



May 26, 2021

Via Hand-Delivery

Clay Rickers
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Erie, CO 80516-8302

Crestone Peak Resources Operating, LLC
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Cosslett East Oil and Gas Development Plan
Cosslett East 22H-H168 Oil and Gas Location – SENE, Section 22, Township 1
North, Range 68 West, Weld County, Colorado
Nearest Crossroads: Erie Parkway and West I-25 Frontage Road.

REQUEST FOR INFORMED CONSENT IN WELD COUNTY

Oil and gas operations are regulated in Colorado by the Colorado Oil and Gas Conservation Commission (“COGCC”). An oil and gas company, or “operator”, may apply for permits from the COGCC to conduct oil and gas operations such as drilling wells to produce oil and natural gas. Effective January 15, 2021, operators must have an approved Oil and Gas Development Plan (“OGDP”) to conduct new oil and gas operations. An approved OGDP gives an operator permission to build one or more new oil and gas locations, or expand existing locations, which may include well pads where oil and gas wells may be drilled. Weld County also has permitting requirements through its 1041 Weld Oil and Gas Location Assessment (“1041 WOGLA”) program. Thus, an oil and gas operator conducting oil and gas operations

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in Weld County must apply for both a 1041 WOGLA permit from Weld County and an OGDG from the COGCC.

COGCC's rules generally do not allow new oil and gas development within 2,000 feet of a residential or high occupancy building such as a home or apartment building.¹ This is called a 2,000-foot siting requirement. However, there are some exceptions to this siting requirement. One exception is if the owners and tenants of every occupied building within 2,000 feet of the proposed development provide **informed consent** for the proposed oil and gas operations.

You are receiving this letter because Crestone Peak Resources Operating, LLC ("Crestone") plans to submit an application to the COGCC for approval of an OGDG and has received approval of an application to Weld County for a 1041 WOGLA, which propose new oil and gas operations within 2,000 of the building where you live. There are two specific COGCC rules that address informed consent of building owners or tenants. The rule that applies in your case is:

COGCC Rule 604.b.(1), because the operator is proposing to build an oil and gas location (known as a "working pad surface") between 500 and 2,000 feet from the building that you live in.

Crestone is asking for your informed consent to this proposed OGDG, and acknowledgement of the approved 1041 WOGLA. If you choose to provide consent, this letter will be included in the application materials and may be made public.

You are not required to consent to the development proposed near your home. If you do not consent, the operator may decide to pursue development at a different location or may revise their proposal to meet additional COGCC and Weld County conditions. The operator may also choose to undergo a more stringent application process. This may involve seeking a "variance" from COGCC rules or demonstrating that its plans for the operations will avoid, minimize, or mitigate impacts on nearby residents like you through a process governed by COGCC Rule 604.b.(4). So, if you do not consent, it is still possible that the operator will obtain the COGCC's and Weld County's permission to conduct the oil and gas operations.

To obtain your informed consent, an operator is required to provide you information about the nature, timeline, and scope of the oil and gas development that it proposes to conduct near your home, and the potential impacts that you may experience because of that development. This information must be presented in a

¹ The terms "building" and "home" in this letter include both the COGCC defined terms "residential building unit" and "high-occupancy building unit". Because some high occupancy building units are commercial buildings like nursing homes and hospitals, this letter uses the term "live" to refer to "owning," "living in," and "working in" a home or building.

language that you understand, and the operator must answer any questions that you have about the information. Crestone is providing this information to you so that you can make an informed decision about whether to give your consent to the proposed oil and gas development that would be located within 2,000 feet of your home. To ensure that you fully understand the implications of providing your consent, at a minimum, Crestone is providing you with the following information as attached:

1. Description of the physical siting of the proposed location, including legal description, and a map showing the proximity to your home;
2. How this proposed location was selected using an Alternative Location Analysis process;
3. A description of the mineral acreage to be developed from this proposed location, and the number and orientation of wells, types of equipment, and other on- and off-location infrastructure related to anticipated operations;
4. A description, proposed timeline, and expected duration of different operations that are planned, including construction, drilling, completions, flowback, interim reclamation, production, and final reclamation;
5. A description of the different immediate impacts that you may experience during each stage of operations, which may include noise, vibration, light, odor, dust, traffic, and visual impacts, along with the operator's planned mitigation ("Best Management Practices") designed to reduce the impacts you may experience during each state of the operation;
6. A description of potential adverse or beneficial impacts that you may experience as a result of planned operations at this location, including but not limited to scientific information discussing potential health impacts that are likely attributable to living in close proximity to oil and gas development;
7. A point of contact for you to obtain additional information from Crestone and how you can access additional information from the COGCC and your local government.²

Because your home is within 2,000 feet of the proposed oil and gas development, you qualify as an "affected person" under COGCC's rules. That means you have a legal right to participate in all COGCC proceedings to decide whether to grant the operator its OGDG permit to conduct oil and gas operations near your home. You have the ability to submit written public comments to the COGCC's Staff while the application is pending. You have the right to request the COGCC to conduct a local public hearing at a location near where you live. You have the right to provide written and oral public comments to the Commissioners about the proposed

² In addition to this information, the operator will also provide you with additional information required by COGCC at later stages of the application process, should the operator choose to move forward with the OGDG application process after learning whether you choose to provide your informed consent.

development while the Commission is considering the application. You also have the right to petition to participate as an "affected person," which means you can exercise your rights in a process like litigation in court, before both a COGCC Hearing Officer and the Commissioners themselves. You also have the right to apply for intervention in the Weld County 1041 WOGLA permitting process to express your concerns before a Weld County Hearing Officer. Intervention party written comments and/or oral testimony will be considered evidence for the Hearing Officer to weigh as part of a decision to approve or deny the 1041 WOGLA Permit.

Before you sign this document, you must read all the information provided to you by the operator.

Please initial below to certify that:

- (1) you have read all the information provided to you: *Initials* CR
- (2) you understand that information: *Initials* CR

CR

CR

Informed Consent Decision:

By signing this document, you are informing the COGCC and Weld County that you have made a fully informed decision on the oil and gas development proposed near the building that you own or live in. **YOU ARE NOT OBLIGATED TO SIGN THIS DOCUMENT. YOU HAVE THE RIGHT TO WITHHOLD YOUR CONSENT TO THE OIL AND GAS DEVELOPMENT NEAR YOUR HOME.** Your signature does not grant you additional rights or waive your existing rights, including your right to participate in COGCC's permitting proceedings as an "affected person," and Weld County's 1041 WOGLA permitting process. Your signature is only relevant to the proposed oil and gas development in this OGDP and this 1041 WOGLA. It is not transferable to any other proposal or location or permit application. This document will be maintained as part of the public record in the hearing of this 1041 WOGLA Permit and this OGDP with the Commission.

I have read and I understand the information provided to me regarding the proposed Oil and Gas Location and its associated operations. The language was provided to me in a language that I understand. I have had the opportunity to ask Crestone questions. I understand the potential impacts of the development, including but not limited to potential impacts to my health. I also understand the benefits that I may receive as a result of the development.

I AGREE to the proposed location and associated oil and gas operations, and voluntarily provide my informed consent.

I DO NOT give my consent for the proposed location and associated oil and gas operations.

Signature: _____

Clay Rickers

Name (Printed): _____

CLAY RICKERS

Date: _____

7-13-2021

Language other than English that materials were provided in (if applicable):

N/A

Cosslett East 22H-H168 Oil and Gas Location – SENE, Section 22, Township 1 North, Range 68 West, Weld County, Colorado

1. Description of the physical siting of the proposed location, including legal description, and a map showing the proximity to your home;

The Cosslett East Oil and Gas Location is physically located in the SE/4NE/4 of Section 22, Township 1 North, Range 68 West, Weld County, Colorado. The nearest crossroads are Erie Parkway and West I-25 Frontage Road. The Working Pad Surface of the Cosslett East Oil and Gas Location is located approximately 798' from your home. Please see the attached map illustrating the Cosslett East Oil and Gas Location relative to your home.

2. How this proposed location was selected using an Alternative Location Analysis process;

See Attachment A

3. A description of the mineral acreage to be developed from this proposed location, and the number and orientation of wells, types of equipment, and other on- and off-location infrastructure related to anticipated operations;

The Cosslett East Oil and Gas Location will develop an approximate 1,920-acre drilling and spacing unit established by the Colorado Oil and Gas Conservation Commission in 2018. The 1,920-acre unit currently has 12 producing horizontal wells in it from another approved and producing oil and gas location, and Crestone will be drilling 19 horizontal wells, on a north to south basis, from the proposed Cosslett East Oil and Gas Location. The names of the 19 horizontal wells to be developed from the Cosslett East Oil and Gas Location are:

- *Cosslett East 1C-22H-H168*
- *Cosslett East 1D-22H-H168*
- *Cosslett East 1E-22H-H168*
- *Cosslett East 1F-22H-H168*
- *Cosslett East 1G-22H-H168*
- *Cosslett East 1H-22H-H168*
- *Cosslett East 1I-22H-H168*
- *Cosslett East 1J-22H-H168*
- *Cosslett East 1K-22H-H168*
- *Cosslett East 1L-22H-H168*
- *Cosslett East 1M-22H-H168*
- *Cosslett East 1N-22H-H168*

- *Cosslett East 1O-22H-H168*
- *Cosslett East 1P-22H-H168*
- *Cosslett East 1Q-22H-H168*
- *Cosslett East 1R-22H-H168*
- *Cosslett East 1S-22H-H168*
- *Cosslett East Fed 1A-22H-H168*
- *Cosslett East Fed 1B-22H-H168*

Crestone will utilize the following equipment on the Cosslett East Oil and Gas Location at various times during its development of the site:

See Attachment B

4. A description, proposed timeline, and expected duration of different operations that are planned, including construction, drilling, completions, flowback, interim reclamation, production, and final reclamation.
 - a. *Construction: November-December 2021*
 - b. *Drilling: December 2021-June 2022*
 - c. *Completions: June-August 2022*
 - d. *Flowback: August-September 2022*
 - e. *Production: September 2022-December 2047 (tentative)*
 - f. *Interim Reclamation: December 2022-2024*
 - g. *Final Reclamation: December 2047-December 2049 (tentative)*

See Attachment C

5. A description of the different immediate impacts that you may experience during each stage of operations, which may include noise, vibration, light, odor, dust, traffic, and visual impacts, along with the operator's planned mitigation ("Best Management Practices") designed to reduce the impacts you may experience during each state of the operation;

Crestone is committed to being a 'good neighbor' in our approach and the execution of our oil and gas development operations. During the different phases of development of an oil and gas well pad, there are potential impacts to individual residing in close proximity to the development operations including noise, vibration, light, odor, dust, traffic, and visual impacts. Crestone strives to minimize these impacts to the greatest extent possible through mitigations. A description of the impacts and the mitigations Crestone is proposing to minimize the effects of the impacts are listed below:

1. Noise/Vibration:

The noise from oil and gas development is mainly attributed to the equipment used on site such as generators, pumps, the top drive on the drilling rig, and other industrial equipment needed for our operations. This noise is usually characterized in one of two ways, you can hear it, or you can feel it. The noise you hear is often referred to as “A-scale” noise and is measured in dBA (decibels A). The noise you feel is the lower frequency noise and is referred to as “C-scale” noise because it is measured in dBC (decibels C). Crestone has worked with several noise experts and acoustical engineers to design our operations with minimizing noise to nearby residents in mind. The equipment we source and use, the design of the site, and the placement of the equipment on the site are all factors we use to minimize the noise. Once we have minimized it as low as possible with design factors, we then design the mitigation strategy to reduce the noise to the lowest level practicable.

These mitigation techniques include:

- Temporary walls will be used during drilling and completion operations with all ingress and egress points installed in directions not to align with the nearest residential building units.*
- Deliveries and the unloading of materials like tubular goods will be minimized during the period from sundown to sunup.*
- Install a noise dampening material called “quash” in all pump housings and other permanent enclosure with a high noise signal*
- Direct engine exhaust upward or away from the nearest residential building units.*
- “Hospital” mufflers will be used on permanent equipment if noise modeling studies or field noise studies, after installation, show they are needed.*
- Continuously monitor noise, from drilling through flowback phases, near your property to give our team the feedback to adjust and make improvements to the noise mitigations on site.*

2. Odor:

Odor nuisances from oil and gas development is mainly due to the components of the fluid during drilling. The current practice in drilling horizontal wells is to use a product commonly referred to as oil-based mud or OBM as the main component of the drilling fluid. Crestone’s efforts to minimize odors focus on the drilling process and the efforts to minimize the odors related to the use of OBM.

The mitigations to control odors include:

- *Using a nearly odor-less drilling fluid consisting of an International Association of Oil & Gas Producers (IOGP) Group III drilling base fluids with <0.5 weight % aromatics and not using diesel-based drilling fluids.*
- *Utilizing mud chillers during drilling to cool drilling fluids and minimizing any off gassing.*
- *A closed loop drilling mud system to minimize gases and vapors from the drilling mud from entering the atmosphere.*
- *Drill piping is wiped down each time the drilling operation “trips” out of the hole.*
- *Drill cuttings are placed in metal bins and covered to minimize odors prior to being transported to the designated waste management facilities.*

3. Lighting:

Lights are needed during the development phases to maintain a safe work environment for our employees. Crestone will take the following actions to minimize light pollution during our operations:

- *All lights will be directed inward and angled approximately 55-75° downward towards working areas and/or shielded to prevent direct light leaving the site.*
- *Automation, timers, or motion sensors will be used to control lighting*
- *Use lighting colors that reduce light intensity*
- *Use low-glare or no-glare lighting to reduce light pollution*
- *Watching for and removing glare points*
- *Temporary walls surrounding the working pad*
- *Positioning light towers and wall mounted lights below the height of the temporary walls*
- *Drill rig lights above the temporary walls will be angled and shielded to avoid direct light shining beyond the boundary of the site*

4. Dust:

Crestone will use the following mitigations to minimize fugitive dust emissions during our operations:

- *Application of fresh water to disturbed areas during earth moving activities.*
- *Application of fresh water or magnesium chloride to graveled surfaces of the Site and associated roads.*
- *Use of high-quality construction materials such as crushed granite road base, which generates less dust than other aggregates.*
- *Limit disturbance of natural vegetation to only that area that is reasonably necessary for construction.*

- *Re-establishment of vegetation on disturbed areas not graveled.*
 - *Covered storage containers to be used for sand, silica, proppant or similar material during hydraulic fracturing.*
 - *Establish speed limit on all access roads of 20MPH or less.*
 - *Regular road maintenance will include adding gravel and grading when needed.*
 - *Crestone will use a rock base tracking pad at the access point to help remove dirt and prevent debris from collecting on all access roads.*
 - *As necessary, Crestone will sweep roads nearest the access point of dirt and debris to maintain a clean entrance.*
6. A description of potential adverse or beneficial impacts that you may experience as a result of planned operations at this location, including but not limited to scientific information discussing potential health impacts that are likely attributable to living in close proximity to oil and gas development;

See Attachment D

7. A point of contact for you to obtain additional information from Crestone and how you can access additional information from the COGCC and your local government.

Crestone Peak Resources:

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Community Relations Advisor
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Jason Oates
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(720)785-4806

COGCC:

Mike Leonard
Compliance Manager
[*mike.leonard@state.co.us*](mailto:mike.leonard@state.co.us)
(303) 894-2100 x5109

Relevant Local Government:

Jason Maxey
Director, Oil and Gas Energy Department

jmaxey@weldgov.com

(970)400-3579

8. COGCC Information Sheets:

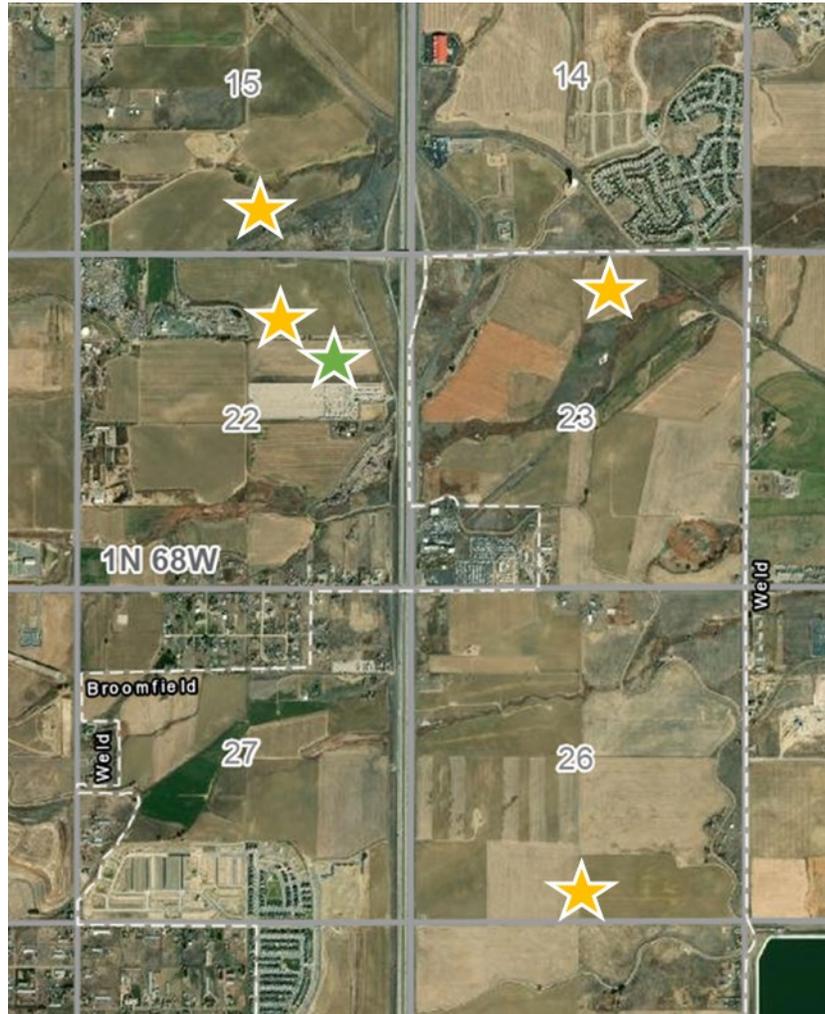
- *Attachment E – Procedural Steps for the Commission’s Review of OGDPs Information Sheet*
- *Attachment F – Public Comments Information Sheet*
- *Attachment G – OGDG Status Information Sheet*



CRESTONE PEAK
RESOURCES

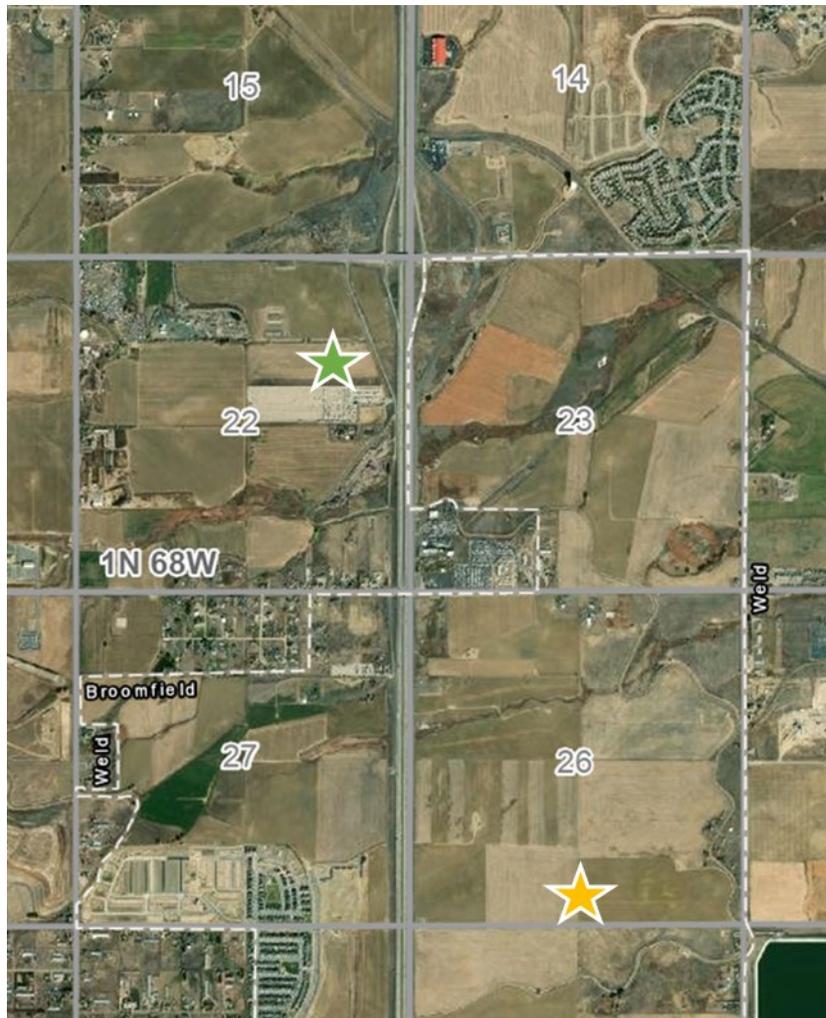
ALTERNATIVE LOCATION ANALYSIS NARRATIVE

COSSLETT EAST 22H-H168



Along with the Cosslett East 22H-H168 location approved by Weld County, four other locations were considered for drilling the two mile laterals in Sections 23 and 26 of an established 1,920 acre drilling and spacing unit. They are as follows:

- 1. Goltl East and West 26H-O168 (2A Document no. 401550237, Location #459593, approved 12/17/2018).**



The Goltl East and West 26H-O168 location (“Goltl location”) was the preferred original surface location to drill Sections 23 and 26 of the 1,920 acre drilling and spacing unit. The Form 2A and associated APDs were submitted to the Colorado Oil and Gas Conservation Commission (“COGCC”) in June, 2018 and are currently in a Suspended status. The Form 2A and associated APDs will be withdrawn upon approval of the Cosslett East 22H-H168

- The current and future use of the Goltl location is dryland agriculture. There are 5

Residential Building Units (“RBUs”) and 0 High Occupancy Building Units (“HOBUs”) within 2000’ of the Working Pad Surface (“WPS”) of the Goltl location. The closest RBU is 1651’ SE. The 5 RBUs are in a Disproportionately Impacted Community.

