



March 23, 2018

Mr. Chandler Newhall
Extraction Oil & Gas
370 17th Street, Suite 5300
Denver, CO 80202

Chandler:

The City and County of Broomfield (CCOB) is submitting the following comments and questions associated with the Emergency Response Preparedness Plan, the Hazardous Materials Management Plan, and the Risk Management Plan sections of Extraction's draft Comprehensive Drilling Plan.

Emergency Response Preparedness Plan:

1. Extraction shall provide hose lay distances from the hydrants to the center of each pad. At that time CCOB and the NMFRD can determine if additional hydrants or water supply systems would be required. Even though requested, NMFRD has not received those distances yet.
2. If determined necessary by NMFRD, Extraction shall agree to provide hydrant access on the lease side of Sheridan and Huron so that CCOB/North Metro Fire Rescue District (NMFRD) can make connections without blocking roads for responding emergency vehicles. That would require extending lines under the roadway at both locations (Huron and Sheridan).
3. Extraction will add to the Emergency Response Preparedness Plan that for any spill, leak, or emergency incident on a well site, the Operator will immediately call 911.
4. Extraction agrees to purchase adequate foam and such other equipment as requested by NMFRD.
5. Extraction agrees to comply with Hot Work requirements established by OSHA, Fire Code and/or NFPA. In addition, Extraction will develop enhanced hot work planning and setback procedures.
6. The expanded Hot Work program must include employee training, oversight and enforcement of Hot Work permit implementation and management, re-issued STEPS alert to employees and vendors for hazard recognition and proper PPE.
7. Adding additional field management levels for specific flowback activities.
8. Implementing stationary LEL monitoring grids with alarms on all flowback operations.
9. Evaluating and retrofitting sound wall placements or technologies to enhance air flow for improved site ventilation.
10. Developing and implementing automated tank gauging on flowback operations.
11. Revising prestart-up safety review (PSSR) of Green Completion flowback setups, including, but not limited to:
 - i. Site layout

- ii. Grounding requirements
 - iii. Vessel depressurizing procedures
12. Holding meetings with vendors and employees regarding all corrective actions taken at the site associated with health and safety, emergency preparedness and response, process or procedure changes, etc. Conduct periodic, scheduled meetings to frequently discuss process improvements, expectations, updates to policies, and site performance.
 13. Implementing continuous ambient air monitoring at the well site during all stages of operations, including drilling, flowback, completion, and operations.
 14. Inspecting berms and other containment devices to verify integrity and functionality, at least monthly.
 15. Describing reporting procedures for the various regulatory agencies including, CCOB, NMFDR, COGCC, CDPHE, etc., associated with incidents, including near miss incidents.

Hazardous Materials Management Plan:

A Hazardous Materials Management Plan describes the hazardous materials that are used or stored onsite, the physical hazards they present, the quantity of the material on hand, the storage method and location, and any other pertinent information that is of value to the employees exposed to the materials and/or first responders in the event of an incident. The Extraction Hazardous Materials Management Plan should be amended to include the following information:

1. The hazardous materials, including waste, that will be used or stored onsite. There are already other provisions related to submitting Safety Data Sheets (SDSs) or Material Safety Data Sheets (MSDSs) to CCOB prior to being brought onsite.
2. The intended use of the material.
3. A description of the physical hazard (NFPA or HMIS number(s)).
4. The quantity expected to be on hand.
5. The storage method that will be utilized.
6. A description of any containment, which may include the use of berms, secondary containment, flammable material storage cabinets, or other methods for preventing leaks and spills.
7. A description of the frequency and types of inspections performed on storage containers, etc. as well as containment devices.
8. A description of maintenance and calibration requirements and frequency, if applicable.

