water Supply is at background based on available data.



Based on data provided by Cabot, Water Supply may be at background levels for the aquifer that supplies the Water Supply and the concentration of combustible free gas at the well head is at levels that do not present a danger to persons or property if properly vented according to applicable regulations and Department practice. Based on review of Cabot's continued sampling data, the Department now believes that sampling at this Water Supply should be reduced to quarterly as set forth in Paragraph 5.b.v. The data collected to date indicates that Cabot could petition for a background determination from the Department.



Based on data provided by Cabot, Water Supply may be at background levels for the aquifer that supplies the Water Supply and the concentration of combustible free gas at the well head is at levels that do not present a danger to persons or property if properly vented according to applicable regulations and Department practice. Based on review of Cabot's continued sampling data, the Department now believes that sampling at this Water Supply should be reduced to quarterly as set forth in Paragraph 5.b.v. The data collected to date indicates that Cabot could petition for a background determination from the Department.



Based on data provided by Cabot, Water Supply may be at background levels for the aquifer that supplies the Water Supply and the concentration of combustible free gas at the well head is at levels that do not present a danger to persons or property if properly vented according to applicable regulations and Department practice. While the Department believes that this supply may comply with paragraph 5.b.vi., the Water Supply has not been sampled continuously since 2010. The Department is requesting that Cabot resume quarterly sampling at this water supply in accordance with Paragraph

5.b.v. and vi. If warranted, Cabot may also petition the Department for a determination that the Water Supply is at background based on available data.



Based on data provided by Cabot, Water Supply may be at background levels for the aquifer that supplies the Water Supply and the concentration of combustible free gas at the well head is at levels that do not present a danger to persons or property if properly vented according to applicable regulations and Department practice. Based on review of Cabot's continued sampling data, the Department now believes that sampling at this Water Supply should be reduced to quarterly as set forth in Paragraph 5.b.v. The data collected to date indicates that Cabot could petition for a background determination from the Department.



Additional analyses are needed to determine if the Water Supply is at background levels for the aquifer that supplies the Water Supply. Cabot may petition the Department for a determination that the concentration of combustible free gas at the well head of the Water Supply is at levels that present no danger to persons or property if properly vented according to applicable regulations and Department practice, and a subsequent reduction in sampling frequency to quarterly, as set forth in Paragraph 5.b.v.



Additional analyses are needed to determine if the Water Supply is at background levels for the aquifer that supplies the Water Supply. Cabot may petition the Department for a determination that the concentration of combustible free gas at the well head of the Water Supply is at levels that present no danger to persons or property if properly vented according to applicable regulations and Department practice, and a subsequent reduction in sampling frequency to quarterly, as set forth in Paragraph 5.b.v.



The Water Supply is not at background levels for the aquifer that supplies the Water Supply. Cabot may petition the Department for a determination

that the concentration of combustible free gas at the well head of the Water Supply is at levels that present no danger to persons or property if properly vented according to applicable regulations and Department practice, and a subsequent reduction in sampling frequency to quarterly, as set forth in Paragraph 5.b.v.



Additional analyses are needed to determine if the Water Supply is at background levels for the aquifer that supplies the Water Supply. Cabot may petition the Department for a determination that the concentration of combustible free gas at the well head of the Water Supply is at levels that present no danger to persons or property if properly vented according to applicable regulations and Department practice, and a subsequent reduction in sampling frequency to quarterly, as set forth in Paragraph 5.b.v.



The Water Supply is not at background levels for the aquifer that supplies the Water Supply. Cabot may petition the Department for a determination that the concentration of combustible free gas at the well head of the Water Supply is at levels that present no danger to persons or property if properly vented according to applicable regulations and Department practice, and a subsequent reduction in sampling frequency to quarterly, as set forth in Paragraph 5.b.v.



The Water Supply is not at background levels for the aquifer that supplies the Water Supply. Cabot may petition the Department for a determination that the concentration of combustible free gas at the well head of the Water Supply is at levels that present no danger to persons or property if properly vented according to applicable regulations and Department practice, and a subsequent reduction in sampling frequency to quarterly, as set forth in Paragraph 5.b.v.

[REDACTED]

The Property Owners have and continue to deny the Department and Cabot access to sample their Water Supply. It is the Department's understanding that the litigation involving Cabot and owners of this property has been resolved. Please advise if the resolution of litigation also included an agreement that this Water Supply has been fully and adequately restored or replaced.