- ii. This location is not within a floodplain and there are no wetlands, Waters of the State, surface water supply area or Public Water System (“PWS”) supply wells within 2000’ of the disturbed area. It is, however, upgradient of Stanley Ditch which is 410’ away. This location is within a High Priority Habitat, one half mile from a Bald Eagle nest.

A Surface Use Agreement (“SUA”) was acquired in 8/2017 but subsequently expired in 12/2020 due to the delay in the permitting process. The surface owner is a partial mineral owner in DSU.

Access road and bridge over FRICO ditch already exists to property for access to older producing wells.

- iii. One advantage of the Goltl location is that Crestone Peak Resources, LLC (“CPR”) acquired 95% of pipeline right-of way from pads to HUB in Section 21; the only missing right-of way was from Broomfield, who owns land in NW Sec. 27 and was unwilling to provide a right of way.

The 1,920 acres DSU and associated well density was approved by the Commission in 2018. The Surface Owner is a Mineral Owner in the DSU.

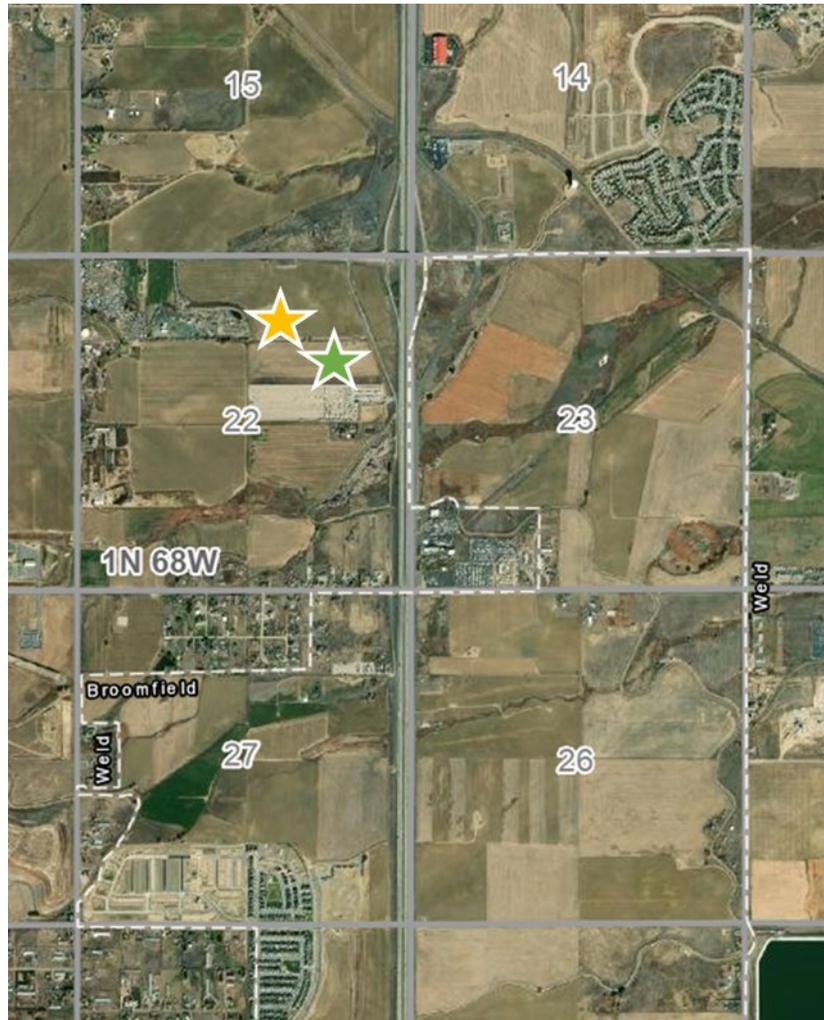
- iv. CPR has spent almost four years attempting to obtain approve of the Goltl Location from Broomfield and this Commission. Crestone’s first meeting with Broomfield was on July 11, 2017 to discuss the Goltl Location and the local permitting process which, for various reasons noted on the attached Goltl Location Timeline, has never been submitted to Broomfield Council and cannot be submitted due to the years-long moratorium in effect prohibiting any new oil and gas permitting. *Please see the attached Appendix A, CPR/Broomfield Goltl Location Timeline for review and consideration.*

- v. Local government moratoria and permitting prohibitions, as well as the Commission’s

permitting requirements and suspended status made the Goltl location unavailable for surface development.

vi. Tier V – A

2. Expansion of Cosslett 22H-B168 Pad.



Cosslett 22H-B168 is an existing pad with 12 producing wells.

- i. The current use is dryland agriculture; future use is commercial per the existing platting and development plans by the surface owner. The surface owner does not own any mineral interest.

There are 3 RBUs and 0 HOBUs within 2000'. The closest RBU is 1651' SE. The RBUs are not in a Disproportionately Impacted Community.

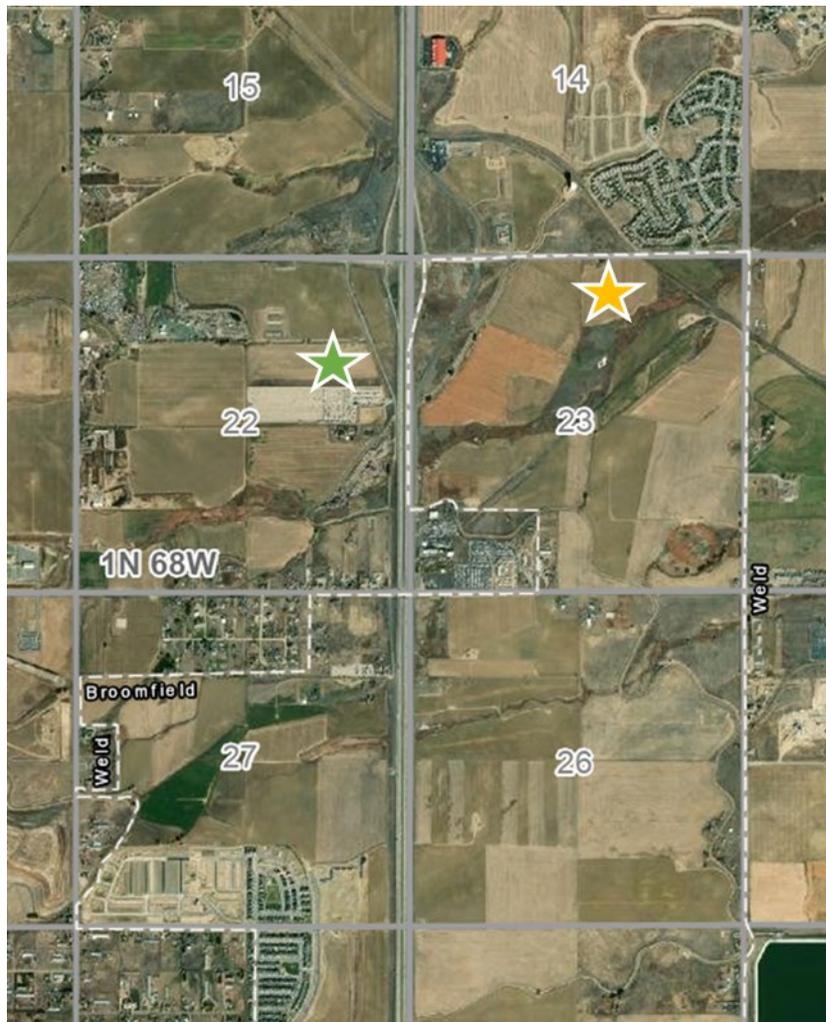
- ii. This location is not within a floodplain and there are no wetlands, Waters of the State, surface water supply area or PWS supply wells are greater than 2000' from the disturbed area. It is 167' from a pond. This location is not within a High Priority Habitat.

The SUA for Cosslett 22H-B168, which was acquired from CPR's predecessor, Encana, is

very limited and specific. The surface owner has plans to develop the property into commercial real estate and has been working with the Town of Erie to determine best options given this will be the “Entrance” to Erie off I-25. The dimensions of an expanded oil and gas site conflict with the Surface Owner’s planned development.

- iii. An advantage of this location is that the pad was already built. Disadvantage: The lateral reach prior to wellbore landing would be up to 6660’ with a 49 degree tangent angle. This extreme reach and angle would create a higher risk of operational problems, including wellbore and pump failure, with potential impacts of increased operational time such as nuisance and emissions
- iv. This property is in the Town of Erie. Erie’s new oil and gas development land use would require rezoning the land to “industrial” in order for additional oil and gas development to be approved.
- v. SUA limitations for increasing the size of the pad, and changes to the Erie MOU made this location unavailable.
- vi. Tier V – A

3. NE4 Section 23. Existing COGCC Location 321535



- i. The current and future use is dryland agriculture.

There are 216 RBUs and 0 HOBUs within 2000'. 26 of these RBUs are within 1000'. The closest RBU is 789' E. The RBUs are in a Disproportionately Impacted Community.

- ii. This location is within a 100-year floodplain and there are no wetlands, Waters of the State, surface water supply area or PWS supply within 2000' of the disturbed area. It is upgradient from a stream which runs through the location. This location is within a High Priority Habitat, which is Aquatic Native Species Conservation Waters.

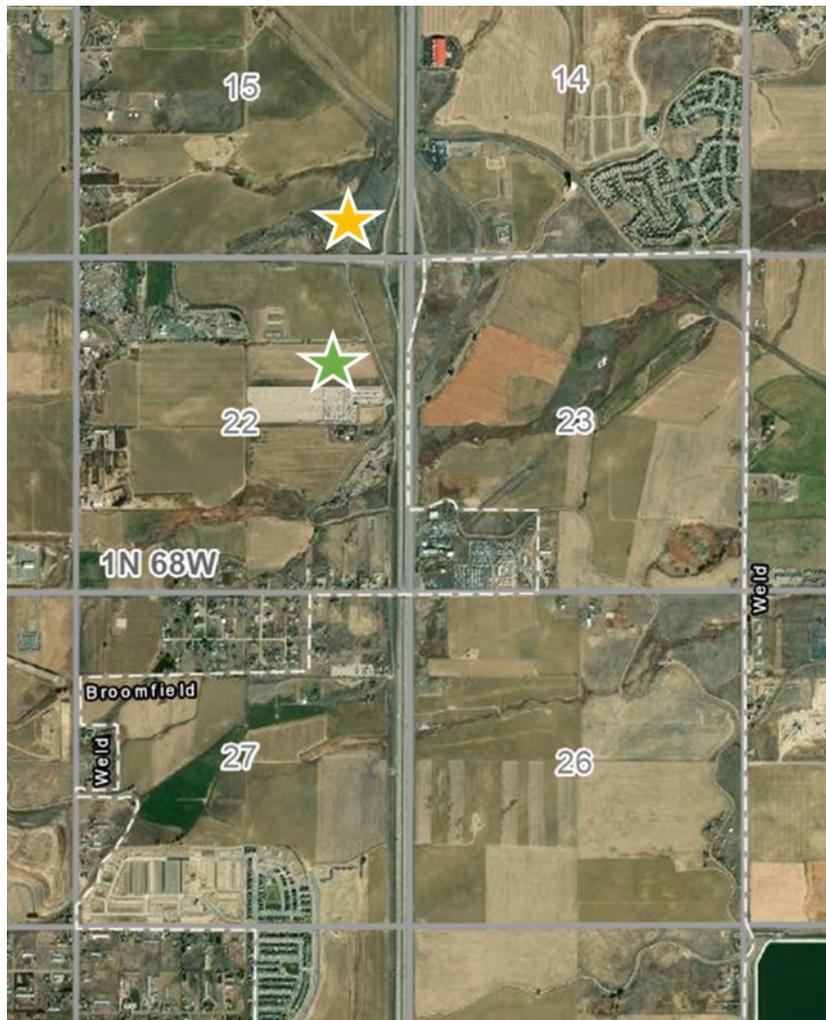
There is an existing SUA for this location is specific to this location and producing wells.

The location would not allow enough room for additional oil and gas development. The surface owner has future residential/commercial development plans for the rest of the

parcel which is in conflict with any additional oil and gas development from other locations on the parcel of land.

- iii. Disadvantages: the location is not large enough; CPR's SUA covers existing wells only and would have to be renegotiated for larger development.
- iv. This location is in Broomfield and presents the same challenges as the aforementioned Goltl location.
- v. Permitting limitations with the Town of Broomfield, as well as the floodplain, HPH, and size of pad constraint/existing SUA made this location more complicated. The large number of RBUs that lie in a Disproportionately Impacted Community also made this location less desirable.
- vi. Tier V – A

4. SE4 Section 15. Property owned by the Town of Erie



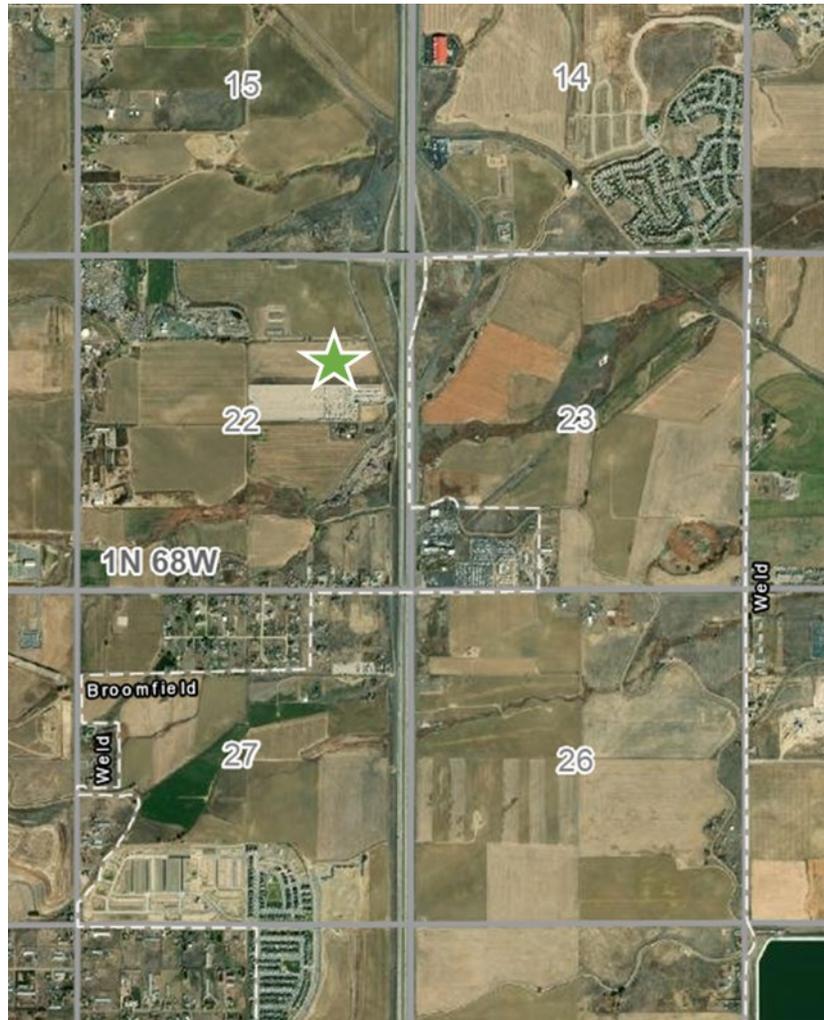
- i. The current and future use is rangeland.
There are 0 RBUs and 0 HOBUs within 2000'. The closest RBU is 2801' SW. The location is not within a Disproportionately Impacted Community.
- ii. This location is not within a floodplain. It is 632' from a wetland, and there are no Waters of the State, surface water supply area or PWS supply wells within 2000' of the location. this location is not within a High Priority Habitat, it is 2724' from an Aquatic Native Species Conservation Waters.
- iii. One disadvantage is the existence of the Eagle Mine's (no longer operational coal mine) main entrance which presents major safety and development concerns. There is significant mechanical equipment remaining in the mine under this identified site and, it

should be noted that the mine was closed due to a fire. Significant ground testing at this site would be required. It has been a historical area for dumping of materials and trash prior to Erie fencing it off. COGCC Rule 401.e states: “No Well shall be located within 200 feet of a shaft or entrance to a coal mine not definitely abandoned or sealed, nor will such a Well be located within 100 feet of any mine shaft house, mine boiler house, mine engine house or mine fan and the location of any proposed Well will ensure that when drilled, it will be at least 15 feet from any mine haulage or airway.” This location would present far too many unknowns considering the proximity of the mine entrance.

Additional factors: Existing offset Occidental Petroleum wellbores and Crestone Peak wellbores pose a severely increased risk of collision with any future planned horizontal wells from the identified site. And finally, although this location’s surface is owned by Erie, it is not annexed into the Town of Erie, land current and future use is Agricultural/Open Space.

- iv. An SUA would need to be negotiated with the Town of Erie (surface owner), CPR has no lease rights under the surface as they are held by another operator. SUA from surface owner and additional easements from leasehold operator and/or mineral owner would be required.
- v. Safety concerns with development in this close proximity to a coal mine entrance along with collision risk, permitting limitations and SUA unknowns with the Town of Erie, made this location unavailable.
- vi. Tier I – A

5. Cosslett East 22H-H168



In summary, there are many reasons to elect and utilize the Cosslett East location.

- i. It lies in Unincorporated Weld County; Crestone obtained full WOGLA approval on October 28, 2020.
- ii. This is an existing, producing pad which is preferred under the Commission's new regulations, that will be expanded to incorporate the new horizontal wells.
- iii. J Sand/Codell/Niobrara ("JCN") wells will be plugged and abandoned before the pad is expanded and new horizontal wells are drilled.
- iv. CPR can preserve the rights of the Mineral Interest Owners in the approved DSU by fully developing the already producing unit from this existing location which fulfills the COGCC's mission to protect correlative rights, develop resources and prevent

waste and to develop the hydrocarbon resources in a manner that protects public health, safety, welfare and environment, and wildlife resources.

- v. There are only two RBUs within 2000' of this pad, which are fewer than some of the other alternatives.
- vi. The location is not within a Disproportionately Impacted Community and the current and future land use is non-irrigated agriculture.
- vii. This location is not near any Waters of the State, surface water supply areas or PES supply wells 2000' of the preferred location. It is not in a High Priority Habitat.
- viii. The surface of the parcel immediately to the south is being used for an outdoor boat/RV storage (Commercial zoned); the parcel further south is used as a small field office and equipment/machinery storage for an Asphalt company (Asphalt Specialties, zoned Industrial).
- ix. The surface owner is subject to active lease included in the DSU (currently receiving royalty from original Cosslett Hz. wells drilled and producing this DSU), and the lease and land has been held by existing family since lease inception.
- x. The location provides for easy access to HUB in Section 21 (east) for easier pipeline connects for water, gas, and/or condensate.
- xi. There is an existing SUA for the Cosslett wells, however, it does need to be amended or a new SUA executed. Crestone has made consistent attempts over the past two years to obtain this amendment from the surface owner and continues to do so. Crestone is currently proceeding under use of the surface rights granted within the lease but have and will continue to try to engage surface owner in SUA discussions.
- xii. While the proximate local governments are the Town of Erie and the City and County of Broomfield, Crestone does not need to obtain siting approvals from such jurisdictions pursuant to the COGCC regulations.

