

**CITY OF LOVELAND
OIL AND GAS STANDARDS
("Standards Document")**

A. INTRODUCTION.

1. This Oil and Gas Standards Document ("Standards Document"), is adopted and enacted by the City Council of the City of Loveland ("City") pursuant to the authority established in Section **18.10.01.03** of the Loveland Unified Development Code ("Code") and any enabling and amending ordinance and shall be enforced as set forth in the Code. This Standards Document and each individual provision is reasonable and necessary to achieve the purposes stated herein.
2. This Standards Document, and each provision herein, is enacted to protect public health, safety, and welfare and the environment by regulating specific areas of Oil and Gas Operations ("Operations") within the City. This document establishes **minimum** standards and may be exceeded voluntarily or as determined by the City in the processing of an Oil and Gas Permit, depending on the nature of the proposed Operations and location.
3. Where used in this Standards Document, the term "practicable" shall mean, in the Director of Development Services' ("Director's") opinion, that: (a) there is no technology reasonably available to conduct the proposed Operations in compliance with the standard and waiver of the provision will not have a significant adverse effect on public health, safety, welfare, or the environment; (b) an alternative approach not contemplated by the standard is demonstrated to provide a level of protection of public health, safety, welfare, and the environment that would be at least equivalent to the standard; or (c) application of the standard would create an undue hardship because of unique physical circumstances or conditions existing on or near the site of the Oil and Gas Facility, which may include without limitation topographical conditions, shape or dimension of the site, or inadequate public infrastructure, provided adequate protection of public health, safety, welfare, and the environment will be ensured through other means. Except where the term "practicable" is used, modifications of these standards shall not be permitted except through a variance.
4. All terms used herein shall have the meaning set forth in the Code, unless a different definition is stated in this document; otherwise, terms and abbreviations shall have their generally accepted meaning as determined by reference to industry and regulatory standards.
5. Each provision is an integral part of this Standards Document and the City's regulations of oil and gas development. Notwithstanding the foregoing, if any provision or a part thereof (or any application thereof) is found to be invalid by a court, such invalidity shall not affect the remaining parts of the provision or of this Standards Document which can be given effect without the invalid portion or application, provided such remaining portions or applications are not determining by the court to be inoperable. To this end, each provision within this Standards Document are declared to be severable.

B. SUMMARY OF REVISIONS. [RESERVED]

C. AIR QUALITY PROTECTION.

Operator's Oil and Gas Operations, Facilities and Locations shall comply with the air quality standards (collectively, "Air Quality Standards") set forth in this Section C, the purpose of which is to protect human health and safety; prevent injury to plant and animal life; prevent damage to property; prevent unreasonable interference with the public welfare; preserve visibility; and protect scenic, aesthetic, and historic values in the City. The Air Quality Standards are established to prevent or mitigate the degradation of the City's air and

visibility resources; prevent odors and other air pollution problems; and to improve the quality of life and the general welfare in the City.

1. *Air Emissions Mitigation Plan.* An air emissions mitigation plan shall be submitted by Operator with the Application filed with the City, demonstrating how the development and operation of the subject Oil and Gas Facility or Location will minimize and mitigate adverse impacts to air quality, and demonstrating compliance with and implementation of the Air Quality Standards in this Section C ("Air Emissions Mitigation Plan").
 - a. Operator shall, through a manufacture-test or other recognized data analysis method, demonstrate hydrocarbon destruction or control efficiency that complies with a design destruction efficiency of 98% or better.
 - b. Operator shall use no-bleed continuous and intermittent pneumatic devices.
 - c. Operators shall not use glycol dehydrators or desiccant gas processing dehydrators.
 - d. Operator shall use current best management practices during liquids unloading (i.e. maintenance activities to remove liquids from existing wells that are inhibiting production), designed to minimize hydrocarbon emissions to the greatest extent practicable.
 - e. Operator shall reduce emissions from oil and gas pipeline maintenance activities such as pigging or blowdowns. Any maintenance activity involving the intentional venting of gas from a well tank, compressor or pipeline, beyond routine pipeline maintenance activity and pigging, requires forty-eight (48) hour advance written notice to the City of such proposed venting. Such notice shall identify the duration and nature of the venting event, a description as to why venting is necessary, a description of what vapors will likely be vented, what steps will be taken to limit the duration of venting, and what steps Operator proposes to undertake to minimize similar events in the future. If venting is required, or if accidental venting occurs, Operator shall provide such notice to the City of such event as soon as possible, but in no event longer than 24 hours from the beginning of the event, including without limitation the information listed above, an explanation as to the cause, and how the event will be avoided in the future; notices shall be supplemented as additional information becomes available.
 - f. Operator shall use telemetric control and monitoring systems, including surveillance monitors, to detect when pilot lights on control devices are extinguished.
 - g. Operator shall construct oil and gas pipeline infrastructure prior to the Production Phase.
2. *Ambient Air Monitoring Plan.* The Air Emissions Mitigation Plan will include an ambient air monitoring plan, describing how Operator will conduct baseline monitoring prior to construction of the subject Oil and Gas Facility or Location ("Ambient Air Monitoring Plan"). The Ambient Air Monitoring Plan shall also describe how Operator will conduct high-frequency monitoring and collect periodic canister samples (or equivalent method capable of speciating air samples) during the drilling, completion, and production phases of Operator's Oil and Gas Operations. Air pollutants monitored shall include methane and total VOCs (including BTEX).
 - a. Baseline, pre-drilling monitoring shall be conducted within five hundred feet (500') of the Oil and Gas Facility or Location over a thirty (30)-day period. Baseline monitoring shall track levels and changes in monitored air pollutant concentrations. Baseline monitoring data shall be provided as part of Operator's Oil and Gas Application submitted to the City.
 - b. High-frequency monitoring for hydrocarbons shall occur at frequencies of no less than once per hour during drilling and completion phases of Oil and Gas Operations. Each hydrocarbon monitor shall include a sampling device to automatically collect a speciated air sample when the monitor levels reach a threshold concentration level as defined in the Ambient Air Monitoring Plan, or in response to a request by the LGD. Meteorological monitoring is also required during the time that air quality monitoring is conducted. High-frequency monitoring of production Oil and Gas Operations will continue until three (3) years have passed from the date the last Well drilled on the subject Oil and Gas

Location entered its production phase of Oil and Gas Operations, unless a School, licensed childcare center, hospital, or residence is within one thousand feet (1,000') of the edge of the subject Oil and Gas Location. In such instances, high-frequency monitoring shall be required until all Wells at such Oil and Gas Location are plugged and abandoned. Continuation of high-frequency monitoring may also be required at the discretion of the CDPHE Director if repeated emissions at threshold concentrations, as defined in the Ambient Air Monitoring Plan, are detected, or as a result of repeated odor violations.

- c. In the event a speciated sample is triggered, the City shall be notified. Depending on the circumstances, expedited lab analysis may be required by the City.
 - d. Operator's Air Quality Monitoring Plan shall meet the minimum requirements of the CDPHE's Air Quality Control Commission ("AQCC") Regulation 7, Section VI.C., and shall receive approval from the CDPHE prior to beginning air quality monitoring at the subject Oil and Gas Location.
 - e. When submitting an Air Quality Monitoring Plan to the CDPHE, Operator shall submit the same at least ninety (90) days in advance of the above-described pre-drilling monitoring, to account for the City's thirty (30)-day pre-drilling air quality monitoring requirement.
 - f. The Air Quality Monitoring Plan submitted to CDPHE for review shall include the pollutants identified in this Section C.
 - g. The CDPHE will review the monthly reports of the Air Quality Monitoring Plan through the first six (6) months of hydrocarbon production from the subject Oil and Gas Location. After such period, Operator shall retain a third-party consultant to implement the approved plan to monitor air quality for the timelines identified in this Section C. Monthly reports would then be submitted to the City, rather than to the CDPHE, by the last day of each month.
3. *Air Quality Action Advisory Days.* The Operator shall utilize the following "Action Advisory Days Provisions," to the extent reasonably practicable, to reduce emissions on Air Quality Action Advisory Days posted by the CDPHE for the Front Range area. The Action Advisory Days Provisions shall be described in the Air Emissions Mitigation Plan and shall include how air quality alerts are received, outline specific emission reduction measures, and include requirements for documenting the measures implemented, including the following:
- a. Minimizing vehicle traffic and engine idling;
 - b. Reducing truck and worker traffic;
 - c. Delaying vehicle refueling;
 - d. Suspending or delaying use of fossil fuel powered equipment;
 - e. Postponing construction and maintenance activities, unless repairing identified leaks or releases;
 - f. Postponing Well maintenance and liquid unloading that would result in emission releases to the atmosphere; and
 - g. Postponing or reducing Oil and Gas Operations with high potential to emit VOCs, NO_x and Particulate Matter, e.g. dust or smoke.
4. *Venting.* Venting is prohibited, except as allowed in ECMC Rules.
5. *Flaring.* Flaring is prohibited, except as allowed in ECMC Rules.
6. *Odor.* Operator's Oil and Gas Operations, Facilities and Locations shall comply with AQCC Regulation No. 2 Odor Emission, 5 CCR 1001-4; AQCC Regulation No. 3, 5 CCR 1001-5; and AQCC Regulation No. 7, 5 CCR 1001-9, Sections VII and VIII, and this Standards Document.
- a. If a resident within one-half (½) mile (2,640') of an Oil and Gas Location or Facility complains of odor (either directly to Operator, to the ECMC, or to the City), Operator must determine whether the odor is caused by Operator's Oil and Gas Operations. Within twenty-four (24) hours of being notified

