

ConocoPhillips Groundwater Quality Monitoring Plan Addendum

**Rush South 4-65 29-30
3BH, 3CH, 3DH, 4AH, 4BH, 4CH, 4DH,
Arapahoe County, Colorado**

APTIM ● Project 148083

October 23, 2019

Prepared for:



ConocoPhillips Company

Prepared by:



6380 S. Fiddler's Green Circle, Suite 310
Greenwood Village, CO 80111
United States
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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

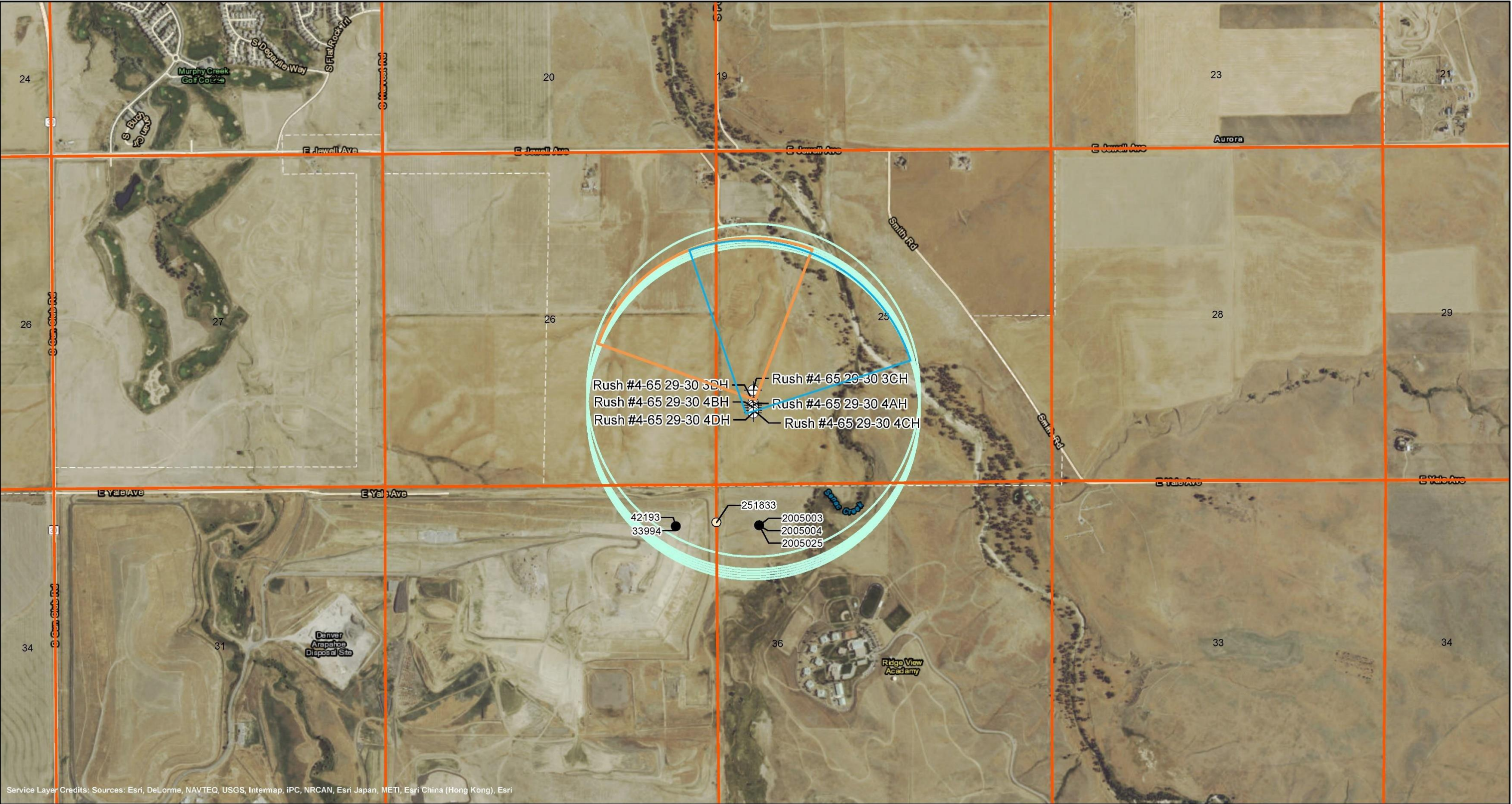
The following objectives are applied to the site-specific addendum.