Appendix A. *CPR/Broomfield Goltl Location Timeline*

- July 11, 2017: Crestone and City and County of Broomfield meeting to discuss Goltl location and local permit process
- August 2, 2017: Crestone and City and County of Broomfield follow-up meeting to discuss Goltl location and local permit process
- September 21, 2017: Crestone and City and County of Broomfield meeting to discuss Goltl drilling and spacing unit and permit process
- November 8, 2017: Crestone and City and County of Broomfield meeting to discuss Goltl location, USR process and XOG Operator Agreement
- January 19, 2018: Crestone and City and County of Broomfield meeting to discuss Goltl location, Crestone's upcoming USR application and notice process
- February 23, 2018: Original Goltl 26H-O168 Location Application Use by Special Review submitted to City and County of Broomfield
- April 2, 2018: Crestone and City and County of Broomfield meeting to discuss Goltl location, USR application submittal and COGCC and local permit process
- April 24, 2018: City and County of Broomfield provided 12 pages of comments/questions on Crestone's Goltl Application for Use by Special Review
- May 7, 2018: Crestone meeting with City and County of Broomfield to discuss 12 pages of comments/questions
- June 18, 2018: Crestone filed the Form 2A for the Goltl 26H-O168 Location with Colorado Oil and Gas Conservation Commission
- June 18, 2018: Crestone filed 26 Form 2's for the Goltl horizontal wells to be drilled from the Goltl 26H-O168 Location
- June 27, 2018: COGCC extended public comment period on Goltl 26H-O168 Location and Form 2's per City and County of Broomfield LGD request via Rule 305.d.(1)A
- July 10, 2018: City and County of Broomfield passes new Oil and Gas Regulations – Ordinance 2067
- July 13, 2018: Email with COGCC regarding public comment for waste management
- July 25, 2018: Public comment period for Goltl 26H-O168 Location and Form 2's closes. Only two comments – 1 from the public regarding waste management and 1 from the City and County of Broomfield LGD
- July 31, 2018: Commission entered Order No. 407-2515 which, among other things, approved a 1,920-acre drilling and spacing unit for the Subject Lands.

Broomfield participated fully in the contested Commission hearing resulting in the approval of Order No. 407-2515.¹

- July 31, 2018: Commission entered Order No. 407-2533 which, among other things, allowed for 31 horizontal wells in the established 1,920-acre drilling and spacing unit for the development and operation of the Codell and Niobrara Formations underlying the Subject Lands. Broomfield participated fully in the contested Commission hearing resulting in the approval of Order No. 407-2533.²
- August 23, 2018: Crestone provided response to waste management public comment and COGCC added to the Goltl 26H-O168 Location Form 2A under the comments section
- October 4, 2018 – October 23, 2018: Access road confirmed by operator, and additional BMPs added by COGCC to Goltl 26H-O168 Location Form 2A for lighting and noise based on Broomfield LGD comment
- October 25, 2018: COGCC OGLA review complete and task passed
- December 8, 2018: Commission approved the Goltl 26H-O168 Location and all Goltl APDs
- December 17, 2018: Broomfield submitted a letter to the Executive Director of the Commission requesting a hearing on the Commission's approval of Crestone's Forms 2 for the Goltl 26H-O168 Location and of Crestone's Form 2's
- December 17, 2018: COGCC Permit and Technical Services Manager issued a suspension on the Goltl 26H-O168 Location and Form 2's
- December 27, 2018: COGCC staff issued a Notice for the January 28-29, 2019 hearing at the request of Broomfield
- January 14, 2019: Crestone submitted a Protest to Broomfield's Request for Hearing on the Goltl 26H-O168 Location and Form 2's
- January 15, 2019: Commission Hearing Officer held a prehearing conference on City and County of Broomfield's Request for Hearing and determined it was ready for hearing
- January 25, 2019: Crestone submitted supplemental information to City and County of Broomfield in response to Staff's April 24, 2018 12 page request for additional information and requests meeting - No response received regarding meeting
- January 31, 2019: City and County of Broomfield confirms January 25, 2019 Crestone supplemental information and confirms will provide comments under

¹ Broomfield appealed Order No. 407-2515 to the Denver District Court and such appeal remains pending as of the date of this filing.

² Broomfield appealed Order No. 407-2533 to the Denver District Court and such appeal remains pending as of the date of this filing.

separate cover – No comments received regarding Crestone’s supplemental submittal

February 4-8, 2019: Crestone mailed required USR Notice of Application to interested parties

February 21, 2019: Crestone requests meeting with City and County of Broomfield - No response received

April 16, 2019: Senate Bill 19-181 adopted

May 31, 2019: City and County of Broomfield passes moratorium on processing or approval of USR Applications

June 19, 2019: Crestone requests meeting with City and County of Broomfield - No response received

July 24, 2019: Meeting scheduled with City and County of Broomfield after multiple requests over several months

September 24, 2019: Crestone presented Request for an Exception to Broomfield’s moratorium to Council and Council denied Crestone’s request

September 24, 2019 – Present: Broomfield’s May 31, 2019 moratorium on oil and gas permitting remains in effect until June 4, 2021

FORM 2A - COGCC Facilities / Equipment List

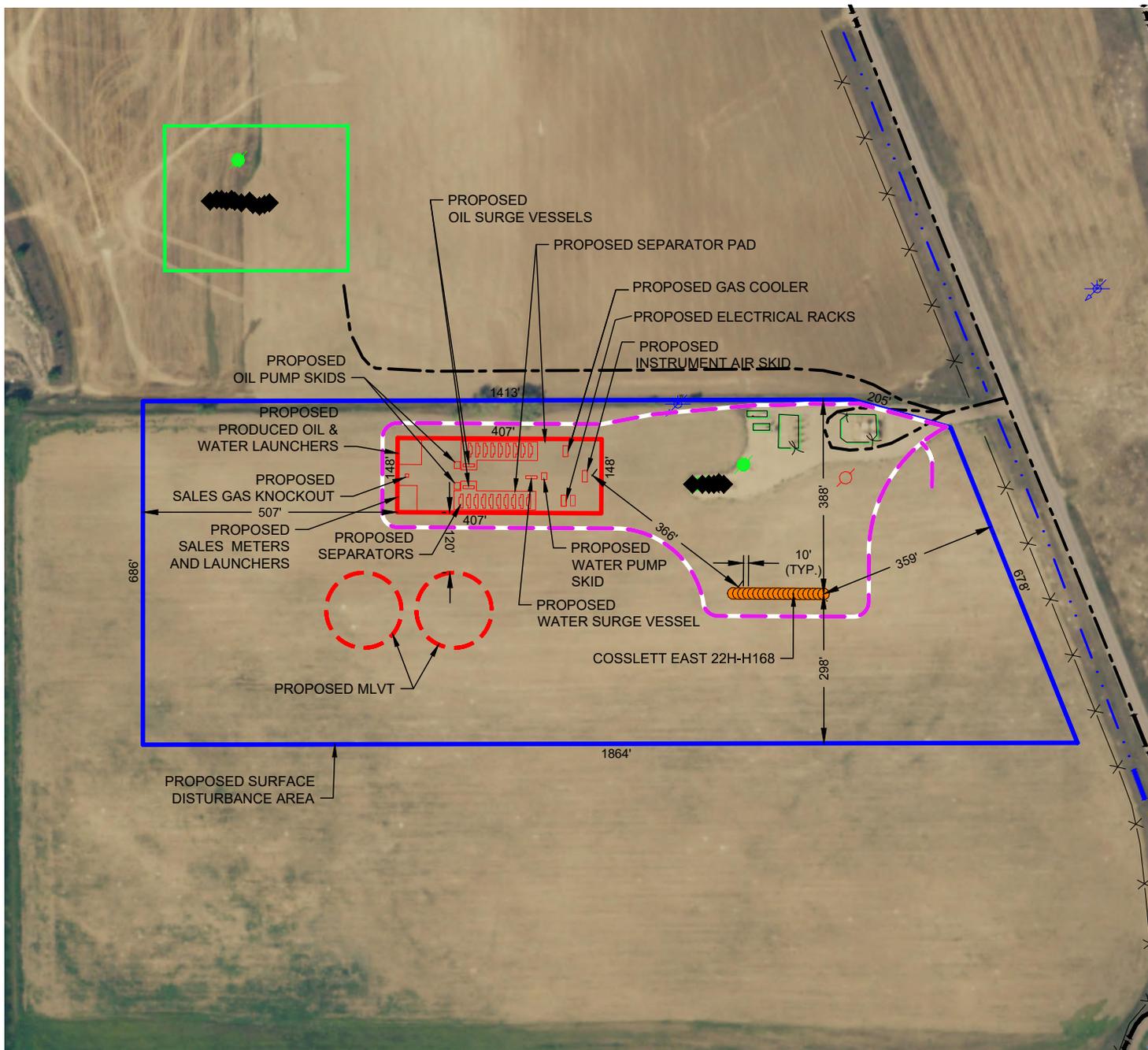
Pad Name: COSSLETT EAST 22H-H168 pad

Indicate the number of each type of oil and gas facility planned on location

Wells	19	Oil Tanks		Condensate Tanks		Water Tanks		Buried Produced Water Vaults	
Drilling Pits		Production Pits		Special Purpose Pits		Multi-Well Pits		Temporary Large Volume Above Ground Tanks	2
Pump Jacks		Separators	19	Injection Pumps		Cavity Pumps		Gas Compressors	
Gas or Diesel Motors		Electric Motors		Electric Generators		Fuel Tanks		LACT Unit	
Dehydrator Units		Vapor Recovery Unit		VOC Combusters		Flare		Pigging Station	
Other Facilities (Not Listed)									
Quantity									
Other Facility Type									
Meter Houses - Gas			1						
Oil Pump Skid			2						
Water Pump Skid			1						
Oil Surge Vessel			2						
Water Surge Vessel			1						
Sales Gas Liquid Knockout			1						
Instrument Air Skid			1						
Electrical Rack			2						
Produced Oil Launcher			1						
Produced Water Launcher			1						
Gas Coolers			1						

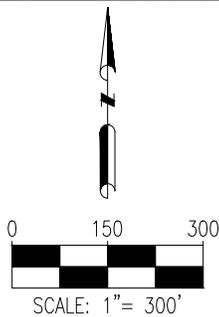
*Equipment #'s are estimated on the basis of prior designs, and prior to production prog information being supplied to engineering.

COSSLETT EAST 22H-H168 PAD PRODUCTION FACILITY LAYOUT



LEGEND

- = PROPOSED WELL
- = WATER WELL
- = EXISTING WELL
- = PLUGGED & ABANDONED WELL
- = DRY & ABANDONED WELL
- = PROPOSED DISTURBANCE AREA
- = PROPOSED FACILITIES
- = PROPOSED MLVT
- = PROPOSED ACCESS ROAD
- = EXISTING FACILITY
- = FENCE
- = EXISTING ROAD
- = DITCH



DISCLAIMER:
THIS PLOT DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND SHOULD NOT BE RELIED UPON TO DETERMINE BOUNDARY LINES, PROPERTY OWNERSHIP OR OTHER PROPERTY INTERESTS. PARCEL LINES, IF DEPICTED HAVE NOT BEEN FIELD VERIFIED AND MAY BE BASED UPON PUBLICLY AVAILABLE DATA THAT ALSO HAS NOT BEEN INDEPENDENTLY VERIFIED.

DATA SOURCE:
AERIAL IMAGE: NAIP 2017
NHD: USGS
WATER WELLS: COLORADO DWR
PUBLICLY AVAILABLE DATA SOURCES HAVE NOT BEEN INDEPENDENTLY VERIFIED BY ASCENT.



FIELD DATE:
07-24-19

DRAWING DATE:
02-07-20

BY:
JAG

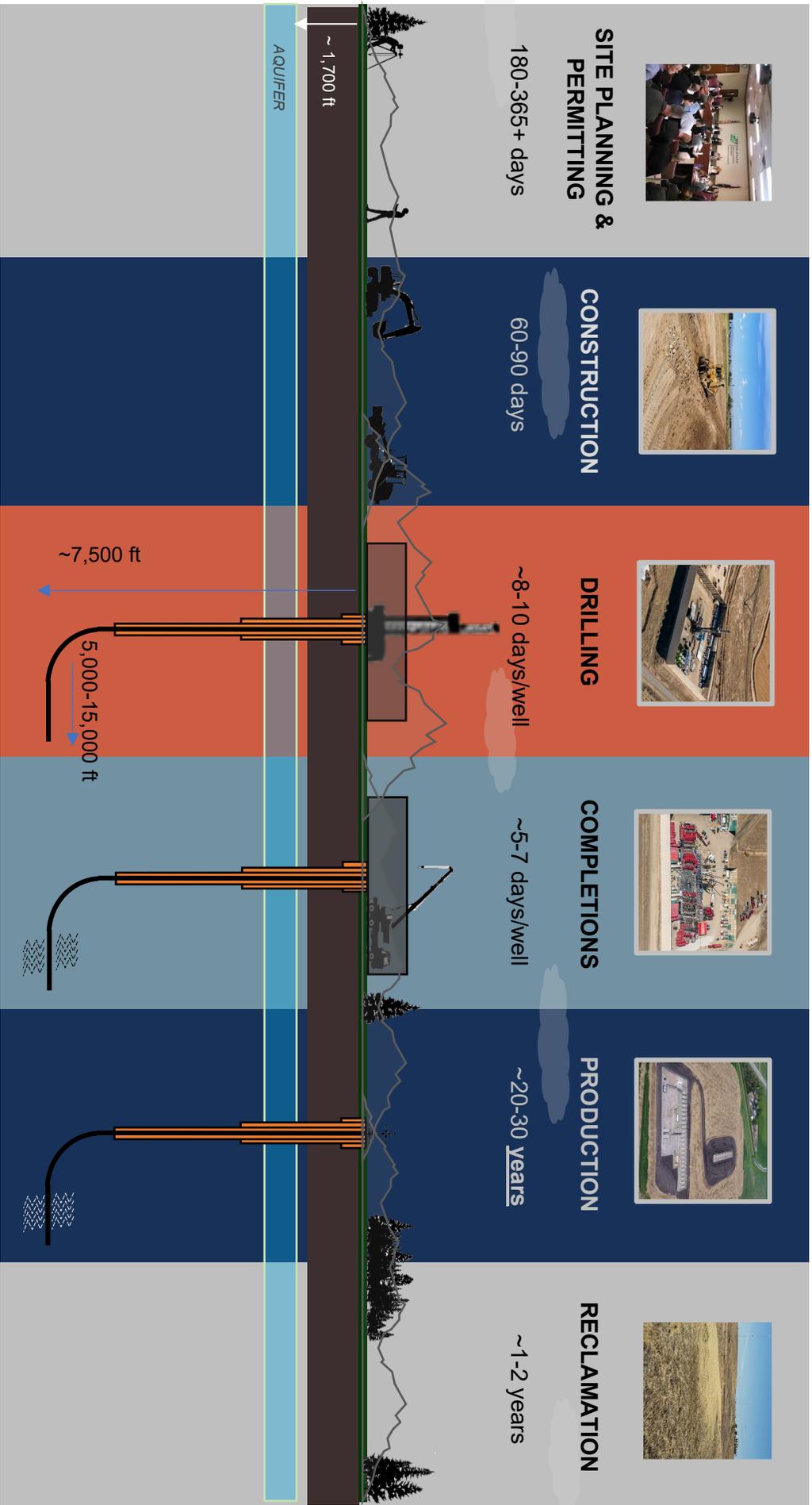
CHECKED:
IJM

SITE NAME:
COSSLETT EAST 22H-H168 PAD

SURFACE LOCATION:
**SE 1/4 NE 1/4 SEC. 22, T1N, R68W, 6TH P.M.
WELD COUNTY, COLORADO**



Phases of Oil & Gas Development Projects:





CRESTONE PEAK
RESOURCES

FIELDWIDE OPERATIONS PLAN

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Introduction

Crestone Peak Resources Operating LLC, a Delaware company, (Operator) presents this Operations Plan as a field-wide document. This Operations Plan is meant to provide a brief overview of the life cycle of an oil and gas well, while also demonstrating how Operator will comply with the Best Management Practices (BMPs).

Life Cycle of a Well

The Operator intends to develop Well Sites and drill wells over a period of several years. The timing of individual Well Sites will be dependent on several factors. For each project the Operator will provide a Project Development Schedule with an Oil and Gas Permit (OGP) Application. The basic development process for a New Well is generally consistent from one site to another. This document describes the life cycle of a typical well, which can be broken down into four basic phases: 1. Planning and Well Site Construction, 2. Drilling and Completion (including Hydraulic Fracturing), 3. Production, and 4. Plugging and Restoration.

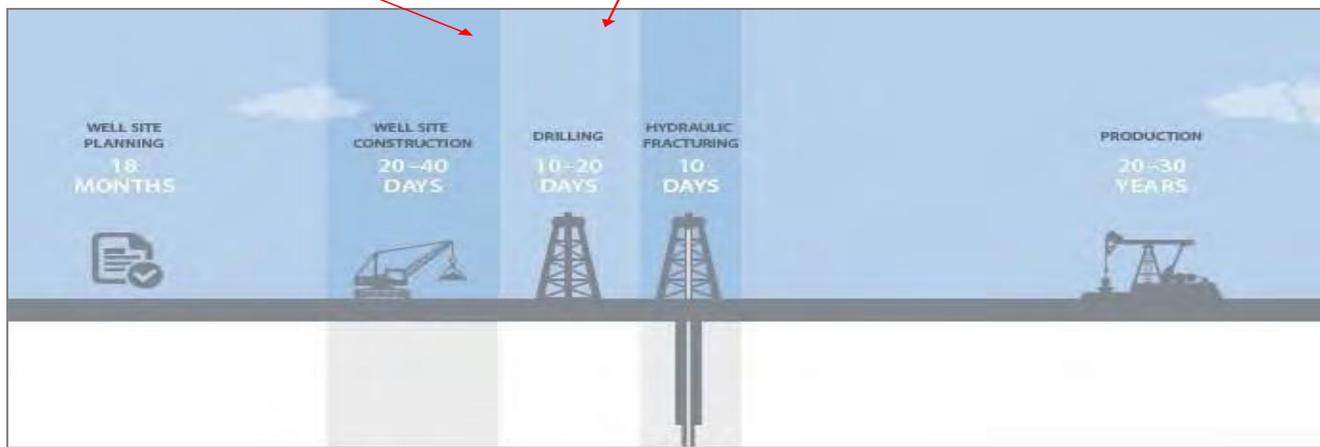
The Development Phases of a Well

Each phase of development is characterized by several factors, such as: purpose and objective, duration, intensity of activity, required equipment, number and type of personnel, traffic intensity, local impacts, footprint of operations and more. Various resources are needed to implement each phase and the demand for these resources increases or decreases at various times throughout each phase. The overall process and the duration of each phase for a typical well is depicted in the diagram below.

Pre-Development Planning

1 well pad ~ 20 days construct time
8 well pad ~ 40 days construct time

1 well ~ 10 days drill time
8 well ~ 60 days drill time



Identifying and testing the Niobrara formation to determine whether it could economically produce hydrocarbons took several years. Once the formation was identified, surface and mineral rights were secured. Permitting for test wells and establishment of drilling and spacing units through the Colorado Oil and Gas Conservation Commission (COGCC) were completed. Exploration drilling collected essential data on reservoir characteristics, geologic hazards, formation tops and tested successful drilling and production strategies. Surveys of topography, sensitive water resources, wildlife and archaeological resources, and formation boundaries all aided in the selection of Well Sites. Engagement with the surrounding community, including open house events, rig tours, and public hearings all provided a better understanding of local values. This led to the development of compatible strategies to mitigate community concerns with education of our standard safety practices.

Phase 1: Planning and Well Site Construction

Well Site Planning

The location of a Well Site is primarily driven by the underlying geology of the rock and the potential for oil and gas in a specific area. Other factors also include:

- the surface owners desired location of the Well Site
- proximity to homes and buildings
- proximity to water and floodplains
- surrounding wildlife and habitat

A typical multi-well pad may take up to 18 months to plan. Our planning process incorporates site-specific studies on wildlife and natural resources to identify potential impacts from our operations. We use the data to make necessary modifications, such as locating Well Sites and facilities outside nesting habitats, adhering to timing restrictions, and reclaiming land by planting vegetation that provides forage for animals and birds.

Civil Survey

A survey of the specific dimensions of the Well Site aids in the generation of the plat package. The plat package and GIS data also form the basis for the required Site Plan and Storm Water Management Plan (SWMP) used in permitting. The local topography is measured, and the elevation of the Well Site is established during this process. The data collected during civil survey determines earthworks volumes required for construction, and feeds into a viable SWMP. The final access road alignment is typically laid out at this time. The route is based on the surface rights that have been granted, along with the local topography. The access point at the nearest public roadway is determined by sight distances and setbacks from existing intersections. Other data collected includes PLSS Section breakdown to verify the acreage within the drilling and spacing unit as required by the COGCC, in addition to distance to nearest building units, water bodies, drainage, and more.

A survey crew of two to three workers can typically collect the required field data within a few days. It typically takes two to three weeks to prepare the preliminary plat package for review. This can be an iterative process to ensure that the final design is achievable and accounts for site-specific conditions. The crew utilizes survey grade GPS data collectors, ATVs, light pickup trucks, and hand tools to visibly mark the survey location. The plat package is generated on the computer by experienced draftsmen. Traffic associated with the activity is minimal, typically consisting of a few light passenger vehicles.

Permitting

Once a plat package and civil engineering drawings are completed, permits are filed with the relevant local government (RLG) and the COGCC. While these permit packages represent the same project, they can Each individual local government has their own permitting process that address their specific regulations, rules and guidance issued by the agencies. COGCC permits may be processed concurrently with RLG permits, or RLG permits may be completed prior to the COGCC permit application, but approval will not be granted until the RLG permit has been issued.