- of such odor complaint, Operator will provide the City and complainant with a complete description of all Oil and Gas Operations occurring at the subject Oil and Gas Facility or Location at the time of the odor complaint. If Operator or City determines that the odor which is the subject of the complaint is caused by Operator's Oil and Gas Operations, Operator shall resolve such odor concern to the maximum extent practicable within twenty-four (24) hours. Within seventy-two (72) hours of the odor complaint, Operator shall report its conclusions, and the resolution of the odor complaint, to the City and the complainant.
- b. If it is determined that Operator caused odors in violation of the Code, Operator may be required to cease or change its Oil and Gas Operations, notify affected residents, and/or temporarily relocate residents until the subject Oil and Gas Facility or Location is no longer causing an odor violation.
 - c. If odor persists after Operator investigation and mitigation measures, and there are reasonable grounds to believe that the subject Oil and Gas Facility or Location is causing the odor, the City may require Operator to conduct additional investigation, which may include audio, visual, and olfactory inspections or instrument based (e.g., infrared camera) leak inspections, and take appropriate corrective action based on the results of such investigation and the severity of odor.
 - d. In response to odor complaints, the City may require Operator to collect and analyze a speciated air sample to measure for volatile organic compounds or hazardous air pollutants known to cause potential health risks, and to have acute health guideline values identified by the Agency for Toxic Substances and Disease Registry and/or CDPHE to further evaluate the risk of the odor. Speciated air sample collection shall be done utilizing a third-party vendor approved by the City.
7. *Fugitive Dust.* The fugitive dust requirements in ECMC Rule 427 shall apply to Operator's Oil and Gas Operations, Facilities and Locations. A dust mitigation plan shall be submitted by Operator with the Application filed with the City, demonstrating how the development and operation of the subject Oil and Gas Facility or Location will minimize and mitigate adverse impacts to air quality ("Dust Mitigation Plan").
- a. If a resident (including business and agriculture) within one-half ($\frac{1}{2}$) mile (2,640') of an Oil and Gas Location or Facility complains of dust directly to Operator, to the ECMC, or to the City, Operator must assist the City to determine whether the complained of dust is caused by Operator's Oil and Gas Operations. Within twenty-four (24) hours of being notified of such dust complaint, Operator will provide the City and complainant with a complete description of all Oil and Gas Operations occurring at the subject Oil and Gas Facility or Location at the time of the dust complaint. If the City determines the complained of dust is caused by Operator's Oil and Gas Operations, Operator shall resolve the dust concern to the maximum extent practicable within twenty-four (24) hours. Within seventy-two (72) hours of such dust complaint, Operator shall report its conclusions, and the resolution of the dust complaint, to the City and the complainant.
 - b. If Operator's Oil and Gas Facilities or Locations are determined to be causing dust that constitutes a nuisance or hazard to public health, safety, welfare, or the environment, the City may require additional dust mitigation efforts as necessary and reasonable at any point during Operator's Oil and Gas Operations.
 - c. Silica dust must be contained to the maximum extent practicable during the hydraulic fracturing process at any Oil and Gas Facility or Location.
8. *Gas Leak Detection and Repair Plan.* A leak detection and repair plan shall be submitted with Operator's Application filed with the City and updated as necessary ("Leak Detection and Repair Plan").
- a. A Leak Detection and Repair Plan shall describe a leak detection and repair ("LDAR") program acceptable to the CDPHE using modern leak detection technologies, such as infrared ("IR") cameras, for equipment used at an Oil and Gas Facility or Location.

- b. A Leak Detection and Repair Plan shall disclose techniques, methods and protocols that will be utilized at Operator's subject Oil and Gas Facilities and Locations to identify, prevent, contain, document, repair, and report leaks, and shall demonstrate how it will comply with and implement the standards in this Section A.
 - c. Operator shall conduct leak detection and repair inspections at every Oil and Gas Facility and Location a minimum of once every year, or at greater frequencies as required by the CDPHE for the subject emission source, using modern leak detection technologies (infrared cameras, etc.) and equipment. The results of said inspections, including all corrective actions taken, shall be reported to the Larimer County Health Department, and the LGD, upon request.
 - d. Repair of leaks shall occur within seventy-two (72) hours of detection. If a leak is not repaired within seventy-two (72) hours of detection, Operator must use other means to stop the leak, including but not limited to, isolating the component or shutting-in the subject Well, unless such other means will cause greater emissions. If it is anticipated that a repair will take longer than seventy-two (72) hours, Operator shall provide a written explanation to the City and the LGD as to why more time is required and how the leak will be contained.
 - e. Equipment leaks that pose an imminent safety risk to persons, wildlife, or the environment require Operator to take the most appropriate safety response action, which may include shut down of the affected equipment or Oil and Gas Facility or Location, and a prohibition on the resumption of Oil and Gas Operations, until the Operator has provided evidence that the leak has been repaired.
 - f. Upon request, Operator will also provide the City an opportunity to attend and observe a routine leak inspection.
9. *Electric Equipment.* Operator's Oil and Gas Operations, Facilities or Locations shall be subject to the following:
- a. All permanent production equipment, such as compressors, motors and artificial lift equipment at Operator's Oil and Gas Facilities or Locations shall utilize electric line power to mitigate noise and to reduce emissions.
 - b. Unless waived by Loveland Water and Power, all drilling rigs used to drill to target depth on Operator's Oil and Gas Locations shall utilize electric line power.
 - c. Operator shall use electric power for hydraulic fracturing Oil and Gas Operations on Operator's Oil and Gas Locations. If unavailable or waived by Loveland Water and Power, Operator shall use Tier IV hydraulic fracturing engines (or technology that achieves equivalent or better emission reductions.)
 - d. Operator will minimize use of diesel generators for temporary power, including the use of liquified or compressed natural gas for power generation, to further reduce emissions and noise on Operator's Oil and Gas Locations; provided however, that Operator shall be authorized to maintain back-up diesel generators for temporary power on its Oil and Gas Facilities and Locations, to protect public health, safety and welfare, and the environment, in the event of an unexpected electrical outage.
 - e. *Air Quality Conditions of Approval in ECMC Permit.* Unless specifically waived by Loveland Water and Power, Operator will propose the following language to be inserted as conditions of the ECMC's approval of an Oil and gas Development Plan, Form 2A, or Form 2:
 - i. "All drilling rigs on Operator's Oil and Gas Locations shall utilize electric line power."
 - ii. "Operator shall use electric power for hydraulic fracturing Oil and Gas Operations on Operator's Oil and Gas Locations." Or, if unavailable or waived by Loveland Water and Power, "Operator shall use Tier IV hydraulic fracturing engines (or technology that achieves equivalent or better emission reductions.)"
10. *Dehydrators.* Glycol dehydrators and desiccant gas processing dehydrators are prohibited on Operator's Oil and Gas Facilities and Locations.

11. *Compressor Engines.* Compressor engines are prohibited within City limits, except for wellhead, gas lift, air, vapor recovery unit ("VRU"), and/or gas gathering compressors, which shall be located on Operator's Oil and Gas Facilities or Locations. Operator shall use enclosures of compressor engines where necessary to provide visual and/or noise mitigation at Operator's Oil and Gas Facilities and Locations. VRU and gas gathering compressor engines will be installed with sound walls to buffer noise.
12. *Pilot Lights.* Operator shall use telemetric control and monitoring systems on Operator's Oil and Gas Facilities and Locations, including surveillance monitors, to detect when pilot lights on control devices are extinguished.
13. *STAR Program.* Operator shall participate in the Natural Gas STAR program, or other equivalent voluntary program(s), to encourage innovation in pollution control at each of Operator's Oil and Gas Facilities and Locations.
14. *Pipeline Infrastructure.* Operator shall construct Pipeline infrastructure to carry both oil and gas for any Oil and Gas Facilities and Locations prior to the beginning production Oil and Gas Operations.

D. WATER QUALITY AND QUANTITY.

Operator's Oil and Gas Operations, Facilities and Locations shall comply with the water quality standards (collectively, "Water Quality Standards") set forth in this Section D, the purpose of which is to: protect human health and safety; prevent injury to plant and animal life; prevent damage to property; prevent unreasonable interference with the public welfare; and to protect water quality. The Water Quality Standards are established to prevent or mitigate the degradation of the City's water resources; prevent odors and other pollution problems; and to improve the quality of life and the general welfare in the City.

1. *Water Quality Protection.* Operator's Oil and Gas Operations, Facilities and Locations shall not cause degradation to surface or ground water, or to wetlands, within the City.
2. *Water Quality Report/Plan.* A water quality report/plan shall be submitted with all Oil and Gas Facility or Location Applications filed with the City ("Water Quality Report/Plan"). The Water Quality Report/Plan shall demonstrate how the development and operations of the subject Oil and Gas Facility or Location will avoid adverse impacts to surface and ground waters in the City, identify all private and community permitted water wells of public record within one-half (1/2) mile (2,640') of the subject Oil and Gas Facility or Location, and demonstrate compliance with and implementation of standards in the Code, ECMC Rules, and this Section D.
3. *Chemical Disclosure, Storage & Prohibitions.* Operator's Oil and Gas Operations, Facilities or Locations shall be subject to the following:
 - a. Prior to any hydraulic fracturing Oil and Gas Operations, Operator shall provide the City with a copy of the Chemical Disclosure Registry form provided by Operator to the ECMC pursuant to the ECMC's "Hydraulic Fracturing Chemical Disclosure."
 - b. Use of PFAS chemicals is prohibited in drilling or hydraulic fracturing fluids, or in firefighting foam, used in or on Operator's Oil and Gas Operations, Facilities and Locations.
 - c. Drilling and completion chemicals shall be removed from Oil and Gas Facilities and Locations no less than sixty (60) days following the completion of drilling and completion Oil and Gas Operations.
 - d. Operator shall not permanently store flowback from hydraulic fracturing, or produced water, at any Oil and Gas Facility or Location.

