20 AAC 25.005(c)(13) is amended to read:

(13) a copy of the proposed drilling program; the drilling program must indicate if a well is proposed for hydraulic fracturing as defined in 20 AAC 25.283(m); to seek approval to perform hydraulic fracturing, a person must make a separate request by submitting an Application for Sundry Approvals (Form 10-403) with the information required under 20 AAC 25.280 and 20 AAC 25.283;

(Eff. 4/13/80, Register 74; am 4/2/86, Register 97; am 11/7/99, Register 152; am 6/4/2000, Register 154; am 1/5/2006, Register 177; am 12/28/2006, Register 180; am 4/4/2013, Register 206; am 1/7/2015, Register 213)

Authority: AS 31.05.030 AS 31.05.090

20 AAC 25.280 is amended by adding a new subsection to read:

(f) An Application for Sundry Approvals for a well proposed for stimulation by hydraulic fracturing as defined in 20 AAC 25.283(m) must also comply with 20 AAC 25.283.

(Eff. 4/2/86, Register 97; am 11/7/99, Register 152; am 12/28/2006, Register 180; am 1/7/2015, Register 213)

Authority: AS 31.05.030

20 AAC 25 is amended by adding a new section to read:

20 AAC 25.283. Hydraulic fracturing. (a) Before hydraulic fracturing, the operator must submit an Application for Sundry Approvals (Form 10-403) under 20 AAC 25.280. Unless modified or altered by pool rules established under 20 AAC 25.520, the application must include

(1) an affidavit stating that all owners, landowners, surface owners, and operators within a one-half mile radius of the current or proposed wellbore trajectory have been provided a notice of operations that is in compliance with the requirements of this paragraph; in the notice of operations, the operator must

(A) state that upon request a complete copy of the application is available from the operator; and

(B) include the operator contact information;

(2) a plat

(A) showing the well location;

(B) identifying each water well, if any, located within a one-half mile radius of the well's surface location; and

(C) identifying for all well types

(i) each well penetration, if any, within one-half mile of the current or proposed wellbore trajectory and fracturing interval; and

(ii) the source of information used in identifying each well penetration;

(3) identification of each freshwater aquifer, if any, within a one-half mile radius of the current or proposed wellbore trajectory, the geological name of the freshwater aquifer, the measured depth of the freshwater aquifer, and the true vertical depth of the freshwater aquifer;

(4) a plan for baseline water sampling of water wells before hydraulic fracturing, as follows:

(A) water sampling consists of collection of baseline water data before

hydraulic fracturing, within a one-half mile radius of the current or proposed wellbore trajectory;

(B) the operator must detail the well selection process for identifying wells to sample;

(C) if a surface owner denies permission for baseline water sampling or for disclosure of the results, the operator

(i) must document the reasonable and good-faith efforts taken to secure that permission; and

(ii) is not required to include the surface owner in any sampling required under (j) of this section of water wells after hydraulic fracturing;

(D) sample parameters must include

(i) pH;

(ii) alkalinity, measured as the presence of total bicarbonate and carbonate, and expressed as parts per million of calcium carbonate;

(iii) specific conductance;

(iv) the presence of bacteria that is iron-related, sulfate-reducing, or slime-forming;

(v) arsenic;

(vi) barium;

(vii) bicarbonate;

(viii) boron;

(ix) bromide;

(x) cadmium;

(xi) calcium;

(xii) chloride;

(xiii) chromium;

(xiv) fluoride;

(xv) hydroxide;

(xvi) iodide;

(xvii) iron;

(xviii) lithium;

(xix) magnesium;

(xx) manganese;

(xxi) total nitrate and nitrate, measured as the presence of nitrogen;

(xxii) phosphorus;

(xxiii) potassium;

(xxiv) radium, measured as the presence of combined radium-226 and radium-228;

(xxv) selenium;

(xxvi) silicon;

(xxvii) sodium;