The Operator is not permitted to begin construction on the Well Site until the RLG has issued all its required local permits, and the COGCC has issued the Form 2A.

Well Site Construction

Once all required permits have been issued, Well Site construction may begin. On average, Well Site construction takes approximately 45 days. This work is normally done during daylight hours and scheduled far enough in advance that construction of the Well Site is completed ahead of bringing a drilling rig to the Well Site. This process uses construction equipment such as bulldozers, scrapers, loaders, backhoes, water wagons, rollers, graders, and gravel trucks to construct the pad and haul in the surface gravel to the location. There are between two and 10 people on-site during this phase of work.

The first step in Well Site construction involves installation of perimeter stormwater BMPs pursuant to the approved SWMP, COGCC and CDPHE Stormwater requirements. Once these protections are in place, earthworks may begin. The existing vegetation is cleared, and the topsoil is stripped. No burning of debris occurs. Topsoil and spoil piles are clearly separated to ensure preservation of the topsoil for final site reclamation.

During the construction of the Well Site there may be a temporary trailer on the location, but no personnel stay overnight on-site. The Well Site is constructed to match the approved permits to the best of our ability. At times, new information is learned during construction that requires deviations from the plans. The Operator works with COGCC and RLG representatives to make any required modification to plans as needed, which is often done in the field. Once the basic grading is complete to level the well pad, establish drainage ditches, and spoils and topsoil stockpiles separated, gravel is hauled in to provide a stable surface for oil and gas operations. Gravel hauling generates heavy traffic, but generally only lasts a few days.

The Operator will not carry out any construction, alteration, removal, or demolition of a building or feature or make any changes that would impair the historic association of the landmark building, landmark site, or historic district to comply with the RLGs code, without first obtaining approval from the City. If there is a discovery of historic artifacts, Operator will notify the RLG.

A portion of the Well Site is constructed with the permanent production facilities in mind. This area is located away from the planned wellheads to abide by numerous safety standards set by the Operator, the COGCC and the American Petroleum Institute. All disturbed ground not needed for subsequent operations, including stockpiles and cut and fill slopes, are seeded and mulched in accordance with the permits. Approved weed-free seed mix is used, and these areas are monitored and maintained for re-growth establishment and elimination of weed establishment for the life of the well.

A V-ditch is constructed to contain on-site stormwater and serve as the Well Site boundary. Cattle guards may be installed at the Well Site entrance, in addition to a locking gate. The V-ditch will remain in place until after reclamation (as defined by the COGCC) has been performed, and all disturbed areas have re-established vegetation. Any additional fencing requirements under the Surface Use Agreement or RLG will be installed after interim reclamation occurs.

The Well Site is left in a stable condition, ready for the rig. Specific project schedules will be communicated to the RLG and COGCC.

Phase 2: Drilling and Completion

Drilling

A drilling rig is brought to the Well Site and begins drilling each of the New Wells. Drilling rig operations are 24 hours per day. The drilling crews work in shifts, with some personnel living on-site during the entire operation. The crew size is about 25 to 40 people. There can be up to 40 people on-site at any time. The Operator will conduct drilling operations in compliance with all COGCC rules and regulations, as well as all applicable local rules and regulations. Drilling a single well takes approximately 10 days.

The drilling rig will be on location for a total of 190 to 210 days for a Well Site with nineteen wells. Multi-Well Sites take longer to drill than a single-well Well Site but yield a smaller overall disturbance than drilling multiple single-well Well Sites. There will be a period of increased traffic prior to the rig arriving and while the rig moves off to the next location.

Standard operations on the Well Site consist of a drilling rig at the center of the pad along with water storage to be used in the drilling operations, pipe racks for temporarily storing drill piping, pumps, power generators, tool storage, fuel storage for said generators and pumps, and an enclosure to protect workers from inclement weather.

All secondary containment, tank farms and diesel storage tanks are surrounded by mechanical (muscle) walls which have a thick, impervious liner installed within. All areas underneath the drilling rig, mud pumps, and mud circulation equipment have a liner installed. This liner holds small spills until the spill can be vacuumed out and disposed of. In addition, all drilling rigs contracted by Operator will have their own SPCC program.

Construction trailers, portable toilets, garbage storage and extra fuel storage will be located near the edge of the Well Site. All trailers are temporarily used for office, residential and security purposes. The Operator utilizes a "closed loop system" during drilling operations. Water used to support drilling operations may be trucked in or piped in and temporarily stored on-site. The Operator properly handles all drilling fluid in accordance with federal regulations. No fluid will be discharged on site, and drilling fluid will be disposed of offsite, in a manner approved by the COGCC.

The Operator plans to use an electric drilling rig to reduce emissions where it is possible to do so and that power is available 6 months prior to the date that Operator commences drilling operations. The Operator will use generator power for production equipment until the Operator acquires the required Building Permit and can safely tie into the existing power at the Well Site.

Noise mitigation may be required during the drilling phase based on its proximity to residences or zoning. In this case, the Operator has agreed to use sound walls, berming, bales, or other appropriate measures to mitigate sound.

The drilling rig drills vertically down to a specified depth and then horizontally to a specified distance. This target depth ranges from 7500'-8500' of feet below the surface. The deepest freshwater source is approximately 5500' shallower than the target depth. The hole (wellbore) is drilled in successive sections through the rock layers. Once the desired length of each wellbore section has been drilled, the drilling assembly is removed, and steel casing is inserted into the wellbore and cemented in place. A typical wellbore contains surface casing and production casing strings designed to provide a barrier that protects groundwater resources from the contents that will later flow inside the wellbore. The Applicant's standard surface casing design consists of 9 5/8" 36 lb/ft graded steel casing. The Applicant's standard production casing design consists of 5.5" 20 lb/ft graded steel pipe. The Operator will follow the COGCC regulations regarding wellbore integrity and testing to ensure water aquifer protection.

The well construction is designed so that Operator will protect freshwater producing zones from the intrusion of hydrocarbons or water from other formations that are penetrated by the New Well. Operator will comply with applicable COGCC regulations regarding wellbore integrity and testing. The casing and cement for each New Well will prevent oil, gas, and water from migrating from one formation to another behind the casing. Where the depth of water producing formations is clearly established, the Operator will set and cement casing in a manner sufficient to protect freshwater aquifers.

Following construction of the pad, a smaller drilling rig is used to drill and set the surface casing strings. Once completed, a larger drilling rig will then be brought to the location to finish drilling the remaining wellbores. The time between the two drilling rig operations is several weeks to months and allows the surface cement to sufficiently cure. The smaller drilling rig equipment will be brought onto the Well Site and rigged up. Drilling operations, which run twenty-four (24) hours a day until completed, will commence after the rig is "rigged up". The surface holes will be drilled to approximately 2,200 feet using fresh water. Surface casing will then be run and cemented to surface to protect any freshwater zones. Surface casing setting depth is determined from subsurface ground water maps prepared by the State Engineer and supplemented by the latest data available from offsetting wells. Prior to drilling activities, and to the extent possible, a baseline water sample will be obtained from water wells within 1/2 mile of the proposed location to ensure water quality.

The COGCC sets forth specific requirements for casing setting depths necessary to protect ground water sources, and all drilling permits ensure that those setting depths are achieved. To ensure the protection of all freshwater resources, 9-5/8" steel surface casing will be set to a depth at least fifty (50) feet below the base of the deepest aquifer in water wells located within one mile of the surface location as required by the

COGCC. The casing will be cemented from the bottom of the pipe up to surface. The COGCC reviews all drilling permits for adequate surface casing setting depths and cementing programs based on subsurface ground water maps prepared by the State Water Engineer and offset well data.

For each well drilled from the Well Site, cement is installed between the wellbore and casing pipe and will be allowed to set. While the cement is setting, well control equipment is installed and tested. After the cement is set and installation of well control equipment is complete, a drill bit is run into the hole to drill the intermediate portion of the well into the potential oil and gas bearing formations. The well will be drilled horizontally and will be turned or steered such that a curve is achieved to approximately 90 degrees or parallel to the surface of the ground. The proposed vertical depth for the each well drilled from the Well Site is approximately 8,000 feet below ground level and the length of the horizontal leg being approximately two (2) to three (3) miles long. The total Measured Depth (MD) for each of the proposed wells will be approximately 18,000 feet.

Once the horizontal section of the wellbore is drilled, a string of production casing will be run into the wellbore. This casing will be 5½ inches in outer diameter and weigh 20 pounds per linear foot. The grade will be P110, which has a collapse rating of 11,080 psi and a burst rating of 12,640 psi. This casing will be cemented into place to isolate the productive zones of the reservoir.

During the Drilling Phase, if surface casing cement is not circulated to the surface, Operator will run temperature or cement logs in order to ensure integrity. Operator will test the production casing to simulate conditions anticipated during the completion operations by pressuring up production casing to 9800 psi before opening the toe sleeve or perforating the toe. If the pressure test is unsuccessful (i.e. the toe valve leaks) a plug is deployed as deep as the plug will go on wireline to test to 9800 psi. Operator will install pressure transmitters on surface and production casing and Operator will monitor casing pressures during the Production Phase.

Operator performs Bradenhead tests on all New Wells at all Well Sites during the Drilling Phase and then annually during the Production Phase of the well. Each test is witnessed by a COGCC inspector.

During drilling operations and other operations on the Well Site, the Operator will use various measures to manage dust from trucks and traffic. Also, odor can result from drilling operations. If the Operator receives complaints from a Residential Building Unit within 2,000 feet from the Well Site, Operator will take measures to mitigate the odor, based on the specific circumstances.

Once drilling operations are complete, the drilling rig is disassembled and moved offsite. At this stage, activity stops until the “completion” (or hydraulic fracturing) of the well occurs. This period of no activity can be as short as a few days or up to several months.

Completions (Hydraulic Fracturing)

Prior to and following the Completion Phase of any New Well, Operator will assess the integrity of plugged and decommissioned wells, wells removed from use, and dry holes ("Previously Abandoned Wells") which are located within 1,500 feet of the proposed New Well borehole.

To “complete” a well means performing various tasks for a well to produce oil through the wellhead. Hydraulic Fracturing is just one portion of the completions process. There are also other minor activities that take place on the pad before and after fracturing, such as preparing the New Well for fracturing and cleaning

the sand out afterwards. Hydraulic fracturing is a completion method that has been used since the late 1940s.

On average, it takes less than 10 days to complete a New Well and 190–210 days to complete a nineteen-well Well Site. Completion operations occur 24-hours per day on the Well Site. The completions crews work in shifts, with some personnel living on-site during the entire operation. Crew size can vary but is typically made up of about 20 people, although up to 60 people may be on-site at anytime.

During hydraulic fracturing, fracturing materials, mainly sand, are brought in by truck and mixed on-site with water and other fracturing fluids. To the maximum extent possible, the Operator will transport water onto the Well Site through temporary, above-ground water supply line (not trucks) for this work.

Operator has a site-specific Water Delivery Plan and Method that will be provided to the COGCC upon application submission. These temporary, above-ground water supply lines (“Lay Flat Lines”) are typically 12” in diameter and typically made of synthetic rubber or similar “hose” material. They are used for the transfer of water from an identified water source to support company’s hydraulic fracturing operations.

“Facilities” associated with use of Lay Flat Lines include the following:

- In-line pumps
- Spools
- Secondary containment equipment
- Ramps

Equipment used for installation may include pick-up trucks, flatbed trailers, skid steer, and skid steer mounted reel winder.

Lay Flat Lines are laid on the surface, at grade and do not require excavation. They do not require staking in order to secure them from movement and are placed at least 10’ from the edge of the roadway.

Deployment and retrieval of a Lay Flat Line involves a truck carrying spools of hose following along-side a skid steer tractor. The skid steer carries and straddles the spool of Lay Flat Line and releases the hose by the reel rolling forward. Victaulic couplings are used to assemble segments of Lay Flat Lines. The process of retrieving the Lay Flat Lines involves the same equipment and process in reverse (reel rolling backward). When Lay Flat Lines run alongside road right of way, traffic control plans are implemented to manage and mandate safety procedures.

There are no permanent tanks associated with Lay Flat Lines. All flowback water is routed to temporary frac tanks which are mobile units and trucked off-site. These frac tanks also have secondary containment (temporary liner constructed 30-40 mil polyurethanes and the portable containment is installed with interlocking high-density plastic panels).

All valves associated with filling and offload of tanks will be installed inside containment berms and the operation of such valves will be controlled through a security seal process per Operator's site security procedure.

Environmental drip buckets will be used in addition to containment berms to minimize small spills during connection and disconnection of transfer equipment.

As secondary containment for completions, any tank 55 bbls or larger not filled with fresh water will be surrounded by a mechanical (muscle) wall with a thick, impervious liner installed within. All stimulation equipment, coiled tubing, and workover rig circulating equipment will have a liner installed underneath. This liner contains small spills until the spill can be vacuumed out and disposed of as described in the waste management plan that will be submitted with the COGCC Oil and Gas Development Plan Application (OGDP Application).

The actual fracturing process uses machinery capable of driving fracturing fluid down the length of the entire wellbore (potentially more than 17,000 feet). The fracturing fluid consists of water, proppant (typically sand), and some chemical additives. This fracturing fluid is pumped into the well at high pressures to crack the rock in different stages in the targeted geologic horizon.

Fracturing fluid is comprised of up to 99.5% water and sand. Small amounts of chemical additives are necessary to reduce fluid friction, kill bacteria that are present in the water source and enhance the fluid's ability to transport the propping agent. Many of these chemical additives are commonly used in everyday consumer products, such as toothpaste, ice cream, cosmetics, household cleaners, table salt substitutes and antiperspirant. Operator supports disclosure of the chemical ingredients used in fracturing fluids in a way that informs the public and protects proprietary company information.

To start the fracturing process, the well casing must first be perforated. At predetermined and specific intervals (stages) in the well, small perforations are made in the wellbore that allow the fracturing fluid to pass through the steel casing and exert pressure against the rock. The force of the fluid creates tiny cracks, or fractures, in the underground reservoir. Once fluid injection stops, pressure begins to dissipate, and the fractures previously held open by the fluid pressure begin to close. The proppant acts as a tiny wedge to hold these narrow fractures open, creating pathways for oil, natural gas and fracturing fluids to flow more easily to the well.

After a stage has been hydraulically fractured, a plug is set inside the casing to isolate the stimulated section of the wellbore. The next stage is then perforated, fractured and isolated by a plug. The entire perforate-fracture-plug cycle is repeated at regular intervals along the targeted section of the reservoir. A 10,000 ft. lateral in the Niobrara formation may have 40 or more discrete stages associated with a frac job. Once all stages have been fractured, the plugs are drilled out by a coil tubing rig, or workover rig, allowing the oil, natural gas, and fluids to flow into the well casing and up to the surface.

Operator complies with "green completions" standards set by the COGCC and the EPA under 40 CFR 60 Subpart OOOO and OOOOa. Based on zoning and prescribed distances, Operator has agreed to mitigate the sound created by hydraulic fracturing through appropriate means .

The last stage of the completions process is known as "flowback". Flowback describes the first few days of production from the well, after the plugs have been drilled out by a coil tubing rig or workover rig. The well produces an emulsion of hydrocarbon, formation water and produced water from the fracturing fluid. This

emulsion flows through various pieces of temporary equipment on the surface to separate it out into various components. The flowback water is collected in tanks and may be recycled and blended with other water to be used at another fracturing site, or disposed of in accordance with all applicable rules, including COGCC's. This typically means the water is transported by truck to a state-approved injection well.

At the end of this stage of development, all temporary equipment is removed from the Well Site, leaving only the wellhead and the permanent production facilities as well as emissions control equipment.

Phase 3: Production Phase

After drilling and completion operations conclude, the well is “put on production” and may produce for 20+ years. Operator’s commitment to safe and environmentally responsible operations continues through the entire life of each well.

Wells produce an emulsion of oil, gas and naturally occurring water. Certain equipment is needed on the Well Site to separate the gas from the oil, and the oil from the water. The oil and gas are measured, metered, and sold as they leave the Well Site.

This site is connected to Crestone’s Hub a nearby central production facility. Oil and water will go to the Hub via pipelines while natural gas will be piped off location. Natural gas is sold through the meter and transported offsite through a gas gathering pipeline system in accordance with COGCC regulations.

Numerous engineering controls are in place to prevent or minimize the impact of unplanned events such as spills or leaks.

Above ground structures are painted a tan or brown matte finish to reduce the visual impact of the production facilities from visibility corridors.

Well Site facilities must meet internal engineering standards, as well as operating and process integrity requirements. The facility plans go through a PHA-Hazard Operability Study by a certified facilitator. Any recommendations are incorporated into the design. Alarms and relief systems are regularly tested, and personnel are trained to operate facilities responsibly.

To the extent flares, thermal oxidizers, or combustion devices are utilized, all such flares shall be designed and operated in accordance with the state and federal regulations, as well as the OA requirements as follows:

- A combustion device must be available at each Well Site during the entire Production Phase for maintenance or emergencies only.
- The combustion device must be fired with natural gas and designed to operate with a 98% or higher hydrocarbon destruction efficiency.
- The combustion device must be designed and operated in a manner that will ensure no visible emissions during normal operation. Visible emissions mean observations of smoke for any period or periods of duration greater than or equal to one minute in any 15-minute period during normal operation, pursuant to EPA Method 22. Visible emissions do not include radiant energy or water vapor.
- The combustion device must always be operated with a flame present when emissions may be vented to it, or other mechanism that does not allow uncontrolled emissions.
- All combustion devices must be equipped with an auto-igniter unless manned while in use.

Operator will maintain all equipment and machinery in a safe manner, and maintenance will not be performed within 500 feet of a navigable waterway. Operator will provide a safe and secure work environment to protect workers contractors and the community. Critical equipment will be secured by lock or with a security seal to prevent unauthorized tampering with equipment.

Well Sites will comply with the County's stormwater management requirements, including the use of stormwater best management practices to minimize water runoff from collecting in local waterways.

Automatic Safety Protective Systems and Surface Safety Valve. An automated safety system, governed by safety devices and a programmable logic computer, will be installed at the Well Sites. The automated safety system will include the installation, monitoring and remote control of a Surface Safety Valve ("SSV") among other engineered measures and devices that are implemented to reduce or eliminate the potential for a well event. All New Wells will have an SSV installed prior to the commencement of the Production Phase connected to the production tubing at the surface. The SSV will be equipped to operate remotely via the automated safety protective system, which monitors flowing pressures and other operating parameters which have predetermined threshold values programmed and will remotely shut the well in should certain upset conditions be detected. Additionally, the automated safety system provides the ability to remotely shut-in wells on demand through operator remote intervention. The SSV will have documented annual testing to ensure functionality. The practice of utilizing automated safety protective systems, including SSVs,

exceeds the current state regulations and requirements for wells operated within Colorado.

Interim reclamation will occur within three months of the first production on Well Sites surrounded by crop lands, and within six months of first production for Well Sites surrounded by grass lands unless a timeline exception is granted by the surface owner and COGCC. Interim reclamation is performed in accordance with the approved RLG's SWMP plans and the COGCC Rules. During this phase, portions of the Well Site that are no longer needed for production operations are reclaimed back to their original contours and reseeded with appropriate vegetative cover. Operator will monitor the condition of these reclaimed areas until sufficient vegetative cover is established. The final fencing (if required) is typically installed at this time to enclose the pad area and establish the site perimeter. A gate to allow for vehicle access will be installed and locked at all times unless there are personnel on-site. The fence can serve multiple purposes including visually screening the site from view, acting as a security measure to deter unauthorized access by members of the public and preventing livestock from entering the site.

During the Production Phase, Operator will maintain the Well Site. Debris and flammable material will be removed from the Well Site and any mudtracked from the Well Site to public roads will be addressed.

Phase 4: Plugging and Restoration

At the end of a well's productive life (generally 20+ years), the Operator submits a Notice of Abandonment to the COGCC and will concurrently submit a final reclamation plan to the City. The "Final Reclamation" of the Well Site is dictated by multiple documents, including COGCC Regulations, any conditions of approval associated with the RLG's permits, the Surface Use Agreement, and/or Oil and Gas Lease or Leases.

Final reclamation plans will include the appropriate surface reclamation necessary for approval from the COGCC. All wellbores are plugged and abandoned in accordance with COGCC regulations and other applicable laws. At the time of final plugging and abandonment, all surface equipment is removed, and the Well Site

is graded back to approximate natural contours. Backfilling, leveling and recontouring is performed as soon as possible after plugging or cessation of production and removal of production equipment and facilities. Stockpiled topsoil is redistributed evenly over the re-contoured surface.

The area is treated to eliminate any compaction that may have occurred during final grading. The access road is reclaimed in a similar manner. If necessary, water bars and physical barricades may be implemented as necessary to promote reclamation efforts. Pipelines and subsurface power lines are typically abandoned in place.

The reclaimed area is reseeded with the approved seed mixture specifically designed to simulate adjacent undisturbed vegetation while maximizing utilization by both wildlife and domestic stock. Final reclamation of the access road is done in accordance with the terms and conditions of the right-of-way grant.

