

**ALASKA WILDERNESS LEAGUE ♦ CENTER FOR WATER ADVOCACY  
DENALI CITIZENS COUNCIL ♦ EARTHJUSTICE ♦ EARTHWORKS  
NATURAL RESOURCES DEFENSE COUNCIL ♦ NATIONAL PARKS  
CONSERVATION ASSOCIATION ♦ NATIVE VILLAGE OF NUIQSUT  
NORTHERN ALASKA ENVIRONMENTAL CENTER ♦ SIERRA CLUB  
THE WILDERNESS SOCIETY**

January 10, 2014

Alaska Oil and Gas Conservation Commission  
333 West 7th Avenue, Anchorage, Alaska 99501  
Submitted via hand delivery and online at: [www.doa.alaska.gov/ogc/](http://www.doa.alaska.gov/ogc/)

Re: Proposed regulations on hydraulic fracturing and workover operations: 20 AAC §§ 25.280, 25.283, and 25.990 (Revised November 1, 2013)

To Whom This Concerns:

Thank you for the opportunity to comment on the Alaska Oil and Gas Conservation Commission's November 1, 2013 revisions to its proposed regulations concerning workover operations and hydraulic fracturing. We are disappointed to see the newly proposed provisions shielding alleged trade secrets and diminishing the requirements for water monitoring. The proposed trade secrets provision is particularly misguided as it will allow operators to easily circumvent all of the public disclosure requirements. As currently written, the draft trade secrets provision incentivizes hydraulic fracturing operators to make broad and unsubstantiated trade secret claims. As transparency and testing are both critical to ensuring the safety of, and the public's confidence in, hydraulic fracturing operations, the Commission should not adopt the latest proposed revisions.

Still, we appreciate the Commission's ongoing efforts to revise the draft regulations in accordance with public input. We ask you to consider the comments below in preparing final regulations that would more rigorously protect human health, safety, and the environment. We incorporate by reference our comments dated April 1, 2013, and August 5, 2013,<sup>1</sup> and reiterate our concerns and recommendations made in those comments.

## **I. Trade Secrets**

The Commission's previous proposals upheld the principle that the public has a right to know what chemicals are being injected into the ground, when these chemicals could—in the event of well

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<sup>1</sup> See Appendix A, Comments submitted by TWS, et al (Aug. 5, 2013) (incorporated the comments submitted by TWS, et al (Apr. 1, 2013)).

integrity failure or intersection with other fractures or faultlines—contaminate freshwater. The current proposal does not. It tacitly buys into Halliburton’s public testimony that oil companies will no longer use their “crown jewels” (i.e., their most environmental and efficient) fracturing formulas, because of concerns about reverse engineering.<sup>2</sup>

As indicated in our previous comments,<sup>3</sup> public health and environmental concerns justify full disclosure of all hydraulic fracturing constituents. We do not allow food manufacturers to avoid disclosure of ingredients they consider trade secrets just because they have spent lots of money developing the “crown jewels” of breakfast cereals. The oil and gas industry should be held to the same standard.

While we disagree that fracturing chemicals should be entitled to trade secret protections and shielded from public disclosure, we appreciate the fact that the current 20 AAC 25.283(k) requires all information claimed to be a trade secret to be provided to the Commission. The Commission clearly has the authority and responsibility to collect and review fracturing fluid chemical information.<sup>4</sup>

Problematically, the proposed Section 25.283(k) does not contain clear requirements to ensure that any protected information actually constitutes a trade secret. Rather, it incentivizes hydraulic fracturing operators to make broad and unsubstantiated trade secret claims. A “privilege log” (presumably a justification for maintaining confidentiality) need only be filed by an operator in the event of a request for disclosure under Alaska’s Public Records Act. Absent this, the operator need do nothing more than place documents in a specially marked envelope in order for “[t]he commission [to] maintain such information as confidential.”<sup>5</sup> In a critical shortcoming, at no point do the proposed regulations require or even allow the Commission to assess the validity of an operator’s trade secret claim. Instead, the regulations place the burden on the public to challenge dubious trade secret claims in court. The time and expense of litigation means that public challenges to trade secret claims are very unlikely, even where a challenge is warranted. Because Section 25.283(k) makes it easy for hydraulic fracturing operators to claim trade secrets but disallows Commission review and makes it exceedingly difficult for the public to challenge such claims, operators can be expected to make frequent, broad, and perhaps illegitimate trade secret claims.

