ILLINOIS DEPARTMENT OF NATURAL RESOURCES

HYDRAULIC FRACTURING REGULATORY ACT ADMINISTRATIVE RULES

RESPONSE TO PUBLIC COMMENTS

Introduction

Pursuant to 1 Ill. Adm. Code 220.600(a)(9), this document is the response of the Illinois Department of Natural Resources ("IDNR") to public comments on IDNR's proposed administrative rules implementing the Hydraulic Fracturing Regulatory Act. This document serves to 1) summarize the criticisms, suggestions and comments raised by interested persons; 2) explain IDNR's evaluation of those comments; and 3) note any changes IDNR will make to the rules after considering the comments. The actual comments and an updated version of the proposed rules integrating the revisions described in this document can be found on the Department's website: www.dnr.illinois.gov

When IDNR filed the first draft of the proposed rules in November of 2013, the Department anticipated that the rules would generate a high level of public interest. To try to accommodate that communication efficiently, IDNR provided multiple channels for the public to comment: five public hearings across the state and an online comment submission form, in addition to traditional U.S. mail and email. Citizens also dropped off comments in person. The comments vary considerably by format, ranging from handwritten letters and holiday cards to petitions, studies, and reports. The comment period did not end until January 3, 2014.

In order to give fair and thorough consideration to each thought, IDNR staff first sorted all of the comments into the areas of concern. For example, if a comment pertained to the Water Source Management Plan, it was filed with the other comments on that same issue. There were over 43,000 pages to process, and many comments -- probably most -- touched on several issues and had to be copied and sorted into multiple files. Some comments addressed dozens of different rule sections. So that every entity or individual would receive fair treatment, only when the sorting was complete did IDNR legal staff begin analysis.

When analyzing, IDNR also conducted additional research or consulted other state agencies, where appropriate, to understand the comments made or to consider a change in the rules. The references to many additional sources IDNR looked at can be found in the endnotes to each section and in the Bibliography. It is important to note that a reference to a source does not imply IDNR endorsement of that source or author, but simply that IDNR reviewed it as part of the rulemaking process, often because a commenter referred IDNR to the source.

Through sorting and analyzing, IDNR found that most of the comments in an issue area made similar points, and thus could be grouped into sub-points. IDNR for each grouping summarized the essence of the points made, so that the response would be concise and useful to both the Joint Committee on Administrative Rules ("JCAR") and the public. To be sure, summarizing will inevitably leave out some of the detail made in the comments, but IDNR did review and did take all ideas or arguments into account when reevaluating the draft rules.

Because of the volume of comments, the number of issues on each comment, and inevitable duplication, individual responses are impossible. What follows is a discussion, one by one, of the approximately 90 areas of the rules that comments addressed, plus another score of comment groupings that addressed broader or procedural concerns, or areas commenters thought were omitted from the rules.

IDNR stresses that this is a limited document arising from the administrative laws of Illinois that govern rulemaking and from the unusual public response to these proposed rules. Although it may contain information of interest or use, this document is not an environmental impact study, a comprehensive departmental report, a scholarly treatise, a scientific article, or an in-depth policy paper, all of which would have taken more time and a different approach, and would have undergone far more polish. This document at beginning and end is part of a conversation about administrative rules, representing the Department's answers to statements and questions it heard from the public.

IDNR saw unprecedented public involvement in this rulemaking process: the comments received were more than IDNR has received in all its other rulemakings combined, ever. IDNR truly valued the input received by the organizations and individuals who commented. The input was heard, was considered, and in many cases resulted in government taking action in response to the ideas it heard. This is how our system is supposed to work. IDNR believes the process ultimately resulted in an improved regulatory framework that fulfills the intent of the Hydraulic Fracturing Regulatory Act.

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Glossary

American Petroleum Institute ("API")

Environmental Law & Policy Center ("ELPC")

Fair Economy Illinois ("FEI")

Faith in Place ("FIP")

Food & Water Watch ("FWW")

Formation Integrity Test ("FIT")

High Volume Horizontal Hydraulic Fracturing ("HVHHF")

Hydraulic Fracturing Regulatory Act, 225 ILCS 732/1-1 *et seq.* ("HFRA" or "Act")

IEC/NRDC/ELPC/FIP/RHA group comment ("environmental coalition's group submission")

Illinois Association of Groundwater Professionals ("IAGP")

Illinois Association of Soil and Water Conservation Districts ("IASWCD")

Illinois Department of Natural Resources ("Department" or "IDNR")

Illinois Department of Public Health ("IDPH")

Illinois Environmental Council ("IEC")

Illinois Environmental Protection Agency ("IEPA")

Illinois Manufacturers' Association ("IMA")

Illinois Public Health Association ("IPHA")

Illinois Oil and Gas Act ("OGA")

Illinois Oil and Gas Association ("IOGA")

Illinois People's Action ("IPA")

Illinois Petroleum Council ("IPC")

Illinois State Geological Survey ("ISGS")

Illinois State Water Survey ("ISWS")

Mechanical Integrity Test ("MIT")

Natural Resources Defense Council ("NRDC")

Occupational Health and Safety Administration ("OSHA")

Pollution Control Board ("PCB")

Respiratory Health Association ("RHA")

Soil and Water Conservation District ("SWCD")

Southern Illinoisans Against Fracturing Our Environment ("SAFE")

United States Environmental Protection Agency ("U.S. EPA")

United States Geological Survey ("USGS")

United States Government Accountability Office ("USGAO")

University of Illinois Springfield ("UIS")

IDNR's Role and Mission

Comments: Over 800 public comments, either in addition to or separate from comment on specific rule sections addressed what the Department here categorizes as the role of the Department vis-à-vis HVHHF. This subject usually was brought up by individuals, including many at the public hearings, but also by Frack Free Illinois, and was a point in one or more of the template comments of the Fair Economy Illinois coalition.