- 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
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Figures



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri

 Proposed Oil Well		Current Well Status		 Well Abandoned
 1/2-Mile Buffer				 Well Constructed
 Expected Denver Basin down gradient zone		 Expected Alluvial down gradient zone		

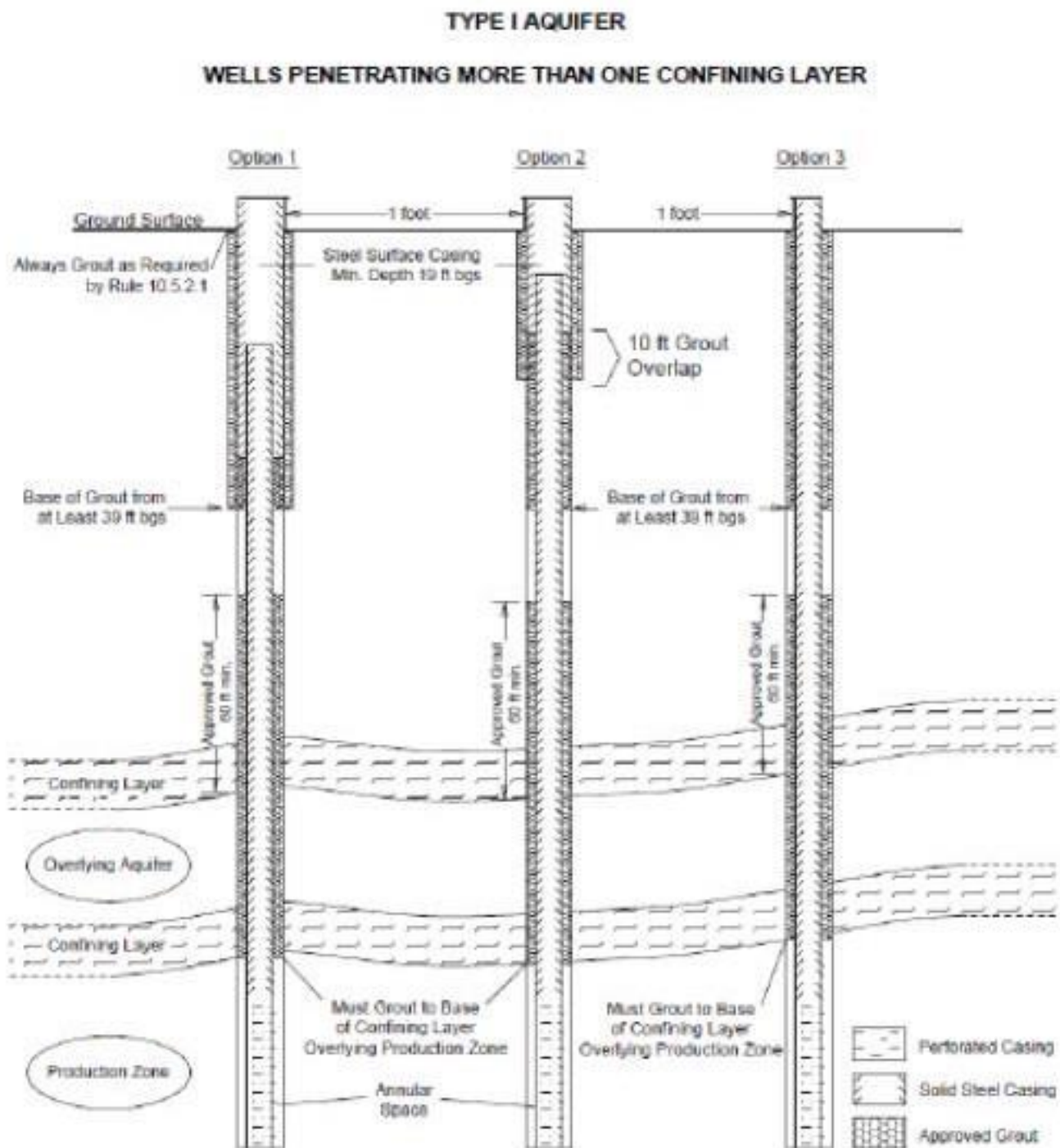


0 1,500 3,000 Feet

Projection: NAD_1983_UTM_Zone_13N

CONOCOPHILLIPS	
RUSH #4-65 29-30 4DH, 4CH, 4BH, 4AH, 3DH & 3CH	
FIGURE 1	PERMITTED WELLS WITHIN A 1/2-MILE RADIUS
 6380 S. Fiddlers Green Circle Greenwood Village, CO 80111 www.APTIM.com	