- e. Operator shall not use any substances that are prohibited by state or federal rules or regulations at any Oil and Gas Facility or Location.
4. *Spills*. Operator's Oil and Gas Operations, Facilities or Locations shall be subject to the following:
 - a. Operator shall prepare, and provide to the City, a fluid leak detection plan as described in the ECMC Rules ("Fluid Leak Detection Plan").
 - b. Operator shall notify the City and Larimer County as soon as possible of spills on Oil and Gas Facilities or Locations that threaten the City Public Water System water supplies or the water within a natural river or stream.
 - c. Operator shall provide the City with a copy of any self-reporting submissions that Operator provides to the ECMC due to any spills at Oil and Gas Facilities or Locations.
 5. *Stormwater*. Operator's Oil and Gas Operations, Facilities or Locations shall comply and conform to the City's stormwater control regulations found in the Code, Chapter 13.
 - a. Maintenance of Machinery.
 - i. Operator shall not conduct any vehicle maintenance at any Oil and Gas Facility or Location.
 - ii. Operator shall not conduct routine field maintenance of mobile machinery within three hundred feet (300') of any water body as defined by the Code.
 - iii. All machinery fueling at Oil and Gas Facilities or Locations must occur over impervious material.
 6. *Baseline and Monitoring Water Source Tests*. As required by and submitted to the ECMC and CDPHE, baseline and monitoring Water Source sampling/testing shall be provided to the LGD for the life of the subject Oil and Gas Facility or Location, and during any post-closure assessments of such Oil and Gas Facility or Location.
 - a. Operator shall offer non-confidential baseline and monitoring Water Source sampling/testing, free of charge, to all well-owners of public record within one-half (½) mile (2,640') of any of Operator's Oil and Gas Facilities or Location.
 - b. Operators baseline and monitoring water testing will test for the analytes listed in Table 1 below, in addition to the analytes tested pursuant to ECMC Rules, at Oil and Gas Facilities and Locations.
 - c. Operator must attempt to collect initial baseline samples, and monitoring samples, from all available potable Water Sources within a one-half (½) mile radius of Oil and Gas Facilities or Locations. Potable Water Sources include registered water wells or permitted or adjudicated springs.
 - d. In conducting the foregoing baseline and monitoring water sampling/testing, Operator shall make reasonable efforts to obtain the consent of the owner of the Water Source. If Operator is unable to locate and obtain permission of the Water Source owner, Operator must advise the City that Operator could not obtain access to the Water Source from the owner thereof.
 - e. Operator may rely on existing groundwater sampling data from any Water Source within the radii described above, provided that such sampling data: (i) was collected in accordance with accepted standards and (ii) was collected within the twelve (12) months preceding the commencement of the drilling phase of Operator's Oil and Gas Operations for the subject Oil and Gas Location. Such data includes measurement of all of the constituents measured in Table 2 below, and confirmation that there has been no significant oil and gas activity within a one (1) mile radius in such time period between the original sampling and the commencement of the drilling phase of Operator's Oil and Gas Operations for the subject Oil and Gas Facility or Location.
 - f. Operator shall follow standard industry procedures in collecting baseline and monitoring water samples, consistent with the ECMC's model Sampling and Analysis Plan.
 - g. Operator shall report the location of any baseline or monitoring water sample Water Source using GPS with sub-meter resolution.

- h. Operator shall report results of field observations made during the conduct of any baseline or monitoring water sampling, including reporting on damaged or unsanitary Well conditions, adjacent potential pollution sources, odor, water color, sediment, bubbles, and effervescence, to the City.
- i. Operator shall provide copies of all baseline and monitoring water sampling/testing results to the City, the ECMC, and the Water Source owner(s), if reasonably locatable, within thirty (30) days after Operator receives the same.
- j. *Subsequent Water Source Sampling.* If any baseline or monitoring water sampling shows water contamination, additional measures shall be required, including:
 - i. If free gas or a dissolved methane concentration level greater than one (1) milligram per liter (mg/l) is detected in a Water Source subject to Operator’s baseline or monitoring water sampling, Operator shall determine the gas type using gas compositional analysis and stable isotope analysis of the methane (carbon and hydrogen).
 - ii. If such determination indicates thermogenic, or a mixture of thermogenic and biogenic, gas, an action plan to determine the source of such gas shall be prepared by Operator.
 - iii. Operator’s immediate notification of the City, the ECMC, and the owner of the subject Water Source shall be required if such methane concentration increases by more than five (5) mg/l between sampling periods, or increases to more than ten (10) mg/l.
 - iv. Operator’s immediate notification of the City, the ECMC, and the owner of the subject Water Source shall be required if BTEX and/or TPH are detected. Such detections may result in required subsequent sampling for additional analytes.
 - v. Operator’s further Water Source sampling/testing in response to complaints from water source owners.
 - vi. Operator’s timely production and distribution of water sampling/testing results, in electronic deliverable format, to the City, the ECMC and the Water Source owners.
 - vii. *Qualified Independent Professional Consultant.* All baseline, monitoring and subsequent Water Source sampling/testing must be conducted by a qualified, independent professional consultant engaged by Operator.

TABLE 1

GENERAL WATER QUALITY
Alkalinity, Conductivity & TDS, pH, Dissolved Organic Carbon (or Total Organic Carbon), Bacteria, Perfluorinated Compounds (PFCs), and Hydrogen Sulfide
MAJOR IONS
Bromide, Chloride, Fluoride, Magnesium, Potassium, Sodium, Sulfate, and Nitrate + Nitrite as N
METALS
Arsenic, Barium, Boron, Chromium, Copper, Iron, Lead, Manganese, Selenium, Strontium, Mercury, Uranium, and Radium
DISSOLVED GASES and VOLATILE ORGANIC COMPOUNDS
Methane, Ethane, Propane, BTEX as Benzene, Toluene, Ethylbenzene and Xylenes, Total Petroleum, and Hydrocarbons (TPH)
OTHER

9. *Waste and Wastewater Management.* Operator shall implement and submit a waste and wastewater management plan to the City with the Application that complies with the following (“Waste and Wastewater Management Plan”):
 - a. No Class II injection Wells are to be located within City limits.
 - b. No land treatment of oil-impacted or contaminated drill cuttings are permitted within the City.
 - c. All fluids on Oil and Gas Facilities or Locations shall be contained, and there shall be no discharge of fluids.
 - d. Wastewater shall be stored in tanks, transported by tanker trucks and/or pipelines, and disposed of at licensed disposal or recycling sites in accordance with applicable law and the operator’s Waste and Wastewater Management Plan.
 - e. If requested, the amount of water disposed or recycled shall be reported to the Director of Water and Power Department.
 - f. The Waste and Wastewater Management Plan shall incorporate secondary containment and stormwater measures consistent with this Standards Document.

10. *Wetlands Protection Plan.* If applicable, Operator shall implement a *Wetlands Protection Plan* demonstrating the oil and gas operations shall, to the maximum extent practicable, avoid causing degradation to wetlands within the City. Among other methods to achieve compliance with this standard, the proposed oil and gas operation shall not alter historic drainage patterns and/or flow rates or shall include acceptable mitigation measures to compensate for anticipated drainage impacts.

11. *Water Supply.* Operator’s Oil and Gas Operations, Facilities or Locations shall be subject to the following:
 - a. Operator shall comply with applicable State of Colorado, Department of Natural Resources and other applicable state regulations concerning the source(s) of water used in the drilling and completion phases of Operator’s Oil and Gas Operations.
 - b. The operator shall identify on the site plan its primary source(s) for water used in both the drilling and well completion phases of operation. In addition, if requested by the City’s Director of Water and Power Department, the applicant’s source(s) and amounts of water used in the City shall be documented and a record of it shall be provided to the City.
 - c. All water volumes actually used by Operator during Operator’s Oil and Gas Operations shall be reported by Operator to the State of Colorado in accordance with its rules and regulations.
 - d. All fresh water used in Operator’s Oil and Gas Operations for hydraulic fracturing shall be transported to Oil and Gas Facilities or Locations by means other than by truck, unless Operator provides notice to the City, therein demonstrating extenuating circumstances which will allow trucks to deliver water for no more than seven (7) days or less. If the transportation of water by means other than truck exceeds seven (7) days, Operator will seek any necessary amendments to this MOU.
 - e. Water will be reused to the greatest extent practicable during the drilling and hydraulic fracturing phase or oil and gas development.
 - f. Operator will assure that water suppliers transporting water to Operator’s Oil and Gas Facilities and Locations have acquired all necessary permitting, easements, etc. for such transportation. The water transportation route and Water Source will depend on which water supplier is chosen for a given Oil and Gas Operation; once confirmed, and in each case, Operator will provide the water transportation route and Water Source information to the City. Where reasonably practicable, Operator may utilize City Road Right-of-Way, and City drainage culverts for the laying and operation of temporary water lines on the surface, upon prior notice to the City of such intended use. If necessary, Operator will

bury temporary water lines at existing driveway and gravel road crossings, or utilize existing culverts, if available.