The essence of the comments the Department collectively addresses here was (1) the assertion by commenters that the Department has a duty, job, or mission to protect the environment and/or public safety, via regulation, and/or (2) that that duty, job, or mission requires the Department to take a more protective role vis-à-vis HVHHF than commenters thought was evidenced in the first notice draft of the rules, even to the extent of banning HVHHF.

The following seven comments are representative of the hundreds received:

"Remember your mandate to protect the welfare of the people. Do your job."

"The Department of Natural Resources was created to protect the public and the environment. Please do your job. You can determine that there is no environmentally safe way to frack."

"The residents of Illinois are depending on IDNR to protect their health, their safety, and the safety of their water, air, and soil."

"I thought your job and responsibility was to protect the commons from the abuse and contamination of OUR resources, not to sell us out to the oil & gas industry."

"As guardians of Illinois natural resources, it is imperative that you make clear provisions protecting air, land water and life now and for the future. It is your duty to know the negative ramifications of fracking and its related activities and to be proactive in banning potentially harmful actions in your rules."

"Government agencies are FOR THE PEOPLE. Here's an idea. Why not just do your jobs? Protect the people of Illinois in the most secure and comprehensive way possible without completely prohibiting the use of fracking."

"you have been tasked with promoting public safety for present and future generations….As public servants dedicated to the stated mission of the IDNR, I urge you to take whatever action's necessary to ensure that fracking does not come to Southern Illinois. That may involve declaring that there is not current technology for safe fracking in Illinois, publicly calling for a ban, or resigning your posts in protest of the impossible tasks you've been given."

Response: The Department considered these comments in context of its many statutory duties, and also considered settled law on how administrative agencies may administer statutes, especially in light of other statutes. The Department also considered its experience as regulator, rule maker, and steward on behalf of Illinois citizens with respect to resources possibly impacted by HVHHF. Finally, the Department considered its role with respect to the HFRA specifically, and in view of the statutory intent.

The comments in some aspects misunderstand the role of the Department in the statutory scheme of Illinois, but in others accurately described Department roles and legitimately pointed out challenges in reconciling multiple roles. Some comments also requested more of the Department than is typically appropriate in rulemaking. Some context here is helpful.

Until 1996, the Department of Conservation ("DOC") that, e.g., managed our state parks and Illinois hunting and fishing, and the Office of Mines and Minerals ("OMM") that regulated extraction of oil, gas, and coal, were two completely separate agencies. Similarly, the Office of Water Resources ("OWR") was a third, separate entity within the Department of Transportation that regulated and protected lakes, rivers, and streams. Meanwhile, the Illinois Environmental Protection Agency, created in 1970, had, and still has, primary responsibility for preventing pollution of water and air.

In 1996, the former DOC was merged, first by executive order and then by statute, with OMM and OWR, along with some other agencies, to form the current Department of Natural Resources. The Department has responsibility for administering hundreds of different statutes, ranging from the Wildlife Code and the Rivers, Lakes, and Streams Act to the Oil and Gas Act.

Creation of the Department did not create an all-encompassing environmental agency, nor even an all-encompassing natural resources agency. In Illinois, the IEPA retains primary responsibility for preventing pollution of water and air; the Illinois Pollution Control Board has other duties and is likewise independent of IDNR. The Illinois Geological Survey is the state's primary geological agency but is also not part of the Department, even though the Department reviews the geology of coal mines and oil and gas wells. The IEMA has primary responsibility for regulating radioactivity. However, the commenters are correct that the Department has a strong mandate to protect the environment of Illinois.

Departmental role to protect environmental resources

The State of Illinois has a strong public policy in favor of protecting the environment of the state, which includes not only plant and animal life but lands, waters, and more abstract but real and valued scenic, aesthetic, and recreational resources. To ensure the safeguarding, preservation, and increase of these environmental resources, the legislature empowered the Department with, e.g., authority to take measures to conserve and preserve "the flora and fauna" of Illinois (20 ILCS 805/805-105), to prevent pollution and engender the conditions in rivers, lakes, streams, and other waters that will promote, protect, and conserve fauna and flora (20 ILCS 805/805-120), to take measures for the protection and conservation of forests (20 ILCS 805/805-130), and to limit the future use of property interests in order to maintain or enhance natural or scenic resources (20 ILCS 805/805-225). Most of these powers were granted decades earlier to predecessor agencies.