Operator must meet stringent site-closure requirements and file appropriate documentation with the COGCC and other government authorities to preserve the location and details of the well closure for future reference.

Operator has agreed to conduct its air, ground water, and plugged and decommissioned well monitoring programs at its own cost. The RLG may access the Well Site to inspect and ensure compliance provided they provide 48-hour notice, wear PPE, comply with Operator's safety standards and rules, and be accompanied by Operator's representative.

Operator will comply with all RLG and COGCC's conditions of approval.



DRILLING, COMPLETIONS AND PRODUCTION ACTIVITY NOTICE – COSSLETT EAST WELL PAD

Crestone Peak Resources is proposing drilling and completion operations of a multi-horizontal well pad located in the area. Activity will begin once we have received regulatory approval by the Colorado Oil & Gas Conservation Commission (COGCC). The following is a summary of what can be expected during operations. For updates specific to this or other Crestone locations visit www.CrestonePeakResources.com.

WHAT TO EXPECT

This is a technical process, and we want to provide neighbors with clear information about how we operate and the practices we employ. Below, please find a detailed overview of our practices and operations throughout the life of a well. Feedback from the community regarding the effectiveness of our mitigation efforts is encouraged and appreciated. Our team can be reached at CommunityRelations@CrestonePR.com or call us at (720) 410-8537.

Pad Construction: Preparing the location (approximately eight weeks)

The preparation of a location takes approximately two months. Initial activity will include the use of heavy equipment. During this phase, you can expect land clearing, grading, road construction and soils handling. Water trucks will be on location to control dust and there will be large trucks carrying earth moving equipment, graders, rollers, etc. During the construction phase, we will be installing 32-foot sound walls around all four sides of the well pad. Once the pad is constructed and the sound walls are in place, the drilling rig will be ready to move onto the location.

Phase One: Drilling the wells (approximately seven days per well, 24/7 operations)

Drilling will likely be done in two phases to minimize the overall amount of time we are on site. The first stage of drilling will be done with a surface drilling rig, which is smaller than the production drilling rig. The surface drilling rig will arrive once the sound walls are in place and the pad is constructed. This rig will drill the conductor and surface sections of each well. The conductor section extends a short distance below the surface and provides the foundation for the well bore during drilling operations. The next section of the well is the surface section. Using only compressed air and fresh water, we drill through the conductor and set the surface section at a depth below the deepest water well or aquifer in the area. We then set and cement the surface casing. Casing is set by inserting a permanent steel pipe into the drilled hole and then pumping specially formulated cement through the casing, filling the space between the outside of the casing and the wellbore. Per the COGCC, surface casing must extend to a depth of 50 feet deeper than the depth of any known water well or aquifer. Crestone will set surface casing about 2,350 feet deep. Once the casing is in place, it is tested in accordance with detailed and strict regulations set by the COGCC. The surface rig will drill around the clock to drill the surface sections of all wells on this well pad. Once this phase is complete, the surface rig will move off and the production drilling rig will move onto the well pad to drill the remaining depths of these wells.

The production rig will use the same wellbore drilled by the surface rig to resume drilling to a vertical depth of approximately 6,500 feet, which is about 500 feet above the horizontal portion of the well. From this point the drilling operation will begin the transition from a vertical to a horizontal well. The horizontal section of the wellbore will extend between 8,000 – 10,000 feet laterally.

Once the total planned distance for the lateral portion of the wellbore is reached, another layer of steel casing and cement is installed. This layer, also verified and tested, provides the pathway for oil, condensate, and natural gas to rise to the surface at the wellhead. When drilling is complete, the wellbore is isolated from the surrounding formations by layers of cement and steel, preventing the migration of hydrocarbons into the nearby water sources.

Crestone utilizes closed-loop fluid handling systems throughout the drilling process. These systems keep drilling fluids within a series of pipes and tanks, ensuring additional control over fluids used in the drilling process. The sections of the earth removed during drilling to form the wellbore are called the formation cuttings. These cuttings return up the wellbore during drilling and are later disposed of using state-approved disposal methods.

Phase Two: Completing the wells (approximately seven days per well, 24/7 operations)

Once the well is drilled, the next phase is called the completions phase. The completions process, which includes hydraulic fracturing or fracing, dramatically enhances the volume of recoverable natural gas and oil from the formation. During this phase, there is an increase in noise and truck traffic associated with the delivery of equipment and materials, construction of temporary freshwater tanks, and crews entering and exiting location. Completions activity will start soon after the drilling rig moves off location.

WHAT IS FRACING?

Hydraulic fracturing, or fracing, is the process of pumping a mixture of water, sand, and a small amount of chemicals down the wellbore, under high pressure for short periods of time, into the targeted geological formations containing natural gas and oil. The water-based mixture forces open fissures in the formation creating a pathway for oil and natural gas to flow into the wellbore and up to the wellhead at the surface. The sand, also called proppant, then holds the fissures open to ensure the maximum recovery of the resource from these wells. The fracing process typically takes 5-7 days per well.

Phase Three: Production & Reclamation (averages 20-30 days for production; reclamation times vary greatly)

Once a well has been completed, crews run production tubing into the well to enhance production and create a more efficient pathway for the natural gas and oil to travel to the surface. We control the flow of hydrocarbons through a series of valves and instruments at the top of the well called the wellhead. The wellhead is the most visible part of a well and allows for surface monitoring and regulation of the production from the producing well. At the well, the natural gas flows into a gathering line at the location called the sales line. Once in the sales line, the natural gas changes custody to the natural gas transporting company. Natural gas liquids, oil, and produced water will then flow from each well through pipelines to the tanks on location.

Once the wells begin producing, the amount of activity at the site dramatically decreases and the reclamation process can begin. Reclamation varies from location to location and may include removing the sound walls, smoothing the operations area, and restoring the location, per state rules or per our agreement with the surface owner. Reclamation can take as little as four weeks or as long as one year depending on the location and weather conditions.

IMPACT MITIGATION EFFORTS

Prior to beginning operations, sound level data is collected at various locations adjacent to the well pad during multiple time periods to establish “typical” ambient sound levels. Crestone will comply with the COGCC Regulation 423 for noise compliance during all phases of operation at the pad.

Throughout our operations, we will have sound monitors set to measure noise levels and we will make adjustments as needed to ensure we are in compliance with COGCC regulations. Sound mitigation on location helps minimize noise, dust, and light, as well as the visual impacts associated with drilling and completions activity on the pad. In addition, based on the noise impact modeling we do, we may also utilize point source sound mitigation. This means we’ll identify the loudest pieces of equipment on location and install interior sound walls around that equipment providing an added layer of sound abatement. To the extent that we can maintain a safe working environment, we redirect lights away from neighbors and install light diffusing material on individual rig lights. All impact mitigation efforts are monitored and adjusted as needed and practicable to address the impacts of our operations.

The safety of those living near our operations, as well as our employees and contractors, is our top priority. We provide ongoing training for our staff in matters of environmental, health, and safety, and we continually look for ways to reduce our impacts to the community. All staff and contractors are required to adhere to strict safety rules and site-specific procedures to ensure the highest level of safety and adherence to the site-specific guidelines (i.e. access and traffic plan).

FIND MORE INFORMATION ABOUT THIS ACTIVITY

Crestone’s team can be reached at CommunityRelations@CrestonePR.com or (720) 410-8537.



THE SCIENCE OF READYSM

SCREENING LEVEL HEALTH RISK EVALUATION OF COMMUNITY AIR MONITORING AND SAMPLING STUDY

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Executive Summary

CTEH, LLC (CTEH) was requested by Crestone Peak Resources (Crestone) to design and perform studies to characterize the short-term impacts on local air quality and public health from discrete operational phases at four oil and gas wellpads being developed in Weld County, Colorado: Big Horn, Cosslett, Echevarria, and Kugel wellpads. The specific goals of this project were to: (1) collect a high-resolution data set of chemical concentrations in air near the wellpad and the surrounding communities, and (2) evaluate the impact on risks to public health, if any, from the release of oil and gas-related compounds into the air during specific operational phases of well development.

To address these goals, CTEH staff conducted real-time air monitoring for total volatile organic compounds (VOCs), hydrogen sulfide (H₂S), particulate matter (PM_{2.5} and PM₁₀), and specific VOCs such as benzene with simultaneous observations of odors, wind direction, and wind speed relative to the wellpad. CTEH also collected discrete air samples around the perimeter of the wellpads to be analyzed by a certified analytical laboratory. These samples were analyzed for VOCs, including benzene, toluene, ethylbenzene and xylenes (BTEX compounds). The study focused on collecting data during activities that may produce the greatest emissions for each phase of operations. This approach uses a robust and widely accepted method for characterizing potential public health risks. This report provides the data and health risk evaluations from real-time air monitoring and analytical sampling (BTEX compounds) conducted in the communities surrounding the wellpads during the various phases of operations to date. Findings contained in this report include the drilling phase at Kugel wellpad, hydraulic fracturing and flowback phases at Big Horn wellpad and the production phases at the Cosslett and Echevarria wellpads.

More than 5,000 total measurements were collected in real-time by CTEH personnel in the communities surrounding the wellpads over a period of 26 days. Additionally, 20 analytical samples were collected from four locations around the Bighorn wellpad to evaluate potential community exposures over 5 days of flowback activities. Approximately 99% of the real-time VOC measurements recorded in the communities were non-detections, which means that VOCs were not present or that VOC concentrations were less than the instrument detection limit of 1 ppb for VOCs. This detection limit is well below the federal (ATSDR) health guideline level for short-term adverse health effects for benzene (9 ppb). Of the over 1,500 measurements collected for benzene specifically or VOCs in general, just one reading was at a detectable level but did not exceed public health guideline values for the BTEX compounds. No H₂S was ever detected, and just one of over 1,500 readings taken for PM, taken on along a dirt road, was higher than typical background values. In the 20 analytical air samples collected in the surrounding community during flowback, the maximum measured concentrations for BTEX compounds were also all 10 to 13,000-times lower than their respective federal acute health guideline values.

These data, combined with corresponding documented wind directions, suggest that oil and gas-related analytes that may come from the wellpads are not migrating to the surrounding communities to any significant extent. Thus, the real-time and analytical data indicate no adverse health risks to nearby communities, including sensitive individuals, from cumulative exposures to VOCs that may be emitted from pre-production and production activities at Crestone wellpads.

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1.0 Introduction

In the State of Colorado, concerns have been raised by government, non-government, and individual stakeholders regarding the impact of air quality on public health at regional and local (i.e., neighborhood, city/town, county) levels from oil and gas drilling and completion activities. Based on these stakeholder concerns, CTEH, LLC (CTEH) was requested by Crestone Peak Resources (Crestone) to design and perform studies to characterize the short-term impacts on local air quality and public health from discrete operational phases at four wellpads being developed in Weld County, Colorado: the drilling phase at Kugel wellpad, hydraulic fracturing and flowback phases at Big Horn wellpad and the production phases at the Cosslett and Echevarria wellpads.

CTEH is an environmental and human health consulting firm specializing in health risk assessment and regulatory compliance, as well as responding to hazardous materials emergencies and chemical releases.

Specific Goals: CTEH designed and executed a study of the Crestone wellpads with the specific goals of (1) collecting a high-resolution data set of chemical concentrations that have potential for public health impacts in air near the wellpad and the surrounding communities, and (2) evaluating the impact on short-term risks to public health, if any, from the release of oil and gas-related compounds into the air during specific operational phases of well development and production.

The specific analytes evaluated in this study were selected based on their association with oil and gas operations and their potential for public health impact. For example, multiple studies conducted during all phases of natural gas well development, both on-site and in residential communities near oil and gas sites, including studies conducted by the Colorado Department of Public Health and Environment (CDPHE), have shown that benzene has the greatest potential to cause short-term and long-term health effects and therefore, is considered a risk driver.¹²³⁴

This report provides an overview and a screening level analysis of data collected by CTEH during real-time air monitoring and air sampling (during flowback) in communities surrounding the Crestone wellpads.

¹ <https://www.colorado.gov/pacific/cdphe/oil-and-gas-community-investigations>

² McMullin, T.S., Bamber, A.M., Bon, D., and VanDyke, M. (2018). Exposures and Health Risks from Volatile Organic Compounds in Communities Located near Oil and Gas Exploration and Production Activities in Colorado (U.S.A.). *International Journal of Environmental Research and Public Health*. Jul 16; 157 (7). DOI: 10.3390/ijerph15071500

³ Collett, J.; Ham, J.; Hecobian, A. North Front Range Oil and Gas Air Pollutant Emission and Dispersion Study; Colorado State University: Fort Collins, CO, USA, 2016.

⁴ Collett, J.; Ham, J.; Hecobian, A. Characterizing Emissions from Natural Gas Drilling and Well Completion Operations in Garfield County, Co; Colorado State University: Fort Collins, CO, USA, 2016.

1.1 Site Descriptions

The four Crestone wellpads around which CTEH performed monitoring and sampling (Big Horn, Cosslett, Echevarria, and Kugel) are in Longmont, Weld County, Colorado. Monitoring and sampling occurred from September 2, 2019 to October 21, 2019

Table 1: Wellpad Descriptions

Wellpad	Phase	Monitoring Dates	Location	Site Description
Big Horn	Hydraulic Fracturing and Flowback	September 9, 2019 to September 13, 2019 October 16, 2019 to October 21, 2019	North of County Road 20	Bordered by agricultural land on three sides, residential neighborhood on the west side and nearby production wells on private land
Cosslett	Production (Hub)	September 16, 2019 to September 20, 2019	West of Interstate 25 and south of Erie Parkway (County Road 8)	Surrounded by primarily agricultural land
Echevarria	Production (Tank Light)	September 23, 2019 to September 27, 2019	South of Co road 26 and west of Co Rd 21 ½	Rural area
Kugel	Drilling	September 2, 2010 to September 6, 2019	South of Sable Ave (Co Rd 22) and west of Frontier St (Co Rd 15)	Residential properties surrounding the wellpad on three sides with a more densely-developed residential subdivision to the north and drilling/production activities to the west

1.2 Operations Description

Data were collected during four operational phases: drilling, hydraulic fracturing, flowback and production. Table 2 lists best management practices (BMPs) in place to address potential sources of emissions for each phase of operation.

Table 2: Description of Best Management Practices

Phase	BMPs
Drilling	<ul style="list-style-type: none"> • Class III Drilling Fluid - oil based mud (odorless, no BTEX) • Mud Chillers - used to control cuttings odor while drilling through hydrocarbon bearing zones • Rotary steerable unit that reduces drilling time on-site • Local electrical power for drill rig - reduces air emissions, NOx • All equipment is on impermeable ground liners during drilling and completions
Flowback	<ul style="list-style-type: none"> • Vapor Recovery Units are used during flowback operations and initial year of production • Closed-top oil tanks - used during flowback operations and drill out • Combustor used for tank vapors during flowback and drill out
Production	<ul style="list-style-type: none"> • Hub facility - a central gathering facility serving several well sites which allows for smaller wellpads and fewer emission sources • Tank-lite facilities - Use of Lease Automatic Custody Transfer (LACT) units for custody transfer of oil, reduces the need to open tanks • Electric permanent production equipment - no gas actuated pneumatics
Completions	<ul style="list-style-type: none"> • Completions fleet fuel substitution – use compressed natural gas to reduce use of diesel fuel; up to 50% replacement when possible • Low-noise completion fleets – utilizing insulated engine housing and hospital grade mufflers

2.0 Methods

CTEH combined analytical sampling with real-time monitoring to provide a comprehensive set of data from which to assess short-term health risks in addition to public welfare impacts, such as odors. Real-time monitoring can capture near-instantaneous and short-term, transient changes in air quality while analytical sampling provides information about specific airborne compounds in the air over a longer period. The strategy for real-time air monitoring and analytical sampling used for this study is like that used routinely by CTEH during chemical emergency responses at accidental releases as well as support of regulatory compliance at numerous sites in North America, including petroleum-related industrial facilities and their neighboring communities.

This report describes the real-time air monitoring results conducted by CTEH personnel using hand-held instruments throughout the communities surrounding the Big Horn, Cosslett, Echevarria and Kugel

wellpads. This report also describes the analytical data collected in the community during flowback operations at the Big Horn wellpad.

2.1 Real-Time Air Monitoring

The objective of the real-time monitoring was to measure analyte levels in the communities with respect to specific wellpad operations. CTEH staff targeted the surrounding communities with an emphasis on locations downwind of the pad using handheld instruments to monitor the ambient air quality at breathing zone level.

Real-time air monitoring for each wellpad was performed for at least 48 continuous hours followed by 12-hour shift monitoring over the subsequent three days. The duration of phase-specific data capture representative of normal operating activities (Table 1). Real-time air monitoring was conducted during the drilling phase at Kugel wellpad, hydraulic fracturing and flowback phases at Big Horn wellpad and during the production phases at the Cosslett and Echevarria wellpads. Measurements were collected at various distances from the pads ranging from the fence line to approximately one mile from wellpad operations. Maps of the specific location of each real-time measurement are provided in Appendix A.

Real-time air monitoring was conducted according to the CTEH site-specific sampling and analysis plan. Measured analytes included hydrogen sulfide (H₂S), particulate matter with a mean diameter of 2.5 microns (PM_{2.5}) and 10 microns (PM₁₀), nitrogen dioxide (NO₂), total non-methane volatile organic compounds (VOCs) and benzene, toluene, xylene, and hexane using hand-held instruments (Table 1). CTEH personnel used handheld instruments including TSI SidePak aerosol monitors, Gastec GV-100 pumps with chemical-specific, colorimetric detector tubes, and Honeywell/RAE Systems ppbRAEs, UltraRAEs, and MultiRAEs. Instruments were calibrated daily at a minimum and according to manufacturer specifications.

Table 3: Airborne analytes measured using real-time monitoring and/or analytical sampling

Analyte	Justification
Total volatile organic compounds (VOCs)	Assesses for the presence of elevated total non-methane VOCs compared to background.
Benzene	Multiple studies conducted during all phases of natural gas well development, both on-site and in residential communities near oil and gas sites, have repeatedly shown that of all measured VOCs, benzene has the highest potential to cause short-term and long-term health effects and therefore, is considered a risk driver
Toluene	Frequently detected during historical monitoring of oil and gas activities and responses to unintended releases, represents a petroleum constituent that has relatively low health screening guideline values, indicating higher potential for adverse effects.
Ethylbenzene	
<i>m,o,p</i>-Xylenes	

Analyte	Justification
Hydrogen Sulfide	Although studies have shown that hydrogen sulfide levels are generally negligible during oil and gas operations in Colorado, its low odor threshold combined with community concern warrants monitoring.
Particulate Matter (PM_{2.5}/PM₁₀)	Measurement of airborne particulate matter (PM _{2.5} and PM ₁₀) is also proposed because it is frequently cited as a concern from community members that live near oil and gas sites. The main source of PM, if any, is likely to come from dust entrained from vehicular activity or diesel fuel-powered combustion engines.
Nitrogen Dioxide	Nitrogen dioxide is a by-product of gasoline/diesel engine combustion. It has relatively low health screening guideline value, indicating higher potential for adverse effects.

During real-time air monitoring, CTEH personnel also recorded simultaneous observations of odors, wind direction and speed relative to the wellpad, and observed activities or potential odor sources in the community. Fixed locations in the community(s) were monitored at regular intervals (i.e., once per hour) to provide concentration averages that may be observed and analyzed for trends over time within the community. Locations that provide upwind (background) and downwind characterization of compounds were selected, with a primary focus on measuring at locations that were generally downwind of the wellpad in adjacent communities. Wind rose plots of wind direction and wind speed can be provided upon request. This approach was intended to capture the highest number of analyte measurements relevant to potential public health risks in a community. CTEH personnel entered readings from handheld instruments, observations of wind direction and speed, presence of odors, and GPS coordinates of their reading locations into a CTEH smartphone application, which saves the data to a CTEH server. All real-time data were reviewed and underwent an in-house QA/QC process to verify that the concentration values reflected the analytes being measured, data were entered correctly and accurately characterized the environment in which they are being measured.

2.2 Community Analytical Air Sampling

In addition to real-time air monitoring, analytical air samples were collected at four discrete locations away from the work area and in the community during the flowback phase at the Bighorn wellpad. A map of the sample locations is provided in Appendix A.

Samples were collected using 1.4-liter evacuated canisters with 24-hour flow controllers. These samples were deployed for 24-hour periods, which represents a conservative estimate of potential exposures from which to compare to federally established short term health guideline values. All samples were sent under chain-of custody to Pace Analytical, a NELAP-accredited laboratory, and analyzed for a suite of VOCs in accordance with the United States Environmental Protection Agency (US EPA) method TO-15, plus tentatively identified compounds (TICs). A formal QA/QC evaluation of the laboratory data was conducted by Environmental Standards, Inc.



For the initial screening evaluation of potential for community health risks for further decision making, this assessment evaluated acute (short-term) exposures during the flowback phase. BTEX compounds (benzene, toluene, ethylbenzene, and xylene) were selected as high priority compounds of potential concern (COPCs) related to oil and gas activities for this initial evaluation.

