

FORM
2A

Rev
08/13

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

401524113

Date Received:

02/26/2018

Oil and Gas Location Assessment

New Location Refile Amend Existing Location Location#: _____

This Oil and Gas Location Assessment is to be submitted to the COGCC for approval prior to any ground disturbance activity associated with oil and gas operations. Approval of this Oil and Gas Location Assessment will allow for the construction of the below specified Location; however, it does not supersede any land use rules applied by the local land use authority. Please see the COGCC website at <http://cogcc.state.co.us/> for all accompanying information pertinent this Oil and Gas Location Assessment.

Location ID:

456769

Expiration Date:

08/22/2021

This location assessment is included as part of a permit application.

CONSULTATION

- This location is included in a Comprehensive Drilling Plan. CDP # _____
- This location is in a sensitive wildlife habitat area.
- This location is in a wildlife restricted surface occupancy area.
- This location includes a Rule 306.d.(1)A.ii. variance request.

Operator

Operator Number: 10459
 Name: EXTRACTION OIL & GAS INC
 Address: 370 17TH STREET SUITE 5300
 City: DENVER State: CO Zip: 80202

Contact Information

Name: Alyssa Andrews
 Phone: (720) 481-2379
 Fax: ()
 email: aandrews@extractionog.com

RECLAMATION FINANCIAL ASSURANCE

- Plugging and Abandonment Bond Surety ID: 20130028 Gas Facility Surety ID: _____
- Waste Management Surety ID: _____

LOCATION IDENTIFICATION

Name: NORTHWEST A PAD Number: _____
 County: BROOMFIELD
 Quarter: NWNW Section: 9 Township: 1S Range: 68W Meridian: 6 Ground Elevation: 5314

Define a single point as a location reference for the facility location. When the location is to be used as a well site then the point shall be a well location.

Footage at surface: 1305 feet FNL from North or South section line
744 feet FWL from East or West section line

Latitude: 39.983115 Longitude: -105.013168

PDOP Reading: 1.3 Date of Measurement: 12/21/2017

Instrument Operator's Name: T. WINNICKI

RELATED REMOTE LOCATIONS

(Enter as many Related Locations as necessary. Enter the Form 2A document # only if there is no established COGCC Location ID#)

This proposed Oil and Gas Location is:	LOCATION ID #	FORM 2A DOC #
Well Site is served by Production Facilities	_____	401606721
	_____	401525931
	_____	401606738

FACILITIES

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

Wells	8	Oil Tanks*	_____	Condensate Tanks*	_____	Water Tanks*	_____	Buried Produced Water Vaults*	_____
Drilling Pits	_____	Production Pits*	_____	Special Purpose Pits	_____	Multi-Well Pits*	_____	Modular Large Volume Tanks	_____
Pump Jacks	_____	Separators*	_____	Injection Pumps*	_____	Cavity Pumps*	_____	Gas Compressors*	_____
Gas or Diesel Motors*	_____	Electric Motors	_____	Electric Generators*	_____	Fuel Tanks*	_____	LACT Unit*	_____
Dehydrator Units*	_____	Vapor Recovery Unit*	_____	VOC Combustor*	_____	Flare*	_____	Pigging Station*	_____

OTHER FACILITIES*

<u>Other Facility Type</u>	<u>Number</u>
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GAS LIFT METERED BUILDING	1
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Those facilities indicated by an asterisk () shall be used to determine the distance from the Production Facility to the nearest cultural feature on the Cultural Setbacks Tab.

Per Rule 303.b.(3)C, description of all oil, gas, and/or water pipelines:

Extraction will trench flowlines in one piping corridor that runs between the drill pad and the separator pad and be placed at 12" centers. These lines will most likely be 2" or 3" fusion bonded SCH160 steel pipe and have proper cathodic protection throughout the run. Extraction will then sweep up with a long radius that will tie off each line to the appropriate separator. All welds on these are 100% x-ray and hydro tested to the API and Manufactures specs for a class 1500 series flange. Also meets ASME code B31.4.

CONSTRUCTION

Date planned to commence construction: 09/01/2018 Size of disturbed area during construction in acres: 4.43
Estimated date that interim reclamation will begin: 12/01/2018 Size of location after interim reclamation in acres: 1.07
Estimated post-construction ground elevation: 5314

DRILLING PROGRAM

Will a closed loop system be used for drilling fluids: Yes

Is H₂S anticipated? No

Will salt sections be encountered during drilling: No

Will salt based mud (>15,000 ppm Cl) be used? No

Will oil based drilling fluids be used? Yes

DRILLING WASTE MANAGEMENT PROGRAM

Drilling Fluids Disposal: OFFSITE Drilling Fluids Disposal Method: Commercial Disposal

Cutting Disposal: OFFSITE Cuttings Disposal Method: Commercial Disposal

Other Disposal Description:

The oil-based cuttings will be disposed of similarly and the water-based cuttings may be applied to the land application, facility ID 449314. Both disposal methods may be used for the water-based cuttings.