The legislature has not only given the Department broad authority to protect and conserve, but, in many instances, has explicitly mandated the Department to be proactive in such protection and conservation. Among other duties, the Department is not simply authorized but is *required* to support, promote, and enhance recreational hunting opportunities (Illinois Hunting Heritage Protection Act, 520 ILCS 30/15(b)), to prevent drawdown of rivers and streams (Rivers, Lakes, and Streams Act, 615 ILCS 5/23), to see that no Illinois waters are "used by any private interest in any way," except as by law and then only after permit, and to "jealously guard . . . the true and natural conditions " of such waters (Rivers, Lakes, and Streams Act, 615 ILCS 5/7), to preserve, enhance, and create wetlands and avoid adverse impacts to wetlands from other State activities (Interagency Wetland Policy Act of 1989, 20 ILCS 830/1-3), to take necessary measures to establish cooperative wildlife restoration projects (Wildlife Restoration Cooperation Act, 520 ILCS 15/1), to take "all measures necessary" for the conservation, distribution, introduction and restoration of birds and mammals (Wildlife Code, 520 ILCS 5/1.10), and to take "all measures necessary" for the conservation, distribution, introduction and restoration of fish, reptiles, and amphibians (Fish and Aquatic Life Code, 515 ILCS 5/1-150).

The legislature was aware of these Department powers and statutory mandates when it entrusted the regulation of HVHHF to the Department. The HFRA, in fact, reinforces these mandates. The Act directs that no HVHHF permits issue until an applicant satisfies multiple requirements, including demonstrating to the Department that plans required by the Act and/or Department rules are "adequate and affective" and that the HVHHF operations will be conducted so as to protect the public health and safety and prevent pollution. Section 1-53. The Act gives the Department authority to make rules, Section 1-130, and specifically gives the Department authority to draft rules requiring an applicant to submit information or plans beyond those listed in Section 1-35(b)(1) through (19).

Performing multiple statutory roles

That the legislature entrusted HVHHF permitting for extraction of nonrenewable resources to an agency that is also specifically charged, at many other points in Illinois law, with protecting living things, waters, and wetlands, among other resources, does not necessarily conflict with administration of the HFRA. Rather, it gives context and meaning, albeit some challenge, to the Department's charge.

Under the doctrine of *in pari materia*, two legislative acts that address the same subject are considered with reference to one another, so that they may be given harmonious effect. *Land v. Board of Education of the City of Chicago*, 202 Ill. 2d 414, 422 (2002). In other words, laws are not siloed. This was reaffirmed relatively recently by the Illinois Supreme Court in *Citizens Opposing Pollution v. Exxonmobil Coal U.S.A.*, 962 N.E.2d 956, 964 (2012).

Very recently, the United States Supreme Court in the federal regulatory context reiterated that an agency "required to balance the possibilities of under-control and over-control … must have leeway in fulfilling its statutory mandate." *EPA v. EME Homer City Generation, LP*, _____ *U.S.* ____ , slip. op. April 29, 2014, at 31. This was not a novel holding, but only the most recent articulation of the longstanding principles explained in *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 866-867 (1984), that deference should

be given to an agency's administrative interpretation "whenever decision as to the meaning or reach of a statute has involved reconciling conflicting policies … that were committed to the agency's care by the statute."

Limitations on Department Role in Rulemaking

The authority of an administrative agency to adopt rules and regulations is bounded by the statute creating that authority, and such rules and regulations cannot contravene the standards and policies set forth in the statute. *Illinois Dept. of Revenue v. Illinois Civil Service Com'n*, 357 Ill. App. 3d 352, 363 (1st Dist. 2005). Just as the Department cannot ignore its other statutory duties, it cannot ignore the HFRA, especially in formulating rules for the HFRA's implementation. While the Department has been given broad authority to flesh out rules, they must be consistent with "the purposes" of the HFRA. Section 1-130.

The Department already regulates over 32,000 existing and producing conventional oil and gas wells in Illinois. Like most other human economic activity sectors, even conventional hydrocarbon extraction is not "safe," if by safe one means zero risk of accident that threatens life, property, wildlife, or resources such as fresh water. As with most other human economic activity sectors that produce goods or services Illinoisans want, the laws allow such activity, under government oversight.

Department Action: No one section of the rules was changed in specific response to the hundreds of exhortations as to Department role. However, as the above discussion shows, the Department is aware of its responsibilities and duly considered its statutory duties with respect to the flora, fauna, wildlife, aquatic life, public health, and environment of Illinois. The Department considered these duties throughout the process of the second notice draft. Department consciousness of those duties informs this draft in multiple regards. Cognizance of its role and duties will also guide the Department in HVHHF permitting going forward.

High Volume Horizontal Hydraulic Fracturing Generally

Comments: The Department received at minimum hundreds of comments from Illinois citizens that did not concern a particular rule subsection, or even the HFRA *per se*, but which were opposed to the practice of HVHHF itself, either in Illinois, or generally, often without specific stated reasons. Most of the comments did not fall into this general anti-fracking category but had a more specific identifiable concern or concerns. However, the Department did hear hundreds of comments to this effect and will respond even though no particular rule was indicated, because the comments were input with respect to the entire rulemaking (or statutory scheme).

