

**WATER QUALITY MONITORING PLAN**  
**Rush North 4-65 29-30**  
**Location ID 471001**

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**Crestone Peak Resources Operating, LLC**  
1801 California Street #2500  
Denver, CO 80202

May 28, 2020

**Prepared by:**



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Heather Shideman  
Environmental Scientist

**Reviewed by:**



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Jana Nilsen  
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## **ATTACHMENTS**

1. Rush North 4-65 29-30 and area map with DWR Water Sources identified within a ½ mile radius
2. Associated Water Wells Table 1

## **INTRODUCTION**

This Water Quality Monitoring Plan (plan) was developed by Apex Companies, LLC (Apex) for Crestone Peak Resources Operating, LLC (Crestone) as required by the City of Aurora (City) Operator Agreement. The plan complies with the procedures, guidelines, and reporting requirements in accordance with the Colorado Oil and Gas Conservation Commission (COGCC) Model Sampling and Analysis Plan (COGCC SAP, 2020) and COGCC Rule 609.

## **DESKTOP ASSESSMENT**

The following describes the process Crestone used for identifying sampling / monitoring locations, and frequency of sampling / monitoring to establish a baseline of existing conditions prior to the construction of the Rush North 4-65 29-30 pad.

Water sources and associated reference data for this effort were acquired from publicly available datasets, including the Colorado Division of Water Resources (DWR). Spatial analysis will be completed using queries in a geographic information system (GIS) desktop environment.

For purposes of the assessment, water sources included water wells that are registered with DWR, including household, domestic, livestock, irrigation, municipal/public, and commercial wells; permitted or adjudicated springs; and monitoring wells installed for the purpose of complying with groundwater baseline sampling / monitoring requirements under COGCC Rule 609.

When evaluating locations as potential available water sources (AWS) for sampling / monitoring, Crestone considered water sources for which the water well owner, owner of a spring, or a land owner, as applicable, had given consent for sampling and testing and had consented to having the sample data obtained made available to the public, including without limitation, being posted on the COGCC website.

### ***Water Well Identification***

Crestone identified all AWS within a ½ mile radius of the Rush North and evaluated the DWR water sources using the selection, exception, and timing criteria identified in COGCC Rule 609. Those criteria include DWR permit status, proximity to the proposed oil and gas production surface location, type of water source, orientation of sampling locations, source aquifer, direction of groundwater flow, and condition of water sources among others.

As shown on the attached map and associated water well (Table 1), available water sources were identified within the ½ mile radius.

Crestone has secured rights from the landowner to sample the domestic water well North of the location shown as #120499 on the attached map and in associated water well (Table 1). Please reference the executed agreement from the landowner following this Water Quality Monitoring Plan.

### ***Requested and City Easement Well(s)***

If required by the City, Crestone will drill and construct a Westbay System or equivalent for multilevel monitoring. A well diagram is available upon request.

## **FIELD ASSESSMENT / DATA EVALUATION**

Field assessment, sampling processes, and data evaluation for identified water wells, requested wells and City Easement wells have been completed in accordance with the COGCC SAP (2020).