Acute toxicity values (called health guideline values) for comparison with the air sampling data were selected following CDPHE memo¹: FA2019 HGVs (updated acute and chronic health guideline values for use in preliminary risk assessments). For BTEX, all health guideline values were from the Agency for Toxic Substances and Disease Registry (ATSDR). According to ATSDR, an acute MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over for up to 14 days of exposure. ATSDR states, “These substance-specific estimates, which are intended to serve as screening levels, are used by ATSDR health assessors and other responders to identify contaminants and potential health effects that may be of concern at hazardous waste sites. It is important to note that MRLs are not intended to define clean up or action levels for ATSDR or other Agencies.”².

3.0 Results

3.1 Real-time Air Monitoring

More than 5,000 readings were collected in real-time by CTEH personnel in the communities surrounding the Crestone wellpads over 26 days. A cumulative summary of off-pad real-time monitoring measurements is provided in Table 4. Summaries of real-time air monitoring measurements by phase are provided in tables 5 through 9.

Table 4: Cumulative Community Real-Time Air Monitoring Summary (All Phases)

Analyte	Instrument	# of Readings	# of Detections	Range*
H ₂ S	MultiRAE Pro	212	0	< 0.1 ppm
NO ₂	MultiRAE	1283	0	< 0.1 ppm
PM ₁₀	AM510/AM520/DustTrak	1297	1297	0.00 - 0.790 mg/m ³
PM _{2.5}	AM510/AM520/DustTrak	1299	1299	0.001 - 0.080 mg/m ³
VOCs	MultiRAE	1	0	< 0.1 ppm
	ppbRAE	1308	1	18 ppb

*If no detections were observed, the instrument detection limit preceded by a “<” is listed.

¹ <https://drive.google.com/file/d/1P2KEvu0MFiyzQAOQtjQUclqR-WGh1bEX/view>

² <https://www.atsdr.cdc.gov/mrls/index.asp>

Table 5: Community Real-Time Air Monitoring Summary for Kugel Drilling Phase

Analyte	Instrument	# of Readings	# of Detections	Range*
NO ₂	MultiRAE	228	0	< 0.1 ppm
PM ₁₀	AM510	238	238	0.005 - 0.046 mg/m ³
PM _{2.5}	AM520	238	238	0.005 - 0.049 mg/m ³
VOCs	ppbRAE	237	0	< 1 ppb

*If no detections were observed, the instrument detection limit preceded by a "<" is listed.

Table 6: Community Real-Time Air Monitoring Summary for Big Horn Hydraulic Fracturing Phase

Analyte	Instrument	# of Readings	# of Detections	Range*
NO ₂	MultiRAE	269	0	< 0.1 ppm
PM ₁₀	AM510	272	272	0.005 - 0.049 mg/m ³
PM _{2.5}	AM520	273	273	0.004 - 0.062 mg/m ³
VOCs	ppbRAE	271	0	< 1 ppb

*If no detections were observed, the instrument detection limit preceded by a "<" is listed.

Table 7: Community Real-Time Air Monitoring Summary for Big Horn Flowback Phase

Analyte	Instrument	# of Readings	# of Detections	Range*
H ₂ S	MultiRAE Pro	212	0	< 0.1 ppm
NO ₂	MultiRAE	245	0	< 0.1 ppm
PM ₁₀	AM520/DustTrak	245	245	0.001 - 0.790 mg/m ³
PM _{2.5}	AM510/DustTrak	247	247	0.001 - 0.08 mg/m ³
VOCs	ppbRAE	257	1	18 ppb

*If no detections were observed, the instrument detection limit preceded by a "<" is listed.

Table 8: Community Real-Time Air Monitoring Summary for Cosslett Production Phase

Analyte	Instrument	# of Readings	# of Detections	Range*
NO ₂	MultiRAE	272	0	< 0.1 ppm
PM ₁₀	AM510	273	273	0.005 - 0.052 mg/m ³
PM _{2.5}	AM520	272	272	0.003 - 0.039 mg/m ³
VOCs	MultiRAE	1	0	< 0.1 ppm
	ppbRAE	274	0	< 1 ppb

*If no detections were observed, the instrument detection limit preceded by a "<" is listed.

Table 9: Community Real-Time Air Monitoring Summary for Echevarria Production Phase

Analyte	Instrument	# of Readings	# of Detections	Range*
NO ₂	MultiRAE	269	0	< 0.1 ppm
PM ₁₀	AM510	269	269	0.003 - 0.045 mg/m ³
PM _{2.5}	AM520	269	269	0.002 - 0.027 mg/m ³
VOCs	ppbRAE	269	0	< 1 ppb

*If no detections were observed, the instrument detection limit preceded by a "<" is listed.

Over 99.9% of all total VOC real-time measurements were non-detects (< 1 ppb) in surrounding communities over the duration of all pre-production and production activities. One (1) out of 1,308 total VOC measurements was above the detection limit of 1 ppb. This detection occurred on October 18, 2019 and measured a one-minute sustained detection of 18 ppb total VOC approximately 4,000 feet northeast of the Bighorn wellpad during the flowback phase of operations. At that time, CTEH personnel noted that they were downwind of site and observed a "manure-like" odor. They also noted that there was livestock nearby. No other odors were noted in the community during real-time monitoring, even during conditions when the VOCs were detected or when transient odors were reported on the wellpad. There were no exceedances of the 20ppb action-level set for VOCs in the community, therefore, no chemical specific measurements were taken for benzene, toluene, xylene or hexane.

No H₂S concentrations were detected. Of the approximately 1,500 readings for PM, only one was higher than typical background values. This reading was recorded on a dirt road at the entrance to the site.

3.2 Off-Pad Analytical Air Sampling

Because flowback phase has been identified by CDPHE as an operational phase that may product higher emissions than other phases, additional analytical air sampling was conducted at four fixed locations in the community over five consecutive days during the flowback phase at the Bighorn Wellpad. A total of 20 samples were deployed for 24-hour periods over five days. As an initial screening level assessment, the air sampling data for selected VOCs were compared to their respective health guideline values that are used by CDPHE to evaluate the potential for short-term health impacts (Table 10). A full summary of lab results is provided in Appendix B.

All detections for each analyte were below their acute health guideline value established by the federal Agency for Toxic Substances and Disease Registry (ATSDR). Acute guideline values were consulted because the analytical data represent potential 5-day (acute) airborne exposures in the surrounding community, and ATSDR acute guideline values are designed to protect even sensitive persons for continuous, 24-hour exposures of up to 14 days. The highest concentration of benzene (0.896 ppb) was reported on October 16 (BHCO1016MC005). This sample was collected at AS05 which is located approximately 500 yards northwest of the wellpad. On October 18, when the real-time detection of 18 ppb total VOCs was recorded

northeast of the wellpad, the corresponding analytical sample (BHCO1018MC008) reported a concentration of 0.785 ppb benzene. This sample was collected at AS08, which is approximately 470 yards northeast of the wellpad. These detections, including the maximum measured benzene concentration, were from 10 to over 13,000-times lower than their respective acute health guideline values.

Table 10: Analytical Air Sampling Summary for Big Horn Flowback Phase

Analyte	# of Samples	# of Detections	Range of Detections (ppbv)	ATSDR Acute Health Guideline Value (ppb) ¹
Benzene	20	19	0.207 - 0.896	9
Ethylbenzene	20	2	0.295 - 0.38	5,000
m,p-xylenes	20	8	0.429 - 1.22	2,000
o-xylene	20	3	0.214 - 0.66	2,000
Toluene	20	20	0.358 - 13.1	2,000

¹ <https://drive.google.com/file/d/1P2KEvu0MFiyzQAOQtjQUclqR-WGh1bEX/view>

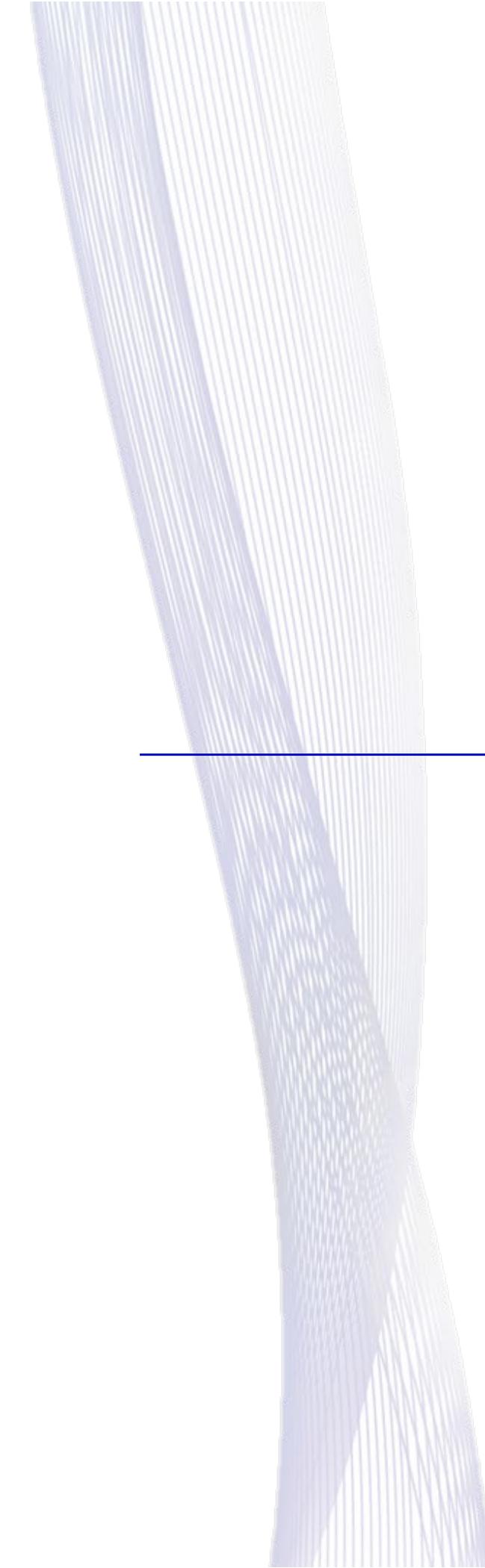
4.0 Impact on Public Health

The real-time air monitoring data and analytical BTEX samples did not indicate any potential increase in adverse health risks to in nearby communities from potential exposures to VOCs that may be emitted by oil and gas wellpad activities at Crestone wellpads. Approximately 99% of the total VOC real-time measurements in the community were non-detects, which means the VOC concentrations were not present or less than 1 ppb total VOCs. Additionally, real-time data indicate no adverse health risks to nearby communities, including sensitive individuals, from exposures to VOCs, H₂S or PM that may be emitted from the operations associated with well development at the various wellpad sites. Corresponding continuous analytical air samples of BTEX were well below their federally established acute health guideline levels.

5.0 Conclusions

CTEH designed and performed a study of air monitoring and sampling to characterize potential for short-term (acute) adverse health impacts to nearby communities resulting from oil and gas activities at Crestone wellpads in Weld County, Colorado. To accomplish this, CTEH collected over 5,000 real-time measurements, along with 20 analytical samples, in communities around multiple Crestone wellpads. Findings from this dataset indicate:

- Pre-production and production activities on Crestone wellpads occurring during the time of these monitoring studies did not result in off-pad migration of VOCs, including benzene, in the nearby community areas at levels expected to cause acute adverse health effects.
- During flowback phase, the maximum detected levels of BTEX in the air in surrounding communities were below their acute health guideline values established by the federal Agency for Toxic Substances and Disease Registry (ATSDR).
- Total VOCs and BTEX concentrations measured during this study were not likely to impact the health of a maximally exposed hypothetical individual living at each of the sampling locations in nearby communities.



Appendix A

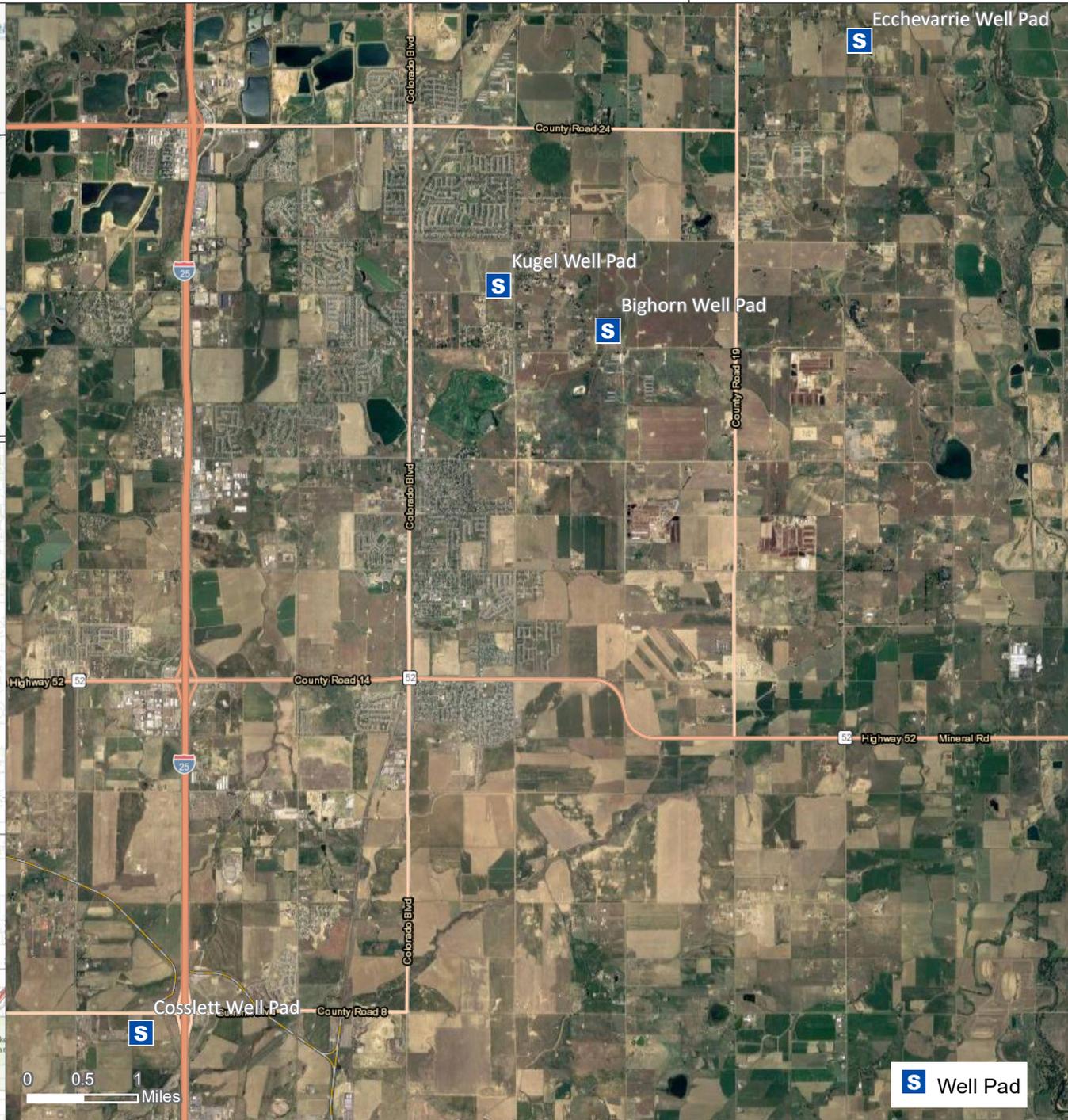
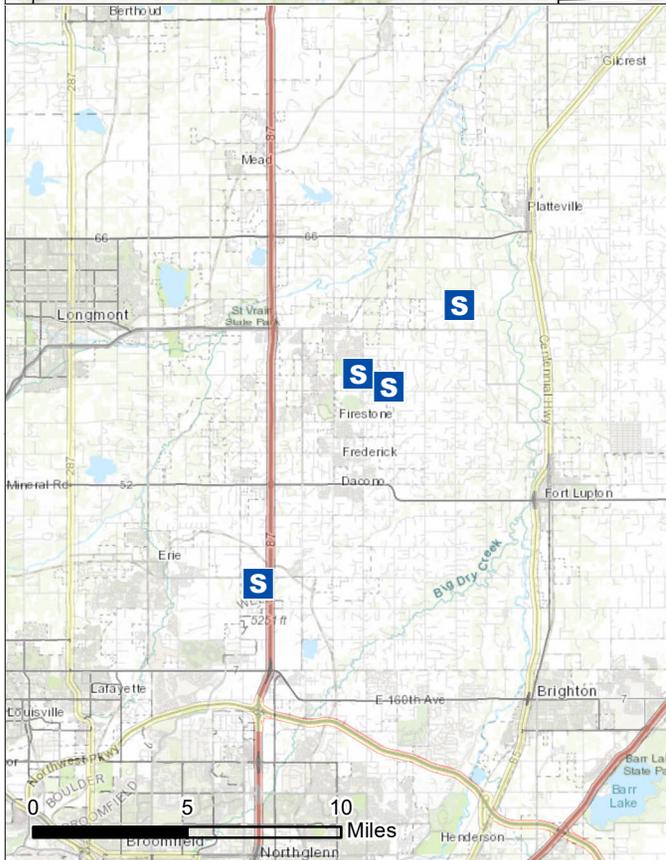
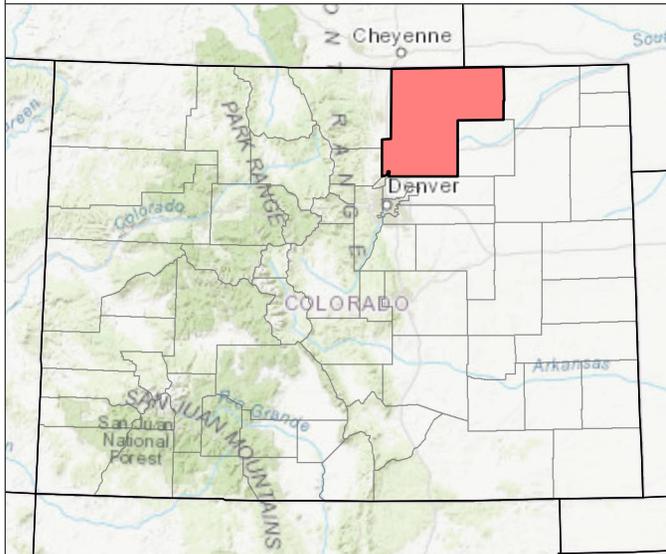
Maps



Crestone Peak Resources Well Pad Monitoring Pad Locations



Project: 111976
Client: Crestone
City: Longmont, CO
County: Weld



S Well Pad

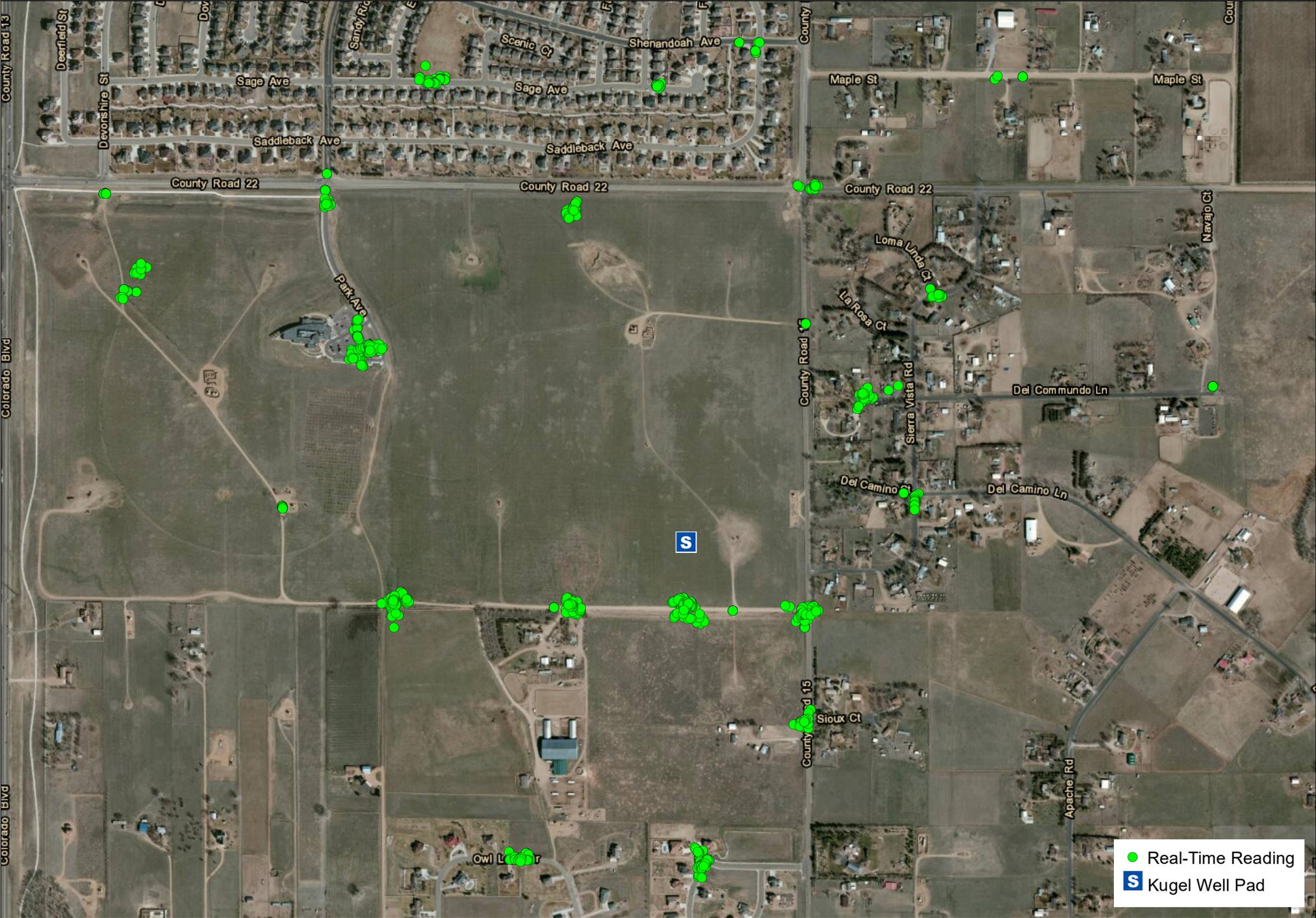


Crestone Peak Resources Kugel Well Pad Drilling Phase
 Hand-Held Real-Time Monitoring Locations | Community Monitoring