We ask the Commission to revise Section 25.283 to prioritize public disclosure, not unchecked secrecy. The regulation should state explicitly that there is a presumption in favor of public disclosure. Section 25.283 should require that, at the time when trade secret protection is first claimed, operators must both supply a detailed privilege log and support any trade secret claims with specific factual

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<sup>2</sup> This was stated by Louann Cutler on behalf of Halliburton at the Commission’s September 23, 2013 public hearing.

<sup>3</sup> See Comments submitted by TWS, et al (Apr. 1, 2013), pp. 7-8.

<sup>4</sup> AS § 31.05.035(a) (giving the Commission broad authority to request subsurface information on a permitted well); AS § 31.05.090(b) (requiring permit applications for wells to “include all information required by the commission”); AS § 31.05.035(c) (which specifies that required information may only be kept confidential from public disclosure if it “relate[s] to an exploratory or stratigraphic test well” and “the commission determines [it] contains proprietary engineering or geotechnical information”); *State Dep’t of Natural Res. v. Arctic Slope Reg. Corp.*, 834 P.2d 134, 140, 143 (Alaska 1991) (recognizing “AOGCC’s authority to require well data and to use the data to prevent waste and protect health and safety”)

<sup>5</sup> 20 AAC 25.283(k).

justifications demonstrating entitlement to the disclosure exemption, similar to what is required under the Emergency Planning and Community Right-to-Know Act (EPCRA) regulations.<sup>6</sup> Section 25.283 should authorize the Commission, in the first instance, to review all claims for trade secret protection and to deny claims that are not supported. Section 25.283 also should create a clear process whereby the public can petition for disclosure of alleged trade secrets.<sup>7</sup> Further, Section 25.283 should specify that a decision of the Commission to deny an operator's trade secret claim or to deny a request from the public for disclosure is subject to administrative reconsideration pursuant to AS § 31.05.080.

These requirements would discourage questionable trade secret claims, helping to ensure that any trade secret protections are not exploited to avoid disclosure. Such requirements are also necessary under AS § 31.05.035(c), which specifies that the Commission itself must make a finding that information is proprietary before it can be withheld from presumptive public disclosure.

We further ask the Commission to adopt a provision similar to that adopted by the Alaska Department of Environmental Conservation to balance the interests of confidentiality with those of public health and consumer protection. Section 18 AAC 31.015(b) (Confidentiality of trade secrets) allows the Department to disclose confidential information to protect against an imminent threat to public health or safety and in the event of an emergency.<sup>8</sup>

It is important that chemical information be made available to emergency responders and health professionals.<sup>9</sup> This information would be critical to enable health professionals and emergency responders to make accurate diagnoses and provide proper treatments.<sup>10</sup>

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<sup>6</sup> See 40 C.F.R § 350.7 (Substantiating claims of trade secrecy); Arkansas Rule B-19 (l)(8) (adopting trade secret criteria in EPCRA, 42 U.S.C. § 11042). Wyoming regulations also require applicants to justify and document the nature and extent of the proprietary information in connection with fracturing chemicals. See Wyo. Adm. Regs., Ch. 3, §45(d)(reporting requirements) and §45(f)(referring to confidentiality protection afforded under the Wyoming Public Records Act, Wyo. Stat. § 16-4-203(d)(v)).

<sup>7</sup> See, e.g., 40 C.F.R § 350.15 (Public petitions requesting disclosure of chemical identity claimed as trade secret).

<sup>8</sup> See 18 AAC 31.015 (b):

If it determines that disclosure is in the interests of public health and consumer protection, the department will disclose information that is confidential under this section under a continuing restriction of confidentiality to other departments of the state or United States or to a court

- (1) to protect against an imminent threat to public health or safety;
- (2) in a proceeding to deny, modify, or suspend a permit required under this chapter; or
- (3) in pursuit of an enforcement activity.

<sup>9</sup> At least five states have written rules that ensure access for both health professionals and emergency responders, including Colorado, Illinois, Kansas, Pennsylvania and Texas. See, e.g., 16 Texas Admin. Code § 3.29(c)(4) (allowing access to hydraulic fracturing trade secret information by health professionals and emergency responders). A number of others, including Arkansas, Montana and Ohio provide access to health professionals only. Even when information may be considered proprietary, disclosure to the public has been upheld when authorized by law. See, e.g., *U.S. v. Geophysical Corp. of Alaska*, 732 F.2d 693, 702 (9<sup>th</sup> Cir. (Alaska) 1984).