(xxviii) strontium;

(xxix) sulfate;

(xxx) total dissolved solids;

(xxxi) total petroleum hydrocarbons, expressed as the results of the analyses made under (xxxii) - (xxxvi) of this subparagraph;

(xxxii) benzene, toluene, ethylbenzene, and total xylene isomers (BTEX); the Application for Sundry Approvals (Form 10-403) must state whether the operator proposes to measure those substances using the United States Environmental Protection Agency's methods 5035, 8260B, or 8260C in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA publication SW-846), or an alternate method proposed for commission approval as effective for measuring those substances;

(xxxiii) gasoline range organics (GRO); the Application for Sundry Approvals (Form 10-403) must state whether the operator proposes to measure those substances using the United States Environmental Protection Agency's methods 5035, 8015C, or 8015D in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA publication SW-846), method AK 101 in the Department of Environmental Conservation's *Underground Storage Tanks Procedures Manual*, or an alternate method proposed for commission approval as effective for measuring those substances;

(xxxiv) diesel range organics (DRO); the Application for Sundry Approvals (Form 10-403) must state whether the operator proposes to measure those substances using the United States Environmental Protection Agency's methods 8015C or 8015D in *Test Methods for Evaluating Solid Waste,*

Physical/Chemical Methods (EPA publication SW-846) with silica gel cleanup, method AK 102 in the Department of Environmental Conservation's *Underground Storage Tanks Procedures Manual*, or an alternate method proposed for commission approval as effective for measuring those substances;

(xxxv) polynuclear aromatic hydrocarbons, including benzo(a)pyrene; and

(xxxvi) dissolved methane, dissolved ethane, and dissolved propane; the Application for Sundry Approvals (Form 10-403) must state whether the operator proposes to measure those substances using the United States Environmental Protection Agency's *Standard Operating Procedure: Sample Preparation and Calculations for Dissolved Gas Analysis in Water Samples Using a GC Headspace Equilibration Technique* (EPA publication RSK SOP 175, Revision No. 2) or an alternate method proposed for commission approval as effective for measuring those substances;

(E) the plan must require documentation of odor, water color, sediment, bubbles, effervescence, and other field observations;

(F) the plan must require that if free gas or a dissolved methane concentration greater than 1.0 mg/l is detected in a water sample, the gas type shall be determined by means of a gas compositional analysis and stable isotope analysis of the methane; a stable isotope analysis must include an analysis of carbon-12, carbon-13, hydrogen-1, and hydrogen-2 isotopes;

(G) the plan must require that the operator notify the commission, the

Department of Environmental Conservation, and the surface owner within 24 hours if

(i) the test results indicate thermogenic or a mixture of thermogenic and biogenic gas;

(ii) the plan requires multiple samples within a stated timeframe, and the methane concentration increases by more than 5.0 mg/l between sampling periods;

(iii) the methane concentration is detected at or above 10 mg/l; or

(iv) total petroleum hydrocarbons as described in (D)(xxxi) of this paragraph, benzene, toluene, ethylbenzene, xylene isomers, gasoline range organics, or diesel range organics are detected;

(H) except as otherwise provided under this paragraph, the plan must provide for the use of current applicable sample custody and collection protocols and analytical methods that the Department of Environmental Conservation or the United States Environmental Protection Agency (EPA) has approved, or an alternate protocol or method proposed for commission approval as effective for custody, collection, or analysis of a sample; the plan must provide that analyses be performed by laboratories that maintain nationally accredited programs;

(I) not later than 90 days after a sample is collected, a copy of each test result, analytical result, and sample location must be provided to the commission and to the Department of Environmental Conservation in printed form and in an electronic data deliverable format that is acceptable to the commission;

(5) detailed casing and cementing information;

(6) an assessment of each casing and cementing operation performed to construct or repair the well; the assessment must include sufficient supporting information, including cement evaluation logs and other evaluation logs approved by the commission, to demonstrate that