Although the comments tended to use the phrase "fracking" without qualification, it was understood from context that they referred to HVHHF. Such comments came primarily from individuals, but this sentiment was also part of the official comment of Food & Water Watch, as well as that of some less formally structured organizations. There were also many comments, considered with respect to more specific or identifiable sections of the proposed rules, that also contained a variant on this sentiment; many of these could also be classified under this more general concern.

The essence of such comments was that Illinois should not allow or promote HVHHF under any circumstances. Some comments called for IDNR, pursuant to its protective and conservationist roles, to "ban" HVHHF or at least call for a ban on HVHHF, or to declare that there is no safe way to conduct HVHHF. Some representative samples of the general anti-fracking comments are as follows:

"*hydraulic fracturing is a completely insane and irresponsible practice*"

"*hydraulic fracturing is an inherently unsafe and toxic technology*"

"*fracking is clearly a disaster waiting to happen*"

"*fracking is a process that is totally unnecessary and extremely dangerous*"

"*fracking is bad for all of us*"

"*no fracking should be allowed in Illinois under any circumstances*"

"*only a ban on fracking will truly protect Illinoisans from fracking*"

"*avoid these problems altogether with a ban on fracking*"

A very few similarly general comments on HVHHF were also supportive or positive, such as the following representative comment:

"*I'm all for fracking*"

Response: The Department has considered, and referred to elsewhere in this Second notice draft, many comments, studies, reports, and other materials received with respect to more specific concerns and specific subsections of the rules. These references include a number of reports on the industry or the practice of HVHHF, very generally, and the Department addresses those concerns where they appear, and can be considered to have taken all those into account with respect to the response to this general subject area.

A ban on HVHHF by the Department would be incompatible with the statutory intent of the HFRA, which instead directs the Department to formulate rules and conditions for HVHHF, and evaluate applications for permits, and which contemplates that the State, through a task force, monitor HVHHF activity and revisit the topic after two years of experience. Section 1-99. The comments broadly opposing HVHHF give context and color to other comments, but because they are directly contrary to the HFRA, they cannot give rise to a rule. Section 1-130. A generalized concern in fundamental opposition to the subject of a rulemaking cannot be addressed by the rulemaking.

The comments broadly supporting HVHHF also cannot give rise to a rule. Section 1-15.

The Department's principal task is to implement the law via its rules (Section 1-15(e), Section 1-130) in accordance with its multiple statutory duties (see Response to comments on IDNR Role and Mission). It is well-established that a properly promulgated administrative rule or regulation is an expression of legislative policy, and an administrative body cannot, through rulemaking, negate the statute. The Department, however, has wide latitude to implement or regulate the statute, consistent with the statutory purpose.

Department Action: The Department understands why many persons used the rulemaking comment channels for expressing general opinion on HVHHF, but no change was made to the proposed rules in response to general opposition nor in response to general expressions of support.

Moratorium

Comments: The Department received many comments that did not concern a particular rule section, or even the HFRA *per se*, but which as a sole point or in conjunction with other concerns, advocated for a moratorium on high-volume horizontal hydraulic fracking in Illinois.

Representative comments:

> "*The safest and best approach for Illinois would be to enact a moratorium on the practice*"
>
> "*there is significant need for further study of horizontal hydraulic fracturing technology prior to [its] use in the State of Illinois*"
>
> "*Please enact a 5-year moratorium, to prove the technology is what the industry claims*"
>
> "*we should just place a moratorium on fracking if we truly intend to protect the water*"
>
> "*a responsible comprehensive approach would be to place a moratorium on fracking based on the possible and probable 'induced earthquake' risk while the broader scientific community can provide its assessment*"
>
> "*I encourage the IDNR to institute at least a temporary moratorium on fracking in Illinois until adequate independent research on associated risks is completed*"
>
> "*the time to be cautious is now…I really wish you would readdress a moratorium*"

Such comments came primarily from individuals but also included the official comment of the Illinois chapter of the Sierra Club.

The essence of such comments was that Illinois should place a temporary ban on HVHHF, of either specific or unlimited duration (the usual request was for two years or more), either explicitly or by refusing to issue permits, to reduce Illinois's risk while giving the state a chance to learn more from ongoing or future research, or from other states' experience, before proceeding with permitting HVHHF.

Response: While many commenters did not define or explain what they meant by a moratorium, a moratorium is typically defined as a delay or postponement of an action or proceeding.[1] The purpose of a moratorium is often to reduce the risks from further permitting of that activity, or to freeze the status quo so as to do so; it is the legislative or regulatory equivalent of an injunction. See, e.g., New York State Assembly, Bill No. A05424B passed on June 16, 2014 (moratorium on HVHHF for 36 months).

The concerns behind the request for a moratorium are based on caution, [2] and moratorium on an otherwise lawful or permitted activity is a legitimate regulatory tool.[3] However, IDNR believes it would have been inappropriate to issue a moratorium here, in an initial permanent rulemaking, that would directly counter the intent of the legislation.[4]

HVHHF is admittedly an activity where all the impacts and consequences are not yet known. However, as with the requests to "ban" fracking, an initial rulemaking that implemented a moratorium would be in fundamental opposition to the subject of that rulemaking, the purpose of which was to regulate HVHHF and, implicitly, to permit it under demonstrated conditions. Legislation that would have established a moratorium (*e.g.*, House Bill 3086, Senate Bill 1418), while garnering significant legislative support, did not pass.