Beneficial reuse or land application plan submitted? _____

Reuse Facility ID: _____ or Document Number: _____

Centralized E&P Waste Management Facility ID, if applicable: _____

SURFACE & MINERALS & RIGHT TO CONSTRUCT

Name: City&County of Broomfield Phone: _____

Address: One DesCombes Dr. Fax: _____

Address: _____ Email: _____

City: Broomfield State: CO Zip: 80020

Surface Owner: Fee State Federal Indian

Check all that apply. The Surface Owner: is the mineral owner

is committed to an oil and Gas Lease

has signed the Oil and Gas Lease

is the applicant

The Mineral Owner beneath this Oil and Gas Location is: Fee State Federal Indian

The Minerals beneath this Oil and Gas Location will be developed from or produced to this Oil and Gas Location: No

The right to construct this Oil and Gas Location is granted by: Surface Use Agreement

Surface damage assurance if no agreement is in place: _____ Surface Surety ID: _____

Date of Rule 306 surface owner consultation _____

CURRENT AND FUTURE LAND USE

Current Land Use (Check all that apply):

Crop Land: Irrigated Dry land Improved Pasture Hay Meadow CRP

Non-Crop Land: Rangeland Timber Recreational Other (describe): _____

Subdivided: Industrial Commercial Residential

Future Land Use (Check all that apply):

Crop Land: Irrigated Dry land Improved Pasture Hay Meadow CRP

Non-Crop Land: Rangeland Timber Recreational Other (describe): _____

Subdivided: Industrial Commercial Residential

CULTURAL DISTANCE INFORMATION

Provide the distance to the nearest cultural feature as measured from Wells or Production Facilities onsite.

	From WELL	From PRODUCTION FACILITY
Building:	816 Feet	910 Feet
Building Unit:	1045 Feet	1104 Feet
High Occupancy Building Unit:	4147 Feet	4044 Feet
Designated Outside Activity Area:	5280 Feet	5280 Feet
Public Road:	318 Feet	224 Feet
Above Ground Utility:	1246 Feet	1150 Feet
Railroad:	5280 Feet	5280 Feet
Property Line:	66 Feet	6 Feet

INSTRUCTIONS:

- All measurements shall be provided from center of nearest Well or edge of nearest Production Facility to nearest of each cultural feature as described in Rule 303.b.(3)A.
- Enter 5280 for distance greater than 1 mile.
- Building - nearest building of any type. If nearest Building is a Building Unit, enter same distance for both.
- Building Unit, High Occupancy Building Unit, and Designated Outside Activity Area - as defined in 100-Series Rules.
- For measurement purposes only, Production Facilities should only include those items with an asterisk(*) on the Facilities Tab.

DESIGNATED SETBACK LOCATION INFORMATION

Check all that apply. This location is within a:

- Buffer Zone
- Exception Zone
- Urban Mitigation Area

Pre-application Notifications (required if location is within 1,000 feet of a building unit):

Date of Rule 305.a.(1) Urban Mitigation Area Notification to Local Government: _____

Date of Rule 305.a.(2) Buffer Zone Notification to Building Unit Owners: _____

- Buffer Zone - as described in Rule 604.a.(2), within 1,000' of a Building Unit.
- Exception Zone - as described in Rule 604.a.(1), within 500' of a Building Unit.
- Urban Mitigation Area - as defined in 100-Series Rules.
- Large UMA Facility - as defined in 100-Series Rules.

FOR MULTI-WELL PADS AND PRODUCTION FACILITIES WITHIN DESIGNATED SETBACK LOCATIONS ONLY:

- Check this box if this Oil and Gas Location has or will have Production Facilities that serve multiple wells (on or offsite) and the Production Facilities are proposed to be located less than 1,000 feet from a Building Unit. *(Pursuant to Rule 604.c.(2)E.i., the operator must evaluate alternative locations for the Production Facilities that are farther from the Building Unit, and determine whether those alternative locations were technically feasible and economically practicable for the same proposed development.)*
- By checking this box, I certify that no alternative placements for the Production Facilities, farther from the nearest Building Unit, were available based on the analysis conducted pursuant to Rule 604.c.(2)E.i.