<sup>10</sup> In addition to ensuring access for health professionals that are involved in patient diagnosis and treatment, California requires trade secret information to be provided “[i]n order to protect public health, to any health professional, toxicologist, or epidemiologist who is employed in the field of public health and who provides a written statement of need.” See Cal. Pub. Res. Code § 3160 (j)(10). Alaska should do the same.

Even in a non-emergency, at a minimum, the chemical family of each substance considered a trade secret should be disclosed to the public.<sup>11</sup> This would provide basic information to the public about the class of chemical and its potential risks without compromising confidentiality in any way.

## II. Protecting Groundwater

We strongly supported the groundwater monitoring requirements proposed in the Commission's June 19, 2013 draft regulations. We understood the concerns expressed by industry representatives at the September 23, 2013 public hearing regarding the need to clarify the number and location of monitoring wells required, and we expected that the November 1, 2013 proposal would contain such clarifications. We are puzzled as to why the requirement for baseline sampling was made less clear by deleting the 90-day timeline in Section 25.283(a)(5) for conducting this sampling. The absence of such a timeline is highly problematic, because baseline sampling that takes place too far in advance might not accurately reflect the baseline conditions just prior to fracturing.

We are dismayed that under proposed Section 25.283(a)(4)(j), post-fracturing water monitoring would no longer be mandatory. Timely monitoring (within 90 days) after hydraulic fracturing is essential to verify that freshwater contamination did not occur. We urge the Commission to make such monitoring mandatory, as Wyoming and Colorado have done.<sup>12</sup> In Wyoming, the oil and gas industry has supported the new groundwater testing rule, recognizing that it could address a situation in which drinking water contamination is attributed to drilling operations.<sup>13</sup>

Under the proposed Section 25.283(a)(4), baseline monitoring is not required for wells on land where owner permission for such monitoring is not obtained. Operators simply have to "document the reasonable and good faith efforts taken to secure such permission." In the event that owner permission

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<sup>11</sup> See, e.g., Colorado Oil and Gas Conservation Commission Rule 205A.b.2.B (requiring disclosure of the chemical family where the chemical identity of a hydraulic fracturing additive is withheld). Other states requiring chemical family disclosure include Arkansas (Rule B-19(1)(8)), Kansas (K.A.R. 82-3-1401(d)), Louisiana (LAC 43:XIX.118(2)(a)(i)), Oklahoma (OAC 165:10-3-10(b)(4)), Pennsylvania (58 Pa.C.S. § 3222.1(b)(3)), and Texas (16 Tex Admin Code 3.29(c)(1)(B)(ii)). Arkansas defines "chemical family" as "a group of elements in the Periodic Table or, more commonly, compounds that share certain physical and chemical characteristics and have a common name."

<sup>12</sup> Wyoming's rule (approved November 12, 2013, effective March 1, 2014) requires operators to sample at least four existing wells or streams within a half-mile radius of the proposed well within a year prior to drilling. See Scott Streater, *Wyo. OKs strict groundwater sampling rule for drillers*, ENERGY WIRE (Nov. 13, 2013), at <http://www.eenews.net/stories/1059990366>; see also Wyoming Oil and Gas Conservation Commission, Notice of Intent to Adopt Rules (Oct. 15, 2013) <http://soswy.state.wy.us/Rules/RULES/9155.pdf>. If there are less than four wells, the operator can sample within the half-mile radius from any other "water source," which is defined as a stream, permitted well or other permitted water source that has a beneficial use, such as groundwater used for agriculture irrigation. *Id.* The operators must resample the same wells or water sources within 12 to 24 months after installation of the well's production casing or liner and again 36 to 48 months after the producing casing is installed. *Id.*

Colorado's rule (approved in January 2013) requires operators to collect up to four water samples from aquifers, existing water wells and other "available water sources" within a quarter to a half-mile of proposed wells. The sampling must be completed before wells are drilled. Post-fracturing tests must be performed within one year after well completion and repeated three and six years thereafter. See 2 CCR 404-1, 608(b).

<sup>13</sup> Scott Streater, *Wyo. OKs strict groundwater sampling rule for drillers*, ENERGY WIRE (Nov. 13, 2013), at <http://www.eenews.net/stories/1059990366>.

is not obtained, the operator should be required to sample wells on adjacent property where permission can be obtained.