[REDACTED]

The Property Owners have and continue to deny the Department and Cabot access to sample their Water Supply. It is the Department's understanding that the litigation involving Cabot and owners of this property has been resolved. Please advise if the resolution of litigation also included an agreement that this Water Supply has been fully and adequately restored or replaced.

[REDACTED]

The Property Owners have and continue to deny Cabot access to sample their Water Supply. It is the Department's understanding that the 2012 litigation involving Cabot and owners of this property has been resolved. Please advise if the resolution of litigation also included an agreement that this Water Supply has been fully and adequately restored or replaced.

[REDACTED]

Based on new information provided by Cabot, this property is now owned by [REDACTED] who have and continue to deny the Department and Cabot access to sample their Water Supply. It is the Department's understanding that the litigation involving Cabot and owners of this property has been resolved. Please advise if the resolution of litigation also included an agreement that this Water Supply has been fully and adequately restored or replaced.

*See Exhibit D for new Property Owner

To address the unresolved obligations under the 2010 Agreement identified above, the Department requests that, by September 14, 2018, Cabot submit the following:

1. **A Report** on the quality of the restored Water Supply #1 on Exhibit A, identified under A.1. above.
2. **A Water Supply Restoration/Replacement Plan** to permanently restore/replace the three (3) other affected water supplies noted under Section A2 and 3, above, located in Dimock Township, Susquehanna County, and identified in Exhibit A (“Affected Water Supplies”). The Plan should include, at a minimum:
 - a. proposed corrective actions (*e.g.* treatment, drill new water supply well, hook into public water supply, and/or other corrective actions) necessary to permanently restore or replace the Affected Water Supplies in compliance with Section 3218(a) of the 2012 Oil and Gas Act, 58 Pa.C.S. §3218(a), and 25 Pa. Code §78a.51(d);
 - b. a proposed schedule to implement the corrective actions so that the Affected Water Supplies are restored or replaced within forty-five (45) days of receipt of the Department’s written approval of the Restoration/ Replacement Plan or of the modified Restoration/Replacement Plan;
 - c. the name of, and contact information for, the independent laboratory, certified by the Department, that Cabot will use to analyze samples from the restored or replaced Affected Water Supplies;
 - d. each agreement and/or contract between Cabot and the owner(s) of the Affected Water Supplies to provide for all plumbing, conveyance, pumping, or auxiliary facilities necessary for the use of the permanently restored or replaced Water Supplies;
 - e. a plan for permanent operation and maintenance of the Affected Water Supplies or contracts/agreements between Cabot and the owner(s) of the Affected Water Supplies documenting how Cabot will compensate them on a permanent basis for any increased operating and maintenance costs for the replaced or restored Affected Water Supplies; and
 - f. a plan for confirmatory samples of the restored and/or replaced Affected Water Supplies after the date that Cabot asserts that it has permanently restored or replaced the Affected Water Supplies, or after the date that Cabot asserts that the Affected Water Supplies are no longer affected. Such samples will be used to determine whether the Affected Water Supply meets the standards set forth in Section 3218(a) of the 2012 Oil and Gas Act, 58 Pa.C.S. § 3218(a), and 25 Pa. Code § 78a.51(d). The confirmatory sampling plan should provide for: split samples with the Department; that sampling would only take place Monday through Thursday during

Department working hours; and should specify that Cabot will notify the Department at least three (3) working days before any scheduled sampling of the Water Supply.

If some of the work itemized in Paragraph 2 above has already been completed at any of these Affected Water Supplies, please provide a summary of work that has been conducted to date, complying with the above requirements. Similarly, if there has been a settlement agreement reached with any of the owners of these Affected Water Supplies please provide any relevant documentation.