12. *Closed-Loop Pitless Systems for the Containment and/or Recycling of Drilling Fluids.* Operator's Oil and Gas Operations, Facilities or Locations shall be subject to the following:
 - a. Wells shall be drilled, completed and operated using closed-loop systems for containment and/or recycling of all drilling, completion, flowback and produced fluids.
 - b. Operator shall recycle drilling and hydraulic fracturing fluids to the greatest extent practicable.
13. *Water Resources Map.* Operator shall prepare a topographic map ("Water Resources Map") showing the horizontal distance and approximate bearing from Oil and Gas Facilities and Locations to:
 - a. All surface Waters of the State within one-half (1/2) mile (2,640') of the subject Oil and Gas Facility or Location. Such map will indicate which surface water features are downgradient;
 - b. All Water Sources within one-half (1/2) mile (2,640') of the subject Oil and Gas Facility or Location;
 - c. Any Public Water System facilities, including intake structures, water wells, storage facilities, recharge areas, and treatments plants within one-half (1/2) mile (2,640') of the subject Oil and Gas Facility or Location;
 - d. ECOM Rule 411 buffer zones, as may be amended, within one-half (1/2) mile (2,640') of the subject Oil and Gas Facility or Location; and
 - e. Any surface waters within one-half (1/2) mile (2,640') of the subject Oil and Gas Facility or Location that are fifteen (15) stream miles upstream of a Public Water System intake.
14. *Containment Berms.* Operator's Oil and Gas Operations, Facilities or Locations shall be subject to the following:
 - a. Operator shall utilize steel-rim berms (or similar material of comparable durability, designed and installed to prevent leakage and resist degradation from erosion or routine operation) around all permanent separation and storage equipment at the subject Oil and Gas Facility or Location, with sufficient capacity to contain one and one-half (1.5) times the maximum volume of liquids that such equipment will contain at any given time plus sufficient freeboard to prevent overflow.
 - b. All berms and containment devices shall be inspected quarterly by Operator and maintained in good condition.
 - c. Secondary containment, such as duck ponds or lined earthen berms for temporary tanks, shall be used.
 - d. Secondary containment 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.
 - e. 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.
 - f. For Oil and Gas Facilities or Locations within one thousand feet (1,000') and up-gradient of a surface water body, tertiary containment, such as an earthen berm, is required around such Oil and Gas Facilities or Locations.

E. SAFETY.

Operator's Oil and Gas Operations, Facilities and Locations shall comply with the safety standards (collectively, "Safety Standards") set forth in this Section E, the purpose of which is to: protect human health and safety; prevent injury to plant and animal life; prevent damage to property; and prevent unreasonable interference with the public welfare.

1. *Emergency Response Plan, Will-Serve Letter, and Resource Mobilization/Cache Plan.* Operators must comply with Code section 18.10.02.05 – Emergency Response.
2. *Discharge Valves.* Open-ended discharge valves on all storage tanks, Pipelines and other containers within the subject Oil and Gas Facility or Location shall be secured, and shall not be accessible to the general public. Open-ended discharge valves within the subject Oil and Gas Facility or Location shall be placed within the interior of the secondary containment area.
3. *Flammable Material.* All ground within twenty-five feet (25’) of any tank, or other structure containing flammable or combustible materials, located on the subject Oil and Gas Facility or Location shall be kept free of dry weeds, grass, or rubbish, and shall conform to ECMC Rules and the applicable fire code for such Oil and Gas Facility or Location. Landscaping is prohibited within twenty-five feet (25’) of any tank, or other structure containing flammable or combustible materials, located on the subject Oil and Gas Facility or Location.
4. *Safety Management Plan.* Operator shall maintain a safety management plan for Operator’s Oil and Gas Operations (“Safety Management Plan”), including: hazard review, operating procedures, safety training program, maintenance procedures, compliance audits, and design measures.
5. *General Maintenance.* Operator shall conduct Oil and Gas Operations, and maintain all equipment, pursuant to applicable manufacturer specifications, consistent with technological limitations and reasonable and customary maintenance practices.
6. *Use of Pipelines.* Operator’s Oil and Gas Operations, Facilities and Locations shall comply with the following:
 - a. Operator shall use Pipelines for the transport of oil and gas from Oil and Gas Facilities and Locations. Where practicable, Operator will use Pipelines to transport produced water from the same as well.
 - b. Operator shall be permitted to utilize temporary tanks during drilling, flowback, workover, completion, hydraulic fracturing and maintenance Oil and Gas Operations at Oil and Gas Facilities and Locations.
 - c. Operator shall obtain all state and local government approvals necessary for the construction and use of Pipelines associated with Oil and Gas Facilities and Locations.
7. *Analysis of Plugged and Decommissioned Wells.* Operator’s Oil and Gas Operations, Facilities and Locations shall comply with the following:
 - a. Before and after the hydraulic fracturing of any new Well(s), Operator shall assess the integrity of all Wells (Active, Dry & Abandoned, Injecting, Plugged & Abandoned, Producing, Shut-In, and Temporarily Abandoned) where the surface location of such Wells are both within City limits and within one thousand five hundred feet (1500’) of the completion interval of the projected track of the borehole of the proposed new Well(s), based upon examination of ECMC and other publicly available records (“Well Assessment”). Well Assessments shall include assessment of leaking gas, oil, or water into the ground surface or into subsurface Water Sources, taking into account plugging and cementing procedures described in any recompletion, or plugging and abandonment, reports filed with the ECMC. Well Assessments shall be provided to the City.
 - b. Based on the results of a Well Assessment, the City may require Operator to plug and abandon, in compliance with all ECMC Rules in relation to Well abandonment and plugging, any of the Operator’s existing Wells or such Wells identified in the Well Assessment that are under Operator’s ownership, control or authority. Additionally, the City may request that Operator attempt to negotiate the plugging and abandonment of other Wells of concern identified in the Well Assessment that are not owned, controlled and/or within Operator’s authority, but only to the extent that such Wells are within one

thousand five hundred feet (1500') of the completion interval of the projected track of the borehole of the proposed new Well(s). If Wells of concern identified in the Well Assessment are not plugged and abandoned, Operator must supply a follow-up monitoring plan, which will be used to prevent or detect any communication between the Well(s) of concern identified in the Well Assessment and the proposed new Well(s).

- c. Operator shall provide notification to the City, and to applicable fire district(s) associated with the subject Oil and Gas Facility of Location not less than fourteen (14) days prior to commencing plugging and abandonment Oil and Gas Operations. Operator shall notify the City and the ECMC of the results of such plugging and cementing procedures.
 - d. For each Well abandoned by Operator within City limits, for which appropriate access and permission to perform tests is granted, a soil gas survey testing the soil within a ten foot (10') radius of the subject Well shall be completed prior to production from a proposed new Well(s), and again one (1) year after production has commenced on the new Well(s) ("Soil Gas Survey"). Every Well abandoned by Operator and for which Operator has obtained appropriate access and permission, shall also be subject to such Soil Gas Survey testing one (1) year after production has commenced on a new Well(s). Operator shall provide the results of such Soil Gas Survey to the City and the ECMC within one (1) month of conducting the same, or advise the City that access to the previously abandoned Well(s) could not be obtained.
8. *Surface Safety Valve and Automatic Safety Protective Systems.* Operator's Oil and Gas Operations, Facilities and Locations shall comply with the following:
- a. Operator will install an automated safety system, governed by safety devices and a programmable logic computer, at each Oil and Gas Facility and Location ("Auto Safety System").
 - b. Each Auto Safety System shall include a surface safety valve ("SSV") or wellhead master control valve installed for each new Well, before the commencement of the production phase, connected to the production tubing at the surface. The SSV or wellhead master control valve shall monitor multiple flowing pressures and rates having predetermined maximum and/or minimum threshold values programmed, and will remotely shut the Well down should certain upset conditions be detected. Additionally, the Auto Safety System shall provide the ability to remotely shut-in Wells on demand through operator remote intervention.
 - c. The SSV or wellhead master control valve will have documented, quarterly testing to ensure functionality per the same's manufacturer's specifications.
13. *Flowback Best Management Practices.* Operator's Oil and Gas Operations, Facilities and Locations shall comply with the following:
- a. Before Flowback, Operator shall:
 - i. Construct the subject Oil and Gas Facility or Location in a manner that is capable of remote emergency shut down consistent with this Attachment A;
 - ii. Tie Flowback equipment into combustors;
 - iii. Notify appropriate fire district associated with the subject Oil and Gas Facility or Location at least twenty-four (24) hours before production Flowback is scheduled to begin for the first time on the subject Oil and Gas Facility or Location; and
 - iv. Conduct a pre-startup safety review, which will review the subject Oil and Gas Facility or Location equipment spacing requirements and safety procedures.
 - b. During Flowback, Operator shall:
 - i. Utilize gas monitors that are capable of detecting lower explosive level and hydrogen sulfide, which gas monitors emit an audible tone linked to Operator representative mobile phones, in order to notify people on and off the subject Oil and Gas Facility or Location;

- ii. Utilize automatic tank gauging to measure tank levels, and have twenty-four (24) hour manned Oil and Gas Operations;
- iii. Transport Flowback gas to sales Pipelines, when possible.

F. NOISE MITIGATION STANDARDS

Operator’s Oil and Gas Operations, Facilities and Locations shall comply with the noise mitigation standards (collectively, “Noise Mitigation Standards”) set forth in this Section F, the purpose of which is to: protect human health and safety; prevent damage to property; prevent unreasonable interference with the public welfare; preserve visibility; and protect scenic, aesthetic, and historic values in the City. The Noise Mitigation Standards are established to improve and prevent degradation to the quality of life and the general welfare of the City. The following requirements are in addition to the noise requirements in Chapter 7.32, Sound Limitations, Loveland Municipal Code.