We appreciate that Section 25.283(a)(4) and (j) continue to provide for monitoring of wells within a one-half (not one-fourth) mile radius. This is consistent with the requirements of Wyoming and Colorado as well as the rebuttable presumption of water contamination under Pennsylvania law.<sup>14</sup> To preserve the rebuttable presumption under Pennsylvania law, water testing must be conducted by an independent certified laboratory rather than the operator.<sup>15</sup> We encourage the Commission to similarly require testing by an independent laboratory certified by the Environmental Protection Agency or the Alaska Department of Environmental Conservation.

We appreciate that proposed Section 25.283(a)(4) identifies additional parameters for baseline water sampling and sampling methods, including total bicarbonate and carbonate as CaCO<sub>3</sub>; the types of bacteria present (iron-related, sulfate-reducing, slime-forming); nitrate and nitrite as N; phosphorus; and ethylbenzene. We are concerned, however, that this section eliminates two key parameters for baseline water sampling: Total Petroleum Hydrocarbons (TPH) and Oil and Grease (HEM). TPH and HEM tests should be required to validate well integrity for shale oil wells and to document that on-site operations are not resulting in this common form of groundwater contamination. While the revised section does add a requirement to conduct a gas compositional analysis in certain situations and notify the Commission of certain results, including the detection of BTEX compounds, GRO, and DRO, this does not substitute for the requirement to test for TPH and HEM.

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<sup>14</sup> See Wyoming rule [forthcoming at <http://wogcc.state.wy.us/rules-statutes.cfm?Skip='Y'>]; 2 CCR 404-1, 608(b). Pennsylvania law presumes that an unconventional well operator is responsible for pollution of a water supply if the water supply is within 2,500 feet (nearly a half-mile) of the unconventional vertical well bore; and the pollution occurred within 12 months of the later of completion, drilling, stimulation or alteration of the unconventional well. 58 Pa.C.S. § 3218(c). An operator can rebut this presumption by conducting baseline water sampling (a “prealteration survey”) and showing any of the following:

- (i) the pollution existed prior to the drilling, stimulation or alteration activity as determined by a predrilling or prealteration survey;
- (ii) the landowner or water purveyor refused to allow the operator access to conduct a predrilling or prealteration survey;
- (iii) the water supply is not within 2,500 feet of the unconventional vertical well bore;
- (iv) the pollution occurred more than 12 months after completion of drilling or alteration activities; or
- (v) the pollution occurred as the result of a cause other than the drilling or alteration activity. 58 Pa.C.S. § 3218(d)(2),(e).

We would like to point out an article containing an incorrect quote by the Alaska Oil and Gas Association, suggesting that all states require monitoring of wells within only a quarter of a mile. See Alaska mulls hydraulic fracturing rules, UPI (Nov. 13, 2013), *available at*: [http://www.upi.com/Business\\_News/Energy-Resources/2013/11/13/Alaska-mulls-hydraulic-fracturing-rules/UPI-86211384344042/#ixzz2l8b7DbQm](http://www.upi.com/Business_News/Energy-Resources/2013/11/13/Alaska-mulls-hydraulic-fracturing-rules/UPI-86211384344042/#ixzz2l8b7DbQm).

<sup>15</sup> 58 Pa.C.S. § 3218(e).

### **III. FracFocus**

We reiterate our concerns from previous comments regarding the adequacy of FracFocus as a medium for fracturing fluid disclosure.<sup>16</sup> The Commission should develop its own site that allows the public to search for and aggregate data, or allow use of FracFocus only if the site enables the public to aggregate data.

Of particular concern is the provision in Section 25.283(i) that requires operators to “post the information required by the Interstate Oil and Gas Compact Commission/Groundwater Protection Council hydraulic fracturing web site (www.fracfocus.org).” FracFocus is a privately run website that could change its requirements at any time, such that the information needed by the Commission and the public is no longer obtained. Further, given that operators can leave certain fields blank (e.g. total water volume) when uploading information to the website, it is questionable whether FracFocus really “requires” disclosure of any information. Accordingly, 25.283(i) must specify the exact categories of information required to be posted on the Internet by an operator and must further specify that such information must be posted to FracFocus or any such comparable website to be designated by the Commission.

### **IV. Disclosure of Freeze-Protect Fluids**

We are concerned that the Commission has retained the provision from its June 2013 proposal eliminating disclosure on “freeze-protect fluids pumped before and/or after hydraulic fracturing.”<sup>17</sup> As stated in our August 5, 2013 comments,<sup>18</sup> any chemical pumped into the ground presents a potential threat to human health and the environment. For example, ethylene glycol (anti-freeze) is a common chemical used in hydraulic fracturing operations. This toxic, carcinogenic chemical and others like it should not be shielded from disclosure in the event that it is not pumped contemporaneously with the base fluid and additives.

