

ConocoPhillips Groundwater Quality Monitoring Plan Addendum

**Lone Tree 4 - 65 15 - 16 1AH, 1BH, 1CH, 1DH, 2AH,
2BH, 2CH, 2DH & 3AH – Lone Tree North**

Arapahoe County, Colorado

APTIM • Project 148083

December 4, 2019

Prepared for:



ConocoPhillips Company

Prepared by:



5690 DTC Boulevard, Suite 600
Greenwood Village, CO 80111
United States
www.aptim.com

Table of Contents

1.0	Purpose	1
2.0	Scope	1
3.0	Objectives.....	1
4.0	Appendices	1

List of Figures

Figure 1	Site Location Map
Figure 2	Well Construction Diagram (to be finalized at a later date)

List of Tables

Table 1	Associated Water Wells
---------	------------------------

List of Appendices

Appendix A	PG Certification Page
Appendix B	Variance Request (as needed)
Appendix C	Site Specific Schedule

1.0 PURPOSE

The purpose of this plan is to provide the necessary information for meeting Water Quality requirements as required by the Oil and Gas Operator Agreement between ConocoPhillips Company (COPC), a Delaware corporation, and its subsidiaries, and Burlington Resources Oil & Gas Company LP, a Delaware limited partnership, and the City of Aurora, Colorado, a municipal corporation. This plan addendum is intended to address site specific items. Each location presents unique challenges related to topography, condition of surrounding domestic water wells, orientation of sampling location, aquifer availability and conditions driven by the Operator Agreement.

2.0 SCOPE

Field-wide Groundwater Monitoring Plan addresses requirements in broad terms. Many aspects of the Groundwater Monitoring strategy are common to all locations. This site-specific plan addendum is intended to address only the aspects that are unique to a certain location and will not repeat general terms outlined in the field-wide plan.

3.0 OBJECTIVES

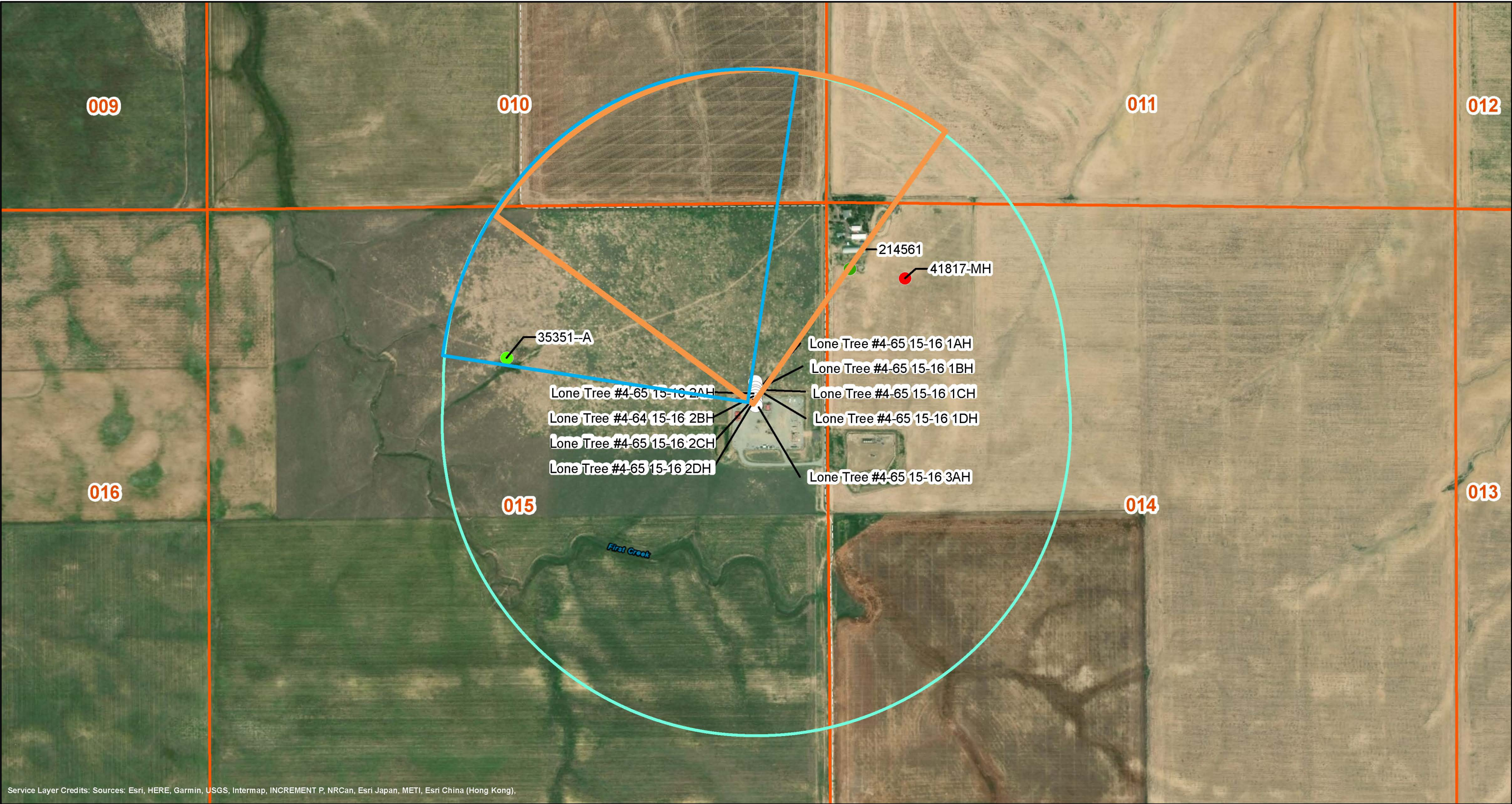
The following objectives are applied to the site-specific addendum.