(A) casing is cemented

(i) below the base of the lowermost freshwater aquifer; and

(ii) in accordance with 20 AAC 25.030; and

(B) each hydrocarbon zone penetrated by the well is isolated;

(7) pressure test information if available and plans to pressure-test the casings and tubing installed in the well;

(8) accurate pressure ratings and schematics for the wellbore, wellhead, BOPE, and treating head;

(9) data for the fracturing zone and confining zones, including

(A) a lithologic description of each zone;

(B) the geological name of each zone;

(C) the measured depth and true vertical depth of each zone;

(D) the measured thickness and true vertical thickness of each zone; and

(E) the estimated fracture pressure for each zone;

(10) the location, the orientation, and a report on the mechanical condition of each well that may transect the confining zones, and information sufficient to support a determination that the well will not interfere with containment of the hydraulic fracturing fluid within the one-half mile radius of the proposed wellbore trajectory;

(11) the location of, orientation of, and geological data for each known or suspected fault or fracture that may transect the confining zones, and information sufficient to support a determination that the known or suspected fault or fracture will not interfere with containment of the hydraulic fracturing fluid within the one-half mile radius of the proposed wellbore trajectory;

(12) a detailed copy of the proposed hydraulic fracturing program; the proposed program must include the pumping procedure by stage if applicable, with a chemical disclosure based on the total amounts and volumes per well, including the

(A) estimated total volumes planned;

(B) trade name, generic name, and purpose of each base fluid and additive to be used; the estimated or maximum rate or concentration of each additive must be provided in appropriate measurement units;

(C) chemical ingredient name of, and the Chemical Abstracts Service (CAS) registry number assigned to, each base fluid and additive to be used; the actual or maximum concentration of each chemical ingredient in each base fluid and additive used must be provided in percent by mass; the actual or maximum concentration of each chemical ingredient in the hydraulic fracturing fluid must be provided in percent by mass; freeze-protect fluids pumped before or after hydraulic fracturing may not be included;

(D) estimated weight or volume of each inert substance, including a proppant or other substance injected;

(E) maximum anticipated treating pressure and information sufficient to support a determination that the well is appropriately constructed for the proposed

hydraulic fracturing program; and

(F) designed height and length of each proposed fracture, including

(i) the calculated measured depth and true vertical depth of the top of the fracture; and

(ii) a description of each method and assumption used to determine designed fracture height and length; and

(13) a detailed description of the plan for post-fracture wellbore cleanup and fluid recovery through to production operations.

(b) When hydraulic fracturing is done through production casing or through intermediate casing, the casing must be tested to 110 percent of the maximum anticipated pressure differential to which the casing may be subjected. If the casing fails the pressure test, the casing must be repaired or the operator must use a fracturing string.

(c) When hydraulic fracturing is done through a fracturing string, the fracturing string must be

(1) stung into a liner or run on a packer set at a measured depth of not less than 100 feet below the cement top of the production casing or intermediate casing; and

(2) tested to not less than 110 percent of the maximum anticipated pressure differential to which the fracturing string may be subjected.

(d) A pressure relief valve must be installed on the treating line between a pump and the wellhead to limit the line pressure to the test pressure determined under (a)(12)(E) of this section. The well must be equipped with a remotely controlled shut-in device unless the operator requests and obtains a waiver from the commission under (*l*) of this section.

(e) The placement of all hydraulic fracturing fluids shall be confined to the approved formations during hydraulic fracturing.

(f) If the surface casing annulus is not open to atmospheric pressure, the surface casing pressures shall be monitored with a gauge and pressure relief device while hydraulic fracturing operations are in progress. The annular space between the fracturing string and the intermediate or production casing must be continuously monitored. The pressure in that annular space may not exceed the pressure rating of the lowest rated component that would be exposed to pressure if the fracturing string failed.