In the space below, explain rationale for siting the multi-well Production Facility(ies) that supports your Rule 604.c.(2)E.i determination. Attach documentation that supports your determination to this Form 2A.

SOIL

List all soil map units that occur within the proposed location. attach the National Resource Conservation Service (NRCS) report showing the "Map Unit Description" report listing the soil typical vertical profile. This data is to used when segregating topsoil.

The required information can be obtained from the NRCS web site at <http://soildatamart.nrcs.usda.org/> or from the COGCC web site GIS Online map page found at <http://colorado.gov/cogcc>. Instructions are provided within the COGCC web site help section.

NRCS Map Unit Name: ReD—Renohill loam, 3 to 9 percent slopes

NRCS Map Unit Name: UIC—Ulm loam, 3 to 5 percent slopes

NRCS Map Unit Name: _____

PLANT COMMUNITY:

Complete this section only if any portion of the disturbed area of the location's current land use is on non-crop land.

Are noxious weeds present: Yes No

Plant species from: NRCS or, field observation Date of observation: _____

List individual species:

Check all plant communities that exist in the disturbed area.

- Disturbed Grassland (Cactus, Yucca, Cheatgrass, Rye)
- Native Grassland (Bluestem, Grama, Wheatgrass, Buffalograss, Fescue, Oatgrass, Brome)
- Shrub Land (Mahogany, Oak, Sage, Serviceberry, Chokecherry)
- Plains Riparian (Cottonwood, Willow, Aspen, Maple, Poplar, Russian Olive, Tamarisk)
- Mountain Riparian (Cottonwood, Willow, Blue Spruce)
- Forest Land (Spruce, Fir, Ponderosa Pine, Lodgepole Pine, Juniper, Pinyon, Aspen)
- Wetlands Aquatic (Bullrush, Sedge, Cattail, Arrowhead)
- Alpine (above timberline)
- Other (describe): _____

WATER RESOURCES

Is this a sensitive area: No Yes

Distance to nearest

downgradient surface water feature: 60 Feet

water well: 956 Feet

Estimated depth to ground water at Oil and Gas Location 50 Feet

Basis for depth to groundwater and sensitive area determination:

Surface water feature: Ditch 314' E from the reference area point - 60 feet from the edge of disturbance.
Nearest water well: Permit # 90995- - , 675' S abandoned, Active water well permit 88207 is 956 feet north with a depth of 70 feet.
Monitoring well permit number 47271MH approx 1130 feet SW has a depth of 50 feet - used 50 feet as depth to groundwater

Is the location in a riparian area: No Yes

Was an Army Corps of Engineers Section 404 permit filed No Yes If yes attach permit.

Is the location within a Rule 317B Surface Water Supply Area buffer No

zone:

If the location is within a Rule 317B Surface Water Supply Area buffer have all public water supply systems within 15 miles been notified: _____

Is the Location within a Floodplain? No Yes Floodplain Data Sources Reviewed (check all that apply)

Federal (FEMA)

State

County

Local

Other

GROUNDWATER BASELINE SAMPLING AND MONITORING AND WATER WELL SAMPLING

Water well sampling required per Rule 318A

WILDLIFE

This location is included in a Wildlife Mitigation Plan

This location was subject to a pre-consultation meeting with CPW held on _____

DESIGNATED SETBACK LOCATION EXCEPTIONS

Check all that apply:

- Rule 604.a.(1)A. Exception Zone (within 500' of a Building Unit) and is in an Urban Mitigation Area
- Rule 604.b.(1)A. Exception Location (existing or approved Oil & Gas Location now within a Designated Setback as a result of Rule 604.a.)
- Rule 604.b.(1)B. Exception Location (existing or approved Oil & Gas Location is within a Designated Setback due to Building Unit construction after Location approval)
- Rule 604.b.(2) Exception Location (SUA or site-specific development plan executed on or before August 1, 2013)
- Rule 604.b.(3) Exception Location (Building Units constructed after August 1, 2013 within setback per an SUA or site-specific development plan)

RULE 502.b VARIANCE REQUEST

Rule 502.b. Variance Request from COGCC Rule or Spacing Order Number _____

ALL exceptions and variances require attached Request Letter(s). Refer to applicable rule for additional required attachments (e.g. waivers, certifications, SUAs).

OPERATOR COMMENTS AND SUBMITTAL

Comments

Reference well for Location Identification: Northwest A S20-25-6N

Notification Zone Drawing and UMA Check Exhibit both attached as "OTHER". This location is not in a buffer zone. This location is not within a Large UMA.