3. **A Gas Well Evaluation/Remediation Plan and Schedule** to further evaluate the following gas wells:

- Gesford 7H – API#: 115-20163
- Grimsley 1V – API#: 115-20095
- Grimsley 2H – API#: 115-20171
- Ely 4H – API#: 115-20034
- Ely 5H – API#: 115-20054
- Ely 6H – API#: 115-20041
- Gesford 2V – API#: 115-20033
- Ratzel 3V – API#: 115-20117
- Ratzell 1H – API# 115-20047
- Ratzell 2H – API#115-20152
- Greenwood 1V- API#: 115-20008
- Greenwood 6H – API#: 115-20223
- Greenwood 7H – API#: 115-20224
- Greenwood 8H – API#: 115-20284
- Costello 1V – API#: 115-20036
- Gesford 3 – API#: 115-20019
- Gesford 9 – API#: 115-20187

The Plan should, at a minimum, include a schedule for 72-hour pressure build-up tests of each of these gas wells. The Plan should also include a description of further diagnostic and remedial actions to be employed pending the outcome of the initial 72-hour pressure build-up tests. If Cabot has reason to believe other Cabot gas wells are a more likely source of the on-going stray gas migration in the Dimock area, Cabot may propose an alternate prioritization of gas wells for diagnostic and remedial work.

4. **A Water Supply Sampling Plan and Schedule** for on-going monitoring of the four (4) water supplies identified in Exhibit A, and the first thirteen (13) water supplies identified under Section C, above, that were part of the 2010 Agreement. The purpose of this monitoring will be to determine the effectiveness of any remedial actions conducted at the gas wells and therefore should be of the raw, untreated water.

5. **A Spill Remediation Compliance Schedule** to be followed in order to come into compliance with items 8 – 11 under Section A, above, relating to spills and releases at Cabot sites.

All of the decisions and determinations expressed in this letter have been made under the 2010 Agreement, and fall within the scope of paragraph 12 of that agreement. None of these decisions or determinations constitutes a final appealable action under 25 Pa. Code § 1021.2, or an adjudication under 2 Pa. C.S.A. § 101.

We look forward to receiving, by September 14, 2018, Cabot's response to this letter. In the meantime, if you have any questions about this matter, please contact me at 570.321.6557.

Sincerely,



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

cc: Cabot-Dimock COA File
Geoff Ayers
Michael O'Donnell

CONFIDENTIAL

EXHIBIT A

Affected Water Supplies
Dimock Township, Susquehanna County

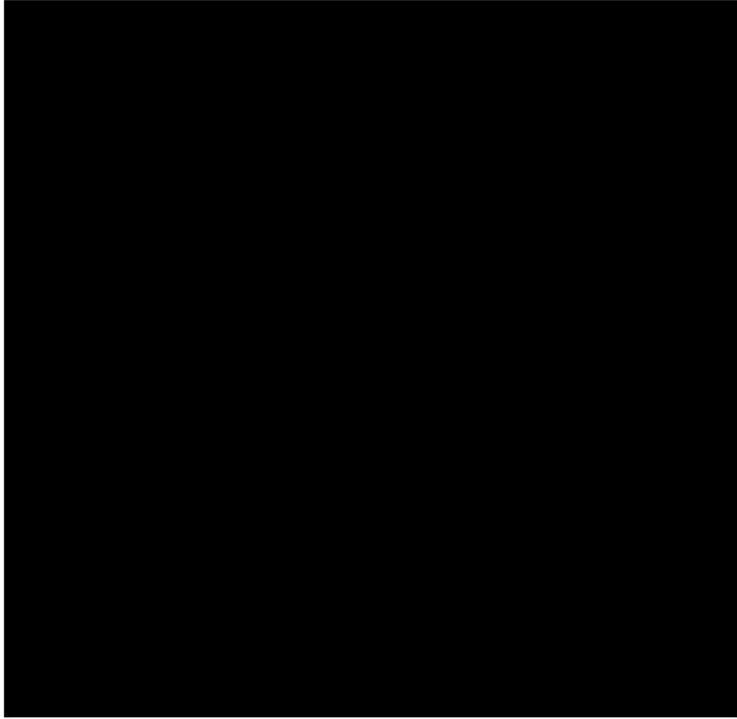


EXHIBIT B



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DISTRICT OIL AND GAS OPERATIONS

January 28, 2013

Certified Mail # 7011 2970 0004 1348 4465

Mr. Phil Stalnaker
Vice President
Regional Manager – North Region
Cabot Oil and Gas Corporation
Five Penn Center West
Suite 401
Pittsburgh, PA 15276

Re: DEP Response to January 9, 2013 Letter
[REDACTED] Property Treatment System
Dimock Township, Susquehanna County

Dear Mr. Stalnaker:

This letter is in follow-up to our January 10, 2013, meeting regarding the Consent Order & Agreement (CO&A) forwarded to Cabot Oil & Gas Corporation (Cabot) by the Department seeking the permanent restoration or replacement of the water supply serving the [REDACTED] Property (Water Supply) located in Dimock Township, Susquehanna County. The Department has reviewed the January 9, 2013, Cabot technical response letter to the CO&A (Response) describing the installation of a permanent treatment system (Treatment System) on the Water Supply and offers the following explanation of the Department's expectations.