(g) During hydraulic fracturing operations, all annulus pressures must be continuously monitored and recorded. If at any time during hydraulic fracturing operations the annulus pressure increases more than 500 psig above those anticipated increases caused by pressure or thermal transfer, the operator shall

(1) notify the commission as soon as practicable, but not later than 24 hours following the incident;

(2) implement corrective action or increased surveillance as the commission requires; and

(3) submit a Report of Sundry Well Operations (Form 10-404) not later than 15 days after the incident; in the report the operator shall give all details of the incident, including corrective actions taken.

(h) Not later than 30 days after completion of hydraulic fracturing operations, the operator shall file with the commission, on a Report of Sundry Well Operations (Form 10-404), a complete record of the work performed and the tests conducted, a summary of daily well

operations as described in 20 AAC 25.070(3), and a copy of the daily record required under 20 AAC 25.070(1). As part of the filing the operator shall include,

(1) for each hydraulic fracturing interval,

(A) the measured depth and true vertical depth of each perforation or sleeve for the actual treated interval; and

(B) the amount and type of each base fluid and each additive pumped during each stage; and

(2) for each hydraulic fracturing treatment addressed in the Report of Sundry Well Operations, the total amount and type of each base fluid and each additive pumped, including

(A) a description of each hydraulic fracturing fluid pumped, identified by individual base fluid or additive; the description must include

(i) the trade name for the base fluid or additive;

(ii) the supplier of the base fluid or additive; and

(iii) a brief description of the purpose of the base fluid or additive; that purpose may be expressed as acid, biocide, breaker, brine, corrosion inhibitor, crosslinker, de-emulsifier, friction reducer, gel, iron control, oxygen scavenger, pH adjusting agent, proppant, scale inhibitor, surfactant, or another similar brief description; and

(B) the chemical ingredient name of, and the Chemical Abstracts Service (CAS) registry number assigned to, each base fluid and additive used; the actual or maximum concentration of each chemical ingredient in each base fluid and additive used

must be provided in percent by mass; the actual or maximum concentration of each chemical ingredient in the hydraulic fracturing fluid must be provided in percent by mass; freeze-protect fluids pumped before or after hydraulic fracturing may not be included.

(i) Before submitting a Report of Sundry Well Operations under (h) of this section, the operator shall

(1) post information required by the Interstate Oil and Gas Compact Commission and the Ground Water Protection Council on the FracFocus Chemical Disclosure Registry, or its successor database, maintained on the Internet by those organizations; and

(2) file a printed copy and electronic copy of that information, in a format acceptable to the commission and as an attachment with the Report of Sundry Well Operations.

(j) The commission may require water sampling of water wells after hydraulic fracturing. If required, and in accordance with a sampling and monitoring plan approved by the commission, water sampling may consist of collection of water data within a one-half mile radius of the wellbore trajectory after hydraulic fracturing. The operator shall detail the well selection process for identifying wells to sample. Methods, parameters, and analysis must be similar to those under (a)(4) of this section as required by the commission.

(k) Any information required to be filed under this section that the filing party believes to be a confidential trade secret shall be separately filed in an envelope clearly marked "confidential" along with a list of the documents that the party believes to be wholly or partially nondisclosable as trade secrets, and the specific legal authority and specific facts supporting nondisclosure. The commission will review the information, and will maintain it as confidential. If the commission receives a request under AS 40.25.100 - 40.25.295 (Alaska Public Records

Act) for disclosure of the information, the commission will promptly forward the request to the party claiming confidentiality. Not later than five business days after receiving the request, the party claiming confidentiality shall file with the commission an affidavit verifying that the documents remain wholly or partially confidential, identifying any portions of the document that are not confidential, and setting out the specific facts and legal authority supporting nondisclosure. After reviewing the affidavit, in accordance with and within the time allowed to respond under 2 AAC 96.325, the commission will determine whether to provide the party making the public records request the requested documents or the list of nondisclosable documents, the specific legal authority and facts supporting nondisclosure, and the affidavit provided by the party claiming confidentiality. The commission will notify the party claiming confidentiality if an appeal is requested under AS 40.25.123(e) and 2 AAC 96.340, or if judicial relief is sought under AS 40.25.124 or 40.25.125.