Risk Management Plan:

A risk management plan is a document that is prepared to identify risks, estimate the impacts (frequency, probability, severity, and impact), and define responses. The Extraction Risk Management Plan should be amended to include the following:

1. Prepare and finalize a Risk Matrix that identifies the type of risk, likelihood of occurrence, frequency of occurrence, potential impacts and severity, mitigation measures, and operator preparedness measures in place to address the risks in a format acceptable to the CCOB, starting with the David Taylor report.
2. The Risk Management Plan must identify all risks associated with each site. This includes identification of all potential hazards that could occur throughout the life of the project. Accidents that have occurred at other similar sites must be assessed. Review of accidents must include a thorough review of the accident, and a root cause analysis performed and the subsequent results of that analysis. The Risk Management Plan should be updated each time an accident or incident occurs.
3. The Risk Management Plan should ensure that employees and contractors understand the hazards associated with operating all equipment at the site and handling all materials.
4. Risks must be continuously reviewed. This includes thorough investigation of any accidents, incidents, and/or near misses that occur at the site or other similar sites, including performing root cause analysis of accidents involving fatalities or significant property damage, and/or environmental harm.
5. Accident reporting and root cause analysis must be discussed with all employees and contractors performing the type of work, or working with the type of equipment, involved in the accident in order to facilitate learning and help avoid a similar accident. Additionally, processes and/or procedures should be revised where necessary to address corrective actions identified through inspections, accident investigations (internal or external), and/or root cause analysis.
6. Accident reporting should include the following elements:
 - Approximate date, time and of the incident or accident;
 - Type of incident or accident;
 - Number of individuals injured and nature of injuries;
 - Chemicals or materials spilled or released,
 - Estimated quantity of spill or release;
 - Type of spill or release and its source;
 - Weather conditions at time of spill or release;
 - On-site impacts;
 - Known off-site impacts;
 - Corrective and/or containment actions taken;
 - Initiating event and contributing factors;
 - Root causes(s), if applicable;
 - Identification of external agencies notified and date/time of notification;
 - Identification of reports submitted and who they were submitted to;

- Operational or process changes that resulted from investigation of the incident or accident.

7. The Risk Management Plan must identify mitigation steps that can and will be taken to lessen the probability of a recurrence. CCOB is requesting that the following items are listed as mitigation steps:

Written operating procedures that provide clear instructions for safely conducting activities involving potential hazards to prevent releases, accidents, or near-misses. Operating procedures should be periodically reviewed and reviewed immediately following any release, accident or near-miss.

Employee Participation in Review and Revision of Operating Procedures

Evidence that all employees and contractors are properly trained on operating procedures in order to minimize risks of accidents, releases, and near-misses.

Procedures in place, including documentation of inspections and testing, to ensure that all process equipment is inspected and tested consistent with manufacturer recommendations and generally accepted good engineering practices. This includes containment devices and equipment and maintenance and calibration of equipment and tools.

Procedures in place to manage change consistent with standard industry practices associated with management of change practices and procedures.

Pre-startup safety reviews for new sources to ensure that construction and equipment is in accord with design specifications, procedures are in place to ensure safe operation, employees have been properly trained, and review of any potential hazards.

Contractors should be screened prior to hiring to ensure they are qualified for the job and have received adequate training in order to perform the job safely. Contractors must participate in pre-startup safety reviews, be informed of all potential threats, accidents, and near-misses (including having access to relevant accident reports and root cause analysis reports), be informed of and trained on the site's emergency response plan. Additionally, they must report any accidents, spills, releases or near misses to the appropriate Extraction personnel.

Safety protocols and procedures should be periodically reviewed and updated in response to accidents, incidents, spills, releases, near misses, and changes in processes or equipment. Safety protocols and procedures should be subject to periodic review, but not less than annually.

Stromberger Well Incident

CCOB requests that Extraction provide written responses to the following questions regarding the Stromberger well incident:

1. Describe the exact cause(s) of the incident?
2. Identify measures that will mitigate and prevent the incident, including measures that would have alerted Extraction in advance of the incident?
3. Describe in detail any differences between the Broomfield well pads and the Stromberger well pads?

As you know, CCOB has submitted written comments on Extraction's draft Comprehensive Drilling Plan on January 22, 2018, March 7, 2018, and now on March 23, 2018. Per our discussion with you on Wednesday, CCOB expects a revised draft Comprehensive Drilling Plan that incorporates all of CCOB's comments not later than March or early April, for CCOB's further review. CCOB has NOT approved the Comprehensive Drilling Plan pursuant to Section 9 of the Amended and Restated Operator Agreement and cannot do so until the issues identified in CCOB's comment letters are addressed in the Comprehensive Drilling Plan.

Sincerely,



Tami Yellico, Broomfield Director of Strategic Initiatives

Cc: Mayor, City Council, Charles Ozaki, Kevin Standbridge, Pat Gilbert