

March 15, 2019

Ms. Jennifer Means
Environmental Program Manager
Eastern Oil and Gas District
Pennsylvania Department of Environmental Protection
208 West Third Street, Suite 101
Williamsport, PA 17701

Re: Cabot Response to Department Letter Dated February 8, 2019 Regarding “December 15, 2010 Consent Order and Settlement Agreement, Continuing Compliance Issues”

Dear Ms. Means:

This letter is written in reply to the referenced letter from the Pennsylvania Department of Environmental Protection (“Department”) regarding the December 15, 2010, Consent Order and Settlement Agreement (“2010 Agreement” or “COSA”) and the Department’s assertion of continuing compliance issues. The Department’s letter was received by Cabot Oil & Gas Corporation (“Cabot”) on February 11, 2019, and requests a response by March 15, 2019. Cabot expressly reserves its rights in connection with the statements made in this letter, but responds here to address your request for information.

Introduction

Before addressing the specific issues raised by the Department, Cabot wants to reiterate that its goal has been and continues to be the complete resolution of the COSA by working cooperatively with the Department. Cabot’s goal remains to gain written approval from the Department to recommence drilling in the Dimock/Carter Road Area.

In your letter, you discuss a number of ongoing projects which Cabot has with the Department, only some of which are related to the COSA. Therefore, to keep these issues separate, Cabot is responding administratively with one letter but makes the distinction between “COSA-Related Matters” and “Non-COSA-Related Matters” via section headings of the same names.

Consistent with and following Cabot’s meeting with the Department in Williamsport on December 18, 2018, the objective of the responses provided below is to update the Department on the work done by Cabot in the interim, most of which has already been shared with and/or coordinated with the Department in an ongoing fashion via frequent verbal and written communications. Cabot continues to diligently work toward completion of the schedule attached as Exhibit B to the Department’s February 8, 2019 letter. Further, Cabot is reiterating requests for technical responses and clarification from the Department on a project-specific basis, as warranted.

For ease of reference, the structural layout of the following responses follows the headings as identified in the Department’s February 8th letter, notwithstanding the separation between COSA-related and non-COSA-related matters.

COSA-Related Matters

Water Supply #2 – Status Update

In your letter, you ask for an update regarding the status of negotiations with the property owner in regards to permanent restoration/replacement of the water supply.

- **Response** – As the Department is aware, Cabot has made repeated efforts to discuss cessation of bulk and bottled water delivery with the landowner. On March 11, 2019, the landowner expressed an interest in resolving this matter. As of March 13, 2019, Cabot has reached a verbal agreement with the landowner, and is working to execute an agreement by mid-April, or sooner if possible.

Water Supplies #3 and #4 – Status Update

In your letter, you indicate the Department does not agree with Cabot's position regarding these water supplies, but proposes to defer further discussions pertaining to these water supplies until the completion of the proposed remedial work associated with the Ratzel 3V and subsequent monitoring.

- **Response** – With the data and lines of evidence provided in the February 2015 Chapter 78.89 gas migration investigation closure report and subsequent response to Department comments, previously submitted by Cabot, coupled with the additional data collected over the past six months during the mechanical integrity assessments of the Ratzel Pad gas wells, Cabot maintains Water Supplies #3 and #4 have not been impacted by Cabot's drilling operations.

Nonetheless, Cabot has proceeded with the proposed remediation of the Ratzel 3V which entailed perforation and squeeze work. The workover was completed on March 3, 2019, and Cabot has been monitoring pressures since. Based on that monitoring, Cabot believes it has successfully remediated the Ratzel 3V and, consequently, has scheduled a 72-hour PBUT in coordination with the Department to commence on March 15, 2019. Residential water sampling will also be performed in conjunction with this PBUT.

Gas Well Pressure Testing (under Paragraph 5.a.iv. of the 2010 Agreement)

As specifically discussed during Cabot's meeting with the Department on December 18, 2018, and with the understanding and agreement between both parties, the goal moving forward is to close-out discrete parts, as warranted, of the 2010 COSA, as opposed to waiting for all work to be completed to close the entire 2010 COSA at one time.

As acknowledged in your February 8th letter, Cabot has performed mechanical integrity assessment work on all the gas wells identified in the Department's June 11, 2018, letter, with the exception of three wells which have been plugged and abandoned (Gesford 3 and Gesford 9) or effectively plugged (Costello 1V – not yet formerly plugged). Through these assessments and based on pressure data, Cabot has demonstrated compliance with Chapter 78a and with Paragraph 5.a.iv. of the 2010 Agreement for the following wells:

- Gesford 7H
- Grimsley 2H

- Ely 4H
- Ely 5H
- Ratzel 1H
- Ratzel 2H
- Greenwood 1V
- Greenwood 6H
- Greenwood 7H
- Greenwood 8H – Based on further review of the existing cement bond log, Cabot believes the top of cement is below the intermediate shoe at approximately 2010'. (See **Attachment A** for the wellbore diagram and cement bond log.)