### **IV. Flaring and Methane Reduction**

We reiterate our concerns from our April 1, 2013 letter regarding flaring.<sup>19</sup> The current version of 20 AAC 25.235 does not actually require flaring to be minimized or emissions to be reduced—operators simply have to track their waste and justify why it occurred. The proposed regulations are an opportunity to implement the best available approaches and technologies to utilize natural gas on or near gas wells and to avoid venting and flaring.<sup>20</sup>

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<sup>16</sup> Comments submitted by TWS, et al (Aug. 5, 2013), pp. 3-4; Comments submitted by TWS, et al (Apr. 1, 2013), pp. 5-7.

<sup>17</sup> 20 AAC 25.283(a)(12)(C), (h)(2)(B).

<sup>18</sup> Comments submitted by TWS, et al (Aug. 5, 2013), pp. 2-3.

<sup>19</sup> Comments submitted by TWS, et al (Apr. 1, 2013), pp. 18-22.

<sup>20</sup> Specifically, operators should be required to implement Reduced Emission Completions (RECs), also called “green completions,” wherever technically feasible, such that gas can be used as fuel in the operations or piped to market. Where this is not feasible, gas should be re-injected into the formation. There should be specific limits on the amount of gas that can be flared per well. A minimum flare efficiency of 98% should be achieved. Intentional, planned gas venting from wells should be prohibited unless it occurs during an unavoidable emergency well control event.

We would like to draw your attention to rules proposed by Colorado Governor John Hickenlooper on November 18, 2013, which would require operators to closely monitor tanks and pipelines for leaks, report monthly on large sources of methane emissions, and reduce the amount of methane and natural gas leaking into the air.<sup>21</sup> The Commission should work with the Alaska Department of Environmental Conservation to develop similar rules.

## **V. Need for Three-Dimensional Modeling**

We reiterate our concerns from our April 1, 2013 letter<sup>22</sup> regarding the need for three-dimensional modeling prior to and between fracturing treatments to ensure that fractures are contained in the targeted zone; prevent fractures from intersecting with wells, faults, and fractures; and ensure a buffer between fractures and groundwater.<sup>23</sup> Failure to understand geophysical and reservoir data increases the risk of intersecting with pathways to groundwater, which could result in groundwater contamination.

California's recent draft regulations require operators to utilize modeling that simulates the projected well stimulation treatment area of influence within the design limits of the projected well stimulation treatment operations. This area encompasses all wells and faults (active or inactive) within a radius of twice the anticipated well stimulation treatment length.<sup>24</sup> The Commission should implement similar requirements.

## **VI. Waivers**

We remain very concerned that the Commission has retained the variance and waiver provisions proposed in the June 19, 2013 draft regulations. As we noted in our comments dated August 5, 2013, the broad scope of the proposed variance and waiver provision threatens to undermine all of the other regulations proposed and is therefore unacceptable. We reiterate all of the concerns and suggested revisions contained in our previous comments.

If the Commission decides to go forward with variance and waiver provisions, they should be narrowly tailored to avoid abuse, and an additional application fee should be required to cover the costs of ensuring compliance with the intention of the regulations and statutes. In the event that a waiver is allowed (though it should not be), regulations should provide the public with an opportunity both to comment on proposed waivers and to challenge waivers that are granted over public objection.

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<sup>21</sup> See Colorado Department of Public Health and the Environment, Oil & Gas Rulemaking Efforts: Regulation Numbers 3, 6, & 7, Nov. 21, 2013 Request for Rulemaking Hearing, at <http://www.colorado.gov/cs/Satellite/CDPHE-AQCC/CBON/1251647985820>.

<sup>22</sup> pp. 15-17.

<sup>23</sup> These requirements should be added to in 20 AAC 25.282(a)(12)(F).

<sup>24</sup> See draft California Public Resources Code §1784(a)(2) at <http://www.conservation.ca.gov/index/Documents/Text%20of%20Proposed%20Regulations%20-%20SB%204%20Well%20Stimulation%20Treatment%20Regulations.pdf>. These regulations are being issued to comply with California Senate Bill 4 (Pavley, Chapter 313, Statutes of 2013), signed into law September 20, 2013.

