

Extraction's Response to Broomfield Public Comments on Extraction's COGCC Form 2A (dated April 23, 2018)

Requested by: COGCC
Submitted by: Extraction Oil & Gas
Revised: 5/25/18

Livingston Pad

1. Please clarify the apparent confusion between Extraction's agreement (CDP and MOU) with Broomfield and the COGCC permitting process.

The Broomfield Municipal Code provides two available methods for obtaining a local permit approval for oil and gas development within the municipality. The first method is a Use by Special Review application. The second method is seeking an administrative approval by memorandum of understanding. When seeking an administrative approval by memorandum of understanding ("MOU" or "Operator Agreement") the operator has to first enter into the Operator Agreement with the City as to the enhanced standards that may exceed local and state regulations. Once the Agreement is approved by the City, the applicant/operator is required to follow the terms of the Agreement as well as provide the submittal requirements set for in the in the Use by Special Review criteria of the Broomfield Municipal Code. The Use by Special Review criteria which among items consists of various mitigation plans as well as the terms of the Agreement together comprise of what is called a Comprehensive Drilling Plan or "CDP" which includes among items various baseline studies and mitigation plans which serve as the plan for Extraction's development.

The Broomfield local permitting process is separate and unrelated to the COGCC permitting process. The COGCC has its own permitting and approval process for the location assessment (Form 2A) as well as the application to drill (Form 2). Approval of the COGCC Form 2As or Form 2s is not linked to the Broomfield local process. Extraction's Operator Agreement with the City and County of Broomfield was approved by the City Council on October 24, 2017.

2. Please prepare responses to address the concerns about site-specific nuisances, including traffic, noise, lights, odors, dust, etc. These responses can also point to BMPs on the Form 2As.
 - a. Traffic: Traffic will be routed to minimize local interruption. A traffic plan is required by the City and County of Broomfield and shall be coordinated with the local jurisdiction prior to commencement of move in and rig up. Fresh water to location, produced water & oil will be transported through a pipeline gathering system which will significantly reduce truck traffic. Also Extraction will use a proppant delivery systems such as the Liberty PropX delivery system

that will reduce truck traffic, dust and noise impacts by improve the manner the proppant is transported.

In its Operator Agreement with the City and County of Broomfield, Extraction has agreed to a restrict non-essential traffic to and from Well Sites from occurring during the time periods of 7a.m.-9a.m., 3-6 p.m. which are considered peak traffic hours.

- b. Noise: Thirty-two foot high perimeter sound walls will be used during drilling and completion operations. Sound walls will be installed on the edges impacting nearest neighbors.

For this location, Extraction will use the Liberty Quiet Fleet or comparable technology from an alternative vendor on all Well Sites. The “Quiet Fleet” is a step change in noise mitigation during the completion process. Noise is significantly reduced the noise during the completion phase of the wells.

Baseline noise monitoring will be conducted prior to commencement of pad construction. Additional sound mitigation measures will be considered and implemented pursuant to third party recommendations. All noise survey data will be made available to the COGCC inspector upon request.

The Operator shall continuously monitor noise and continuously collect and store noise readings with instruments placed between the Oil and Gas Location and residential Building Units. The Operator shall conduct the monitoring and data collection during construction, drilling, and completions operations. This data shall be available to COGCC on tables or graphs within 48 hours of being requested by COGCC. The Operator shall conduct a 72 hour baseline noise survey from a minimum of three points prior to the commencement of construction.

For the development wells, to provide long term noise mitigation at this location all production equipment will powered by electricity. If needed, sound mitigation panels will be installed around the compressors during production operations to shield sensitive areas.

Extraction is working with United Power to supply sufficient electrical power for the drilling rig to drill the wells. Easements are being procured from the Landowners and the existing infrastructure is being upgraded in order to handle the larger electrical loads. While Extraction plans on drilling these wells on electrical power only, the rig will have back-up diesel-powered generators in the event of an upset condition with the electrical supply from United Power. At that point, Extraction would use the diesel generators to power the rig until service from United Power was restored.