1. The timelines and deadline dates of various Cabot activities and initiatives contained in the Response are acceptable to the Department.
2. Cabot will perform, at a minimum, once per month sampling of the Water Supply, both prior to and after treatment, for a period of six (6) months after the installation of the Treatment System to fully determine the effectiveness of the Treatment System and current quality of the untreated water.
3. All results of the sampling of the Water Supply, as described in Item 2 above, will be forwarded to the Department for review within five (5) days of the receipt of the results by Cabot. Additionally, Cabot will notify the Department five (5) days prior to each and every scheduled sampling of the Water Supply to allow the Department the option to be present.
4. Upon the completion of all of the Water Supply sampling and the completion of Cabot's determination that the Treatment System is operating effectively, Cabot will submit a report to the Department detailing this determination within ten (10) days of the determination having been made. The quantity and quality of the water supplied to the [REDACTED] Property emanating from the Water Supply and passing through the Treatment System will meet the requirements of 25 Pa. Code Section 78.51(a) and (d).

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5. Upon the Department's review and approval of the determination, as described in Item 4 above, Cabot will commence and conclude arrangements with the current owner of the [REDACTED] Property for the continued Operation and Maintenance of the Treatment System until such time the [REDACTED] Property is sold to a different owner unless the pre-treatment sampling described in Item 2 above clearly and conclusively indicates the raw water quality meets or exceeds that of the pre-drill water quality.

The Department reserves the right to take an enforcement action against Cabot in the event that Cabot fails to adhere to the timelines and deadlines contained in the Response, or to meet the expectations of the Department described in Items 1 through 5 above.

If you have any questions or comments, please feel free to contact me either via telephone at 570.321.6557 or via e-mail at jenmeans@pa.gov.

Sincerely,




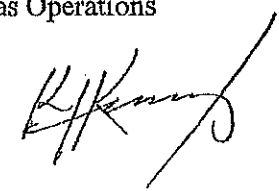
Jennifer W. Means
Environmental Program Manager
East Region Oil and Gas Management

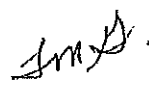
cc: Marc B. Cooley
Eric M. Rooney, P.G.
Michael T. O'Donnell
Kevin P. Costello
Todd A. Miller
Permit 115-20118
Permit 115-20181
[REDACTED]

EXHIBIT C

MEMO

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

FROM Kenneth J. Kennedy 
Oil and Gas Inspector
Scranton District Office

THROUGH Trudy Graby 
Oil and Gas Inspector Supervisor

- And -

Marc B. Cooley
Environmental Group Manager

DATE September 22, 2015

RE Cabot - Dimock Well Inspections
May 6 - 12, 2015

OBJECTIVE:

To perform preliminary re-assessment inspections of the Mechanical Integrity of Cabot Oil and Gas (Cabot O&G) wells listed in the review memo from Douglas W. Welsh, Oil and Gas Inspector Supervisor, Oil and Gas Management to S. Craig Lobins, Regional Manager, Oil and Gas Management, dated May 9, 2011. In this letter Mr. Welsh refers to his review of annuli pressure test reports submitted by Cabot O&G to the Department on December 21, 2010, January 4, 2011, January 11, 2011, April 1, 2011 and April 14, 2011. Based on the results of Cabot's previous pressure tests, Mr. Welsh had categorized 43 tested gas wells in four categories as follows:

- **Category I** - Six (6) Cabot gas wells with gas present in the annular space between the Intermediate and surface casing.
- **Category II** - Eight (8) Cabot gas wells with gas present in the annular space(s) between the production and the intermediate or surface casings, with the production casing top of cement (TOC), within the intermediate or surface casing shoe.
- **Category III** - Eight (8) Cabot gas wells with gas present in the annular space(s) between the production casing and the intermediate or surface casings, but with open formation intervals that may explain the presence of gas in these annular spaces; and
- **Category IV** - Twenty one (21) Cabot gas wells with no gas present in any annular spaces.