- 1. *Noise Requirements for Oil and Gas Facilities and Locations.* Operator’s Oil and Gas Operations, Facilities and Locations shall comply with the following:
 - a. Noise generated from Oil and Gas Facilities and Locations shall comply with the following maximum permissible noise levels appropriate for the Zone Area Designation of the adjacent land uses as determined by the City. Noise Abatement will be used as part of the City’s determination for land uses surrounding land surrounding the subject Oil and Gas Facility or Location, and may be different from the City’s zone districts.

Table 2: Maximum Permissible Noise Levels		
Zone Area Designations	7:00 am to next 7:00 pm	7:00 pm to next 7:00 am
Residential/Agricultural/Rural	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)
All Areas	60db(C)	60 db(C)

In the hours between 7:00 a.m. and 7:00 p.m., the noise levels permitted above may be increased by ten (10) db(A) for a single period of not to exceed fifteen (15) minutes in any one (1) hour period. In the hours between 7:00 p.m. and 7:00 a.m., the noise levels shall not be exceeded; therefore Oil and Gas Operations shall employ strategic planning for noise-inducing activities to be conducted between the hours between 7:00 a.m. and 7:00 p.m.

- b. Noise levels shall be measured at or within twenty-five feet (25’) of the boundary line of the tract of land upon which the subject Oil and Gas Facility or Location is located. When evaluating a noise complaint, the City shall measure sound at or within twenty-five feet (25’) of the boundary line of the tract of land upon which the subject Oil and Gas Facility or Location and other property boundaries which are more representative of the noise impact.
- c. During construction, drilling, and completion phases of Oil and Gas Operations, the City will require continuous noise monitoring for all Oil and Gas Facilities and Locations located within one-half (½) mile (2,640’) of any existing Residential Building Unit(s), Schools, or state-licensed child care facilities. The City may adjust this distance based on the location, nature, and size of the same. The City may require continuous noise monitoring to be conducted by an approved third-party consultant.
- d. Oil and Gas Operations shall be conducted, and Oil and Gas Facilities and Locations shall be operated,

so the ground vibration inherently and recurrently generated does not constitute a nuisance at any point along the boundary line of the tract of land upon which such Oil and Gas Operations are conducted and/or upon which the subject Oil and Gas Facility or Location is located.

- e. In situations where low-frequency noise from an Oil and Gas Facility or Location is reasonably believed to exceed the standards in Table 2 above, a sound level measurement shall be taken twenty-five feet (25') from the exterior wall of the subject Building Unit(s) nearest to the noise source, using a noise meter calibrated to the db(C) scale. If such reading exceeds 60 db(C), the City shall require Operator to obtain a low-frequency noise impact analysis, conducted by a qualified sound engineer, including identification of any reasonable control measure(s) available to mitigate such low-frequency noise impact ("Noise Impact Analysis"). Such Noise Impact Analysis shall be implemented at the subject Oil and Gas Facility or Location, and shall be provided to the City for consideration and possible action.
2. *Noise Mitigation Plan.* A noise mitigation plan shall be required for the Application filed with the City ("Noise Mitigation Plan"). The Noise Mitigation Plan shall demonstrate how Oil and Gas Operations at the subject Oil and Gas Facility or Location will mitigate noise and vibration impacts to comply with the Noise Mitigation Standards contained in this Attachment A and the Code. The Noise Mitigation Plan shall include the following:
 - a. The hours of maximum noise emissions, type, frequency, and level of noise to be emitted, and proposed mitigation measures.
 - b. A minimum five (5) day (two days being the weekend) baseline noise analysis.
 - c. Modeled maximum A- and C-weighted decibel levels for all phases of development shall be presented using contour maps from the subject Oil and Gas Facility or Location (combining noise sources) at three hundred fifty feet (350'), five hundred feet (500'), one thousand feet (1,000'), two thousand feet (2,000'), and to the property line of the adjacent properties. Such contour maps shall demonstrate both unmitigated and mitigated decibel levels.
 - d. A plan of proposed mitigation measures to be implemented by the subject Oil and Gas Facility or Location during each phase of development shall be provided to ensure compliance with the maximum permissible noise levels as listed in Table 2 above.
 - e. The Noise Mitigation Plan may be required to be updated periodically to address additional noise expected when artificial lift is added to the subject Oil and Gas Facility or Location as provided for below.
 3. *Artificial Lift.* Artificial lift will not be accomplished through the use of traditional pump jacks.
 - a. Alternatives such as gas lift, linear rod pumps, or a hydraulic pumping unit may be used at Oil and Gas Facilities and Locations, and are to be as low profile as practicable, with a maximum height of thirty feet (30'). An alternative artificial lift system may be used if it causes less visible and auditory impacts, and is agreed to by both Operator and the City.
 - b. When an artificial lift system is requested for an Oil and Gas Facility or Location, Operator will provide the City with a proposed design for the same. Upon receipt and review of the same, the City may require an updated Noise Mitigation Plan to address the additional noise created by the artificial lift system, and to protect other development that has occurred, or is anticipated to occur, that could be affected by the increased noise.
 4. The City may require Operator to implement additional noise mitigation measures if there is a Residential Building Unit, Public Park, or High Occupancy Structure within two thousand feet (2,000') of the subject Oil and Gas Facility or Location, based on any of the following additional site-specific characteristics:
 - a. Nature and proximity of adjacent development (design, location, use);
 - b. Prevailing weather patterns, including wind directions;

- c. Type and intensity of the noise emitted; and
- d. Vegetative cover on or adjacent to the site or topography.
- e. Additional noise mitigation measures may include, but are not limited to:
 - i. Continuous noise monitoring by a third-party contractor, at the expense of Operator, during construction, drilling, and completion phases, with instruments placed between the subject Oil and Gas Facility or Location and Residential Building Units within two thousand feet (2,000'). Continuous noise monitoring data shall be provided to the City.
 - ii. Sound walls around the subject Oil and Gas Facility or Location during drilling and completion phases to mitigate noise impacts;
 - iii. Use of electric-powered motors and pumping systems on the subject Oil and Gas Facility or Location.
 - iv. Construction of buildings or other enclosures where Oil and Gas Operations create noise and visual impacts that cannot otherwise be mitigated due to proximity, density or intensity of adjacent land use.
 - v. Quiet design mufflers (*i.e.*, hospital grade or dual dissipative) equal to or better than noise mitigation technologies shall be utilized for non-electrically operated equipment at the subject Oil and Gas Facility or Location.
 - vi. Motors, generators, and engines at the subject Oil and Gas Facility or Location shall be enclosed in acoustically insulated housings or covers.
 - vii. Subject to Section C.9 of this Standards Document, obtaining all electric power from utility line power or renewable sources at the subject Oil and Gas Facility or Location;
 - viii. Utilizing best practices to minimize noise impacts during drilling, completion, and all other phases of Oil and Gas Operations, including, where reasonably available at market costs and in agreement with Operator's Oil and Gas Operations schedule, the use of "quiet fleet" noise mitigation measures during the completion phase of Oil and Gas Operations;
 - ix. Restrictions on the unloading of pipe or other tubular goods between 6:00 p.m. and 8:00 a.m. at the subject Oil and Gas Facility or Location;
 - x. Subject to Section C.9 of this Standards Document, the use of electric drill rigs at the subject Oil and Gas Facility or Location; and
 - xi. The use of Tier IV or better diesel engines, or electric line power, for hydraulic fracturing pumps at the subject Oil and Gas Facility or Location.

5. *Noise Complaints.* Noise complaints shall be responded to as soon as possible.

- a. If a resident (including business and agriculture) within one mile (5,280') of an Oil and Gas Location or Facility complains of noise directly to Operator, to the ECMC, or to the City, Operator must assist the City to determine whether the complained of noise is caused by Operator's Oil and Gas Operations. Within twenty-four (24) hours of being notified of such noise complaint, Operator will provide the City and complainant with a complete description of all Oil and Gas Operations occurring at the subject Oil and Gas Facility or Location at the time of the noise complaint. If the City determines the complained of noise is caused by Operator's Oil and Gas Operations, Operator shall resolve the noise concern to the maximum extent practicable within twenty-four (24) hours. Within seventy-two (72) hours of such noise complaint, Operator shall report its conclusions, and the resolution of the noise complaint, to the City and the complainant.
- b. If Operator's Oil and Gas Facilities or Locations are determined to be causing noise that constitutes a nuisance or hazard to public health, safety, welfare, or the environment, the City may require additional noise mitigation efforts as necessary and reasonable at any point during Operator's Oil and Gas Operations.
- c. At any time, the City may require continuous noise monitoring, conducted by an approved third-party consultant, until noise concerns are abated.

G. VISUAL STANDARDS.

Operator's Oil and Gas Operations, Facilities and Locations shall comply with the visual standards (collectively, "Visual Standards") set forth in this Section G, the purpose of which is to: protect human health and safety; prevent damage to property; and prevent unreasonable interference with the public welfare. The Visual Standards are established to improve and to prevent degradation to the quality of life and the general welfare in the City. The following requirements are in addition to the visual requirements in the Code, Chapter 18.08 – Landscaping and Buffering.