The use of pipelines to transport, water, oil and gas will also minimize noise impacts associated from truck traffic.

- c. Lights: All lights will be directed downward, inward and shielded so light pollution is minimized. During the Drilling and Completion Phases, consistent with applicable law,

Operator will construct a 32-foot high perimeter sound wall surrounding the well pads and operations area, as permitted, to reduce light escaping from the site.

The use of berms and hay bales together with the 32-foot high perimeter sound walls will also mitigate night time light associated with truck traffic.

- d. Odors: Oil & gas facilities and equipment shall be operated in such a manner that odors do not constitute a nuisance or hazard to public welfare. Extraction will use a mud cooling system to control the release of odors within the drilling and fracturing fluids. Odor preventing additives will be on site for use if and when needed. Extraction will use a base fluid that will decrease the measurable aromatic properties by more than 50% of regular drilling fluid. Operator is prohibited from masking odors from any oil and gas facility site by using masking fragrances.
- e. Dust: During construction and through the life of this location, Extraction will utilize watering, via water trucks, to control fugitive dust. Additionally, the access road will be constructed with aggregate road base material and recycled asphalt and vehicle speeds will be limited to twenty five miles per hour to reduce dust.

Extraction shall employ practices for control of fugitive dust caused by their operations. Such practices shall include but are not limited to the use of speed restrictions, regular road maintenance, restriction of construction activity during highwind days, and silica dust controls when handling sand used in hydraulic fracturing operations. Additional management practices such as road surfacing, wind breaks and barriers may be used.

As stated previously, Extraction will use a proppant delivery systems such as the Liberty PropX delivery system that will reduce truck traffic, dust and noise impacts by improve the manner the proppant is transported.

- f. Emissions/Leak Detection: Saleable gas will not be flared, it will be sent downline. For maintenance or upset conditions the use of a maintenance vessel and emission control devices will be utilized. Extraction will monitor production facilities weekly at a minimum to a maximum of daily to identify fluid leaks, including, but not limited to, visually inspecting all wellheads and equipment. As part of Extraction's Leak Detection and Repair (LDAR) program, all equipment including above ground flowlines and piping will be inspected quarterly with an infra-red camera for the first 5 years of production.
3. Please prepare responses that addresses coordination with local emergency responders and the public's concerns about safety, explosion, fire risks, and proximity to schools. These responses can also point to BMPs on the Form 2As.

Extraction maintains a Tactical Response Plan (TRP), also at times referred to as the Emergency Response Plan, which is designed to provide Extraction employees and designated Emergency Response Team (ERT) members with the information necessary to respond to incidents in a safe,

rapid, effective, and efficient manner. The TRP is kept at Extraction's office and a copy is provided to the North Metro Fire Rescue District and the City of Broomfield. Extraction will place the TRP summary card in strategic places on the facilities during specific operational and copies of the summary card is provided to the North Metro Fire Rescue District to be kept in the responding fire engines. The access road will be constructed to accommodate local emergency vehicles.

The nearest school Prospect Ridge Academy is over $\frac{3}{4}$ of a mile away from the nearest pad, Northwest A.

4. Please prepare responses to the public's concerns regarding threats to drinking water and potential spills. These responses can also point to BMPs on the Form 2As.

Surface casing depth will be set deeper than the lowest underground source of drinking water. Multiple layers of cement and casing protect the groundwater. Baseline water samples will be collected in compliance with Commission Rule 318A(1)f. which addresses water sampling.

In order to contain any potential spills, Extraction shall utilize steel-rim berms around all permanent facility equipment at the Well Sites with sufficient capacity to contain 1.5 times the maximum volume of all liquids that will be contained at a facility at any given time plus sufficient freeboard to prevent overflow. All berms and containment devices shall be inspected quarterly by the Operator and maintained in good condition. Secondary containment such as duck ponds or lined earthen berms for temporary tanks shall also be used.