- Identification of all water wells within ½ mile of the proposed O&G location, as shown in **Figure 1**
- Determination criteria of each water well's sample rank, as show in **Table 1**
- Well construction diagram (to be finalized at a later date), as show in **Figure 2**

4.0 APPENDICES

Appendix A PG Certification Page
Appendix B Variance Request (as needed)
Appendix C Site Specific Schedule

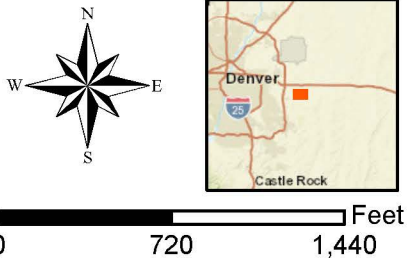
Figures



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong),

- ConocoPhillips Lone Tree Wells
- Permit Issued
- Well Abandoned
- Well Constructed
- 1/2 Mile Buffer
- Sections

- Expected Denver Basin down gradient zone
- Expected Alluvial down gradient zone




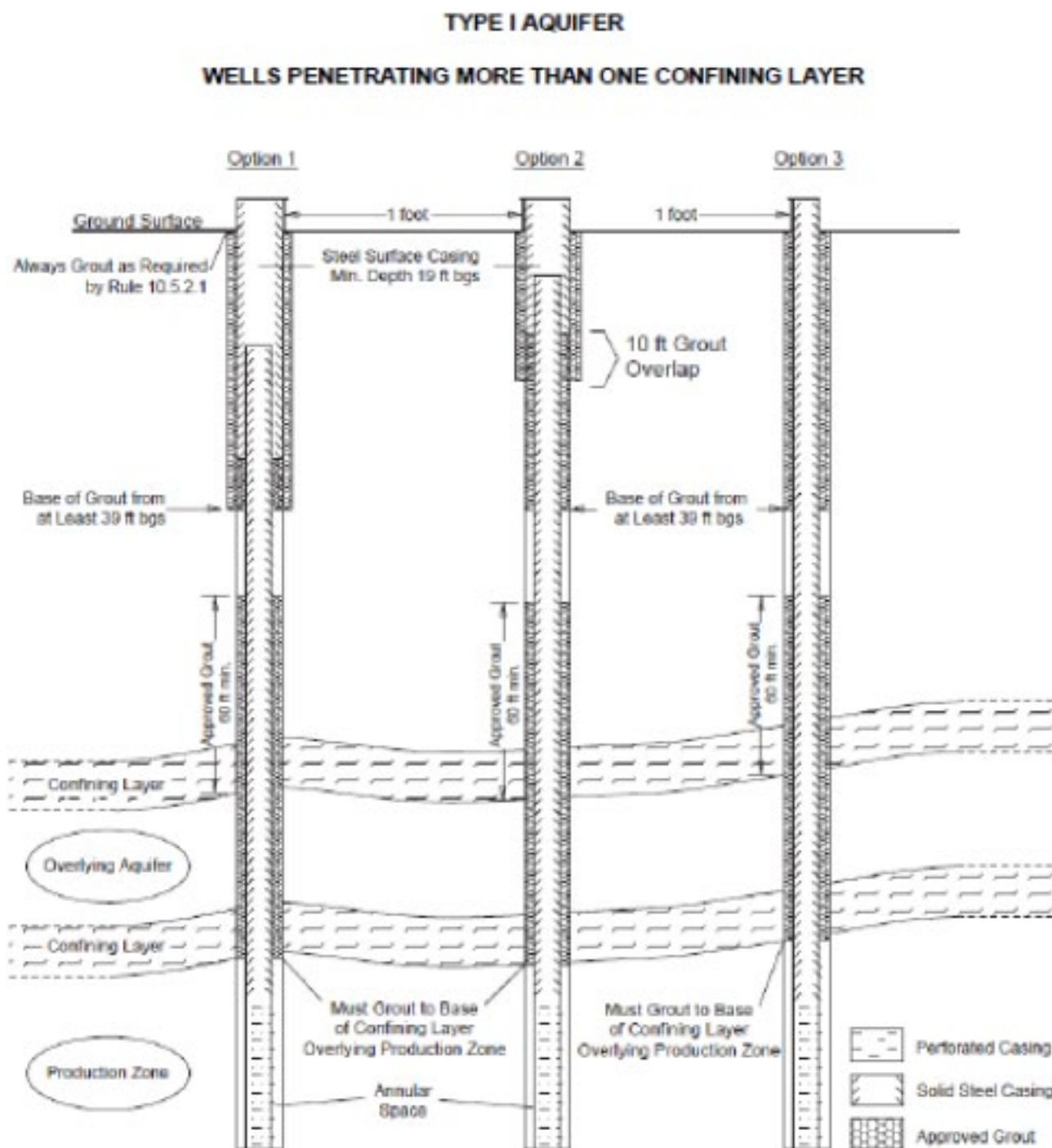
CONOCOPHILLIPS	
LONE TREE 4-65 15-16 1AH, 1BH, 1CH, 1DH, 2AH, 2BH, 2CH, 2DH & 3AH	
FIGURE 1	PERMITTED WELLS WITHIN A 1/2 MILE RADIUS
<div> 6380 S. Fiddlers Green Circle Greenwood Village, CO 80111 www.APTIM.com</div>	

Figure 2: Typical Well Construction



Note: reproduced from Figure 4b (R2 OCR 402-2)

