



<p>Planning</p>	<p>The operator shall identify the location of the wellbore with a permanent monument as specified in Rule 319.a.(5). The operator shall also inscribe or imbed the well number and date of plugging upon the permanent monument</p> <ul style="list-style-type: none"> <li>● Interchange – No fencing is planned for this location.</li> <li>● Livingston – There will be fencing surrounding the pad.</li> <li>● United – No fencing is planned for this location.</li> <li>● NWA – No fencing is planned for this location.</li> <li>● NWB – No fencing is planned for this location.</li> </ul> <p><b>Why are we not using the language of Exhibit B, #23?</b>  Each Form 2A will specify whether a location will be fenced. The language in #23 refers to a plans between the city and the operator, contains subjective requirements and refers to city codes; these items cannot be enforced by COGCC</p>
<p>Planning</p>	<p>This location is subject to a Comprehensive Development Plan (CDP), as set forth in the Operator Agreement between Extraction Oil and Gas,, Inc. and the City and County of Broomfield, dated October 24, 2017. <b>Already included</b></p>
<p>Planning</p>	<p>Blowout Prevention Equipment (“BOPE”): A double ram and annular preventer will be used during drilling. Stabbing valves shall be installed in the event of reverse circulation and shall be prior tested with low and high pressure fluid.</p>
<p>Planning</p>	<p>Backup stabbing valves will be required on well servicing operations during reverse circulation. Valves shall be pressure tested before each well servicing operation using both low-pressure air and high-pressure fluid.</p>
<p>Planning</p>	<p>All ground within twenty-five (25) feet of any tank, or other structure containing flammable or combustible materials, shall be kept free of dry weeds, grass or rubbish, and shall conform to COGCC 600 Series Safety Regulations and the applicable Fire Code.</p>
<p>Planning</p>	<p>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</p>



	<p>North Metro Fire Rescue District to be kept in the responding fire engines.  Should reference Emergency Preparedness Plan, BMPs #19. Maybe not all, but part of that section at least. I don't know why COGCC is OK with the TRP, but not the other parts.  COGCC can enforce whether the TRP summary card is present at facilities, the remainder of the BMP is for information and awareness only.  #19 can be included as a comment on the 2A. #19 cannot be a BMP because it is specific to the interactions between the operator, the city and North Metro Fire. COGCC cannot enforce these third party interactions.</p>
<p>Planning</p>	<p>Discharge valves (BMP #16) - Open ended discharge valves on all storage tanks, pipelines and other containers within the Well Site shall be secured and shall not be accessible to the general public. Open-ended discharge valves within the Well Site shall be placed within the interior of the secondary containment area. Load Lines and containment BMP address this. Have that Livingston will be fenced.</p>
<p>Planning</p>	<p>Automatic Safety Protective Systems and Surface Safety Valve (BMP #56) - An automated safety system, governed by safety devices and a programmable logic computer, will be installed at the well sites. The automated safety system shall include the installation, monitoring and remote control of a Surface Safety Valve (SSV) among many other engineered measures and devices that are implemented to greatly reduce or eliminate the potential for a well event. All new wells will have a 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 multiple flowing pressures and rates which have predetermined maximum and/or minimum 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 quarterly testing to ensure functionality. Operator has provided - BMP 15 in permit</p>
<p>Planning</p>	<p>Emergency Preparedness Plan (BMP #19.G.) - The Operator shall have current Safety Data Sheest (SDSs)/ Material Safety Data Sheets (MSDSs) for all chemicals used or stred on a site. the SDSs/MSDSs shall be provided immediatly upon request to City officials, a public safety officer, or a health professional as required by COGCC Rule 201. Rule 205 and 205A is chemical disclosure, but already a rule, don't need it as a BMP.</p>