In sum, the request for an immediate, preemptive moratorium cannot be addressed by this rulemaking, but was and is better addressed to the legislature.

The Department has considered with respect to this concern many comments, studies, reports, and other materials received with respect to more specific concerns and specific sections of the rules, and addresses those concerns where they appear, and can be considered to have taken all those into account with respect to this response.

Department Action: No change was made to the proposed rules in response to general call for immediate moratorium.

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[1] Black's Law Dictionary (9th ed. 2009)

[2] See generally, *The Precautionary Principle in Environmental Science*, Environ. Health Perspect. 109:871–876 (2001), available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240435/pdf/ehp0109-000871.pdf; Madelon Finkel, Jake Hays, and Adam Law, *The Shale Gas Boom and the Need for Rational Policy*. Am. J. Pub. Health: July 2013, Vol. 103, No. 7, pp. 1161-1163. doi: 10.2105/AJPH.2013.301285

[3] Some other jurisdictions with moratoria include Germany, http://www.bloomberg.com/news/2013-11-08/no-fracking-in-germany-for-now-backed-in-merkel-coalition.html, France, http://www.bloomberg.com/news/2013-10-11/fracking-ban-upheld-by-french-court-as-constitutional.html, Nova Scotia, http://metronews.ca/news/halifax/106301/fracking-on-hold-for-two-years-in-nova-scotia/, and Quebec, http://www.ibtimes.com/quebec-installs-outright-moratorium-hydraulic-fracturing-433930

[4] No HVHHF permits have issued while the rules are in development, and IDNR has had the benefit of additional study and research during the first notice period, but made no decision to delay whatsoever. Rules have been generated as fast as normal administrative process and deliberation allowed. See generally the Department's response to comments on Pace of Rulemaking.

Strengthen/Don't Strengthen the Rules

Comments: The Department received hundreds of comments that addressed specific areas of the rules, but also made the point that IDNR should "strengthen the rules" from the first notice draft. The Department also received many comments that did not address any specific section of the rules, but still made the same point, that IDNR should strengthen the rules from the first notice draft. Commenters included online comments, speakers at public hearings and many individual commenters, as well as at least one *ex parte* communication from the Green Caucus of the Illinois legislature. The essence of the comments was that IDNR must toughen the standards in the rules to more closely fulfill the spirit of the statute with regard to its manifested goal to protect public safety and health, and the environment. Representative comments:

> *"Please toughen these standards to more closely hew to the spirit behind the statute, as articulated by the environmental organizations who are most closely participating in the rule-making process."*
>
> *"As a citizen of Illinois, I do not feel that the regulations IDNR has proposed are sufficient to protect me and my family or our state's natural resources."*
>
> *"If the IDNR wants to accomplish the aim of the law and the safety of Illinois and its people, it must make these rules stricter and more expensive, or oil and gas companies will see them as nothing more than the cost of doing business."*

On the other hand, a few different commenters, such as the Illinois Oil and Gas Association, urged IDNR to resist pressure to enact HVHHF-specific regulations on issue areas like worker safety that are already covered by other laws and regulations. IOGA pointed out that the oil and gas industry is subject to myriad rules and regulations at the local, state, and federal level that cover nearly every aspect of their operations. IOGA recommended avoiding regulations that would create an "anti-business" image for IDNR and the state of Illinois that could serve to discourage capital investment.

Response: IDNR approached the second draft of the rules not with an eye toward either "strengthening" or "weakening" the rules – what strengthens one's position may weaken another's – but with an eye toward using the commentary to re-examine with an open mind its own work in comparison with the statute, to take into consideration science and facts suggesting standards for regulating and implementing the statute, and to produce a practical, workable, and enforceable framework to guide the Department, applicants, and the public going forward. The Department has, however, heard and given due weight to the essential inference from those asking to "strengthen the rules" that, in their opinion, the first draft did not sufficiently achieve the statutory protective purposes. The Department has also duly considered the comments urging the opposite.

Department Action: None in specific response to these comments.

Pace of Rulemaking

Comments: The Department received many comments concerning the pace of the rulemaking process. Commenters included several written submissions, as well as comments at public hearings and the petition filed by Frack Free Illinois with nearly 1,800 signers. The essence of these comments was that the rulemaking process was moving too quickly, both for the public to be able to provide input and for IDNR to understand all of the potential effects on public health and the environment.

Representative comments:

"I am concerned, first of all, with the speed at which this rulemaking is moving…Our state will have to live with the consequences for a long time to come if the rule does not provide sufficient protections from fracking and its impacts on the environment."

"Most especially, give yourselves adequate time to work. I have never understood why there is such a great rush about this."

"What's the hurry? Continue the moratorium. Stop caving in to big business!!"

On the other hand, the Department also received at least one *ex parte* comment stating that the rulemaking process was taking too long and thus delaying the onset of HVHHF activity in Illinois.