Figure 2: Typical Well Construction



Note: reproduced from Figure 4b (R2 CCR 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	Determination of Sampling Priority	Well Info Available	Well Use Designation	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	x_COSPcft	y_COSPcft
RUSH 4-65 29-30 3CH	251833	0512484	2181.675301	Well Constructed	37770	42	ALL UNNAMED AQUIFERS	1	Only well available to sample within 1/2 mile . However, well is upgrade from the location and a monitoring well and is therefore not a viable sample option.	well construction and test report, permit to use an existing well, monitoring/observation well permit application, see permit no. 42193MH	monitoring well	1977-00-0-00-289	DENVER, CITY & COUNTY OF	1525 SHERMAN ST DENVER, CO 80203-1714	WASTE MANAGEMEN T OF COLORADO	C/O AQUAETER INC 7340 EAST CALEY AVE #200 CENTENNIAL , CO 80111	AURORA, CO NE NE 32 4.0S 65.0W Sixth 611 N 9 E	527554.4	4390715.3	3231192.74	1668443.43
RUSH 4-65 29-30 3CH	2005003AB	2005003	2151.878007	Well Abandoned	NA	20	ALL UNNAMED AQUIFERS	NA	well plugged 08/16/2004 - will not be able to sample	well abandonment report (well plugged 08/16/2004)	monitoring well	1977-00-0-00-282	DEPARTMEN T OF HUMAN SERVICES	1525 SHERMAN ST DENVER, CO 80203-1714	LAYNE - WESTERN	17800 EAST 22ND AVENUE AURORA, CO 80011	AURORA, CO NW NW 33 4.0S 65.0W Sixth	527761.6	4390699.5	3231873.06	1668395.29
RUSH 4-65 29-30 3CH	2005004AB	2005004	2151.878007	Well Abandoned	NA	20	ALL UNNAMED AQUIFERS	NA	well plugged 08/16/2004 - will not be able to sample	well abandonment report (well plugged 08/16/2004)	monitoring well	1977-00-0-00-282	DEPARTMEN T OF HUMAN SERVICES	1525 SHERMAN ST DENVER, CO 80203-1714	LAYNE- WESTERN	17800 EAST 22ND AVENUE AURORA, CO 80011	AURORA, CO NW NW 33 4.0S 65.0W Sixth	527761.6	4390699.5	3231873.06	1668395.29
RUSH 4-65 29-30 3CH	2005025AB	2005025	2151.878007	Well Abandoned	NA	78	ALL UNNAMED AQUIFERS	NA	well plugged 08/16/2004 - will not be able to sample	well abandonment report (well plugged 08/16/2004)	monitoring well	1977-00-0-00-282	DEPARTMEN T OF HUMAN SERVICES	1525 SHERMAN ST DENVER, CO 80203-1714	LAYNE- WESTERN	17800 EAST 22ND AVENUE AURORA, CO 80011	AURORA, CO NW NW 33 4.0S 65.0W Sixth	527761.6	4390699.5	3231873.06	1668395.29
RUSH 4-65 29-30 3CH	33994MH	0033994	2489.770204	Well Abandoned	36003	50	ALL UNNAMED AQUIFERS	NA	well plugged 09/21/1999 - will not be able to sample	well abandonment report (well plugged 09/21/1999), notice of intent to construct monitoring hole	monitoring well	1977-00-0-00-289	DENVER, CITY & COUNTY OF	1525 SHERMAN ST DENVER, CO 80203-1714	WASTE MANAGEMEN T OF COLORADO	C/O GOLDER ASSOCIATES INC 44 UNION BLVD STE 300 LAKEWOOD, CO 80127	AURORA, CO NE NE 32 4.0S 65.0W Sixth	527356.7	4390697.8	3230544.2	1668382.45
RUSH 4-65 29-30 3CH	42193MH	0042193	2489.770204	Well Abandoned	37771	49	ALL UNNAMED AQUIFERS	NA	well plugged 5/03/2003 - will not be able to sample	well abandonment report (well plugged 5/03/2003), notice of intent to construct monitoring hole	monitoring well	1977-00-0-00-289	DENVER, CITY & COUNTY OF	1525 SHERMAN ST DENVER, CO 80203-1714	DENVER CITY & COUNTY OF	C/O AQUAETER INC 7340 EAST CALEY AVE #200 CENTENNIAL , CO 80111	AURORA, CO NE NE 32 4.0S 65.0W Sixth	527356.7	4390697.8	3230544.2	1668382.45