Please refer to the PowerPoint presentation previously provided to the Department during the meeting on December 18, 2018, and additional data and information that have been submitted to the Department following Cabot's subsequent work.

Based on this data and information and in the spirit of resolving discrete parts of the COSA, Cabot requests that the Department acknowledge the above listed gas wells are compliant with Chapter 78a regulations and with the 2010 Agreement. If the Department disagrees with Cabot's assessments, please provide specific technical reasons, so that Cabot may focus its attention on those reasons in pursuit of resolution.

Additionally, Cabot further requests that the Department acknowledge the Gesford 3 and the Gesford 9, being properly plugged and abandoned (P&A) per Department regulations and approval, as being compliant with existing regulations. With respect to the Costello 1V, Cabot requests that further discussions be deferred pending resolution of the issues associated with Water Supply #2.

Gas Well Remediation Update – By way of an update pertaining to the "Gas Well Remediation Plan and Schedule" shown as Exhibit B of the Department's February 8th letter, Cabot continues to work toward completing the list of proposed action items as follows:

- **Ely 6H** – Cabot continues to monitor the production annular flow (4x7). There has been a downward trend to this point.
- **Gesford 2V** – In January and February, Cabot performed remedial work on the Gesford 2V, which involved the removal of the top section of the 4.5" casing and also some perf and squeeze work on the 7" casing. It appears the remedial work has been successful based on initial monitoring. Thus, Cabot has scheduled a 72-hour PBUT in coordination with the Department, which is set to begin Friday, March 15, 2019.
- **Ratzel 3V** – In late February and early March, Cabot performed remedial work on the Ratzel 3V, which included some perf and squeeze work on the 4.5" casing. It appears the remedial work has been successful based on initial monitoring. Thus, Cabot has scheduled a 72-hour PBUT in coordination with the Department, which is set to begin Friday, March 15, 2019.

- **Ely 1V** – Cabot is presently mobilizing the rig to the Ely Pad to begin P&A operations. Downhole work is anticipated to begin Saturday, March 16, 2019.
- **Grimsley 1V** – In early March 2019, Cabot sealed-off the leak from the top nut packing on the Grimsley 1V wellhead associated with the 5x9 annulus. The remedial effort was successful; therefore, Cabot has scheduled a 72-hour PBUT in coordination with the Department, which is set to begin Friday, March 15, 2019.

Screening / Water Sampling (under Paragraph 5.b.iv.-vi. of the 2010 Agreement)

In your February 8th letter, you placed the 18 COSA residential water supplies into one of three categories: 1) No Further Sampling Required; 2) Quarterly Sampling Required; and 3) No Property Access – No Further Action Required. Cabot responds as follows:

- **No Further Sampling Required** – Based on your letter, Cabot is no longer sampling the six water supplies identified, inclusive of the [REDACTED] [REDACTED] – this well has been abandoned by the property owner; and the [REDACTED]
- **Quarterly Sampling Required** – Please refer to the PowerPoint presentation previously provided to the Department during the meeting on December 18, 2018, and additional data and information that have been submitted to the Department following Cabot’s subsequent work.
 - [REDACTED] – In July 2014, the Department determined that it would issue a closure letter/memo regarding the [REDACTED] and that no additional sampling is necessary (see **Attachment B** – Slide #35 of the Department’s July 17, 2014, PowerPoint presentation). The dissolved methane concentrations have demonstrated variability over time, with the most recent data points being in-line with historical data. Although there are not eight consecutive quarters of data, at least 12 data points exist since July 2011, with greater than 75% of the data points over time being 7 mg/L or less and no individual water sample result exceeding 14 mg/L. Further, the well headspace measurements, aside from one exceedance, remain well below the Department’s threshold of 25% LEL as per Chapter 78a.89 (d)(2). Therefore, Cabot disagrees with the Department’s current assertion that sampling should continue on a quarterly basis; rather, Cabot requests that the Department reconsider the data and approve the cessation of sampling for this water supply.
 - [REDACTED] – In July 2014, the Department determined that it would issue a closure letter/memo regarding the [REDACTED] and that no additional sampling is necessary (see **Attachment B**). However, at this time, Cabot has agreed to continue quarterly monitoring for this water supply.
 - [REDACTED] – This dissolved methane concentration in this water supply is variable but has remained relatively consistent over time, from February 2009 through February 2019, generally fluctuating between 10 mg/L and 25 mg/L, especially when considering normalized data for inter-laboratory comparison. While well headspace measurements indicate combustible gas greater than 25% of LEL, this well is properly vented according to Department-approved best management practices and poses no threat to persons or property. Therefore, Cabot disagrees with