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Signed: _____ Date: 02/26/2018 Email: aandrews@extractionog.com

Print Name: Alyssa Andrews Title: Regulatory Analyst

Based on the information provided herein, this Application for Permit-to-Drill complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved:  _____ Director of COGCC Date: 8/23/2018

Conditions Of Approval

All representations, stipulations and conditions of approval stated in this Form 2A for this location shall constitute representations, stipulations and conditions of approval for any and all subsequent operations on the location unless this Form 2A is modified by Sundry Notice, Form 4 or an Amended Form 2A.

COA Type	Description
	<p>1. Access Roads/Drive: The access road/drive will be constructed with a Class 6 road base and then covered with recycled asphalt. Access road will be maintained to minimize development of 'washboard'.</p> <p>2. Access Road/Drive: Operator shall utilize the additional mitigation measures of berms, bales, and/or sound walls to mitigate noise or light. Mitigation measures will be located on the south side of the access road/drive and be strategically placed as necessary to minimize vehicle light pollution to and excessive noise impacts on nearby residences.</p> <p>3. Access Road/Drive: Operator shall implement a hard surface apron and vehicle tracking pad so vehicles do not track mud or debris onto City streets. Street sweeping services shall be provided if vehicle tracking occurs on public roadways.</p> <p>4. Access Road/Drive: During construction, drilling, and completions operations, Operator will post warning signs to warn motorists of turning trucks ahead of each of the proposed public road access points. Operator will post signage before each access point to clarify that public access or turns are not allowed into any of the access roads/drives that the Operator will construct. Operator will post stop signs and turn movement restriction instructions at each of their exits.</p> <p>5. Access Road/Drive: Operator will post 25 mile per hour speed limit signs along the access road/drive. Operator will assess and repost speed reductions as necessary.</p> <p>6. Access Road/Drive: Operator will restrict non-essential traffic and permitted loads (oversize and/or overweight) traffic to and from Well Sites to periods outside of peak a.m. and p.m. traffic periods and during school hours (generally 7-9 a.m. and 3-6 p.m.).</p>
	In addition to the samples collected in accordance with Rule 318A.f, Extraction shall submit the analytical results to COGCC of all other samples collected from permitted water wells and permitted springs in both Adams County and Broomfield that are within 1/2 mile of the Oil and Gas Location. The operator shall notify the director immediately if there are methane detections as described in Rule 318A.F(8) or if BTEX compounds or TPH are detected in a water sample. The operator shall submit the analytical results to COGCC via a Form 4 Sundry, in an electronic data deliverable (EDD) format, consistent with the procedures in Rule 318.f.(10).
	The Approved Form 2A permit will be posted at the location during construction, drilling, and completions operations.

Best Management Practices

No	BMP/COA Type	Description
1	Planning	Site security will be maintained at all times. Location will be adequately fenced to restrict access by unauthorized persons. The site will have gated access to keep unauthorized vehicles out and fencing will be placed around all production equipment.
2	Planning	The location was approved by an Oil and Gas Operator Agreement with Broomfield on October 24, 2017. The development of this location is subject to a Comprehensive Drilling Plan (CDP) approval from The City and County of Broomfield. Operator is currently working through the CDP application with the City and County of Broomfield staff.
3	Planning	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.
4	Planning	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.

5	Planning	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.
6	Planning	Operator will bring a new oil, gas, and water pipelines, to send produced volumes immediately down the pipeline. No production will flow to tanks on this location. Production will be piped to the Central Gathering System. If the CGF is not ready at the time of production, the wells will be temporarily shut in.
7	Community Outreach and Notification	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. 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.
8	Traffic control	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. No untreated produced water or other process fluids shall be used for dust suppression.
9	Traffic control	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.
10	Traffic control	Access Road/Drive: 24/7 security shall be provided at entrance of access road/drive to restrict unauthorized access.
11	General Housekeeping	Removal of Debris. 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. 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.
12	General Housekeeping	Leak Detention 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.
13	Storm Water/Erosion Control	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 & Gas's field wide permit, permit number COR03M013. Typical stormwater BMPs installed include a diversion ditch and berm with sediment traps and installation of wattles where necessary. Please see the attached Stormwater BMP drawings.