## **PROTECTION AND MITIGATION MEASURES**

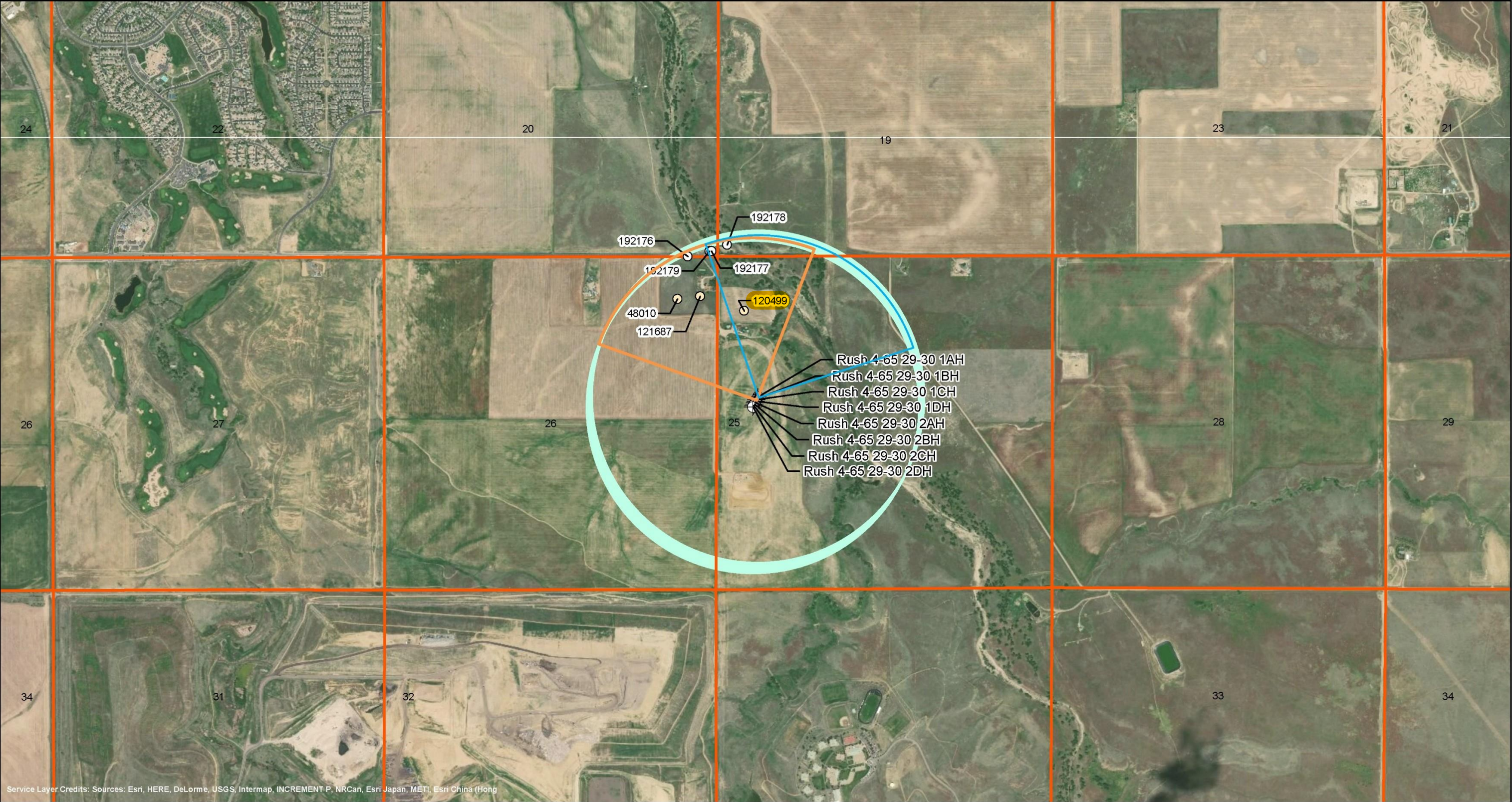
### ***Mitigation***

If needed, a mitigation plan will be developed on a case-by-case basis depending on the degradation observed and the degree of impairment. The plan will identify locations and frequency for sampling to document baseline groundwater conditions prior and subsequent to drilling activities.


## **REFERENCES**


Colorado Oil & Gas Conservation Commission. (2020, April). *Model Sampling and Analysis Plan Rules 609 and 318A.e(4) Colorado Oil and Gas Conservation Commission Version 2* Retrieved May 28, 2020, from [https://cogcc.state.co.us/documents/about/COGIS\\_Help/COGCC\\_Model\\_SAP\\_20200414.pdf](https://cogcc.state.co.us/documents/about/COGIS_Help/COGCC_Model_SAP_20200414.pdf)