1. *Visual Mitigation Plan.* Operator shall prepare and implement a visual mitigation plan and comply with applicable provisions of ECMC Rules and the steps identified in this Standards Document ("Visual Mitigation Plan").
2. *Visual Mitigation Methods.* The City may require Operator to implement the following visual mitigation methods may be required on a site-specific basis:
 - a. Use of low-profile tanks less than 16 ft. in height;
 - b. Use of equipment with reduced height and profiles;
 - c. Facility painting, vegetative or structural screening, land berming, and landscaping;
 - d. Earthen berms around the perimeter of fencing with turf grass or ground cover generally recognized by landscape architects and horticulturalists for local area use for the purpose of general screening;
 - e. Establishment and proper maintenance of ground cover, trees and shrubs for screening and aesthetic purposes;
 - f. Designing an Oil and Gas Facility to utilize natural screens where possible; and
 - g. Construction of fences for use with or instead of landscaping or berming
3. *Fencing.* At the time of initial installation, pumps, wellheads, and production equipment at Oil and Gas Facilities and Locations shall be adequately fenced to restrict access by unauthorized persons. For security purposes, all Oil and Gas Facilities and Locations, and all equipment used in Oil and Gas Operations concerning a completed Well, shall be surrounded by a fence six feet (6') in height, and so long as the fence material is noncombustible and allows for adequate ventilation, the gates within such fences shall be locked. The following specific standards shall apply to all Oil and Gas Facilities and Locations. Fence enclosures shall be constructed of materials reasonably suitable for the subject Oil and Gas Facility or Location, and the associated Oil and Gas Operations, which are technologically and operationally feasible, and which are compatible with the surrounding land uses, but shall not include solid masonry walls. All fences and walls shall be equipped with at least one (1) gate, provided that all such gate(s) shall meet the following specifications:
 - a. Gates shall be constructed in a manner that meets the applicable specifications or of such other approved material that, for safety reasons, shall be at least as secure as a chain-link fence;
 - b. Gates shall be provided with a combination catch and locking attachment device for a padlock, and shall be kept locked except when being used for access to the subject Oil and Gas Facility or Location; and
 - c. Operator must provide the fire protection district(s) associated with the subject Oil and Gas Facility or Location with a "Knox Padlock" or "Knox Box with a key" to access the subject Oil and Gas Facility or Location, to be used only in case of an emergency.
4. *Landscaping.* Operator shall prepare a *Landscaping Plan* that contains, at minimum, the following components:

- a. Initial landscaping, if required by an approved Landscaping Plan, and any fencing will be installed within 6 months of finishing drilling and completion operations.
- b. The operator shall submit to the City a temporary *Irrigation Plan* and implement said plan, once approved by the City, for the first two years after the plant material has been planted. If it is practicable to provide a permanent irrigation system, the operator shall submit an *Irrigation Plan* for permanent watering and the operator shall provide a performance guarantee for such landscaping that is acceptable to the Director. Produced water may not be used for landscaping purposes.
- c. The application shall include an analysis of the existing vegetation on the site to establish a baseline for re-vegetation upon temporary or final reclamation or abandonment of the operations. The analysis shall include a written description of the species, character and density of existing vegetation on the site and a summary of the potential impacts to vegetation as a result of the proposed operations. The application shall include any commission-required interim and final reclamation procedures and any measures developed from a consultation with the Director regarding site specific re-vegetation plan recommendations.
- d. If water for irrigation use is unavailable at the location, the initial phase may utilize natural topography and fencing surrounding the location, as well as any trees already established near the property.
- e. Once water for irrigation use is available to the area, the Operator must implement any final landscaping as described in the Landscaping Plan. The Operator must consult with the City as well as meet Code requirements at the time the final landscaping is installed.
- f. Existing significant trees (a deciduous tree with a caliper of greater than 4 inches or an evergreen tree that is 15 feet or greater in height) shall be preserved to the maximum extent practicable and may help satisfy the landscaping and visual mitigation requirements. All required landscape plans shall accurately identify the locations, species, size, and condition of all significant trees, each labeled showing Operator's intent to either remove, transplant, or protect. Trees that meet one or more of the following removal criteria shall be exempt from the requirements contained in this subsection:
 - i. Dead, diseased, or naturally fallen trees, or trees found to be a threat to public health, safety or welfare;
 - ii. Trees that are determined by the City to substantially obstruct clear visibility at driveways and intersections; or
 - iii. Tree species that constitute a nuisance to the public such as cotton-bearing cottonwood, Siberian or Chinese elm, Russian olive and female box-elder. Native cotton-bearing cottonwood trees and female box-elder trees, when located in a natural area buffer zone, are not nuisance tree species.

5. *Lighting.*

- a. Exterior lighting shall be directed away from residential and other sensitive areas or shielded from said areas to eliminate glare. Light spillage beyond the perimeter of an Oil and Gas Location should be minimized.
- b. All permanent lighting or lighting higher than a perimeter wall must be downward facing.
- c. All bulbs must be fully shielded to prevent light emissions above a horizontal plane drawn from the bottom of the fixture.
- d. Prior to installation of permanent lighting on any Oil and Gas Location, Operator shall submit to the City a *Lighting Plan* and the City shall communicate with Operator any modifications to the plan that it deems appropriate. Operator shall make such modifications as reasonably required by the City and as required by law.
- e. The *Lighting Plan* shall indicate the location of all outdoor lighting on the site and any structures, and include cut sheets (manufacturer's specifications with picture or diagram) of all proposed fixtures.
- f. During the Drilling and Completion Phases, consistent with applicable law, Operator will construct a minimum 32 ft. in height wall around as much of the perimeter of the well pads as operations allow to

reduce light escaping from the site, unless taller, shorter, or no walls are mutually agreed to by City and Operator on a site-specific basis.

6. *Trailers.* Operator's Oil and Gas Operations, Facilities and Locations shall comply with the following:
 - a. Construction trailers are permitted at Oil and Gas Facilities and Locations as an accessory use during active construction, drilling and completion phases or workover Oil and Gas Operations only.
 - b. Permanent residential trailers are prohibited at Oil and Gas Facilities and Locations.
 - c. Until ninety (90) days following the end of the completion phase of Oil and Gas Operations on any Oil and Gas Facility or Location, temporary residential and/or security trailers are permitted, as needed for on-site Oil and Gas Operations, for exclusive use by the Operator's personnel and the personnel of its subcontractors, on a temporary basis.

H. COMMUNITY OUTREACH, NOTIFICATION, REPORTING & OVERSIGHT STANDARDS

Operator's Oil and Gas Operations, Facilities and Locations shall comply with the community outreach, notification, reporting and oversight standards (collectively, "Community Standards") set forth in this Section H, the purpose of which is to: protect human health and safety; prevent damage to property; and prevent unreasonable interference with the public welfare. The Community Standards are established to improve and to prevent degradation to the quality of life and the general welfare in the City.

1. *Operator Contact.* Operator shall supply a contact name, address and phone number, including twenty-four (24) hour numbers for at least two (2) persons responsible for Oil and Gas Operations on Oil and Gas Facilities and Locations, as well as the contact information for any subcontractor of Operator engaged for well-control emergencies. Such contact information will be updated as necessary, and in the annual review of the Emergency Management Plan for the subject Oil and Gas Facility or Location.
2. *Outreach to Affected Residents.* Operator's Oil and Gas Operations, Facilities and Locations shall comply with the following:
 - a. Operator shall maintain a list, updated annually, of the residents and business owners within one-half (1/2) mile (2,640') of an Oil and Gas Location ("Affected Residents").
 - b. Operator shall create a community outreach plan for Oil and Gas Facilities and Locations proposed within one-half (1/2) mile (2,640') of any Residential Building Unit ("Community Outreach Plan"). The Community Outreach Plan shall provide for consultation, outreach, and engagement that includes a description of any measures taken to directly mitigate adverse impacts to the Affected Residents;
 - c. Provide at least thirty (30) days advanced written notice to Affected Residents of mobilization and rigging up for Oil and Gas Operations;
 - d. Notify Affected Residents in writing within ten (10) days of any reportable events that could have impacts beyond the subject Oil and Gas Facility or Location, including fires, explosions, blow-outs, venting, or large spills (over 100 barrels); and
 - e. Provide such notices to the local fire district(s) associated with the subject Oil and gas Facilities or Locations.
 - f. Operator may satisfy the foregoing notification requirements through a website, email, direct correspondence, or through direct mail to Affected Residents.
3. *Complaint Response.* Operator's Oil and Gas Operations, Facilities and Locations shall comply with the following:

- a. Operator shall maintain a dedicated phone line to receive complaints that is open twenty-four (24) hours per day, seven (7) days a week. Such phone number shall be posted at all Oil and Gas Facilities and Locations and provided to the ECMC Director.
 - b. Operator shall document and review all complaints, and provide the complainant with an initial, written response within twenty-four (24) hours. Responses to complaints shall also be provided to the ECMC Director and, if appropriate, other interested state officials.
 - c. Any additional complaint responses and/or corrective actions will be communicated to the complainant, the landowner(s), the ECMC Director and, if appropriate, other interested state officials.
4. *Risk Management.* Operator shall create and implement a risk management plan for all new and substantially modified Oil and Gas Facilities and Locations (“Risk Management Plan”). The Risk Management Plan shall include risk identification, responsibilities, assessment, response, planning mitigation and, methods of risk avoidance and control that implement techniques to prevent accident/loss and reduce the impact after an accident/loss occurs. Operators shall periodically update and revise the Risk Management Plan, but shall ensure that the same occurs at least every three (3) years, and after any incident.
- a. Operator shall develop a risk identification in a risk table which will identify the subject Oil and Gas Facility or Location by name; describe the risk; identify any health, safety, or environmental impact; identify any impact to Operator’s development schedule; provide a description of the risk area and associated factors; and indicate whether it is an unmitigated or mitigated risk.
 - b. Operator shall assign persons or entities under its control or direction to have responsibility for managing risks identified, and Operator’s plan to support the risk mitigation. Such assignment shall not limit Operator’s responsibility.
 - c. Operator shall identify any planned mitigation response (including emergency response, tactical response, and notifications) for certain identified risks.
 - d. Operator will implement a compliance and audit program. Operator shall determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected. If Operator utilizes a self-reporting mechanism to any governmental agency, that self-reporting mechanism will be described in the Risk Management Plan. If Operator self-reports, any findings included in the self-reporting to any other governmental agency will be provided to the City.
 - e. The City may retain outside consultants, at Operator’s cost, to review any Risk Management Plan, and may require modifications to such Risk Management Plan based on its review.
5. *Bi-Annual Updates to City.*
- a. Operator biannually shall provide a formal written Progress Report update to the Director, to be shared publicly, as to the progress of Operations, including but not limited to:
 - i. Any reportable spills or reportable accidents at locations;
 - ii. Any notice of alleged violations from the City or ECMC; and
 - iii. A summary of complaints to the Operator and ECMC.
 - b. Updates shall begin at the beginning of construction and continue throughout drilling and completion operations and cease once the final well approved for an Oil and Gas Location has been drilled and has been in production for one full year.
6. *Incident and accident reporting.* Operator’s Oil and Gas Operations, Facilities and Locations shall comply with the following:
- a. Within twenty-four (24) hours of any reportable safety event, as defined in the ECMC Rules, as may be amended, or any accident or natural event involving a fire, explosion, or detonation requiring emergency services or completion of a ECMC Form 22, Operator shall submit a report to the City that