For the purposes of these preliminary re-assessment inspections, I focused on the **Category I and II** wells. The wells in **Category I and II** totaled (14). I also inspected all wells on the pad at each location visited, which

added an additional (10) wells. Based on The Department's empirical modeling tool, which considers local fracture orientations, intervening structural geology and distance from the source well to receptor, an additional (6) wells were added for a total of (30) wells inspected.

The objective of these preliminary re-assessment inspections was to check wells for any presence / flow of gas at surface and/or annular vents, under "normal well conditions". Based on findings, a list will be developed of wells warranting further mechanical integrity evaluation and/or additional remedial intervention.

Procedure:

In preparation for inspections, a list of wells was sent to John Smelko of Cabot O&G. Prior to inspections, Cabot field personnel were sent out to well locations to ensure that wellhead / cellar areas were open and accessible to open casing tops. On May 6-12, 2015, accompanied by Cabot O&G Well Tender Matt Depue, inspections were performed. Most cellar areas had some standing water, above conductor tops. Areas where conductor tops were exposed but no standing water was present, conductor / casing tops were checked for bubbling by pouring water over cement tops and around wellhead area. No signs of bubbling were noted at any wells inspected.

Cabot O&G's "normal well conditions" are that all annular vents are left open and venting, plumbed to onsite vent tanks. These annular vents are plumbed to vent tanks via a common vent line. Although there are check valves installed on individual annuli vent lines, prior to the common vent line to prevent back flow of liquids, this alignment can allow gas vapors to intermingle (back vent) within individual annuli vent lines and create a false gas detection when initially checking the individual annuli vents for presence of gas. With this in mind, I had Matt go ahead of me and disconnect all individual annuli vent lines and remove the check valves. The individual annuli vents were left open, venting to atmosphere, for a minimum of (1) hour prior to performing any gas checks on annuli.

Individual annuli vents were checked for presence of gas with an ALTAIR 5X Multigas meter, which was recalibrated every morning prior to inspections.

If gas was detected within an annular vent, a quick flow check was performed by use of a Nitrile rubber glove (NRG). NRG would be attached to a 2" vent fitting and rate of inflation would be recorded. If No NRG Inflation occurred, the result was listed as No Flow noted (NF). If NRG inflated but was not displaced within 15 min., the result was listed as No Measureable Flow noted (NMF). If NRG inflated and was displaced off 2" fitting within 15 min., the result was listed as Measureable Flow noted (MF). For each well exhibiting a MF, flow rate was then measured with a Quick Change Orifice Well Tester, calculated and listed.

Other parameters which were listed during inspections were: Well Status; Well Design; Prod. Csg. Press./Tubing Press.; and Previous Remedial Work Completed. Data compiled from preliminary re-assessment inspections performed are listed in the attached table.

Summary of Findings:

Out of the (30) wells inspected:

- (22) wells were found to have gas detected within the Intermediate x Surface casings or cemented annuli or: **Category I Wells.**

- Of these (22) wells, (6) are Two String designs. Of these Two String design wells, (2) had measureable gas flows noted, namely the **Gesford 7H** and the **Heitsman 4H**. Of the remaining (4) Two String designs all had gas flows that could not be measured at time of inspection, namely the **Ely 7H; Grimsley 1V; Hull, R. 1H and 2H**.
In my opinion, these (6) Two String wells may warrant further evaluation.
- The remaining (16) **Category I Wells** are all Three String designs with the exception of the **Ratzel 3V**, which is a Four String design. Of these (16) **Category I Wells**, (11) had significant gas detected (> 5% gas) within cemented annuli. (11) of these wells had gas flows that could not be measured at time of inspection, namely the **Ely 5H; Ely 1V; Gesford 2V; Ratzel 3V; Hubbard 5H and 6H; Teel 6V; Teel 13V; Greenwood 1V, 6H and 8H**.
In my opinion these (11) wells may warrant further evaluation.
- The remaining (8) wells were found to have gas detected within the Production x Intermediate annulus or **Category II Wells**. The only exception is the **Costello 1V** which is presently undergoing remediation. These (7) remaining wells, although they do have gas present within the Production x Intermediate casings, are all Three String designs with no measureable gas flow noted, The only exceptions are the **Grimsley 2H**, which is a Two String well, and the **Greenwood 7H**, which is a Three String well but had a measureable gas flow detected. In my opinion these (2) wells may warrant further evaluation.