14	Material Handling and Spill Prevention	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 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.
15	Material Handling and Spill Prevention	The location will be completely automated to monitor all production operations remotely. In the event that the facility is not operating under normal conditions, the automation system will immediately notify the operator. The automation system also has the ability to remotely perform an emergency shut down if necessary.
16	Dust control	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 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. No untreated produced water or other process fluids shall be used for dust suppression.
17	Construction	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. 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.
18	Construction	Base beams will be used and not guy line anchors.
19	Construction	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. A. Permanent containment berms shall be constructed of steel rings, designed and installed to prevent leakage and resist degradation from erosion or routine operation. 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.
20	Noise mitigation	Quiet Technology. The Operator agrees to use the Liberty Quiet Fleet or comparable technology from an alternative vendor on all Well Sites for completion activities.
21	Noise mitigation	Thirty-two foot sound walls will be used during drilling and completion operations. Sound walls will be installed on the edges impacting nearest neighbors. Sound walls will be placed on the west, south, and south-east corner edges of the pad.

22	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>
23	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>
24	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 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.</p>
25	Emissions mitigation	<p>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. Uncontrolled venting is prohibited other than where necessary for safety. Production will be piped to the Central Gathering System. If the CGF is not ready at the time of production, the wells will be temporarily shut in.</p>
26	Emissions mitigation	<p>Reduced Emission Completions (Commonly known as Green Completions). At Well Sites Operator shall employ reduced emission completions, also commonly known as green completions, which comply with federal and state requirements. In addition, Operator shall comply with the following:</p> <ul style="list-style-type: none"> A. Gas gathering lines, separators, and sand traps capable of supporting green completions as described in COGCC Rule 805 shall be installed per the provisions of COGCC Rule 805. B. Operator shall comply with 40 CFR 60.5375(a)(1), (2) for green completions. C. Uncontrolled venting is prohibited other than where necessary for safety. D. Temporary flowback flaring and oxidizing equipment where allowed shall include the following: <ul style="list-style-type: none"> 1. Adequately sized equipment to handle 1.5 times the largest flowback volume of gas from a vertical/directional and/or horizontally completed well respectively as reported to the COGCC in a ten mile radius; 2. Valves and porting available to divert gas to flaring and oxidizing equipment; pursuant to the above Rules 40 CFR 60.5375 & COGCC Rule 805; 3. Auxiliary fueled with sufficient supply and heat to combust or oxidize noncombustible gases in order to control odors and hazardous gases. The flowback combustion device shall be equipped with a reliable continuous ignition source over the duration of flowback, except in conditions that may result in a fire hazard or explosion; and 4. The Operator has a general duty to safely maximize resource recovery and minimize releases to the atmosphere during flowback and subsequent recovery/operation.
27	Emissions mitigation	<p>Leak Detention 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 infra-red camera for the first 5 years of production.</p>

28	Emissions mitigation	Exhaust. The exhaust from all engines, motors, coolers and other mechanized equipment shall be vented up or in a direction away from the nearest occupied building.
29	Odor mitigation	805. 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 BTEX and aromatic properties by more than 50% of regular diesel. Operator is prohibited from masking odors from any oil and gas facility site by using masking fragrances.
30	Drilling/Completion Operations	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.
31	Drilling/Completion Operations	All fresh water for completions shall be transported to the well site via temporary water lines.
32	Drilling/Completion Operations	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.
33	Drilling/Completion Operations	Closed chamber drill stem tests shall be allowed. All other drill stem tests shall require approval by the Director. None planned for this well.
34	Drilling/Completion Operations	All loadlines shall be bull plugged or capped.
35	Drilling/Completion Operations	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 extent practicable.
36	Drilling/Completion Operations	Flowback Monitoring System: Autonomous 4 gas monitors will be placed around the location during the flowback phase.
37	Drilling/Completion Operations	Bradenhead Monitoring. Operator will conduct bradenhead monitoring on the New Wells as required on the relevant Applications for Permit to Drill - Form 2.
38	Drilling/Completion Operations	Well Integrity. Operator must equip the bradenhead access to the annulus between the production and the surface casing, as well as any intermediate casing, with a fitting to allow safe and convenient determinations of pressure and fluid flow. Valves used for annular pressure monitoring shall remain exposed and not buried to allow for visual inspection. The Operator shall take bradenhead pressure readings as required by the COGCC.
39	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.
40	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)The operator shall also inscribe or imbed the well number and date of plugging upon the permanent monument.
41	Final Reclamation	Reclamation. Operator must submit an oil and gas site reclamation plan and reclaim a Well Site not later than six (6) months after plugging and abandoning the last New Well at such Well Site, weather and planting season permitting.