includes the following, to the extent available: fuel source; location; proximity to residences and other occupied buildings; cause; duration; intensity; volume; specifics and degree of damage to properties, if any, beyond the subject Oil and Gas Facility or Location; injuries to persons; emergency response; and remedial and preventative measures to be taken within a specified amount of time. Additional reporting shall be provided after the conclusion of the event if the event lasts longer than twenty-four (24) hours.

- b. The City may require Operator to conduct a root cause analysis of any reportable safety events or Grade 1 gas leaks, each as defined by ECMC Rules.
- c. Any spill or release that is reportable to the ECMC shall be simultaneously reported to the City's Director and the applicable fire district.

7. *Signs and Markers.* Operator shall mark each and every Well in a conspicuous place, from the time of initial drilling until final abandonment, as follows:

- a. General Sign Requirements.
 - i. No sign required under this Standards Document shall be installed at a height exceeding six feet (6').
 - ii. Operator shall maintain all signs in a legible condition, and shall replace damaged or vandalized signs within sixty (60) days.
- b. Drilling and Recompletion Operations.
 - i. Operator shall provide directional signs, no less than three (3) square feet and no more than six (6) square feet in size, during all drilling and recompletion Oil and Gas Operations.
 - ii. All signs shall be at locations sufficient to advise emergency crews where drilling or recompletion Oil and Gas Operations are taking place.
 - iii. All sign locations shall include the first point of intersection of a public road and the access road to the subject Oil and Gas Facility or Location, and thereafter at each intersection of the access route access road to the subject Oil and Gas Facility or Location, except where the same is clearly obvious to uninformed third parties in any weather or condition.
 - iv. Signs not needed to meet other obligations under this Attachment A shall be removed as soon as practical after drilling and recompletion Oil and Gas Operations are complete.
- c. Permanent Designations.
 - i. Oil and Gas Wells. Within sixty (60) days after the completion phase of a Well, a permanent sign shall be located at both the wellhead and near the surface equipment (if not at the wellhead), which shall identify the subject Well, the name and contact information of the Operator, and the legal description, including the subject governmental quarter section.
 - ii. Surface Equipment. Within sixty (60) days after the installation of a Tank battery at an Oil and Gas Facility or Location, a permanent sign shall be located at the Tank battery. At the option of Operator, or at the request of the City, such sign may be placed at the intersection of the access road to the subject Oil and Gas Facility or Location with a public road nearest the subject Tank battery, if the same is readily apparent from such location. Such sign shall provide: the name of the Operator; a phone number at which Operator may be reached at all times; a phone number for local emergency services; the lease name or Well name(s) associated with the subject Tank battery; the public road used to access the subject Oil and Gas Facility or Location; and the legal description, including the governmental quarter section.
 - iii. Tanks and Containers. All Tanks with a capacity of ten (10) barrels or greater shall be labeled or posted with the following information:
 - a) Name of Operator;
 - b) Operator's emergency contact telephone number;
 - c) Tank capacity;
 - d) Tank contents; and

e) National Fire Protection Association Label.

8. *Complaint Response.*

- a. Operator shall maintain a dedicated phone line to receive complaints that is open 24 hours per day, 7 days a week. The phone number shall be posted at all Oil and Gas Locations and provided to the Director.
- b. Operator shall document and review all complaints and provide the complainant with an initial response within twenty-four (24) hours. Responses to complaints shall also be provided to the Director and, if appropriate, state officials.
- c. Any additional responses or corrective actions will be communicated to the complainant, landowner, Director and, if appropriate, state officials.

9. *Risk Management.* Operator shall create and implement a *Risk Management Plan* for Oil and Gas Locations and Oil and Gas Facilities that are part of an Oil and Gas Permit. The plan shall include risk identification, responsibilities, assessment, response, planning mitigation and, methods of risk avoidance and control that implement techniques to prevent the accident/loss and reduce the impact after an accident/loss occurs. Operators shall periodically update and revise the plan, but at least every three years and after any incident.

- a. Operator shall develop a risk identification in a risk table which will identify the particular site by name, describe the risk, identify any health, safety, or environmental impact, identify any impact to Operator's development schedule, provide a description of the risk area and associated factors, and whether it is an unmitigated or mitigated risk.
- b. Operator shall assign persons or entities under its control or direction to have responsibility for the managing risk identified and plans support the risk mitigation. Such assignment shall not limit the Operator's responsibility.
- c. Operator shall identify any planned mitigation response (including emergency response, tactical response, and notifications) for certain identified risks.
- d. Operator will implement a compliance and audit program. The Operator shall determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected. If Operator utilizes a self-reporting mechanism to any respective agency, that self-reporting mechanism will be described in the *Risk Management Plan*. If Operator self-reports, any findings included in the self-reporting to any other respective agency will be provided to the City.
- e. The City may retain outside consultants, at Operator's cost, to review *Risk Management Plan* and may require modifications to *Risk Management Plan* based on its review.

10. *Incident and accident reporting.*

- a. Within 24 hours of any reportable safety event, as defined in the ECMC rules, as may be amended, or any accident or natural event involving a fire, explosion or detonation requiring emergency services or completion of a ECMC Form 22, Operator shall submit a report to the City that includes the following, to the extent available: fuel source, location, proximity to residences and other occupied buildings, cause, duration, intensity, volume, specifics and degree of damage to properties, if any beyond the Oil and Gas Location, injuries to persons, emergency response, and remedial and preventative measures to be taken within a specified amount of time. Additional reporting shall be provided after the conclusion of the event, if the event lasts longer than 24 hours.
- b. The City may require Operator to conduct a root cause analysis of any reportable safety events or Grade 1 gas leaks, each as defined by the ECMC.
- c. Any spill or release that is reportable to the ECMC shall be simultaneously reported to the Director and the applicable fire district.

11. *Signs and Markers*. Operator shall mark each and every well in a conspicuous place, from the time of initial drilling until final abandonment, as follows:
 - a. General Sign Requirements.
 - i. No sign required under this provision shall be installed at a height exceeding 6’.
 - ii. Operator shall maintain signs in a legible condition and shall replace damaged or vandalized signs within sixty (60) days.
 - b. Drilling and Recompletion Operations.
 - i. Operator shall provide directional signs, no less than three (3) and no more than six (6) sq. ft. in size, during all drilling and recompletion operations.
 - ii. Such signs shall be at locations sufficient to advise emergency crews where drilling or recompletion is taking place.
 - iii. Such sign locations shall include the first point of intersection of a public road and the rig access road and thereafter at each intersection of the rig access route, except where the route to the well is clearly obvious to uninformed third parties in any weather or condition.
 - iv. Such signs not needed to meet other obligations under these rules shall be removed as soon as practical after drilling and recompletion operations are complete.
 - c. Permanent Designations.
 - i. Oil and Gas Wells. Within sixty (60) days after the Completion Phase of an Oil and Gas Well, a permanent sign shall be located at both the wellhead and surface equipment (if not at the wellhead), which shall identify the Oil and Gas Well, the name and contact information of the Operator and the legal location, including the quarter section.
 - ii. Surface Equipment. Within sixty (60) days after the installation of a tank battery, a permanent sign shall be located at the tank battery. At the option of the Operator, or at the request of the City, the sign may be placed at the intersection of the lease access road with a public road nearest the tank battery, if the tank battery is readily apparent from such location. Such sign, which shall be no less than three (3) sq. ft. and no more than six (6) sq. ft., shall provide: the name of the Operator; a phone number at which the Operator may be reached at all times; a phone number for local emergency services; the lease name or Oil and Gas Well name(s) associated with the tank battery; the public road used to access the site; and the legal location, including the quarter section.
 - iii. Tanks and Containers. All tanks with a capacity of ten (10) barrels or greater shall be labeled or posted with the following information:
 - a) Name of Operator;
 - b) Operator’s emergency contact telephone number;
 - c) Tank capacity;
 - d) Tank contents; and
 - e) National Fire Protection Association (NFPA) Label.

I. RECLAMATION.

Operator shall comply with these reclamation standards to: protect human health and safety; prevent injury to plant and animal life; prevent damage to property; and prevent unreasonable interference with the public welfare. These standards are established to restore the City’s resources and to improve the quality of life and the general welfare in the City.

1. *Interim Reclamation Plan*. Operator shall implement an interim reclamation plan (“Interim Reclamation Plan”), including:
 - a. A plan and diagram to reduce the size of the subject Oil and Gas Facility or Location to a Working Pad Surface.
 - b. Operator shall prepare, and provide to the City, a Topsoil Protection Plan, as required by ECMC Rules.