Further Analysis:

Following the above noted inspections, I conducted further review of Department records for the 30 gas wells inspected. Well records and drill logs were reviewed for gas shows, casing depths, etc. Geographic location and Information from the Department's empirical model noted above was also reviewed. As a result of this evaluation, I recommend that 11 of the 30 Category I and II gas wells be prioritized for further evaluation and potential remediation.

A thorough review of the previous well history and plugging operations performed on the **Gesford 3H and 9H** wells indicates that further investigation is warranted to evaluate the subsurface effects and/or impacts that may have resulted from previous plugging operations of these wells. Previous gas shows were very significant at ~ 1600' when drilling the wells on this pad.

Recommendations:

Further evaluation of the following wells via updated 72 hr. pressure build-up tests (PBUT).

Category I Wells:

- | | | |
|----------------------|-----------------------|-----------------------|
| - Gesford 7H | - Gesford 2V | - Greenwood 6H |
| - Grimsley 1V | - Ratzel 3V | - Greenwood 8H |
| - Ely 5H | - Greenwood 1V | |

Category II Wells:

- | | | |
|-----------------------|----------------------|-----------------------|
| - Costello 1V* | - Grimsley 2H | - Greenwood 7H |
|-----------------------|----------------------|-----------------------|

* Remedial work has been performed on the Costello 1V. Intermediate casing has been milled out of wellbore (~1400' to surface.) Presently sits secured, open, venting to atmosphere and being monitored.

Cabot/Dimock Well Inspections of May 6-12, 2015

Category 1 Wells

Well Name	Permit#	Well Status	Well Design	Prod. Cg. Press.	Previous Remedial Work Completed	
					Tubing Press.	Annuli / % Gas / Flow
Ely 5H	115-20054	In Prod.	3 Str. w/Tbg.	779 psi	(7x4) / 70% / NMF	
Ely 7H	115-20160	Shut in	2 Str.	782 psi T	(9x7) / 30% / NMF	
Ely 1V	115-20049	Not Stim.	(16" Cond.)	No Gauge	(9x4) / 0% (0% LEL) / NF	
		Shut in	3 Str.	No Gauge	(16x9) / 6% / NMF	
		Not Stim.			(7") / 0% (0% LEL) / NF	
					(9x7) / 100% / NMF (Full Infl. NRG in 1 min.)	
					(13x9) / 9% / NMF	
Gesford 2V	115-20033	In Prod.	3 Str.	896 psi	(7x4) / 3% / NMF	P/Sq 4.5 (5300-5302)
Gesford 7H	115-20163	In Prod.	2 Str.	853 psi T	(9x7) / 35% / NMF (Full Infl. NRG in 30 secs.)	w/ 380sx CL.A. 4/1/09
					(7x4) / 0% (20% LEL) / NF	
					(9x7) / 80% / MF - 320 cf/d	
Ratzel 1H	115-20047	In Prod.	3 Str.	1054 psi	(7x4) / 6% / NMF	4.5" pld. 7" p/sq
					(9x7) / 4% / NMF	
Ratzel 2H	115-20152	Temp. SI	3 Str.	N/A	(7x4) / 100% / MF - 747 cf/d	
		Srvg. TFCU			(9x5) / 5% / NMF	4.5" pld. 7" p/sq
Ratzel 3V	115-20117	In Prod.	4 Str.	989 psi	(7x4) / 100% / NMF (Full Infl. NRG in 30 secs.)	
					(9x7) / 20% / NMF	
Grimsley 1V	115-20095	In Prod.	2 Str.	831 psi	(9x5) / 100% / NMF (Full Infl. NRG in 30 secs.)	
Heitsman 2V	115-20140	In Prod.	3 Str.	861 psi	(9x4) / 20% / NMF	
Heitsman 4H	115-20162	In Prod.	2 Str.	898 psi	(9x4) / 100% / MF - 264 cf/d	
Hubbard 1V	115-20039	In Prod.	3 Str.	857 psi	(7x4) / 20% / NMF	
					(9x5) / 5% / NMF	
Hubbard 5H	115-20148	In Prod.	3 Str.	903 psi	(7x4) / 5% / NMF	
					(9x7) / 6% / NMF	

Legend: NMF - No Measureable Flow, MF - Measureable Flow, NF - No Flow, NRG - Nitrite Rubber Glove, T - Tubing, TFCU - Total Flow Control Unit

Cabot/Dimock Well Inspections of May 6-12, 2015

Category I Wells (Cont'd)