Response: IDNR has worked since the HFRA became law in June 2013 to draft the rules efficiently, while also ensuring that the statutory goals are fulfilled. There is no time prescribed by law for the adoption of any rules after the passage of a law; each bill is different. Some make only one or a few changes; some, like the HFRA, are over 100 pages long and enact an entirely new program.

The Department was already working on draft rules for the HFRA upon its passage and propounded an entire set of rules in October, approximately 10 weeks after the bill becoming law, and those were published on "First notice" in the Nov. 15 Illinois Register. That automatically triggered a 45-day public comment period, which actually extended until January 3 because of intervening holidays.

Regarding the comments that the rules are moving too quickly, if IDNR would have taken longer to propound the first draft, it would have been longer before the draft rules were available for public discussion. The Department was given authority under numerous provisions of the statute to adopt rules and under some was directed to adopt rules. Secs. 1-15(e), 1-50(c), 1-55(c), 1-77(l), 1-96(b), and 1-130. Illinois does not have a "waiting period" and the first draft rules, once propounded, got the public process rolling.

IDNR, during the public comment period, added three public hearings (after the first two hearings were scheduled) so that citizens representative of different communities could be heard.

Four of the five hearings were held in the southern half of Illinois. The Department has not before in its memory held multiple hearings on a rulemaking, let alone five. Subsequent to the hearings and the end of public comment, the Department has worked thoroughly to review the comments and further research the issues.

With respect to the comments that IDNR is moving too slowly, no general law requires an agency to propose rules within any set timeframe after passage of a law. For a large, new program, six months or even a year after passage is not uncommon; a Department may seek feedback even before it goes to first notice. The Illinois Administrative Procedure Act then allows up to a year from first notice of a rule until its adoption by a Department. Review of recent IDNR rulemakings shows that the normal time between the "first notice" of a rulemaking and its adoption by IDNR is, on average, about five months; every rule requires at a minimum 45 days for public comment, there is typically sometime after that to revise the rule, and then the process of JCAR review and Department final approval takes, typically, 30-60 days.

That “typical” timeline above is for rules that have only a few new lines and receive only one or two public comments. The statutory allowance of a year, by contrast, anticipates and allows for the situations such as this, where the rulemaking is complex, or the revisions after first notice may be extensive, or the public comment is voluminous, or – as here – all of the above.

The characterization in some accounts of the HFRA as “regulations” perhaps confused some who are not familiar with the difference between legislation and rulemaking. While there is no waiting period that requires IDNR to extend rulemaking, neither is there any trigger that requires commencing rulemaking at any point. There are numerous instances of statutes for which rules were not promulgated for years, or where no rules exist.

As noted above, IDNR began rulemaking expeditiously. The subject matter of this rulemaking is long and complex, has both an extensive procedural aspect and an intense substantive aspect, and has required both technical and legal analysis in addition to the sheer logistics of processing and lawfully giving due consideration to a record-breaking number of public comments received during first notice, which did not end until the beginning of 2014. IDNR has also consulted with IEPA, ISGS, and IEMA to better understand the comments submitted and to explore options for improving the program to be implemented. IDNR also held internal meetings with its Office of Legal Counsel, Office of Water Resources, and Office of Oil and Gas Resource Management. IDNR devoted extensive resources to the rulemaking and worked diligently at the task, mindful every day of its importance to the people of Illinois, but also attending to the myriad other duties entrusted to it, many of those time-sensitive.

That some who oppose the advent of HVHHF found the pace too fast and that some who desire its introduction to Illinois found it too slow is understandable, but on retrospection IDNR finds no aspect of the pace of rulemaking reason to revisit any of the first notice rules. IDNR finds the time devoted to the task appropriate, and the timing of both first notice and second notice drafts completely consistent with the work IDNR had to do.

Department Action: The rulemaking is timely filed on second notice.

Inability to Regulate

Comments: The Department received over 8,000 comments that, in addition to or separately from comment on specific draft rule subsections, declared the impossibility of safely regulating HVHHF. These comments expressed the belief that difficulties inherent to the industry and practice made it impossible for anyone to do the job. Commenters included those who used the Sierra Club web form, the CREDO submitters, and at least four dozen unaffiliated individuals, including a number who spoke at public hearings.

Representative comments as to HVHHF being generally insusceptible of regulation were as follows:

> *"No regulations can make fracking safe. It poses inherent dangers to public health and safety, inevitably pollutes water and air, and accelerates climate change."*
>
> *"The HFRA is a regulatory floor, and in no way makes high-volume hydraulic fracturing safe."*
>
> *"You guys have basically been given the impossible task of regulating a technology that has already been exempted from seven different major essential federal environmental health protections.....Obviously fracking was never supposed to be regulated."*
>
> *"There is no such thing as safe fracking."*
>
> *"The regulations cannot be written strong enough to protect our environment."*
>
> *"I have some sympathy for DNR today because you've been charged with an impossible task. You've been asked to make fracking safe, but we all know that there's no evidence that fracking can be made reliably safe."*
>
> *"No matter how strict the regulations on fracking are they will never stop human error. In the case of drinking water, soil, and air, we cannot afford catastrophic error!"*

Response: All human activities, of course, have some inherent risk. If by "safe" we mean reducing the chance of mishap, industrial accident, injury, or worse to zero, the commenters are correct. However, reduction to zero risk is not IDNR's charge. The Department has been charged with protecting public health and safety, property, wildlife, aquatic life, and the environment. Protection is not a guarantee of no harm. It is an effort to safeguard, but nothing is fail-safe.