- c. *Removal of Debris.* All construction-related debris shall be removed from the subject Oil and Gas Facility or Location for proper disposal in a timely manner. All Oil and Gas Facilities or Locations shall be maintained free of debris and excess materials at all times during Oil and Gas Operations. Operator shall not burn or bury debris at any time at any Oil and Gas Facility or Location.
 - d. *Removal of Equipment.* All equipment used for drilling, re-completion and maintenance of the subject Oil and Gas Facility or Location shall be removed from the same within thirty (30) days of completion of such work, weather conditions permitting, unless otherwise agreed to by the Surface Owner. Permanent storage of removable equipment at any Oil and Gas Facility or Location is prohibited.
2. *Final Reclamation Plan.* Operator must submit an Oil and Gas Facility or Location Final Reclamation Plan, and reclaim an Oil and Gas Facility or Location, not later than six (6) months after plugging and abandoning the last Well at such Oil and Gas Facility or Location, weather and planting season permitting. In addition to any ECMC Rule reclamation requirements, Operator shall:
- a. Notify the LGD of the commencement and completion of such activity;
 - b. Remove all equipment from the subject Oil and Gas Facility or Location;
 - c. Remove all Pipelines, Gathering Lines and Flowlines after one (1) year of non-use, calculated from the date when the last Well utilizing the same is plugged and abandoned, unless this requirement is waived in writing by the ECMC Director; and
 - d. Reclaim and revegetate, to the satisfaction of the City and in consultation with the Surface Owner, all temporary access roads associated with Oil and Gas Operations at the subject Oil and Gas Facility or Location within three (3) years after seeding, or as directed by the Surface Owner in a Surface Use Agreement, and subject to applicable ECMC Rule variances.
 - e. Coordinates for the location of the decommissioned Well(s), and any associated Gathering Lines or Flowlines, shall be provided with the notice of the completion of Well plugging and abandonment. This information will also be provided in a format suitable for input into the City's GIS system.
3. *Marking and recording of plugged and abandoned wells.*
- a. The ECMC Well Abandonment Report must be accurately completed and filed with the City and the ECMC.
 - b. The location of all plugged and abandoned Wells must be recorded with the Larimer County Clerk and Recorder.
 - c. Operator shall permanently mark all plugged and abandoned Wells, by a brass plaque set in concrete, similar to a permanent benchmark, to monument the same's existence and location. Such plaque shall contain the information required by the ECMC to properly identify the subject plugged and abandoned Well.

J. TRANSPORTATION AND CIRCULATION.

Operator's Oil and Gas Operations, Facilities and Locations shall comply with the transportation and circulation standards (collectively, "Transportation Standards") set forth in this Section J, the purpose of which is to: protect human health and safety; prevent injury to plant and animal life; prevent damage to property; and prevent unreasonable interference with the public welfare. The Transportation Standards are established to restore the City's resources and to improve the quality of life and the general welfare in the City.

1. *Transportation Management Plan.* Operator shall establish a transportation management plan ("Transportation Management Plan") for each Oil and Gas Facility or Location, including the following:
- a. Estimated weights of vehicles when loaded, a description of the vehicles, including the number of wheels and axles of such vehicles and trips per day;

- b. Details regarding access locations for each Oil and Gas Facility or Location, including sight distance, turning radius of vehicles, and a template indicating this is feasible, sight distance, turning volumes, in and out from each Oil and Gas Facility or Location for an average day, and what to expect during the peak hours;
 - c. A truck routing map and truck turning radius templates will be used to determine if improvements are necessary at intersections along the route to the subject Oil and Gas Facility or Location;
 - d. Restriction of non-essential traffic to and from any Oil and Gas Facility or Location to periods outside of peak am and pm traffic periods and during school hours (generally 7-8 am and 3-6 pm) if the subject Oil and Gas Facility or Location, or the access road(s) to the same are within one thousand feet (1,000') of a School.
 - e. Identification of need for any additional traffic lanes, and any other recommendations from traffic study, which would be subject to the final approval of the City's Director of Public Works or designee.
2. *Access Roads.* Designs for private access roads to Oil and Gas Facilities and Locations shall be pursuant to Section 18.10.02.03 of the Code.
 3. *Public Improvements.* Necessary transportation system improvements, as determined by City staff, will be paid for by the Operator. If public road improvements are necessary to accommodate Oil and Gas Operations at any Oil and Gas Facility or Location, and before work will be permitted within any City right-of-way, Operator shall draft engineered drawings, to be prepared by a Colorado licensed civil engineer, in conformance with City standards, for review and approval by the City.
 4. Operator will comply with all Transportation and Circulation requirements as contained in the LUDC, in any approved plans, and as may be reasonably required by the City's Traffic Engineer.
 5. Operator will comply with all applicable hazardous material regulations at all Oil and Gas Facilities and Locations.
 6. Operator will obtain necessary access permits for all Oil and Gas Facilities and Locations, which the City will not unreasonably withhold.
 7. *Mud Tracking.*
 - a. Operator shall take all practicable measures to ensure that vehicles do not track mud or debris onto public streets from any Oil and Gas Facility or Location.
 - b. Operator shall immediately clean any mud or debris deposited on public streets adjacent to any Oil and Gas Facility or Location.
 8. *Chains.* Traction chains from heavy equipment shall be removed before entering a public street from any Oil and Gas Facility or Location.

K. WILDLIFE

Operator's Oil and Gas Operations, Facilities and Locations shall comply with the wildlife standards (collectively, "Wildlife Standards") set forth in this Section K, the purpose of which is to protect, preserve and prevent injury to plant/animal life and the environment.

1. *Wildlife Protection Plan.* Operator's Application filed with the City for any Oil and Gas Facility or Location must contain a wildlife protection plan ("Wildlife Protection Plan"), containing: a map of ecologically important areas, including critical wildlife habitat areas, riparian areas, rivers, water bodies,

wetlands, potential conservation areas as identified by the Colorado Natural Heritage Program, Species of Concern listing, Tier 1 and Tier 2 species as identified by Colorado Department of Parks and Wildlife, and of federally-designated threatened or endangered species, as mapped by other applicable federal and state governmental agencies or discovered upon inspection, on and within one (1) mile of the parcel(s) on which the Oil and Gas Facilities and Locations are proposed to be located.

2. *Consultation with CPW.* Consultation with the Colorado Department of Parks and Wildlife must occur when required by ECMC Rules, or as requested by the LGD, due to known or suspected wildlife resources in the area. If so required, the LGD will be invited to the consultation.
3. *Endangered Species.* The Operator shall not engage in activities which, in the opinion of the Colorado Parks and Wildlife, threaten endangered species.

L. SEISMIC SURVEYS

1. As a part of the administrative review process, applicants will provide to the City:
 - a. Timeline for work to be accomplished;
 - b. A map of any existing mines underlying the project area, and within 2,000-feet of the project boundary;
 - c. An assessment by a certified engineer demonstrating that the proposed vibrations will not damage any of these mines or other historic infrastructure;
 - d. A map of the seismic study area showing planned source and receiving locations;
 - e. A map showing the route that vibroseis trucks will follow;
 - f. An assessment by a certified engineer demonstrating that the roads to be utilized in the project are able to endure the vibrations generated by the project;
 - g. Financial assurance in a form and amount acceptable to the City;
 - h. A traffic control plan; and
 - i. Other information as the City deems necessary.
2. During the seismic testing, the Permittee shall survey and monitor the testing so as to keep source points a minimum distance from critical infrastructure identified by the City so as to cause no damage thereto. Critical infrastructure includes, but is not limited to:

Private water wells	300'
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3. *Traffic Control.* When seismic testing, including the source or receiving, is performed within the public right-of-way, Permittee shall at its expense provide adequate traffic control. A *Traffic Control Plan* acceptable to the City shall be approved prior to the start of any work. Traffic control shall be in general compliance with the then current *Manual on Uniform Traffic Control Devices for Streets and Highways*.
4. *Public Notice*
 - a. No less than seven (7) calendar days in advance of the use of vibroseis trucks within the Seismic Study Area, Permittee shall cause to be mailed notice of the planned activity to all residents or businesses located on the roads that will be used by vibroseis trucks within the entire seismic study area. In addition, notice shall be given to all homeowners' associations, special districts, and city franchisees which have facilities or infrastructure within the study area. The notice shall include, at a minimum, an explanation of the planned operations, the dates when the activities will occur, 24/7 source and

contact names and numbers for additional information, and explanation as to what may be expected or experienced during the seismic testing in the way of noise, duration of vibration, etc. In addition, the Permittee shall utilize public outreach vehicles such as social media and the internet to provide additional information to the public. Social media and internet notifications shall be coordinated with the City of Loveland.

- b. No more than 96 hours in advance of and no less than 24 hours in advance of seismic testing, notice shall be given to all residents or businesses located on the roads that will be used by vibroseis trucks within the entire seismic study area. The notice shall consist of a door hanger type pamphlet acceptable to the City that clearly indicates when the vibratory activity will occur and advises the occupant of the nature of the vibration activity. The notice shall also include 24/7 contact information for occupants to report problems or ask questions.
5. *Hours of Operation.* The seismic testing, in residential areas, shall not commence prior to 9 a.m. and shall end by 5 p.m., Monday through Friday.
6. Vibration and peak particle velocity monitoring shall be undertaken at all source locations in urban areas within 500ft of structures or buildings within the seismic study area, and at no time shall the peak particle velocity exceed 0.2 inches per second at the location of those structures.

[END OF OIL AND GAS STANDARDS DOCUMENT]