Well Name	Permit#	Well		Well Design	Prod. Cg. Press. Tubing Press.	Annuli / % Gas / Flow	Previous Remedial Work Completed
		Status	Design				
Hubbard 6H	115-20147	In Prod.	3 Str.	3 Str.	864 psi	(7x4) / 10% / NMF (9x7) / 15% / NMF	
Hull, R. 1H	115-20122	In Prod.	2 Str.	2 Str.	837 psi	(9x5) / 70% / NMF (Full Infl. NRG in 1 min.)	
Hull, R. 2H	115-20121	In Prod.	2 Str.	2 Str.	864 psi	(9x5) / 50% / NMF	
Teel 6V	115-20011	In Prod.	3 Str.	3 Str.	798 psi	(7x4) / 70% / NMF (Full Infl. NRG in 1 min.) (9x7) / 30% / NF	P/sq 4.5"
Teel 13V	115-20116	In Prod.	3 Str.	3 Str.	888 psi	(7x4) / 70% / NMF (Full Infl. NRG in 1 min.) (9x7) / 10% / NF	
Teel 2V	115-20010	In Prod.	3 Str.	3 Str.	945 psi	(9x4) / 100% / 5.7 mcf/day (Being monitored by TFCU)	
Greenwood 1V	115-20008	In Prod.	*3 Str. Shallow SC	*3 Str.	859 psi	(7x4) / 40% / NMF (Full Infl. NTG in 5 min.) (9x7) / 10% / NMF	4.5" pld. 7" p/sq
Greenwood 6H	115-20223	In Prod.	3 Str.	3 Str.	854 psi	(9x5) / 30% / NMF (Full Infl. NTG in 2 min.) (13x9) / 10% / NMF	
Greenwood 8H	115-20284	In Prod.	3 Str.	3 Str.	869 psi	(9x5) / 38% / NMF (Full Infl. NTG in 15 min.) (13x9) / 10% / NMF	

Legend: NMF - No Measureable Flow, MF - Measureable Flow, NF - No Flow, NRG -- Nitrile Rubber Glove, T - Tubing, TFCU - Total Flow Control Unit

Cabot/Dimock Well Inspections of May 6-12, 2015

Category II Wells		Well Status	Well Design	Prod. Cg. Press.	Annuli / % Gas / Flow	Previous Remedial Work Completed
Well Name	Permit#			Tubing Press.		
Brooks, J 1H	115-20051	In Prod.	3 Str.	940 psi	(7x4) / 100% / NMF (9x7) / 0% (10% LEL) / NF	
Ely 4V	115-20034	In Prod.	3 Str. w/Tbg.	829 psi 815 psi T	(7x4) / 50% / NMF (9x7) / 4% / NF	P/Sq 4.5" @ (5750' w/ 450sx CL A, 3/16/09) and (1500-1502' w/5 bbl MicFin 5/10)
Ely 6H	115-20041	In Prod.	3 Str. w/Tbg.	825 psi 793 psi T	(7x4) / 78% / NMF (9x7) / 0% (20% LEL) / NMF	4.5" pld, 7" p/sq
Grimsley 2H	115-20171	In Prod.	2 Str. w/Tbg.	857 psi 1002 psi T	(9x5) / 0% (0% LEL) / NF	
Teel 8H	115-20045	In Prod.	3 Str.	894 psi	(7x4) / 5% / NF (9x7) / 0% / NF	
Teel 5V	115-20024	In Prod.	3 Str.	965 psi	(7x4) / 100% / NMF (Full Infl. NRG in 2 min.) (9x7) / 0% / NF	
Greenwood 7H	115-20224	In Prod.	3 Str.	852 psi	(9x5) / 70% / MF (Displaced NRG in 30 secs.) (16x9) / 0% (0% LEL) / NF	
Costello 1V	115-20036	Remedial Wk. Underway	N/A	N/A	(In 9 5/8") / 100% / NF	7" milled out, 9" vented

These preliminary well evaluations were performed by:

Kenneth J. Kennedy
PA. D.E.P. Oil and Gas Inspector

Legend: NMF - No Measureable Flow, MF - Measureable Flow, NF - No Flow, NRG - Nitrile Rubber Glove, T - Tubing, TFCU - Total Flow Control Unit

CONFIDENTIAL

EXHIBIT D

New Property Owners
2010 Agreement Affected Water Supplies
Dimock Township, Susquehanna County