0 500 1,000 Feet

Project: 111976
 Client: Crestone
 City: Longmont, CO
 Counties: Boulder/Weld



- Real-Time Reading
- S Kugel Well Pad

*GPS Coordinates are Approximate

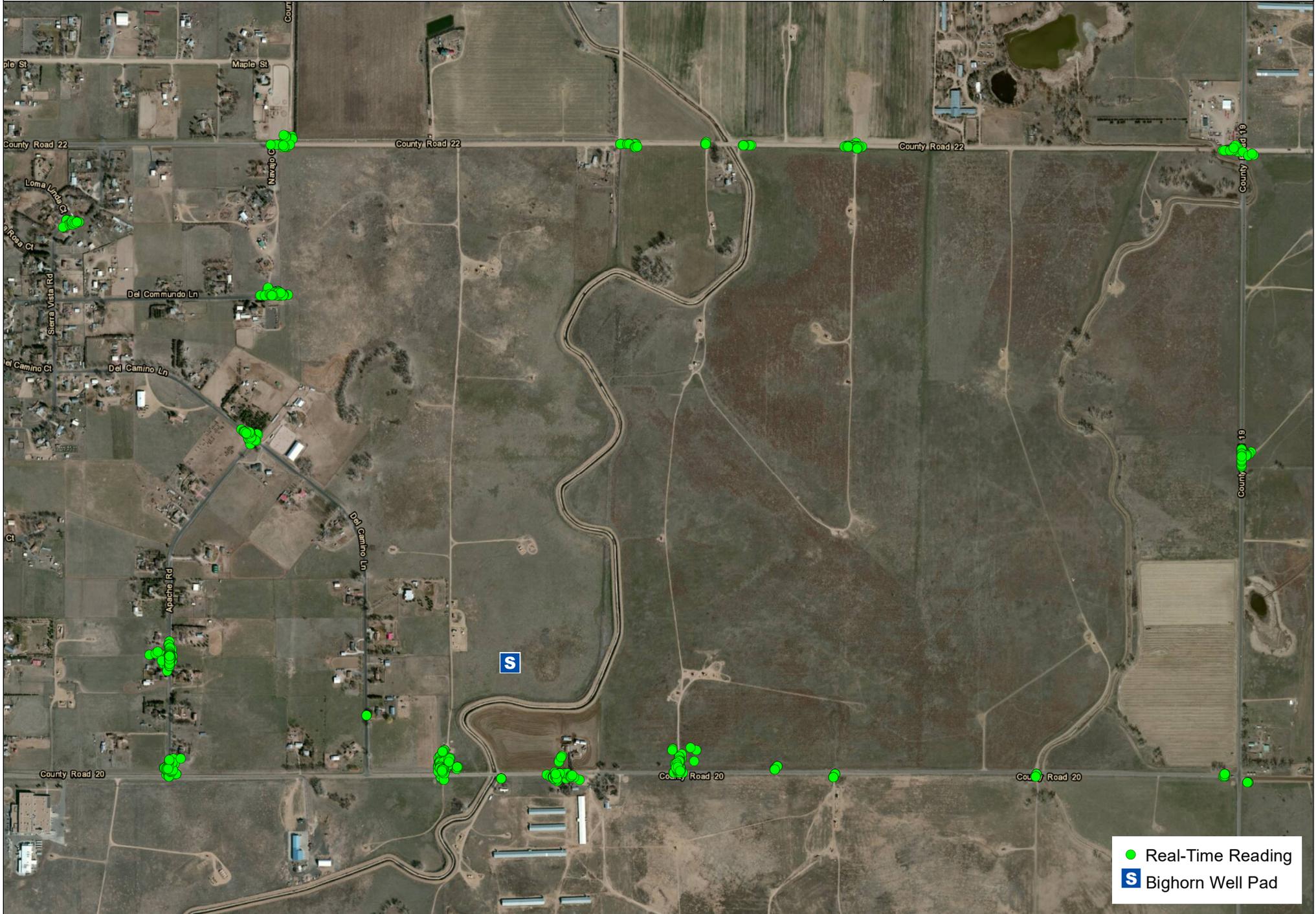


Crestone Peak Resources Bighorn Well Pad Hydraulic Fracturing Phase
Hand-Held Real-Time Monitoring Locations | Community Monitoring



0 700 1,400 Feet

Project: 111976
Client: Crestone
City: Longmont, CO
Counties: Boulder/Weld



- Real-Time Reading
- S Bighorn Well Pad

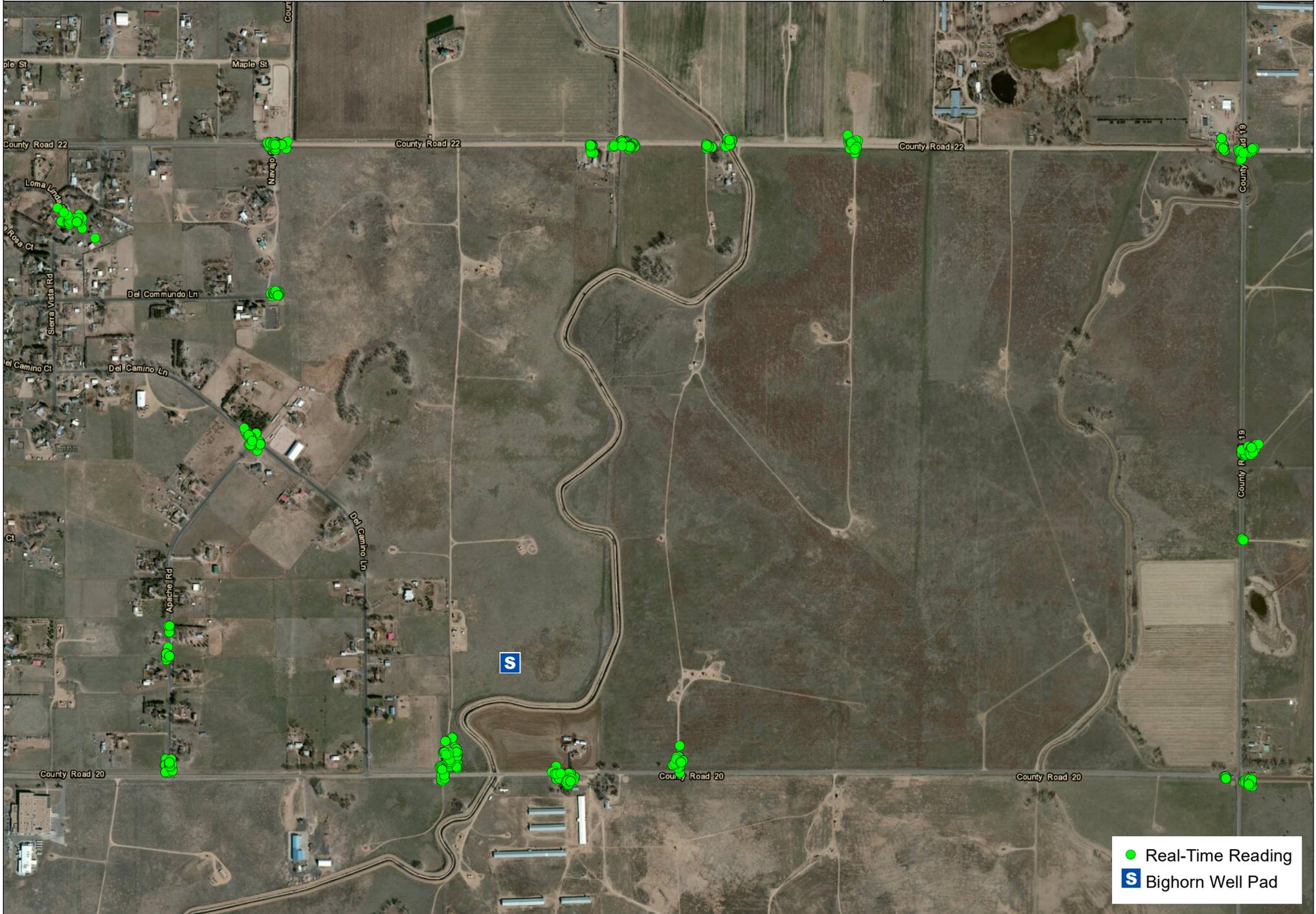


Crestone Peak Resources Bighorn Well Pad Flowback Phase
Hand-Held Real-Time Monitoring Locations | Community Monitoring



0 700 1,400 Feet

Project: 111976
Client: Crestone
City: Longmont, CO
Counties: Boulder/Weld



- Real-Time Reading
- S Bighorn Well Pad



Crestone Peak Resources Bighorn Well Pad Flowback Phase
Analytical Sampling Stations | Community



0 400 800 Feet

Project: 111976
Client: Crestone
City: Longmont, CO
Counties: Boulder/Weld



Analytical Sampling Station
 Bighorn Well Pad

*GPS Coordinates are Approximate

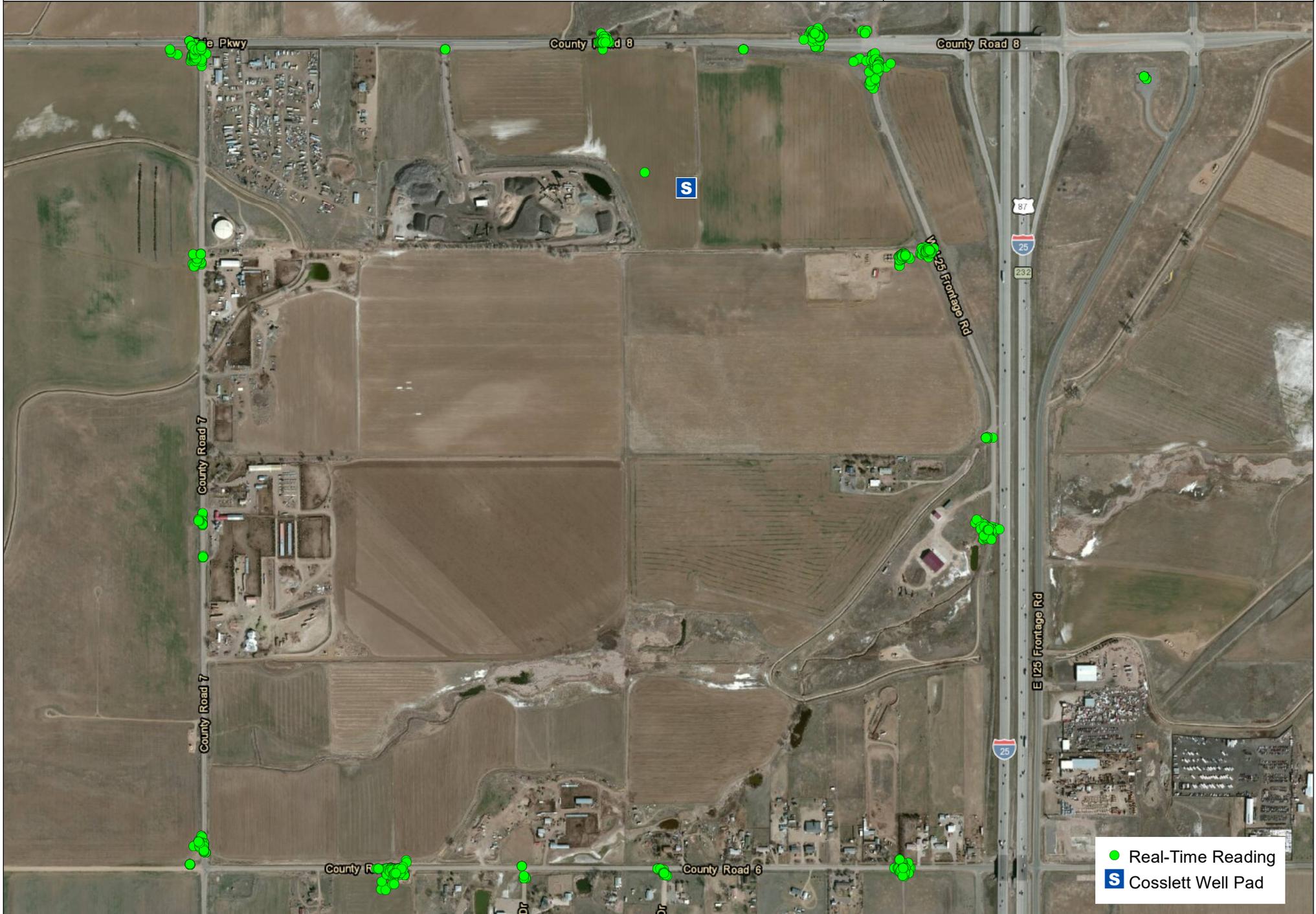


Crestone Peak Resources Cosslett Well Pad Production Phase
Hand-Held Real-Time Monitoring Locations | Community Monitoring



0 500 1,000 Feet

Project: 111976
Client: Crestone
City: Longmont, CO
Counties: Boulder/Weld



- Real-Time Reading
- S Cosslett Well Pad

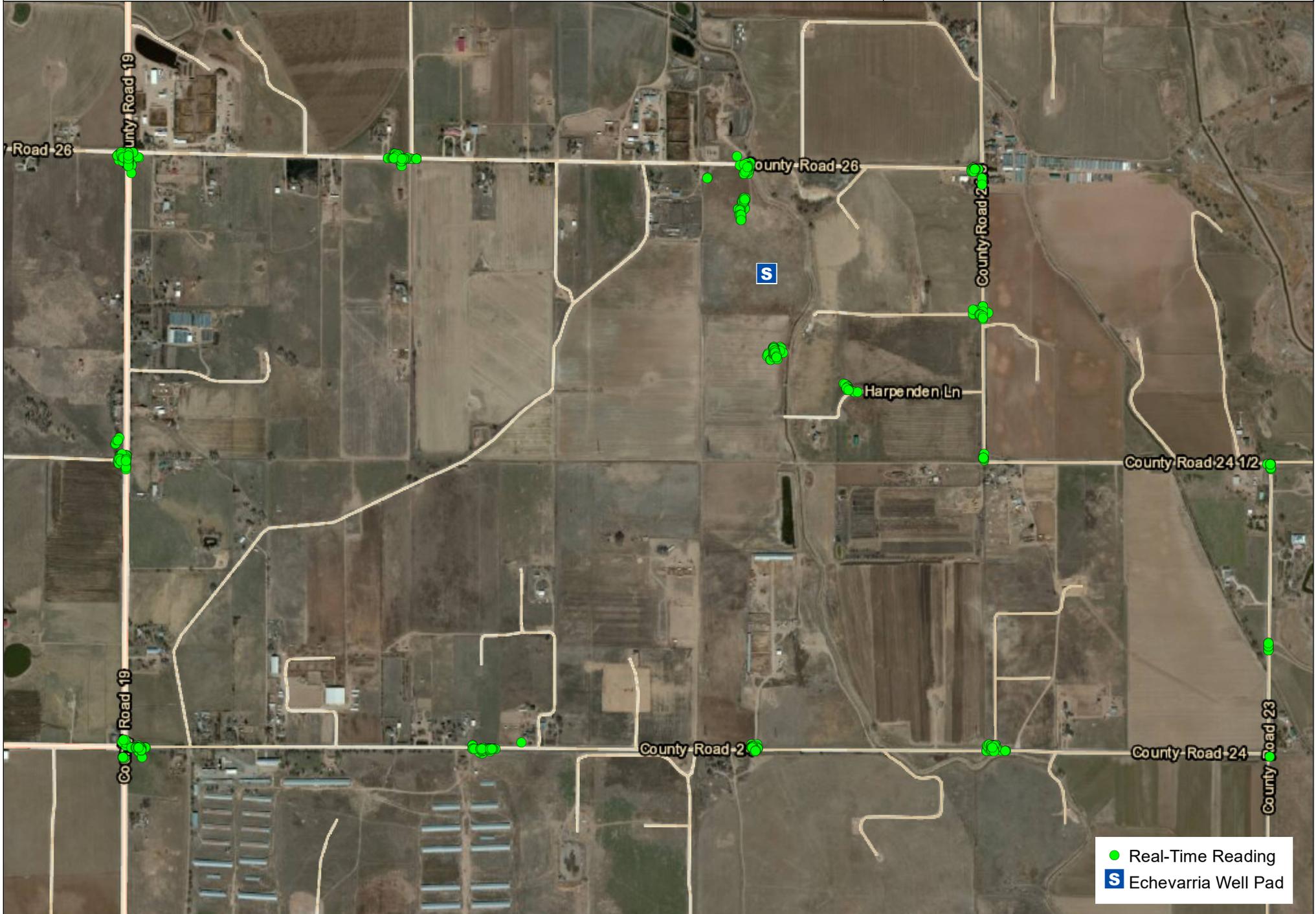


Crestone Peak Resources Echevarria Well Pad Production Phase
Hand-Held Real-Time Monitoring Locations | Community Monitoring

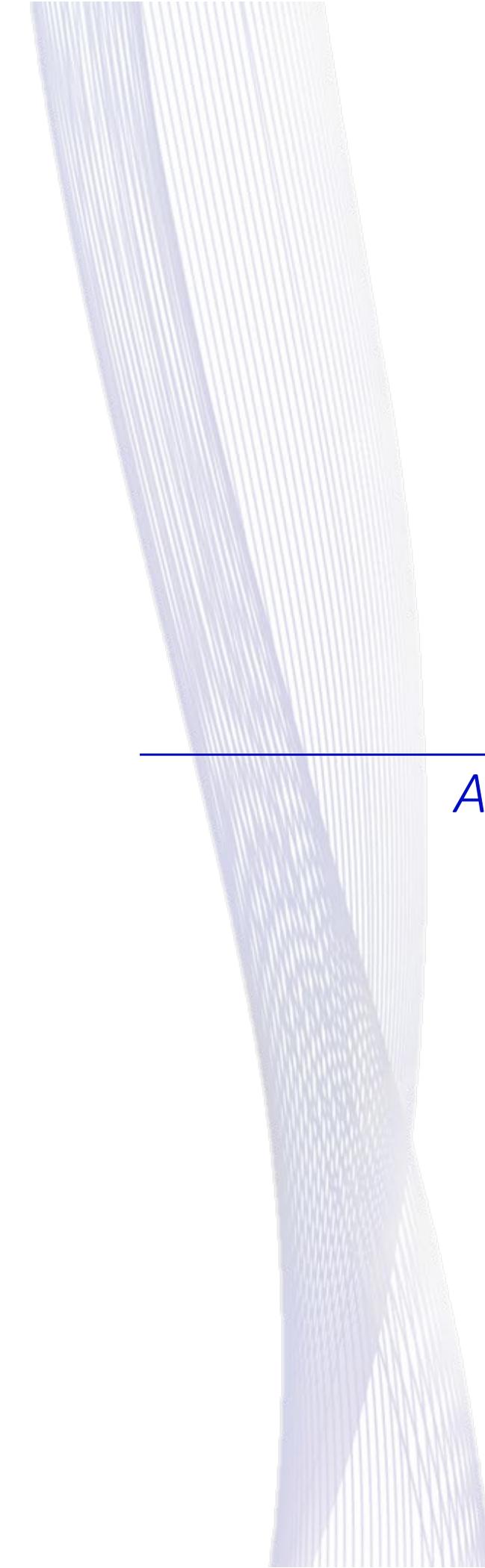


0 750 1,500 Feet

Project: 111976
Client: Crestone
City: Longmont, CO
Counties: Boulder/Weld



- Real-Time Reading
- S Echevarria Well Pad



Appendix B

Analytical Summary Table

Analytical Results BTEX | Crestone Peak Resources

Bighorn Pad - Flowback Phase

Last updated: 12/4/2019 3:25:15 PM

			AS05-BH					AS06-BH				
			Approx. 520 yds NW of well pad					Approx. 510 yds SW of pad				
			October 16, 2019	October 17, 2019	October 18, 2019	October 19, 2019	October 20, 2019	October 16, 2019	October 17, 2019	October 18, 2019	October 19, 2019	October 20, 2019
			BHCO1016MC005	BHCO1017MC005	BHCO1018MC005	BHCO1019MC005	BHCO1020MC005	BHCO1016MC006	BHCO1017MC006	BHCO1018MC006	BHCO1019MC006	BHCO1020MC006
Analysis Method	Result Type	Analyte										
EPA TO-15 + TICs	Target Analyte	BENZENE	0.896 ppbv	0.543 ppbv	0.353 ppbv	0.438 ppbv	0.260 ppbv	0.615 ppbv	0.467 ppbv	0.544 ppbv	0.265 ppbv	0.253 ppbv
		ETHYLBENZENE	0.295 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv
		M,P-XYLENES	1.080 ppbv	0.505 ppbv	< 0.095 ppbv	< 0.095 ppbv	< 0.095 ppbv	0.459 ppbv	0.502 ppbv	< 0.095 ppbv	< 0.095 ppbv	< 0.095 ppbv
		O-XYLENE	0.361 ppbv	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv
		TOLUENE	3.510 ppbv	1.490 ppbv	1.180 ppbv	1.080 ppbv	0.433 ppbv	1.430 ppbv	1.620 ppbv	0.947 ppbv	0.681 ppbv	0.457 ppbv

¹Laboratory non-detections are reported as less than ("<") the laboratory method detection limit.