The legislature in passing the HFRA declined to ban HVHHF, and instructed IDNR to fashion rules that would serve the statutory purposes. IDNR acknowledges the challenges in this task but has done this, and, after hearing comment from thousands of Illinoisans, redoubled its effort to ensure that risks inherent in HVHHF are reduced further. The Department is convinced

that responsible operators who take the aims of the HFRA to heart, thoughtfully prepare the necessary plans in consultation with local authorities, and operate their well sites with best practices will end up with a superior safety record. The Department has heard the concerns about HVHHF safety, shares the commenters' desire that the activity be conducted with the highest regard for the safety of Illinoisans and the preservation of its irreplaceable natural resources, and hopes that that concern is evident throughout its response to the comments, and in the modifications to this rulemaking.

Department Action: None in specific response to these comments.

Comments: At least 200 public comments specifically questioned the ability of IDNR to safely regulate HVHHF in Illinois. These comments, while often combined with disbelief as to the ability of any governmental entity to safely regulate HVHHF, nevertheless differed in kind from that category in that the focus was not on difficulties inherent to the industry and practice, but specifically on this Department's budget and personnel constraints, logistical capacity, or similar practical challenges.

This subject usually was brought up by individuals, including many at the public hearings, but was also formally raised by the Nuclear Energy Information Service, by Food & Water Watch, and by Frack Free Illinois. The following comments are representative of the hundreds received:

> *"given the thousands of frack sites under consideration for licensing, coupled with State financial woes and budget cuts to critical safety-related agencies, it seems highly irrational to accept the notion that State Agencies will have the person power to monitor this industry at a level protective of the public health and safety."*
>
> *"You need more offices, more staff, more inspectors, more testing."*
>
> *"We have made many calls to my local Department of Natural Resources Office. Calls to the DNR regarding … violations are met with 'We have no jurisdiction over that,' or a DNR employee will come out and write a minimal fine to the company. …The amount of well inspectors and law enforcement specific to this industry in this area is grossly inadequate."*
>
> *"[I have] concerns that there is no Department of Hydraulic Fracturing at IDNR and that capabilities of personnel at IDNR are inadequate to the ways of hydraulic fracturing."*
>
> *"We're entering a new type of horizontal high volume fracking drilling that I worry that this Department is not going to be able to effectively regulate, effectively monitor and effectively protect our natural resources…I don't see any biologists…I don't see any zoologists."*
>
> *"We doubt that the IDNR will have the capacity to enforce the rules."*

Response: The Department considered these comments in conjunction with its many statutory duties, and also considered settled law on how administrative agencies may administer statutes, especially in light of other statutes. The Department also considered its experience as regulator, rulemaker, and steward on behalf of Illinois citizens with respect to resources possibly impacted by HVHHF. The Department also looked at the experience of comparable agencies in states that are already regulating HVHHF operations.
Among specific facts taken into consideration with respect to the comments were the following:

- Pace of growth in number of well permits in comparable states
- The existing IDNR backlog in permitting, inspecting, and enforcing the simpler conventional oil and gas drilling regulatory regime
- The need to hire ahead of receipt of funds from permit applications
- The estimated quantity and complexity of material in anticipated permit applications, and the staff-hours it will take to process those applications with the expected thoroughness
- The likelihood of challenges to permit applications, requiring public hearings
- The possible range of volume of public comment on individual applications
- Statutory time constraints on the application review process
- The number of inspections and reviews of submitted forms that will be required during the well drilling and construction process
- The unknowns of southern Illinois geology especially with respect to seismicity
- Unknowns re: existing wells and pathways for fluids and gas, including abandoned oil and gas wells, incompletely or imperfectly plugged wells, broken or deteriorated wells, water wells, coal seams, faults, and fissures
- The absence of baseline data on groundwater and on the quality of freshwater sources on private land, and the opposition or resistance of some stakeholders to mandatory baseline testing
- The hiring challenge that IDNR faces in competing with the private sector for expertise
- The scarcity of qualified and independent personnel willing to relocate to Illinois

The Department will of course make full effort to comply with the law and has taken or is taking steps intended to address the above vulnerabilities in the process. The Department's Office of Oil and Gas Resource Management, while obviously not having confronted, before, some aspects of HVHHF, has considerable experience and expertise in siting, drilling, well construction, storage, transportation, and waste disposal issues, and has enforced thousands of violations of the Oil and Gas Act. Additional personnel are being hired for inspection, technical review, legal investigation, and regulatory compliance, specifically for HVHHF.

By definition, overall concern is legitimate if the volume of applications and operations were to exceed OOGRM capacity. The Department considered means and forms of limiting applications in case of unmanageability, but ultimately found that the legislature did not intend the use of such regulatory tools. The Department believes that by the onset of actual HVHHF applications and operations, it will have the technical capability to regulate the program, and that

it can keep pace with industry growth, and that through partnering with other state agencies such as the Illinois Environmental Protection Agency, the Illinois Emergency Management Agency, and the Illinois Department of Public Health, the protections sought to be employed by the HFRA will be in place, and backed by appropriate expertise.