Total: 41 comment(s)

Attachment Check List

<u>Att Doc Num</u>	<u>Name</u>
2316363	ACCESS ROAD MAP
2316365	LOCATION DRAWING
2316366	HYDROLOGY MAP
2316371	CORRESPONDENCE
2316397	OPERATOR RESPONSE TO PUBLIC COMMENTS
2316398	SITING RATIONALE
2316416	COGCC RESPONSE TO PUBLIC COMMENTS
401524113	FORM 2A SUBMITTED
401526544	OTHER
401526587	FACILITY LAYOUT DRAWING
401526611	LOCATION PICTURES
401526612	MULTI-WELL PLAN
401526642	OTHER
401526649	NRCS MAP UNIT DESC
401526650	NRCS MAP UNIT DESC
401526653	SURFACE AGRMT/SURETY
401562835	OTHER
401573025	WASTE MANAGEMENT PLAN

Total Attach: 18 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Permit	Final Review Completed.	08/22/2018
OGLA	The comment response document was updated to remove the reference to bi-annual flowline testing. Bi-annual flowline testing is not required at this location by the Broomfield agreement; flowlines will be tested annually.	08/22/2018
OGLA	The COGCC Commissioners reviewed the Form 2As for the Interchange A&B, Northwest A, and Northwest B Locations and heard comments regarding the Form 2As during the July 30-August 1, 2018 Hearing. A primary concern of the commenters was proximity of the access road for the Interchange A&B and the Northwest A and B Pads to Adams County residents. Many of the commenters were residents of the area and were concerned about potential noise, high traffic volumes, and dust, and lights. The Commissioners instructed the Director to address access road concerns and complete the review of the Form 2As. Staff worked with the operator to place the additional mitigation measure BMPs and COAs for the access road on the Form 2As. The access road was modified moving a portion closer to the Northwest Parkway and further from some of the Adams County residents.	08/16/2018
OGLA	Operator provided revised Access Road map - replaced. Working with Operator on Access Road COA/BMPs. COAs and 1 BMP for Access Road with Operator Concurrence.	08/09/2018
OGLA	Email from Operator for updated distances to HOBUs and replaced location drawing, updated water information and replaced hydrology map - discussed monitoring well depth to water via phone, updated disposal info for water based cuttings, updated BMPs per discussions between City of Broomfield, COGCC, and Operator. Attached Exhibit B from City of Broomfield MOU as reference.	07/06/2018
Permit	Permitting review complete.	07/05/2018

OGLA	OGLA review: Add related remote locations, need more for beneficial reuse as referenced in waste management plan, HOBU appears to be closer than indicated on 2A or location drawing, dryland cropland, but NRCS is checked, water resources – surface water body is closer, should be sensitive area based on surface water, water well on 2A is abandoned; monitoring well with shallower depth and active well to the north, Hydrology map appears to have buffer from reference area point.	06/27/2018
LGD	<p>As the Local Government Designee for the City and County of Broomfield (Broomfield), Broomfield would like to provide the COGCC with an update related to Extraction Oil and Gas, LLC (Extraction) Form 2A permits, by the Colorado Oil and Gas Conservation Commission (COGCC), including the following permit applications:</p> <p>401524109 United Pad</p> <p>401524113 Northwest A Pad</p> <p>401525931 Northwest B Pad</p> <p>By way of an update to the COGCC, on October 24, 2017, Extraction and Broomfield entered into an Amended and Restated Operator Agreement (Agreement).Section 9 of the Agreement provides that Extraction must submit a “Comprehensive Drilling Plan and Application” to Broomfield for such new wells or well sites (Plan).Per the Agreement, that Plan is subject to the review and approval by the City.</p> <p>Broomfield has not approved the Plan as required by the Agreement.Broomfield has been working diligently with Extraction on the Plan, through weekly meetings and timely and reasonable communications with Extraction. The COGCC spacing orders for these spacing units, dated as of October 31, 2017, indicate that any Permits for the wells within these spacing units must “comport with” the Agreement.</p> <p>As stated above, Section 9 of the Agreement provides that Extraction must submit the Plan for all of the well sites that is subject to Broomfield’s approval. On December 15, 2017, Extraction submitted a draft Plan for the Livingston and Interchange B well pads. On January 22, 2018, Broomfield submitted 220 comments on that draft Plan, which included the comment that the Agreement requires the Plan to be for all of the well sites (Comments). Broomfield is still reviewing the last draft of the Plan, which is over 1460 pages in length.Many of Broomfield’s comments on the Plan and Extraction’s responses have included the addition of best management practices that may be enforceable by the COGCC.</p> <p>In both citizens’ and staff comments we have identified areas where Broomfield is requesting additional information and where we believe the Plan is not complete.Broomfield believes that Extraction has an obligation to correct or update any deficient statements in the Plan. The issues that remain outstanding in the Plan include the following:</p> <ul style="list-style-type: none"> •At meetings with Extraction, Broomfield continues to identify engineering issues that need to be resolved before permitting of the pipeline for all the well sites could go forward. •As of the date of these comments, Broomfield is still working with Extraction on required updates to its Emergency Response Plan and Risk Analysis Plan before those can be approved. Extraction has not identified each type of hazard for each location and specific mitigation measures. •It is Broomfield’s understanding that Extraction has yet to talk with all affected Broomfield and Adams County residents to determine their desired mitigation measures for the well sites and truck roads to the north, even though Extraction committed to such individual communications. •Extraction has not committed in writing to all necessary specific mitigation measures between residents and well sites to the north and east of residents in Adams County and Broomfield. 	05/25/2018