Table 1

Table 1 - Associated Water Wells

COP Well	Water Well Permit No.	Receipt #	Approximate Distance from COP (Ft)	Well Status (DWR)	Well Completion date	TD'	Aquifer	Sampling Priority	Permitted Use	Well Info Available	Determination of Sample Priority	Parcel ID No.	Property Owner (tax records)	Property Owner Mailing Address (tax records)	Well Owner (well permit)	Well Owner Mailing Address (DWR)	Well Location (well permit, tax records)	UTM_X	UTM_Y	Latitude	Longitude
Lone Tree North	214561-	0437182	1523	Permit Issued	UNK	UNK	ARAPAHOE		1 Domestic, Stock	change in Ownership/Address/Location Well Permit 214561 Change in Ownership (to Mark L. Hurd) dated 10/11/99; Permit to Construct a Well 214561 (for domestic purposes) Issued 12/8/1998 (Applicant G.A. Van Dyk, 308 S. Hayesmount Rd, Watkins, CO 80137); Water Well Permit Application (G.A. Van Dyk); Permit Expiration Date Extension to 12-8-01 ADS 11-17-00 (request made by Owner on 11/14/2000.	Well is roughly downgradient and serves as a domestic and stock water source	1977-00-0-00-291	HURD MARK L, HURD MARJORIE G	308 S HAYESMOUNT RD, WATKINS CO 80137-8505	HURD, MARK L	308 S HAYESMOUNT RD, WATKINS CO 80137-8505	600 N 200 W NW NW 14 4.0 S 65.0W; Arapahoe County: NW 1/4, NW 1/4, Sec 14, TWP 4 S, Range 65 W, 6th PM	530835.9	4395589.3	39.709609	-104.640273
Lone Tree North	35351--A	0270512B	2208	Well Constructed	11/29/1986	650	ALL UNNAMED AQUIFERS		2 Stock	Statement of Beneficial Use of Groundwater Permit 35351-A dated November 3, 1987 (water used for livestock); Well Completion and Pump Installation report Permit 35351-A dated November 29, 1986; Permit Application Form (receipt 70512B, Replacement for Permit 35351), Permit 35351-A Approved January 14, 1987;	well is roughly downgradient and serves as a stock water source	1977-00-0-00-350	MELCOR/TC AURORA LLC	9750 W CAMBRIDGE PLACE, LITTLETON CO 80127-5906	SMITH, WILBUR	Rt. 3, box 352, Aurora, CO 80111	NE 1/4, NW 1/4, Sec.15, TWP 4 S, Range 65 W, 6th PM; 1300 N 2495 W NE NW 15 4.0 S 65.0 W S	529950.1	4395359.5	39.707570	-104.650617
Lone Tree North	41817-MH	0041817	1749	Well Abandoned	2/21/2003 (PLUGGED)	101	ALL UNNAMED AQUIFERS	NA	Monitoring/Sampling	Notice of Intent to Construction Monitoring Hole(s) MH-41817 dated 2/11/2003; Well Abandonment report MH41817 dated 2/25/2003 with well plugged 2/21/2003: "borehole dry, plugged, and sealed. No well Installed"; note: borehole plugged to 101.0'.	well plugged	1977-00-0-00-291	HURD MARK L, HURD MARJORIE G	308 S HAYESMOUNT RD, WATKINS CO 80137-8505	US. Geological Survey	Denver Federal Center, PO Box 25046, MS 415, Lakewood, CO 80225	NW 1/4, NW 1/4, Sec. 14, TWP 4 S, Range 65 W, 6th PM	530978.6	4395565.3	39.709387	-104.638609

**Appendix A –
PG Certification
Page**

Appendix A


Professional Geologist Certification

- In accord with the City of Aurora's request, I hereby certify that:
- I am familiar with the provisions of the Operators Agreement between ConocoPhillips Company, Burlington Resources Oil & Gas Company LP, and the City of Aurora, Colorado.
- I, or my agent, have completed a Due Diligence Phase I review of all available water sources in the vicinity of the subject oil and gas well location to identify potential sample sites.
- The procedures contained herein for water monitoring and testing for baseline and subsequent monitoring events have been established in accord with industry standards or recommended practices; and
- This Groundwater Monitoring Plan is adequate for the subject location.
- Colorado Professional Geologist as defined per C.R.S. 23-41-208.