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


 Proposed Oil Well


 1/2-Mile Buffer

 Expected Denver Basin down gradient zone

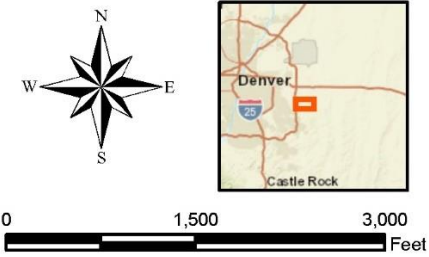
**Current Well Status**

 Well Constructed

 Unknown

 Expected Alluvial down gradient zone

PHASE 1




CONOCO PHILLIPS

RUSH #4-65 29-30 1AH, 1BH, 1CH, 1DH,  
2AH, 2BH, 2CH, 2DH

FIGURE  
1

PERMITTED WELLS WITHIN  
A 1/2-MILE RADIUS

 APTIM

6380 S. Fiddlers Green Circle  
Greenwood Village, CO 80111  
www.APTIM.com



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	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)
RUSH 4-65-29-30-1AH	120499-	0215107	1383	Well Constructed	11/1/1981	640	ALL UNNAMED AQUIFERS	1	Proximity to proposed location - closest to surface location (SL). Type of water source - domestic use. Orientation of sampling location - north of SL (no wells within 1/2 mile to the south, east, or west of SL). Aquifer availability - well permitted/completed in "All Unnamed Aquifers" (TD 640 feet).	well completion and pump installation report, permit to construct a well, domestic purposes (use for home and livestock)	1977-00-0-00-364	COAL CREEK RESERVE PARTNERS HIP	3033 E 1ST AVE SUITE 725, Denver, CO 80206	Edward G. Smith	Rt 3 Box 358 Aurora 80111	Arapahoe County: NW 1/4 of the NW 1/4, Section 28, TWP.4 S, Rng. 65 W, 6th PM; 850 N 400W NW NW 28 4.0 S 65.0 W S
RUSH 4-65-29-30-1AH	121687-	0217909	1841	Well Constructed	12/1/1981	640	ALL UNNAMED AQUIFERS	2	Proximity to proposed location - next closest to SL. Type of water source - domestic use. Orientation of sampling location - north of location (no wells within 1/2 mile south, east, or west of SL). Condition of water source - well is 1 year older than priority #1 well. Aquifer availability - well permitted/completed in "All Unnamed Aquifers" (TD 640 feet).	well completion and pump installation report, permit to construct a well, domestic purposes (use for home and livestock)	1977-00-0-00-157	RAINS THOMAS J, RAINS KIMBERLEY K	20274 E EUCLID PLACE, Aurora, CO 80016-2332	D.E. Rains	RR 3 Box 354-A Aurora 80111	Arapahoe County: NW 1/4 of the NW 1/4, Section 29, TWP.4 S, Rng. 65 W, 6th PM;620 N 300 E NE NE 29 4.0 S 65.0 W S
RUSH 4-65-29-30-1AH	48010-	9007028	2016	Well Constructed	8/10/1971	36	ALL UNNAMED AQUIFERS	3	Proximity to proposed location - next closest to SL. Type of water source - domestic use. Orientation of sampling location - north of location (no wells within 1/2 mile south, east, or west of SL). Condition of water source - well is significantly older than priority #1 and 2 wells. Aquifer availability - well permitted/completed in "All Unnamed Aquifers" (TD 36 feet).	Note: Well AKA "0207725-Rains Well No 48010", Source = WDID; Permit 48010 to Construct a Well (domestic use) dated August 10, 1971, Map and Statement for Water Well Filing Permit 48010; Well Construction Information;	1977-00-0-00-157	RAINS THOMAS J, RAINS KIMBERLEY K	20274 E EUCLID PLACE, Aurora, CO 80016-2332	Donald Rains	Rt 2, Box 100, Denver, CO 80232	Arapahoe County: NE 1/4, NE 1/4, Sec. 29, TWP 4 S, Range 65 W, 6th PM;
RUSH 4-65-29-30-1AH	192177-	0393820C	2431	Permit Issued, Well Constructed (Owner's well designation CC-MH2)	Unk	Unk	ALL UNNAMED AQUIFERS; alluvium of Coal Creek	NA	Proximity to proposed location - next closest to SL. Type of water source - well is a monitoring well and not used for domestic consumption. Orientation of sampling location - north of location (no wells within 1/2 mile south, east, or west of SL).	Permit to Construct a Well (permit issued December 28, 1995);ref: File MH-26654 Notice of Intent to Construct Monitoring Hole "CC-MH2" for water level monitoring ; other (ref: receipt no. 393820-A).	1977-20-1-00-004	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER	3033 E 1ST AVE SUITE 725, Denver, CO 80206	City of Aurora, c/o Bishop-Brogden Assoc. Inc.	165 S. Union Blvd, #670, Lakewood, CO 80228	Arapahoe County: SE 1/4, SE 1/4, Section 20, TWP 4S, Range 65 W, 6th PM; 100 S 130 E SE SE 20 4.0 S 65.0 W S
RUSH 4-65-29-30-1AH	192179-	0393820E	2440	Well Construction Permit Issued, Owner's well designation CC-PWI.	Unk	Unk	ALL UNNAMED AQUIFERS; alluvium of Coal Creek	NA	Proximity to proposed location - next closest to SL. Type of water source - well is a monitoring well and not used for domestic consumption. Orientation of sampling location - north of location (no wells within 1/2 mile south, east, or west of SL).	Permit to Construct a Well (permit issued December 28, 1995);ref: File MH-26711 Notice of Intent to Construct Monitoring Hole "CC-PW1" for water level monitoring ; other (ref: receipt no. 393820-A).	1977-20-1-00-004	EASTERN HILLS LLC & CHERRY CREEK VISTA PARTNER	3033 E 1ST AVE SUITE 725, Denver, CO 80206	City of Aurora, c/o Bishop-Brogden Assoc. Inc.	167 S. Union Blvd, #670, Lakewood, CO 80228	Arapahoe County: SE 1/4, SE 1/4, Section 20, TWP 4S, Range 65 W, 6th PM; 200 S 120 W SW SW 21 4.0 S 65.0 W S
RUSH 4-65-29-30-1AH	192178-	0393820D	2464	Well Construction Permit Issued, Owner's well designation CC-MH3	Unk	Unk	ALL UNNAMED AQUIFERS; alluvium of Coal Creek	NA	Proximity to proposed location - next closest to SL. Type of water source - well is a monitoring well and not used for domestic consumption. Orientation of sampling location - north of location (no wells within 1/2 mile south, east, or west of SL).	Permit to Construct a Well (permit issued December 28, 1995), ref: File MH-26655 Notice of Intent to Construct Monitoring Hole "CC-Mhe" for water level monitoring; other (ref: receipt no. 393820-A).	1977-00-0-00-371	ACJ PARTNERS HIP 52% INT & EASTERN HILLS LLC 48% IN	3033 E 1ST AVE SUITE 725, Denver, CO 80206	City of Aurora, c/o Bishop-Brogden Assoc. Inc.	166 S. Union Blvd, #670, Lakewood, CO 80228	Arapahoe County: SW 1/4, SW 1/4, Section 21, TWP 4S, Range 65 W, 6th PM; 100 S 160 E SE SE 20 4.0 S 65.0 W S