<p>Community Outreach and Notification</p>	<p>Extraction will establish a live, 24-hour telephone hotline, as well as an email address, to receive feedback on our drilling and completion activities with the goal of having a tool for us to immediately investigate and address any complaints that arise.</p> <p>Prior to the initiation of 24-hour operations (drilling) Extraction will mail a post card (to include the email address and 24 hour manned phone number) to residents within 1/2 mile of the location.</p>
<p>Risk Assessment</p>	<p>Risk Assessment (BMP #55) - As part of the Operator's application to the City, Operator agrees to provide a risk management plan which will include: the identification of potential risks, methods of risk avoidance, and controls that implement techniques to prevent accidents and losses and reduce the impact or cost after the occurrence of identified potential events. <b>Not enforceable by COGCC</b></p>
<p>Traffic Control</p>	<p>Access Roads: The access road will be constructed to accommodate local emergency vehicles. This road will be maintained for access at all times. Traffic will be routed to minimize local interruption. During construction and through the life of this location, Operator 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.</p> <p><b>Operator must control erosion while roads are in use. (BMP #38)</b></p> <p><b>Why not language of BMP #17 Fugitive Dust Suppression?</b></p> <p><b>Erosion control is addressed in Rules 1002.e and 1002.f</b></p> <p><b>COGCC recommends including this portion of BMP #17 "no untreated produced water or other process fluids shall be used for dust suppression"</b></p>
<p>Traffic Control</p>	<p>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. Any subsequent modification to the traffic plan must be coordinated with the local jurisdiction.</p>
<p>General Housekeeping</p>	<p>Maintain appearance with garbage clean-up; a trash bin will be located on site to accumulate waste by the personnel drilling the wells. Site will have unused equipment, trash and junk removed immediately and legally disposed of as applicable.</p>



General Housekeeping	Removal of Debris (BMP #34) - All construction-related debris shall be removed from the site for proper disposal in a timely manner. The site shall be maintained free of debris and excess materials at all times during operation. Operator shall not burn or bury debris at any time on the well sites. <b>Included as part of BMP #11 on the permit</b>
Water Quality	Water Quality Monitoring Plan (BMP #26) - Oil and gas operations shall, to the extent practicable, avoid causing degradation to surface or ground waters within the City and to wetlands within the City. In addition to the COGCC rules and regulations, the water quality monitoring plan as required by City requirements. <b>COGCC has Rule 318A and 609 to enforce, cannot enforce City requirements.</b>
Storm Water/Erosion Control	<p>Implement and maintain BMPs to control stormwater runoff in a manner that minimizes erosion, transport of sediment offsite, and site degradation. Co-locate flowlines and/or gathering lines whenever feasible, and mitigate any erosion problems that arise due to the construction of any gathering lines. Location will be covered under Extraction Oil &amp; Gas's field wide permit, permit number COR03M013.</p> <p>Typical stormwater BMPs installed include a diversion ditch and berm with sediment traps and installation of wattles where necessary.</p> <p>Please see the attached Stormwater and Management Plan.</p> <p><b>Need to make sure plan attached? Why this plan and not other?</b></p> <p><b>BMP #37 requires compliance with the City's stormwater control regulations and an Erosion Control Report and Plan to be submitted to the city. The operator may place a comment about this plan on the Form 2A - COGCC cannot enforce this plan.</b></p> <p><b>Why not the other language of BMP #41?</b></p> <p><b>#41 addresses waste management and not stormwater. A Waste Management Plan will be attached to each Form 2A. #41 is specific to the plan that must be submitted to the city and only addresses waste disposal within the city.</b></p>
Material Handling And Spill Prevention	Leak Detection Plan: 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, tanks and fittings. Additionally annual SPCC inspections will be conducted and documented. Annual flowline testing will also occur according to COGCC rules 1101 and 1102. Inspection and record retention of flowline testing will be in accordance per COGCC regulation. All records will be made available to the COGCC upon request.



<p>Material Handling And Spill Prevention</p>	<p>Chemical Disclosure and Storage (BMP #13) - All fracturing chemicals must be disclosed to the City before bringing on site. Prior to the bringing of such chemicals onto the property, the Operator shall make available to the City, in a table format, the name, Chemical Abstract System (CAS) number, storage, containment and disposal method for such chemicals to be used on the well sites, which the City may make available to the public as public records. Fracturing chemicals shall be uploaded on the Frac Focus website within sixty (60) days of the completion of fracturing operations. The Operator shall not permanently store fracturing chemicals, flowback from hydraulic fracturing chemicals at a well site within thirty (30) days following the completion of hydraulic fracturing at that well site. In addition to any substances not permitted for use in accordance with state or federal rules or regulations in place at the time, the 23 chemicals identified in BMP #13 shall not be utilized. <b>Part of COGCC rules 205A don't need as a BMP</b></p>
<p>Material Handling And Spill Prevention</p>	<p>Flammable Material (BMP #24) - All ground within twenty-five (25) feet of any tank, or other structure containing flammable or combustible materials, shall be kept free of dry weeds, grass or rubbish, and shall conform to COGCC 600 Series Safety Regulations and the applicable Fire Code. - <b>BMP #1 on the permit</b></p>
<p>Material Handling And Spill Prevention</p>	<p>Wastewater and Waste Management (BMP #41) - Operator must submit a waste management plan to the City that complies with the following: All fluids shall be contained and there shall be no discharge of fluids. Waste shall be stored in tanks, transported by tanker trucks and/or pipelines, and disposed of at licensed disposal or recycling sites. The plan shall incorporate secondary containment and stormwater measures. No land treatment of oil impacted or contaminated drill cuttings are permitted. A copy of the Operator's SPCC plan will be given to the City, which describes spill prevention and mitigation practices. The Operator shall not dispose of any wastewater within the City. All other waste shall be disposed of in accordance with state regulations. <b>WMP is required to be attached, COGCC cannot enforce City requirements</b></p>
<p>Material Handling And Spill Prevention</p>	<p>Spills (BMP #52) - Operator must notify the City of any spill of any material on permeable ground on the well sites that has a reportable spill quantity under any law. Operator will also provide the City with a copy of any self-reporting submissions that Operator provides to the COGCC due to any spills at the well sites. <b>COGCC has a spill reporting program - does not need to be a BMP and COGCC cannot enforce City requirements.</b></p>