(*l*) Upon written request of the operator, the commission may modify a deadline in this section upon a showing of good cause, approve a variance from any other requirement of this section if the variance provides at least an equally effective means of complying with the requirement, or approve a waiver of a requirement of this section if the waiver will not promote waste, is based on sound engineering and geoscience principles, will not jeopardize the ultimate recovery of hydrocarbons, will not jeopardize correlative rights, and will not result in an increased risk to health, safety, or the environment, including freshwater.

(m) In this section,

(1) "additive" means a chemical substance or combination of substances, including a proppant, that is contained in a hydraulic fracturing fluid and that is intentionally

added to a base fluid for a specific purpose, whether or not that purpose is to create fractures in a formation;

(2) "chemical ingredient" means a discrete chemical constituent that is contained in an additive and that has its own Chemical Abstracts Service (CAS) registry number or other specific name or identity;

(3) "diesel range organics" means mid-range petroleum products, including diesel fuel, with petroleum hydrocarbon compounds corresponding to an alkane range from the beginning of n-decane (C10) to the beginning of n-pentacosane (C25) and with a boiling point range between approximately 170 - 400 degrees Centigrade;

(4) "fracturing string" means any pipe or casing string used for the transport of hydraulic fracturing fluids during hydraulic fracturing operations;

(5) "gasoline range organics" means light range petroleum products, including gasoline, with petroleum hydrocarbon compounds corresponding to an alkane range from the beginning of n-hexane (C6) to the beginning of n-decane (C10) and with a boiling point range between approximately 60 - 170 degrees Centigrade;

(6) "hydraulic fracturing" means the treatment of a well by the application of hydraulic fracturing fluid under pressure for the express purpose of initiating or propagating fractures in a target geologic formation to enhance production of oil or natural gas;

(7) "hydraulic fracturing fluid" means the fluid, including the applicable base fluid and all additives, used to perform a particular hydraulic fracturing treatment;

(8) "hydraulic fracturing treatment" means all stages of the treatment of a well by the application of hydraulic fracturing;

(9) "proppant" means treated sand, a manufactured ceramic material, or another solid material designed to keep a hydraulic fracture open during or after hydraulic fracturing treatment;

(10) "stage" means any separate interval treatment that initiates a new fracture within the wellbore;

(11) "water well" means a well producing freshwater that serves as a source of drinking water for human consumption or agricultural purposes. (Eff. 1/7/2015, Register 213)

Authority: AS 31.05.030

Editor's note: Access to the FracFocus Chemical Disclosure Registry is available at www.fracfocus.org.

20 AAC 25.990 is amended by adding a new paragraph to read:

(77) "surface owner" means a person who holds record title to the surface of the land as an owner. (Eff. 11/7/99, Register 152; am 1/5/2006, Register 177; am 9/30/2010, Register 195; am 11/3/2013, Register 208; am 1/7/2015, Register 213)

Authority: AS 31.05.030 AS 41.06.035 AS 41.06.040
AS 41.06.005

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MEMORANDUM

TO: Jody Colombie, AAC Contact
Department of Administration

FROM: Scott Meriwether
Special Assistant
907.465.4081

DATE: December 8, 2014

RE: Filed Permanent Regulations: Alaska Oil and Gas Conservation Commission

Regulations re: hydraulic fracturing: 20 AAC 25.005(c)(13); 20 AAC 25.280(f); 20 AAC 25.283; 20 AAC 25.990

Attorney General File:	JU2012200995
Regulation Filed:	12/8/2014
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cc with enclosures: Linda Miller, Department of Law
Dean Williams, Administrative Regulation Review Committee
Judy Herndon, LexisNexis