



September 5, 2019

Eric Jacobsen, Senior Vice President of Operations  
Extraction Oil and Gas, Inc.  
370 17th Street, Suite 5300  
Denver, Colorado 80202

Re: Odor complaints and NeoFlo Drilling mud

Dear Eric:

We were disturbed by your recent notification indicating Extraction intends to switch to a different synthetic drilling mud that is untested in Broomfield or even Colorado. Let this serve as a written demand that until, and unless a drilling mud that is tested and proven to be safer and odorless is identified, there will be no change in the mud. Additionally, we demand compliance with the Operator Agreement of the usage of the Tier 4 Quiet Fleet engines at all well pads and for all current and future operations in Broomfield. Extraction has proven that Tier 4 engines are in fact 'commonly available' for their operations in Broomfield.

**Drilling Mud:**

With regards to the emission section in the Operator Agreement provides at BMP No. 48, Odor:

Odor emitting from Well Sites must be controlled. Operator to prevent odors from oil and gas operations by proactively addressing and, to the extent possible, resolving complaints filed by impacted members of the community, in coordination with City public health staff. Operator must use a filtration system or additives to the drilling and fracturing fluids to minimize odors. Operator is prohibited from masking odors from any oil and gas facility site by using masking fragrances.

Extraction used hydrocarbon based drilling mud at the Interchange B Pad. During that time, Broomfield received 113 complaints about odor from your operations. The air quality monitoring data collected by Ajax and CSU show that there were elevated levels of aromatic hydrocarbons during the drilling phase at the Interchange B Pad, which correlates the use of the hydrocarbon based drilling mud with the odor complaints. Complaints continued to be received when you moved your drilling operations to the Livingston Pad at which point Extraction switched to the synthetic drilling mud, NeoFlo. Since switching to NeoFlo, odor complaints have declined significantly to 30.

**Tier 4 Quiet Fleet Engines:**

With regard to the use of Tier 4 engines in Broomfield operations, the Operator Agreement provides at BMP No. 20, Air Quality:

**A. Minimization of Emissions.**

To protect air quality, the following will be required:

The use of Tier 2 and liquified natural gas dual fuel hydraulic fracturing pumps. **If Tier 4 fracturing pumps become commonly available, Operator will begin using Tier 4 fracturing pumps.**

The use of Tier 4 engines have been proven to reliably reduce NOx and particulate matter emissions. The use of the Tier 4 engines significantly reduced complaints related to air quality and odor. Since the

Livingston Pad is in close proximity to residential properties, emissions and odor control is of the utmost importance.

In the City & County Manager's conditional approval of the Comprehensive Drilling Plan, August 20, 2018, letter, it explicitly stated that "Extraction will comply with all safety requirements of the CDP and implement any additional, reasonable, future measures needed to ensure safety." Tier 4 Engines and odor free synthetic drilling mud are both reasonable measures to ensure the public is not exposed to unnecessary emissions. Tier 4 Engines and odor free synthetic drilling mud are not optional, but rather requirements of the Operator Agreement as cited above and necessary for the protection of public health, safety, and the environment. Broomfield expects that Extraction will live up to the Operators Agreement.

Sincerely,



Jennifer Hoffman  
City and County Manager

cc: Eric Christ, General Counsel, Extraction Oil & Gas, Inc.  
Randy Ahrens, Mayor  
City Council  
T. Shaun Sullivan, City and County Attorney  
Jeff Robbins, Executive Director of the Colorado Oil & Gas Commission  
John Putman, Director of Environmental Programs, Colorado Department of Public Health