## VII. Remediation

In general, all else being equal, a well fractured in a tight formation produces less than a well into a more permeable formation. This means that, compared to conventional operations, far more wells, pipelines, and roads are needed to extract equivalent amounts of oil and gas from tight formations.<sup>25</sup> These additional wells will one day need to be plugged and abandoned.<sup>26</sup>

The Commission's current bonding rates are at \$100,000 for a single well and \$200,000 for all the operator's wells in the state.<sup>27</sup> These amounts are likely insufficient to ensure proper abandonment and remediation, particularly when an operator may have thousands of wells across the state associated with unconventional production involving fracturing.

A recent New York Times article calls attention to this problem in Wyoming, where some 1,200 wells have been abandoned by operators that may be unable to pay the cost of reclamation.<sup>28</sup> The state estimated that closing the 1,200 wells already abandoned would cost about \$8 million.<sup>29</sup> Compounding the problem, the state estimates that it will need to close an additional 2,300 wells that are sitting idle but have not been entirely abandoned by operators.<sup>30</sup>

The Commission should raise bonding requirements substantially to ensure proper well abandonment and remediation.

In summary, we ask the Commission to

- Protect the public's right to know all chemicals included in fracturing fluids by: (1) removing the provisions pertaining to trade secrets; or, at a minimum, indicating circumstances in which information can be revealed to the public to abate health and safety threats and requiring operators to submit justifications of their claims as part of their applications, subject to Commission review and administrative challenge by the public; and (2) requiring reporting of freeze-protect fluids;
- Ensure accountability for potential groundwater contamination by retaining the pre- and post-fracturing water monitoring requirements from the June 19, 2013 draft regulations, with the addition of the following chemical monitoring requirements from the November 1, 2013 draft

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<sup>25</sup> TWS's AOGCC Comments at 1.

<sup>26</sup> See Det Norske Veritas AS, DNV-RP-U301, Risk Management of Shale Gas Developments and Operations (Jan. 2013), p. 34 (suggesting the following regulatory requirement: "The well shall be abandoned with an eternal perspective, where two barriers shall be required in order to prevent natural gas from flowing from the reservoir to aquifers or external environment."); *id.* at 44 ("after abandonment of the area, all surface area and subsurface used for infrastructures shall be restored as far as reasonably practicable to pre-development conditions as stated in the baseline survey, or changed into alternative use as agreed with the surface landowner or other relevant stakeholders").

<sup>27</sup> 20 AAC 25.025.

<sup>28</sup> Dan Frosch, *Wyoming May Act to Plug Abandoned Wells as Natural Gas Boom Ends*, THE NEW YORK TIMES (Dec. 24, 2013), at [http://www.nytimes.com/2013/12/25/us/state-may-act-to-plug-abandoned-wyoming-wells-as-natural-gas-boom-ends.html?\\_r=0](http://www.nytimes.com/2013/12/25/us/state-may-act-to-plug-abandoned-wyoming-wells-as-natural-gas-boom-ends.html?_r=0).

<sup>29</sup> *Id.*

<sup>30</sup> *Id.*



regulations: total bicarbonate and carbonate as CaCO<sub>3</sub>; the types of bacteria present (iron-related, sulfate-reducing, slime-forming); nitrate and nitrite as N; phosphorus; and ethylbenzene;

- Ensure the adequacy of groundwater testing by requiring additional monitoring parameters (i.e., number and location of monitoring wells, and the additional chemicals to be monitored as listed in the November 1, 2013 proposal);
- Avoid waste and air pollution by implementing stronger regulations to curtail flaring and methane release;
- Reduce the risk of groundwater contamination by requiring three-dimensional modeling prior to and between fracturing treatments;
- Ensure that all of these carefully considered regulations will apply by eliminating the provision for waivers and narrowly tailoring the provision for variances; and
- Raise bonding requirements to ensure proper well abandonment and remediation.

Additionally, it would be helpful for the Commission to provide a rationale for the changes to previous proposals. Particularly where there have been changes in the types of chemicals that must be reported and monitored, it would improve the public's understanding to have an explanatory preamble in any future proposals.

Thank you very much for your consideration of these comments. We appreciate the Commission's commitment to developing clear regulations that protect the welfare of the public. If you have any questions, please contact Lois Epstein, P.E., Arctic Program Director at The Wilderness Society (lois\_epstein@tws.org or 907-272-9453, x107) or Barrett Ristroph, Esq., Arctic Program Representative at The Wilderness Society (ristroph@tws.org or 907-342-9090).

Sincerely,

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