Detection Color Legend

- Detection
- Non-detect

Analytical Results BTEX | Crestone Peak Resources

Bighorn Pad - Flowback Phase

Last updated: 12/4/2019 3:25:15 PM

Analysis Method	Result Type	Analyte	AS07-BH					AS08-BH				
			Approx. 530 yds SE of well pad					Approx. 470 yds NE of well pad				
			October 16, 2019	October 17, 2019	October 18, 2019	October 19, 2019	October 20, 2019	October 16, 2019	October 17, 2019	October 18, 2019	October 19, 2019	October 20, 2019
BHCO1016MC007	BHCO1017MC007	BHCO1018MC007	BHCO1019MC007	BHCO1020MC007	BHCO1016MC008	BHCO1017MC008	BHCO1018MC008	BHCO1019MC008	BHCO1020MC008			
EPA TO-15 + TICs	Target Analyte	BENZENE	0.419 ppbv	0.600 ppbv	0.343 ppbv	0.313 ppbv	0.207 ppbv	0.787 ppbv	0.705 ppbv	0.785 ppbv	0.348 ppbv	< 0.046 ppbv
		ETHYLBENZENE	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	< 0.051 ppbv	0.380 ppbv	< 0.051 ppbv	< 0.051 ppbv
		M,P-XYLENES	0.512 ppbv	< 0.095 ppbv	< 0.095 ppbv	< 0.095 ppbv	< 0.095 ppbv	0.583 ppbv	0.429 ppbv	1.220 ppbv	< 0.095 ppbv	< 0.095 ppbv
		O-XYLENE	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv	< 0.063 ppbv	0.214 ppbv	< 0.063 ppbv	0.660 ppbv	< 0.063 ppbv	< 0.063 ppbv
		TOLUENE	1.480 ppbv	1.130 ppbv	0.606 ppbv	0.876 ppbv	0.741 ppbv	1.600 ppbv	1.330 ppbv	13.100 ppbv	0.699 ppbv	0.358 ppbv

¹Laboratory non-detections are reported as less than ("<") the laboratory method detection limit.

Detection Color Legend

- Detection
- Non-detect



COGCC INFORMATION SHEET: PROCEDURAL STEPS FOR THE COMMISSION'S REVIEW OF OGDPS

(As required by COGCC Rule 303.e.(2).C)

Why am I receiving this information sheet?

Oil and gas operating companies (“Operators”) are required to obtain approval of an Oil and Gas Development Plan (“OGDP”) from the Colorado Oil and Gas Conservation Commission (“COGCC”) prior to undertaking any new operations such as drilling oil and gas wells or building oil and gas locations. When an Operator submits an OGDP application to the COGCC for consideration, and the application has been received and is deemed complete, COGCC staff begins a formal technical review of the application materials, and a public comment period starts.

COGCC has prepared this information sheet to inform the public of the procedural steps involved with the Director’s and Commission’s review of an OGDP, so that the public is informed and may participate in the review process if they choose. As part of the process, Operators must provide this information sheet to certain recipients, like yourself, that include mineral owners within the area of proposed development and all landowners, homeowners, commercial property owners, tenants, and other entities within 2,000 feet of an oil and gas location proposed by a pending OGDP application.

What is an Oil and Gas Development Plan (OGDP)?

An OGDP is an Operator’s plan to develop oil or gas resources (“minerals”) from one or more surface locations. Operators prepare an OGDP and associated application materials, consistent with the requirements of COGCC Rule 303, and submit the plan for approval through the Commission’s Hearings process. The application materials include a hearing application; one or more Form 2A, Oil and Gas Location Assessments; a Form 2B,

Cumulative Impacts Data Identification; and a Form 2C, OGDP Certification. The application may also include a request for the establishment of one or more Drilling and Spacing Units (“DSUs”). The OGDP, along with its associated supporting documents, will be heard at a public hearing where the Commission will make a final determination to approve or deny the OGDP application.

What are the procedural steps involved with the Director’s and Commission’s review of Oil and Gas Development Plans?

1. **OGDP application is submitted:** Operator/ Applicant submits a complete OGDP application with all supporting documents. The written portion of the application is submitted to the COGCC hearings unit via the eFilings system, and Forms 2A, 2B, and 2C are submitted to technical staff via the eForms system. (See Rules 303 & 304)
2. **OGDP application is received:** The COGCC hearings unit reviews the written hearing application, assigns a docket number for the OGDP, and provides public notice for the hearing. (See Rules 303 & 504)
3. **Completeness determination:** The COGCC technical staff and Director review the application materials for completeness. When deemed complete:
 - a. the OGDP application materials are posted on COGCC’s website;
 - b. the Operator provides notice (including this information sheet) to relevant persons;
 - c. the public comment period begins;
 - d. the formal consultation period commences as applicable (including relevant/ proximate local governments and other agencies such as Colorado Parks and Wildlife (“CPW”) or Colorado Department

- of Public Health and Environment (“CDPHE”)); and
- e. COGCC staff begin their technical review of the OGDG components. (See Rule 303).
4. **Director’s review of application (technical review):** COGCC technical staff conducts the technical review of all application materials to ensure compliance with COGCC Rules, ensure the protection of public health, safety, welfare, the environment, and wildlife resources, and to evaluate potential Cumulative Impacts. The technical review includes analysis and assessment of:
- a. DSUs and protection of mineral owner’s correlative rights;
 - b. proposed surface locations and alternative locations;
 - c. downhole and engineering considerations;
 - d. best management practices;
 - e. public comments and recommendations provided by consulting agencies;
 - f. financial assurance; and
 - g. the need for conditions of approval. (See Rule 306)
5. **Director’s recommendation:** Once the Director has reviewed the application materials, the Director provides a written recommendation to the Commission in support of the approval or denial of the OGDG application. The Director will post the recommendation on COGCC’s website, notify relevant parties¹, and submit it to the COGCC hearings unit in preparation for hearing. (See Rule 306.c)
6. **Commission’s consideration and final action (public hearing):** The Commission receives the

Director’s recommendation of the OGDG and begins review of the OGDG with support from the COGCC hearings unit. The review includes all supporting documents, written testimony, public comments, consulting agency recommendations, and Director’s recommendation. The Commission considers the OGDG at a public hearing, which may include oral testimony provided during the hearing. The Commission makes a final determination and presents its findings in a written order based on the evidence in the record; the Commission’s order to approve or deny the OGDG application is final. (See Rule 307)

Where can I get additional information?

For more information about the COGCC administrative hearing process and OGDGs, please refer to the COGCC website at <http://cogcc.state.co.us>. You may also contact the COGCC at dnr.ogcc@state.co.us or 303-894-2100. Please note, COGCC staff are not available to provide legal advice. COGCC recommends that you engage an attorney with knowledge of oil and gas matters to assist you with reviewing any offers you receive from an oil and gas operator or other person.

¹ Parties who receive this information sheet will not necessarily be included in the notice of the Director’s recommendation. Parties who make a public comment on the Form 2A and include their email address will receive the notice of the Director’s recommendation.



COGCC INFORMATION SHEET: PUBLIC COMMENTS

(As required by COGCC Rule 303.e.(2)D)

Purpose

This information sheet provides details on how to make public comments on an Oil and Gas Development Plan submitted to the Colorado Oil and Gas Conservation Commission via the Form 2A, Oil and Gas Location Assessment permit application.

Why am I receiving this Information Sheet?

You have received this Colorado Oil and Gas Conservation Commission (“COGCC”) information sheet because an oil and gas operator (“the Operator”) has submitted an application for an Oil and Gas Development Plan (“OGDP”), and that application is under review by the COGCC. Per COGCC Rule 303.e.(1), the Operator is required to provide this information to you within seven days of the application materials being posted on the COGCC website.

COGCC Rule 303.d requires the COGCC to open a formal “public comment period” upon posting the OGDP application to our website. This public comment period allows the public to review OGDP applications and their components (i.e., proposed Oil and Gas Locations), and provide comments on those pending permit applications.

How can I provide comments on pending permits in an OGDP?

Members of the public can access OGDP applications through the COGCC website to review permit information and provide comments. Public comments may be made directly on Form 2A, Oil and Gas Location Assessment permit applications (“Form 2A”) through the COGCC website.

1. Go to the COGCC website <https://cogcc.state.co.us>
2. On the green menu bar, click on the “Permits” page. This will take you to the “Drilling and Location Permits Search” tool for Pending Permits.



3. Under “Pending Permits”, find “Oil and Gas Location Assessment Permits (Form 2A)”. Select the county of interest from the dropdown menu and click “Go!”

Pending Permits (Filed ON or AFTER January 15th, 2021)

Oil & Gas Location Assessment Permits (Form 2A):

4. This will generate a table of pending applications and will indicate the status of the public comment

period for each permit within the COGCC review process.

5. Scroll through the list of pending permits to find the one you would like to review. You may wish to use “ctrl + f” to search for a specific document number, operator name, or location name.
6. To view the submitted Form 2A and its associated attached documents, click the “Location Name” link for any permit application.

Pending Location Permits - All Counties

Doc Number (Public Comment Link)	Final day of Public Comment Period (Closes at Midnight)	Received	Location Name (Documents Link)	Status	Status Date
402165141	03/11/2021	01/26/2021	Brian_Test_d	IN PROCESS	01/26/2021

7. To make a public comment on a specific permit application, click the “Doc Number” of the permit on which you wish to comment.

Pending Location Permits - All Counties

Doc Number (Public Comment Link)	Final day of Public Comment Period (Closes at Midnight)	Received	Location Name (Documents Link)	Status	Status Date
402165141	03/11/2021	01/26/2021	Brian_Test_d	IN PROCESS	01/26/2021

After clicking the Doc Number link, you will be taken to the Public Comment portal.

8. In the Public Comment portal, you may review the Form 2A application including the PDF and all attachments.

Selected Well / Location:

Document Number	Form Type	
402165141	02A	COL

9. To make a public comment, click the “Make Comment” button. A Form will open for you to provide your name, contact information, and your comment. Only the text in the Comment box will be made public; your contact information will be kept confidential by COGCC.

Please fill out the fields below in full to submit your comment.

Name: Email:
 Address: Phone Number:
 City: State: Zip:
 Subject:
 Comment:

10. Click the “Submit Comment” button when you are ready to submit your comment.

11. You may also view other public comments and read yours after it is posted by scrolling down on this page (see below about a delay in displaying comments).

How long do I have to submit a comment on a permit?

The Public Comment Period begins once the COGCC Director determines the OGDG application is complete and has been successfully submitted by the operator. The Director will approve the Form 2C, OGDG Certification form, and post the OGDG application on the website for public review.

In order to be considered by the Director and Commission during the review of the OGDG, public comments must be received as follows:

1. Within 30 days from the date that the Director posts the OGDG on the website, OR
2. Within 45 days if the OGDG includes any proposed Oil and Gas Locations within 2,000 feet of a Residential Building Unit, High Occupancy Building Unit, or School Facility within a Disproportionately Impacted Community.

The final day for public comments can be found in the list of all pending permits:

Pending Location Permits - All Counties

Doc Number (Public Comment Link)	Final day of Public Comment Period (Closes at Midnight)	Received	Location Name (Documents Link)	Status	Status Date
402165141	03/11/2021	01/26/2021	Brian Test 4	IN PROCESS	01/26/2021

When the Public Comment Period closes, the date will revert to read “Comments Closed”. The link to the public comment portal will remain active, but comments will no longer be accepted. You will still be able to view any public comments submitted for pending permits.

The Director may extend or reopen the public comment period per Rule 303.g, for up to an additional 30 days for a proposed OGDG if the Director determines an extension or reopening is reasonable in order to obtain public input.

What happens to my comment?

Your comment will become part of the public record of the application and will be reviewed by the applicant, COGCC staff, Director, and the Commission. COGCC staff may recommend permit conditions in response to comments. But, Staff does not routinely respond

individually to comments; instead, COGCC staff will work directly with the applicant to address the site-specific concerns expressed.

Submitted comments may not be immediately visible; it may be a few days before you see your comments posted. This delay allows COGCC supervisory staff to screen for offensive language prior to publication.

What if I want to make my comment to the Commission?

COGCC Staff and the Director review every comment received on a Form 2A permit application. They review the site specific concerns against the totality of the application materials, including the alternative location analysis, cumulative impacts evaluation, and best management practices proposed by the applicant. When the Director makes a recommendation to the Commission to either approve or deny an OGDG, that recommendation will include the consideration of the public comments received.

In their review of an OGDG for a final determination at the administrative hearing, the Commission will have access to the entire record, including your public comment.

Can I remain anonymous?

Yes. Only the “Comment” portion of your submitted comment will be made publicly viewable. Your name and contact information will be kept confidential, and will only be used by COGCC staff to contact you if necessary in the course of permit application review. If you choose to include your name and contact information in the body of your comment text, it will be part of the public record.

Links

The following links provide guidance and additional information on providing Public Comments.

COGCC Permits Page:

<https://cogcc.state.co.us/permits.html#/permits>

Numerous helpful guidance documents can be found at the link on the COGCC Permits Page:

<https://cogcc.state.co.us/permits2.html#/permithelp>

Daily Activity Dashboard (DAD) is another useful tool and can be used to access the public comment portal as well: <https://cogcc.state.co.us/dashboard.html>



COGCC INFORMATION SHEET: OGDP STATUS INFORMATION

(As required by COGCC Rule 303.e.(2).G)

Why am I receiving this information sheet?

The Colorado Oil and Gas Conservation Commission (“COGCC”) prepared this information sheet to inform the public in the vicinity of a proposed Oil and Gas Development Plan (“OGDP”) how to access documents and view the status of proposed OGDPs through the COGCC’s website, eForms, and eFiling system. A review of public property records indicates that you may have an interest in lands that an oil and gas operator wishes to develop as part of an OGDP. Pursuant to Commission Rule 303.e.(2).G, operators are required to provide this information sheet to certain recipients near their development plans.

What is an Oil and Gas Development Plan?

An OGDP is an operator’s plan to develop subsurface oil and gas resources (“minerals”) from one or more surface locations. An OGDP consists of a hearing application and associated permit materials that provide technical information. The Director (i.e. COGCC Staff) reviews the technical information and makes a recommendation to the Commission for the hearings application; the Commission has the ultimate authority on approval or denial of the OGDP.

How do I view the status of the pending OGDP hearing application?

Members of the public may view the status of proposed OGDP applications through the COGCC eFiling System by creating an account in the Applications and Docket Portal, available on the “Hearings Page.”

1. From the COGCC homepage, click “Regulation” in the green menu bar, and then “Hearings” on the blue bar.
2. On the right-hand side of the Hearings page, under the Hearings eFiling System header, click on “Application and Docket Portal”.

Hearings eFiling System (Beginning November 9, 2020)

- Document Search
- Application & Docket Portal

3. Create a user account by clicking “Request Access to Account,” and completing the

required registration information. There may be a delay for processing following your request before you are granted access. Check your email for access approval.

4. Once registration is complete, access the Application and Docket Portal by entering your user name and password.
5. Search for the 9-digit docket number provided by the operator in their cover letter using the “Find Hearing Application by Docket Number” option at the bottom left of the page.

Find Hearing Application by Docket Number

SEARCH RESULTS

Docket Number

210012345

6. The general status of the docket is listed in the first column on the left, titled “Docket Status.”
7. Double click the docket search result to load the docket’s main page, which will show additional information, including the application type, status, assigned Hearing Officer, and applicant information.

Do I have to create an account to view documents?

No. You may view documents through the “Document Search” described below without creating an eFiling System account, but you will not be able to view the “status” of the docket through this method.

1. On the right-hand side of the Hearings page, under the Hearings eFiling System header, click on the “Document Search” link.

Hearings eFiling System

(Beginning November 9, 2020)

- Document Search
- Application & Docket Portal

2. From the “Search Type” dropdown menu, select “DNRCOG Search for Docket Related Documents.”

Search Type

- DNRCOG New Applications
- DNRCOG New Applications
- DNRCOG New Documents
- DNRCOG Search for Docket Related Documents

- Input the docket number provided by the operator.

DNRCOG Docket Number

210012345

- If you don't have a docket number, or to view any OGD, scroll down to the "DNRCOG Application Type" dropdown menu and select "OIL & GAS DEVELOPMENT PLAN."

DNRCOG Application Type

ADDITIONAL WELLS
 COMPREHENSIVE AREA PLAN
 ENFORCEMENT
 EXCEPTION LOCATION
 GENERAL ADMINISTRATIVE
OIL & GAS DEVELOPMENT PLAN
 OTHER

- After step 3 or 4, scroll down and click the "Search" button at the bottom of the scroll bar.
- A list of all related documents will appear. Click on any item to view its contents.

How do I view general forms, permits, and data regarding permits and OGDs?

You may use the Daily Activity Dashboard to access frequently requested oil and gas data at the county and state levels. The Daily Activity Dashboard is located in the right-hand corner of the COGCC homepage, and allows you to search and generate custom-made statistical charts, graphs, tables, and maps for information including pending permits, well status, production, well inspections, Notices of Alleged Violation, active notifications, and spills. The COGCC also provides access to pending and approved permits through its "Permits Search" and interactive map on the COGCC website.

To view the status of pending Form 2As (Oil and Gas Location Assessment Permits) through the "Permit Search" function, follow the steps outlined below:

- Click "Permits" in the green menu bar on the COGCC homepage. This will take you to the "Drilling and Location Permits Search" page.
- Under Pending Permits, find "Oil & Gas Location Assessment Permits (Form 2A)". Select "All Counties" or a specific county using the drop down menu and click "Go!".

Pending Permits (Filed ON or AFTER January 15th, 2021)

Oil & Gas Location Assessment Permits (Form 2A):

- A table will show all pending Form 2As currently under review by the COGCC.

Click here to open page in a new tab/window

Pending Location Permits - All Counties

Doc Number	Received	Location Name (Documents Link)	Status	Status Date	Related 2D Doc Number	Related 3D Doc Number	Type of Permit	City	Section	Township	Range	County	Footage Call (Map Link)
48218577	9/27/2021	Sabina 3	IN PROCESS	02/14/2021			Well Location	NEHU	3	4S	60W	DEWEER	C
48218579	9/27/2021	Sabina 3rd Cont.	IN PROCESS	9/27/2021			Well Location	NEHU	3	4S	60W	DEWEER	C
48218589	9/27/2021	Sabina 11	IN PROCESS	9/27/2021			Well Location	NEHU	3	4S	60W	DEWEER	C
48218592	9/27/2021	Sabina 13	IN PROCESS	9/27/2021			Well Location	NEHU	3	4S	60W	DEWEER	C

- Clicking a "Doc Number" link will take you to the Public Comments portal for that pending permit.
- Clicking a "Location Name" link will take you to a list of documents related to that permit, including the Form 2A (as submitted by the operator) and supporting documents that are attached to the pending permit application.

Can I view pending applications on the COGCC Map?

Yes. You may access the COGCC GIS Online Interactive Map by clicking "Maps" in the green banner on the COGCC homepage, then click "Click HERE to access interactive map". You may use the "address search" option to zoom to your address to see oil and gas activity near you. With the map zoomed to your area of interest, you may specify pending permits by checking the appropriate boxes on the left-hand menu.

Permits

- Pending Well (Form 2) Permit
- Approved Well (Form 2) Permit
- Pending Location (Form 2A) Permit
- Approved Location (Form 2A) Permit

To select and view a pending application, use the arrow tool to double-click on the pending icons to display the Application.

Links

COGCC Homepage:

<https://cogcc.state.co.us/#/home>

Hearings Page:

<https://cogcc.state.co.us/reg.html#/hearings>

eFiling system help:

http://cogcc/documents/reg/Hearings/External_E_filing_System_Users_Guidebook_20201109.pdf

COGCC GIS Online Interactive Map help:

<http://cogcc/documents/about/Help/Search%20pending%20permits%20on%20the%20COGCC%20map.pdf>