Well Name: Lone Tree 4-65 15-16 1AH, 1BH, 1CH, 1DH,
2AH, 2BH, 2CH, 2DH & 3AH – Lone Tree
North

Company: APTIM

Name of Professional Geologist (typed): Daisie Young

Signature and Seal: _____

Certification Date: December 4, 2019

**Appendix B –
Variance Request
(as needed)**



December 3, 2019

Liang Yu
Senior Environmental Coordinator
ConocoPhillips Corporation
34501 East Quincy Ave, Building 1
Watkins, Co 80137

Subject: Variance Request and Form 4 Sundry Notice – Lone Tree 4-65 15-16 1AH, 1BH, 1CH, 1DH, 2AH, 2BH, 2CH, 2DH & 3AH – Lone Tree North

Dear Mrs. Yu:

APTIM does not anticipate a Variance Request will be needed for this location. Below is a brief summary of APTIM's efforts to identify and document potential sampleable domestic water wells located within ½ mile of the Lone Tree North location.

Initial Phase I Due Diligence efforts were completed, at the direction of ConocoPhillips, in order to identify domestic water wells which could be utilized as sample locations. Phase I efforts included a review of all available documentation associated with permitted water wells located within ½ mile of the Lone Tree North location. Two (2) potential sampleable water wells were identified during Phase I due diligence efforts. It is anticipated that at least one of those wells will be suitable for sampling and will meet the requirements set forth by the City of Aurora OA and COGCC Rule 609. The closest well identified (permit number 214561) is permitted for domestic and livestock use and APTIM has sampled this well multiple times in the past without issue.

The water wells which APTIM identified as being located within 1/2 mile of the Lone Tree North location based on DWR records are listed below along with their associated sample designations.

Well Permit No.	Approximate Distance from COP (Ft)	Sampling Priority	Determination of Sampling Priority	Property Owner (tax records)
214561-	1523	1	Well is roughly downgradient and serves as a domestic and stock water source	HURD MARK L, HURD MARJORIE G
35351--A	2208	2	well is roughly downgradient and serves as a stock water source	MELCOR/TC AURORA LLC
41817-MH	1749	NA	well plugged	HURD MARK L, HURD MARJORIE G

If you have any questions regarding this letter, please don't hesitate to contact me at 303-741-7052.

Sincerely,

A handwritten signature in black ink, appearing to read "Daisy", with a stylized flourish at the end.

Daisie Young, G.I.T.
Geologist, APTIM

Please Reply To: Daisie Young
Phone: 303-741-7052
E-Mail Address: daisie.young@APTIM.com

Appendix C – Site Specific Schedule

Appendix C Site Specific Schedule

Timelines are dependent upon receipt of COGCC permit approvals. ConocoPhillips (COPC) will make all good faith efforts to ensure monitoring well installation will be completed prior to conducting hydraulic fracturing of the oil and gas well. In the event that circumstances outside of COPC's control affecting the monitoring well installation schedule should occur, e.g. supply chain shortages, contractor availability issues, or permit approval delays (SEO), COPC will notify the City. In this event, COPC and the City of Aurora will agree to negotiate in good faith a resolution acceptable to both parties to insure adequate groundwater monitoring and protection measures are put in place.

Lone Tree 4 - 65 15 - 16 1AH, 1BH, 1CH, 1DH, 2AH, 2BH, 2CH, 2DH & 3AH – Lone Tree North

Scheduled Commencement of Drilling Activities – October 10, 2020

Conduct Phase I – Due Diligence:	Prior to permit submittal
Contact landowners to obtain sample permission:	As soon as possible
Contact surface landowners to obtain surface rights to install Requested Well(s):	If needed due to domestic water well refusal, as soon as possible
Coordinate Requested Well location, construction, and installation schedule with City:	If needed due to domestic water well refusal, as soon as possible
If needed, coordinate Easement Well location, construction and installation schedule with City:	If needed due to Requested Well landowner refusal, as soon as possible
Submit monitoring well permit application(s) to SEO:	If needed June 2020 or as soon as possible
Monitoring well(s) installation:	Beginning August 2020 or as soon as possible
Sample monitoring well(s):	Prior to well completion activities
Commence O&G Drilling activities:	October 10, 2020