**Site Specific Schedule**  
**Rush North 4-65 29-30-Scheduled Commencement of Activities**  
**TBD Pending Permit Approval**

Conduct Phase I – Due Diligence:	Prior to City of Aurora permit submittal
Contact landowners to obtain sample permission:	Rights to sampling existing domestic well confirmed by landowner 5/26/20. Please reference included executed agreement following this agreement.
Contact surface landowners to obtain surface rights to install Requested Well(s):	NA
Coordinate Requested Well location, construction, and installation schedule with City:	NA
If needed, coordinate Easement Well location, construction and installation schedule with City:	NA
Submit monitoring well permit application(s) to SEO:	NA
Monitoring well(s) installation:	NA
Sample monitoring well(s):	Anticipated 30 days prior to the commencement of oil & gas drilling operations
Commence O&G Drilling activities:	TBD Pending Permit Approval

\*Any timelines listed above may be subject to change based on City requirements and O&G location specific issues which may be outside of APTIM or Crestone's control.



Coal Creek Reserve Partnership  
3033 E. 1<sup>st</sup> Avenue, Suite 725  
Denver, CO 80206

May 13, 2020

**RE: Water Well Testing**

Dear Mr. Cooper:

Crestone Peak Resources (Crestone) has permitted the drilling of an oil and gas production well in your area. All of Crestone's operations are subject to approvals, permits and regulations administered by the Colorado Oil and Gas Conservation Commission (COGCC). As such, the COGCC requires that certain water wells in the vicinity of drilling locations be tested for water quality. Additionally, COGCC rules require follow-up sampling of the same water wells between six and 12 months following the completion of the oil and gas production well and a second subsequent event between 60 and 72 months.

Apex Companies, LLC (Apex) has been retained by Crestone to access and conduct the initial and follow-up sampling at the following water well:

Permit	Receipt	QtrQtr	Section	Township	Range	County	Address
120499	215107	NWNW	28	4S	65W	Arapahoe	2090 S. Powhaton Road

Apex is requesting permission to access your property to conduct the initial and follow-up sampling of your water well by our scientists. Therefore, in order to perform this sampling, Apex will need access to your water well on three separate occasions. The samples will be tested by independent laboratories, and the laboratory results from your water well samples will be provided to you and the COGCC (where the data will become public). The sampling and analysis of your well will be paid for by Crestone.

We would appreciate a response from you within five days, letting us know if you will grant access to Apex and allow for sampling of your well. Please sign and mail the enclosed postcard to either accept or to decline having your water well sampled. Please include a telephone number so that we can coordinate the sampling event. Once we have your response, we will contact you to schedule an appropriate time to complete the initial sampling of your water well. We will contact you again to arrange for the follow-up samples of your well.

If you have any questions or concerns, please contact me at (307) 620-0117. Thank you for your assistance with this water well sampling request.

Sincerely,

**Apex Companies, LLC**

A handwritten signature in blue ink that reads 'Heather Shideman'.

Heather Shideman  
Environmental Scientist



Please sign below to indicate your decision to have Apex Companies, LLC (Apex) access your property and sample your water well(s).

☒ YES, I grant Apex permission to access my property, sample my water well(s), and to share the results with me.

<u>Marc Cooper</u>	<u>303-842-9694</u>	<u>5/26/2020</u>
Print Name	Phone No. (for sample coordination)	Date
<u>By: Marc Cooper, Manager</u>		
Signature		

☐ NO, I do not grant Apex permission to access my property and sample my water well(s).

Please sign below

<u></u>	<u></u>	<u></u>
Print Name	Date	Signature

After you have signed and dated this card, please mail it to Apex at:  
2020 E Grand Ave Suite 515 Laramie, WY 82070

Thank You, Apex Companies, LLC (307) 742-4991