the Department's current assertion that sampling should continue on a quarterly basis. Rather, now that the remedial work performed on the Gesford 2V in January and February 2019 has been completed, Cabot proposes to sample the [REDACTED] water supply on a biweekly basis for three months (i.e., through the end of May 2019). If the new dissolved gas results remain comparable with the existing, extensive data set, Cabot will propose that the Department approve the cessation of sampling at the [REDACTED] water supply.

- [REDACTED] – With the data and lines of evidence provided in the February 2015 Chapter 78.89 gas migration investigation closure report and subsequent response to Department comments, previously submitted by Cabot, coupled with the additional data collected over the past six months during the mechanical integrity assessments of the Ratzel Pad gas wells, Cabot maintains Water Supplies #3 and #4 have not been impacted by Cabot's drilling operations. As such, Cabot disagrees with the Department's current assertion that sampling should continue on a quarterly basis; rather, Cabot requests that the Department reconsider the data and approve the cessation of sampling.
- [REDACTED] – In July 2014, the Department determined that it would issue a closure letter/memo regarding the [REDACTED] and that no additional sampling is necessary (see **Attachment B** – Slide #35 of the Department's July 17, 2014, PowerPoint presentation). Aside from three data points collected in early 2009, ranging from just above 7 mg/L to 12 mg/L, all dissolved methane results associated with the water supply have been less than 7 mg/L. Because Cabot has not had regular access to the property over time due to landowner access issues, eight consecutive quarters of data have not been collected; however, nearly 50 data points have been collected over multiple years, from 2009 through 2018, with greater than 75% of the data points over time being 7 mg/L or less and no individual water sample result exceeding 14 mg/L. In fact, no dissolved methane result has ever exceeded 14 mg/L. Further, the well headspace measurements have all been non-detect, which certainly meet the Department's threshold of 25% LEL as per Chapter 78a.89 (d)(2). Therefore, Cabot disagrees with the Department's current assertion that sampling should continue on a quarterly basis; rather, Cabot requests that the Department reconsider the data and approve the cessation of sampling for this water supply. Moreover, while the Department has maintained access to this property, the resident has recently denied access to Cabot to collect a split sample with the Department in February.

➤ **No Property Access / No Further Action Required** – Cabot agrees with the Department's determination that the obligations related to the 2010 Agreement for these water supplies are met and that no further action in regards to these water supplies will be required. However, pursuant to Slide #35 of the Department's July 17, 2014, PowerPoint presentation (see **Attachment B**) and in an effort to provide closure to the matter, Cabot requests the Department issues closure letters to the five properties denying access. These properties are as follows:

- [REDACTED]
- [REDACTED]
- [REDACTED]

- o [REDACTED]
- o [REDACTED]

Non-COSA-Related Matters

In expressing its justification for maintaining the COSA, the Department once again begins by referencing Paragraph 3.a. of the 2010 Agreement and then references matters outside the scope of the 2010 Agreement. Before addressing these specific references, it is important to note that Cabot continues to operate in good faith to comply with the laws and regulations of the Commonwealth of Pennsylvania. The Department has been made fully aware of and has been involved with the substantial efforts and operations that Cabot has undertaken pursuant to the COSA.

Moreover, it is inappropriate to reference matters outside the scope of the COSA as justification for maintaining this agreement. It is especially important to point out that Paragraph 3.a. is limited to the Dimock/Carter Road Area and has to be read in conjunction with Paragraph 4., which references the wells identified on Exhibit B of the COSA or wells to be drilled within this area. Further, the inclusion of non-COSA-related matters is contrary to the discussions between Cabot and the Department at the December 18, 2018, meeting. Accordingly, Cabot disagrees with and reserves its right to contest any attempt by the Department to maintain the COSA due to activities unrelated to its scope and intent.

Water Supply #1 – Status Update

In your letter, you request an update as to the status of the submittal of the Chapter 78a.89 Stray Gas Migration Closure Report.

- **Response** – Regrettably, Cabot missed the self-imposed submittal date; however, Cabot will complete its internal review of the draft report prepared by Woodard & Curran by Monday, March 18, 2019, and anticipates that Woodard & Curran will finalize and submit the report to the Department by Wednesday, March 27, 2019.