- Extraction has not submitted a final pavement design report for approval by the City and County Engineer.
- Extraction has yet to agree in the Plan to ensure the safety of emergency response teams, construction workers and the general public. Extraction has yet to agree in the Plan that Buffers shall be created as required on site to shield dust, noise, and light from residents
- Broomfield is still reviewing Extraction's long term reclamation plan.
- Extraction has not provided a complete explanation of its noise modeling approach.
- Extraction has not detailed the noise reduction levels it can achieve.
- Extraction has not provided written detail on the process of "Conduct Recovery Operations" including involvement of Broomfield's Public Health Division.
-
- Extraction has not complied with 2 requirements for the Wetlands Plan.
- Extraction has given only general responses to specific environmental site review requests.
- Extraction has not provided a detailed visual mitigation plan for the well sites, service road, or pig launcher station.
- Extraction has not provided a Drainage Report signed and stamped by a Colorado Registered Professional Engineer. Should be in accordance with Section 100 and 600 of the Broomfield Standards and Specifications.
- oPer section 610.00 All ponding facilities shall be of the detention type. Retention Ponds will not be approved
- oAll ponds should provide water quality
- oAll ponds must drain completely within 72 hours.
- oShould be designed for a minor storm of 10yr and a major of 100yr
- oAll reports should include the SDI spreadsheet. For more information see the following website:<https://maperture.digitaldataservices.com/gvh/?viewer=cswdif>
- Provide a Drainage letter for the access road plans.
- oProvide historic and proposed drainage basin map
- oProvide location and sizing for crossroad pipes both existing and proposed

Other Comments concerning the Form 2A permits include:

Interchange, Northwest, and United Pads Form 2 A Comments

- The FACILITIES section indicates there are 2 gas compressors planned for the location.Extraction should provide information associated with the purpose of the compressors and how will they be fueled.
- The waste management plan only addresses EP Waste.It does not discuss secondary containment and stormwater measures as required by Item 41 in the Best Management Practices of the Operator Agreement.

Interchange, Northwest, and United Pads Form 2 A Comments

- Extraction has committed to a Form 2A BMP on weed control in their Comprehensive Development Plan for Broomfield.Please verify that the weed