<p>Dust control</p>	<p>805.c. Operator 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 high- wind 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.</p> <p><b>Suggested addition: “no untreated produced water or other process fluids shall be used for dust suppression”</b></p>
<p>Construction</p>	<p>803. Permanent lighting will be installed around the facility to allow both the operator and haulers to conduct safe operations at night. All lights will be directed downward, inward and shielded so light pollution is minimized.</p> <p>During the Drilling and Completion Phases, consistent with applicable law, Operator will construct a 32 foot perimeter wall surrounding the well pads and operations area, as permitted, to reduce light escaping from the site.</p>
<p>Construction</p>	<p>Base beams will be used and not guy line anchors.</p>
<p>Construction</p>	<p>Containment Berms. The Operator 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. No potential ignition sources shall be installed inside the secondary containment area unless the containment area encloses a fired vessel or such sources are rated in accordance with industry codes and standards. Secondary containment such as duck ponds or lined earthen berms for temporary tanks shall also be used.</p> <p>A. Permanent containment berms shall be constructed of steel rings, designed and installed to prevent leakage and resist degradation from erosion or routine operation.</p> <p>B. Secondary containment for tanks shall be constructed with a synthetic or engineered liner that contains all primary containment vessels and is mechanically connected to the steel ring to prevent leakage.</p> <p>C. For locations within five hundred (500) feet and up-gradient of a</p>



	<p>surface water body, tertiary containment, such as an earthen berm, is required around production facilities.</p>
Noise Mitigation	<p>Quiet Technology. The Operator agrees to use the Liberty Quiet Fleet or comparable technology from an alternative vendor on all Well Sites.</p>
Noise Mitigation	<p>Thirty-two foot sound walls will be used during drilling and completion operations. Sound walls will be installed on the edges impacting nearest neighbors.</p> <p>Interchange – Northwest, southwest, and south edges of the pad.          Livingston – Sound walls will wrap the pad except for the southwest corner.          United – Sound walls will be placed on the northeast corner.          NWA – Sound walls will be placed on the west, south, and south-east corner edges of the pad.          NWB – Sound walls will be placed on the southwest, south, and southeast edges of the pad.</p>
Noise Mitigation	<p>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.</p> <p>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.</p>
Noise Mitigation	<p>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.</p>
Construction/Noise Mitigation	<p>Electrified Drilling Rig - 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</p>



	plans on drilling these wells on electrical power only, the rig will have 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.
Emissions Mitigation	Operator will bring a new oil, gas, and water pipelines, in a timely manner, to send produced volumes immediately down the pipeline.
Emissions Mitigation	Air Quality (BMP #20) - In order to minimize degradation of air quality, Operator agrees to the provisions related to: minimization of emissions, leak detection and repair, ambient air sampling, air quality action days, and compliance. Operator must eliminate, capture, or minimize all potentially harmful emissions and minimize dust associated with onsite activities and traffic on access roads. Operator shall comply with all applicable state and federal regulations including regulations promulgated by CDPHE, COGCC, and US EPA. Under CDPHE - COGCC cannot enforce.
Emissions Mitigation	This location is designed without permanent tanks. Oil, Gas, and produced water will be transported through a pipeline gathering to a Central Gathering Facility. 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.
Emissions Mitigation	Green Completions - Emission Control System. Test separators and associated flow lines and sand traps shall be installed on-site to accommodate green completions techniques pursuant to COGCC Rules.
Emissions Mitigation	Leak Detection Plan: Operator 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 infrared camera for the first 5 years of production.
Emissions Mitigation	Flares and Combustion Devices (BMP #25) - To the extent flares, thermal oxidizers, or combustion devices are utilized, all such flares shall be designed and operated to include: being fired with natural gas and designed to operate with a 98% or higher hydrocarbon destruction efficiency; and in a manner that will ensure no visible emissions during normal operation. The flare must be operated in any fifteen (15) minute period during normal operation pursuant to EPA Method 22 and must be operated with a flame present at all times when emissions may be vented to it. All combustion devices must be equipped with an operating auto-igniter. CDPHE not COGCC