By way of further update and pursuant to your February 8th letter, Cabot offered to the landowner two options pertaining to the current treatment system: 1) leave the existing system in place in its current configuration for their own use (ongoing operation and maintenance being their responsibility) or 2) remove the treatment system and reconnect the water well to the house to match the original water supply configuration (see **Attachment C**). The landowner has subsequently chosen option 2). Consequently, Cabot will perform the work on the property once the weather improves; at this point, Cabot anticipates completing the work in the April/May timeframe of 2019.

Spill Remediation Compliance Schedule – Status Update

In your letter, you request an update on the submittal status of two Act 2 reports.

- **Response** – The status update is as follows:

- o [REDACTED] **Well Site** – Cabot submitted the Act 2 report to the Department’s Environmental Cleanups and Brownfields Program (ECBP) on Friday, March 8, 2019; ECBP should have received the report on Monday, March 11, 2019.
- o [REDACTED] **8H Gas Well** – As of Friday, March 8, 2019, Cabot is awaiting procedural correspondence from ECBP. The Act 2 report for this site has already been drafted and, once Cabot receives the approval of ECBP, the Act 2 report will be submitted promptly.

Closing Remarks

Cabot is not waiving its right to object to any determination of the Department, and Cabot expressly reserves the right to challenge any determination made if an enforcement action is undertaken by the Department or any other governmental entity. Moreover, nothing contained in this letter, including the work completed to date or potential future work that is discussed in this letter or its attachments, should be construed as an admission of liability by Cabot.

Should the Department wish to meet and discuss any or all the items covered under this response, Cabot is more than willing to do so.

If you need more information regarding this matter, or have any additional questions, please contact me by telephone at 412-249-3854 or by e-mail at John.Smelko@cabotog.com.

Sincerely,



John J. Smelko
Environmental & Regulatory Compliance Manager – North Region

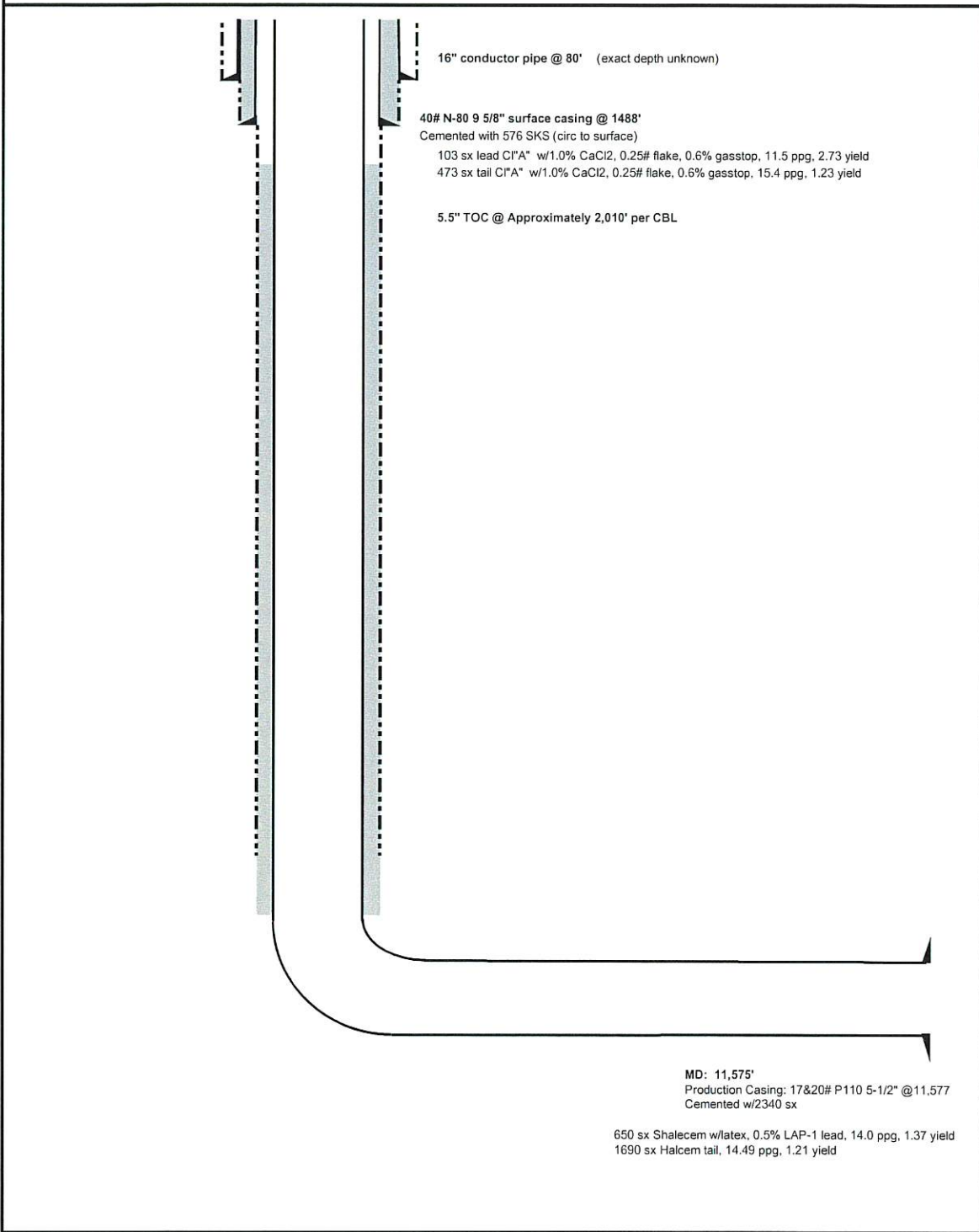
Cc (electronic copy): Phil Stalnaker (Cabot)
Cole DeLancey (Cabot)
Andy Mehalko (Cabot)