**Appendix A –
PG Certification
Page**

Appendix A

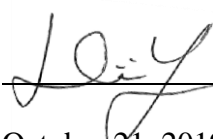
Professional Geologist Certification

- 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: Rush 4-65 29-30 4DH, 4CH, 4BH, 4AH, 3DH
3BH, 3CH - Rush South

Company: APTIM

Name of Professional Geologist (typed): Daisie Young

Signature: 

Certification Date: October 21, 2019

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



August 22, 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 – Rush 4-65 29-30 4DH, 4CH, 4BH, 4AH, 3DH & 3CH - Rush South

Dear Mrs. Yu:

Below is a brief summary of APTIM's efforts to identify and document potential sampleable domestic water wells located within ½ mile of the Rush South 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 as required by the City of Aurora Operators Agreement (OA). Phase I efforts included a review of all available documentation associated with permitted water wells located within ½ mile of the Rush South location. Of the six (6) permitted water wells which were identified, all but one had been plugged and are unsuitable for sampling. The remaining well is an upgradient monitoring well which does not meet the requirements set forth by the OA and is therefore also unsuitable for sampling.

Due to the lack of sampleable wells available within ½ mile of the Location, it is recommended that a Form 4 Sundry Notice be prepared for the Rush South location and submitted to meet the requirements of COGCC Rule 609. Following that it is also recommended that a Variance Request be submitted to the City of Aurora to meet the requirements of the Operators Agreement.

The water wells which APTIM identified as being located within 1/2 mile of the Rush South location and their associated sample designations are listed below.

Well Permit No.	Approximate Distance from COP (Ft)	Sampling Priority	Determination of Sampling Priority	Property Owner (tax records)
251833	1990	1	Only well available to sample within 1/2 mile. Well is upgrade from the location and also a monitoring well.	DENVER, CITY & COUNTY OF
2005003AB	1952	NA	well plugged 08/16/2004 - will not be able to sample	DEPARTMENT OF HUMAN SERVICES
2005004AB	1952	NA	well plugged 08/16/2004 - will not be able to sample	DEPARTMENT OF HUMAN SERVICES
2005025AB	1952	NA	well plugged 08/16/2004 - will not be able to sample	DEPARTMENT OF HUMAN SERVICES
33994MH	2318	NA	well plugged 09/21/1999 - will not be able to sample	DENVER, CITY & COUNTY OF
42193MH	2318	NA	well plugged 5/03/2003 - will not be able to sample	DENVER, CITY & COUNTY OF



If no other sample sources within ½ mile become available, APTIM suggests attempting to sample a single well downgradient and within 1 mile of the Rush South location to meet the requirements of the Arapahoe County MOU.

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

Sincerely,

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

Please Reply To: Daisy Young

Phone: 303-741-7052

E-Mail Address: daisy.young@APTIM.com

Appendix C – Site Specific Schedule

Appendix C

Site Specific Schedule

Timelines listed below 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.

Rush South 4-65 29-30 4DH, 4CH, 4BH, 4AH, 3 BH, 3DH, 3CH

Scheduled Commencement of Drilling Activities - TBD Pending Permit Approval

Conduct Phase I – Due Diligence:	Prior to permit submittal
Contact landowners to obtain sample permission:	As soon as possible - N/A No suitable wells identified for sampling within ½
Contact surface landowners to obtain surface rights to install Requested Well(s):	Began week of September 3, 2019
Coordinate Requested Well location, construction, and installation schedule with City:	Beginning week of October 30, 2019 or as soon as practicable
If needed, coordinate Easement Well location, construction and installation schedule with City:	TBD
Submit monitoring well permit application(s) to SEO:	Week of July 13, 2020 (13 months prior to spud - allows for 12-month window to install well(s) before SEO permit expiration)
Monitoring well(s) installation:	Beginning week of August 1st, 2021
Sample monitoring well(s):	Prior to well completion activities
Commence O&G Drilling activities:	TBD Pending Permit Approval