Odor mitigation	<p>805. Oil &amp; 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 BTEX and aromatic properties by more than 50% of regular diesel. <i>Operator is prohibited from masking odors from any oil and gas facility site by using masking fragrances.</i></p> <p>Why not language of #48?  The COGCC enforceable part of #48 is already included (blue italics)</p>
Odor Mitigation	<p>Reduced Emission Completions (BMP #21) - At well sites, Operator shall employ reduced emission completions, also commonly known as green completions, which comply with federal and state requirements. This must include the following: Temporary flowback flaring and oxidizing equipment where allowed shall be auxiliary fueled with sufficient supply and heat to combust or oxidize non-combustible gases in order to control odors and hazardous gases. In addition, uncontrolled venting is prohibited other than where necessary for safety. On permit as BMP #26</p>
Drilling/Completions Operations	<p>All fresh water for completions shall be transported to the well site via temporary water lines.</p>
Drilling/Completions Operations	<p>BOPE testing for drilling operations. Upon initial rig-up and at least once every thirty (30) days during drilling operations thereafter, pressure testing of the casing string and each component of the blowout prevention equipment including flange connections shall be performed to seventy percent (70%) of working pressure or seventy percent (70%) of the internal yield of casing, whichever is less. Pressure testing shall be conducted and the documented results shall be retained by the operator for inspection by the Director for a period of one (1) year. Activation of the pipe rams for function testing shall be conducted on a daily basis when practicable.</p>
Drilling/Completions Operations	<p>Closed chamber drill stem tests shall be allowed. All other drill stem tests shall require approval by the Director. None planned for this well.</p>
Drilling/Completions Operations	<p>All loadlines shall be bull plugged or capped.</p>
Drilling/Completions Operations	<p>Closed-Loop Pitless Systems for the Containment and/or Recycling of Drilling Fluids. Wells shall be drilled, completed and operated using closed-loop pitless systems for containment and/or recycling of all drilling, completion, flowback and produced fluids. Operator shall recycle fluids to the maximum</p>



	extent practicable.
Interim Reclamation	Operator shall be responsible for segregating the topsoil, backfilling, re-compacting, reseeding, and re-contouring the surface of any disturbed area so as not to interfere with Owner’s operations and shall reclaim such area to be returned to pre-existing conditions as best as possible with control of all noxious weeds. COGCC Rule 1003 addresses interim reclamation
Final Reclamation	Within 90 days subsequent to the time of plugging and abandonment of the entire site, superfluous debris and equipment shall be removed from the site. Identification of plugged and abandoned wells will be identified pursuant to 319.a.(5) <b>Why not language of BMPs 34 &amp; 35? Why 90 days when #35 says 30 days?</b> This BMP is for final reclamation where #34 and #35 are for well site clearing and interim reclamation. This BMP is Rule 604.c.(2)T  <b>Why not include requirement of submittal of final plan (BMP #49)</b> Final Reclamation is addressed by COGCC Rule 1004. The time frame for completion of reclamation is 3 months on crop land and 12 months on non-crop land. The requirements are specified in the rules and a plan is not necessary.
Final Reclamation	The operator shall identify the location of the wellbore with a permanent monument as specified in Rule 319.a.(5). The operator shall also inscribe or imbed the well number and date of plugging upon the permanent monument

**#32 Flowlines**

Addressed in COGCC’s 1101 Pipeline Regulation Rules

**#10 Anchoring**

COGCC Rule 603h addresses anchoring in floodplains

**#31 Noise mitigation**

COGCC inspectors will only measure sound levels and assign point of compliance as described in Rule 802.c



### #3 use of pipelines

A BMP is on the 2A regarding the use of pipelines for oil, gas and produced water transport. A BMP is also on the 2A that addresses transport of fresh water for completions via pipeline.

### #50 Well integrity

Addressed in COGCC Rule 207.b

### #36 Plugged and decommissioned well testing

Not enforceable by COGCC