Enclosures: **Attachment A** – Greenwood 8H Wellbore Diagram and Cement Bond Log
Attachment B – Slide #35 of the Department’s July 17, 2014, PowerPoint Presentation Associated with the COSA
Attachment C – Water Treatment System Options for Water Supply #1

Attachment A

Greenwood 8H Wellbore Diagram and Cement Bond Log

Well Name: Greenwood 8H-SE	County, State: Susquehanna Co. PA
API Number: 37-115-20284	TIL Date:
AFE Number:	TIL Rate:
Drilling Rig:	Surf. Latitude:
Drilled: 5/10/2010 to 06/1/2010	Surf. Longitude:
Completed:	KB Elevation: 1379'
Final Open Flow:	Ground Elevation: 1355'



Downhole Tools:
Stimulation Co.:

Attachment B

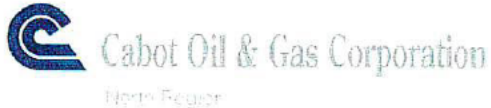
**Slide #35 of the Department's July 17, 2014,
PowerPoint Presentation Associated with the COSA**

VI. Moving Forward

- Closure letters/memos will be written for [REDACTED] (currently owned by Cabot), [REDACTED], [REDACTED], [REDACTED], and [REDACTED]. No additional sampling is necessary at any of those properties.
- Closure letters/memos will be written for [REDACTED] and [REDACTED] due to access denial.
- [REDACTED], [REDACTED] and [REDACTED] should be sampled monthly for at least dissolved and free-phase gases until background is demonstrated. Sampling techniques should involve the use of a submersible pump and consistent purging methodologies.
- [REDACTED], [REDACTED] and [REDACTED] should continue to be sampled bi-weekly for dissolved and free-phase gases along with other standard analysis parameters as part of the ongoing gas migration investigations in the area [REDACTED].
- Gas well integrity assessments should begin at wells in the restricted area that are possibly contributing the more recent gas migration incidents.

Attachment C

Water Treatment System Options for Water Supply #1



February 22, 2019

CERTIFIED MAIL NO. [REDACTED]

[REDACTED]

Dear [REDACTED]

Cabot Oil & Gas Corporation (“Cabot”) and the Pennsylvania Department of Environmental Protection (“PADEP”) have concluded through the review of regularly collected monitoring data that the water quality for your groundwater well situated on parcel, [REDACTED] Dimock Township, Susquehanna County is at background conditions. Therefore, Cabot will cease maintenance of the water treatment system currently located at the property. You may elect to retain the water treatment system at your sole cost of continued operation and maintenance or elect for Cabot to have the water treatment system removed and to return the groundwater well plumbing system at the property to its original configuration.

If you have any questions, please contact me; otherwise, please respond via return letter and indicate your preferred option – a self-addressed, no postage necessary envelope has been provided for your convenience. If no election is made by March 31, 2019, Cabot will assume you wish to keep the water treatment system and Cabot will cease maintenance of the system effective that day.

Respectfully,

Phillip G. Levasseur
EHS Specialist
Environmental & Regulatory Compliance
Cabot Oil & Gas Corporation, North Region

cc: Michael O’Donnell (PADEP)
John Smelko (Cabot)
Andy Mehalko (Cabot)