	<p>control BMP is included in the Interchange, Northwest, and United Pad Form 2As.</p> <ul style="list-style-type: none"> •Broomfield requests that COGCC take a close look at the offset well evaluations provided by Extraction Oil and Gas to verify the estimates of offset distances of existing wells (including plugged and abandoned wells) from the new proposed horizontal wells.Broomfield was unable to confirm many of the distances indicated in the OPERATOR COMMENTS AND SUBMITTAL section of the Form 2s based on the OFFSET WELL EVALUATIONS spreadsheet or from the ANTI-COLLISION reports provided. •According to the OFFSET WELL EVALUATIONS spreadsheet provided in the Form 2s, there are many plugged and abandoned wells and several producing wells that have horizontal offsets of less than 150 feet from the proposed new horizontal wells and it is indicated that No Remediation Is Required for these wells.Broomfield is very concerned about the short offset distance for some of these wells; therefore, Broomfield requests that COGCC take a close look to verify the proposed mitigation measures indicated by Extraction Oil and Gas are appropriate as defined by the DJ Basin Horizontal Offset Policy. <p>Broomfield asks that COGCC leave the comment period on the Permits open until all issues are resolved regarding the Plan.Broomfield will continue to work diligently with Extraction on the Plan.</p>		
LGD	<p>1)The COGCC mandated during the October 30, 2017 hearing that it reviews each of the Form 2A locations that impact Adams County residents in a public hearing.Adams County respectfully requests the following Form 2A's be heard before the COGCC in public hearings;</p> <ul style="list-style-type: none"> a)Interchange A Pad b)Interchange B Pad c) United Pad d)Northwest A Pad e)Northwest B Pad <p>2)Understanding that selecting an appropriate location for an oil and gas facility is the crux of compatibility, the proposed locations will impact the maximum number of residents by the proposed development. Four locations were initially proposed to access the identified minerals, and only 44 homes were within 1,500 feet of those locations. Today, six locations are proposed to access those same minerals, and approximately 94 homes are within 1,500 feet of those locations, more than doubling the number of people impacted by this proposed development. Those additional impacted residences are located within Adams County, yet as the elected representatives for this neighborhood, the Adams County Board of Commissioners did not have authority in the approval of these sites.</p> <p>Adams County remains deeply concerned about the locations of the well pads and the cumulative impacts they will have on our residents. The Comprehensive Drilling Plan (CDP) that was shared with Adams County does not fully capture the entire proposed development and the cumulative impacts that will be felt by neighbors. Many Adams County residents will be impacted by four or more of the well pads at one time.</p> <p>3)The Broomfield Comprehensive Plan setbacks necessitated Extraction break up the well pads so that each contains fewer wells. The result of fewer wells on each pad is the distribution of impacts over a larger area, ultimately shifting the burden to a larger number of residents. Adams County has seen increased development of oil and gas facilities, and the current industry standard is the consolidation of wells and their impacts on a single pad, rather than spreading those impacts over a larger area. The proposed Interchange A and B well pads total 33 wells and are proposed to consume over 21 acres of land and shrink to 9 acres during interim reclamation. In Adams County, by contrast, 30+ well pads disturb only about 11 acres of land</p>	05/01/2018	

	<p>and are shrunk to about 5.5 acres during interim reclamation. COGCC 1000 Series rules discuss proper reclamation of the land, including the minimization of surface area disturbance to reduce cumulative impacts, as well as facility consolidation to reduce the fragmentation of wildlife habitat. Extraction's proposal does the opposite of industry standard and COGCC rules.</p> <p>4)While minimizing the surface disturbance, the consolidation of many wells on a single pad reduces the need for haul roads. Haul roads are planned to be constructed to connect Sheridan Parkway to Huron Street, across the backyards of Adams County residences. These haul roads will see significant construction traffic, creating noise, dust, and safety concerns. Berms or walls have been proposed by the operator, and the mitigation of these significant impacts remains to be addressed in the plans.</p> <p>5)Many residents have provided public testimony or written comments with concerns about potential impacts to public health, safety, welfare and the environment that this project may cause. There are also many residents who desired to provide testimony and were not awarded the opportunity by Broomfield throughout the process or by the COGCC when representatives of the COGCC were in Broomfield on October 12, 2017.</p> <p>As allowed by COGCC Rule 216 Comprehensive Drilling Plans, Adams County respectfully recommends the Director of the COGCC request a Comprehensive Drilling Plan from Extraction Oil and Gas for the well pads identified in comment one (1).</p> <p>a)Residents of the City and County of Broomfield as well as Adams County were under the impression that a Comprehensive Drilling Plan process was going to be part of Broomfield's Administrative Review by Memorandum of Understanding as outlined in section 9 of City and County of Broomfield Resolution No. 2017-186.</p> <p>i.City and County of Broomfield Oil and Gas Land Use Regulations Chapter 17-54-020 Definitions does not provide a definition for Comprehensive Drilling Plan which infers the definition provided by the COGCC Rule 216.</p> <p>b)The inclusion of agencies such as Colorado Department of Public Health and Environment, Colorado Parks and Wildlife, Local Government Designees as well as surface owners could aid in easing concerns expressed by many residents which will be impacted by this development. In addition, a CDP would ensure that appropriate parties are provided a fair and equitable opportunity to weigh in on concerns.</p>	
OGLA	Comment period extended 10 days at the request of the Broomfield LGD now ending on 5/27/18	04/30/2018
Agency	Passed Completeness.	04/27/2018
OGLA	Passed OGLA Completeness review. Address BMPs/COAs and other issues during the technical review.	04/27/2018
OGLA	This 2A is being pushed back to draft for lack of production information. No completions information is provided. Groundwater depth and comments are not consistent on the 2A. BMPs for engineering controls of storm water and erosion control for this location are not provided. COGCC staff has discussed the same issues on previous permits (Livingston and Interchange A and B) with the Operator.	02/28/2018

Total: 13 comment(s)