The promise of the legislation was that the two-year review period would result in the legislature revisiting the issue. The legislature declined to revisit the issue via a number of bills introduced in the spring 2014 session, and instead reduced to zero the budget sum for the Department's Office of Oil and Gas Resource Management. If the factors identified result in difficulty, the Department is confident the legislature will address the problems.

Department Action: None.

245.100 Applicability/Retroactivity

Comment: The Department received over 6,000 comments concerning Rule Subsection 245.100 as it relates to the applicability of the HFRA, including whether it applies retroactively to existing wells.

Commenters included the Illinois Attorney General's Office, Heart of Illinois Group/Sierra Club, IEC/NRDC/ELPC/FIP/RHA, ILOGA, the Central Illinois Global Warming Solutions Group, Fair Economy Illinois, Frack Free Illinois, Illinois People's Action, Faith in Place, Illinois Section American Water Works Association, ELPC, Peoria Families Against Toxic Waste, Prairie Rivers Network, SAFE, NRDC/ELPC (at public hearing), and thousands of individuals, most of those signing on to organizational statements or using others' templates. The essence of most comments was that all high volume fracking wells should be subject to the same rules. Many argued that the regulations should apply to wells that predate the current regulations. The environmental coalition comment acknowledged that bringing all existing sites under these regulations may be complicated.

Response: The concern is valid and this rulemaking can address the concern on second notice. The Department, in the First notice draft of this subsection, was attempting to reconcile the statutory language with the fact that certain oil and gas wells were already in operation at the time the HFRA was passed. After considering the comments, the Department agrees that the statutory language clearly applies to existing wells: "[the HFRA] applies to all wells where high volume horizontal hydraulic fracturing operations are planned, *have occurred*, or are occurring in this State." Section 1-20 (emphasis added).

IDNR recognizes the difficulties in applying certain aspects of the regulations to existing wells; as a result, IDNR will not apply the rules to require a permittee to "retrofit" a particular well. However, the Department will apply the Act and the rules to ongoing activities to the extent feasible, particularly the reporting requirements. The Act and rules will, of course, apply to future HVHHF activities.

Despite the large number of comments, the Department does not believe that this will be a common or widespread problem. The Department knows of only one pre-Act HVHHF permit. Going forward, if the owner or operator of a pre-existing horizontal or vertical well desires to attempt HVHHF operations, the operator will be required to register and obtain a permit pursuant to the statute (Section 1-30(a)) and administrative rules (Section 245.120). At this time, the Department anticipates that few pre-existing wells will be converted to HVHHF wells. If a well has already been built without benefit of all the inspections and other procedural safeguards the Act contemplates, it would be difficult to meet all of the requirements to demonstrate safety.

Department Action: The rule is modified to read as follows:

a) High Volume Horizontal Hydraulic Fracturing Operations
This Part applies to all horizontal wells in which any single stage of a stimulation treatment using more than 80,000 gallons, or in which the total amount of all stages of stimulation treatment using more than 300,000 gallons, in the pressurized application of hydraulic fracturing fluid to initiate or propagate fractures in a geologic formation to

enhance extraction or production of oil or gas *are planned, have occurred* ~~since June 17, 2013~~*, or are occurring in this State* (Section 1-20 of the Act).

b) Medium Volume Horizontal Hydraulic Fracturing Operations
Subpart L applies to all *horizontal wells* in which the total amount of *all stages of stimulation treatment using more than 80,000 gallons but less than 300,001 gallons* in the pressurized *application of hydraulic fracturing fluid to initiate or propagate fractures in a geologic formation to enhance extraction or production of oil or gas* are planned, have occurred ~~since June 17, 2013~~, or are occurring in this State (Section 1-98 of the Act)

245.100 Non-Water Fracturing

Comments: The Department received hundreds of comments concerning rule subsection 245.100 as it relates to non-water "fracks." Commenters included the environmental coalition's group submission, SAFE, Fair Economy Illinois, Frack Free Illinois, Illinois People's Action, Peoria Families Against Toxic Waste, Roosevelt University's RISE Organization, NRDC/ELPC, and at least 44 individuals. The essence of the comments was that hydraulic fracturing operations that use gases (specifically nitrogen) or foams instead of liquids ("non-water fracks") are increasingly viable, but are not addressed by the administrative rules. The main concern is that this creates a loophole for the non-water fracturing operations insofar as the requirements of the HFRA would not apply to them.

A few of the comments consider non-water fracks to be preferable to liquid fracturing operations ("water fracks"), and suggested that IDNR take action to encourage permittees to pursue them. The vast majority of comments, however, considered non-water fracks to be just as problematic as water fracks, and suggest that IDNR adopt rules to ensure these activities are subject to the same regulations. Many of these comments noted that the threshold numbers for water fracks (80,000 per stage or 300,000 gallons total) would not apply to non-water fracks, both because gases like nitrogen are not generally measured in gallons and because the non-water fracks would have different chemical properties that might require different thresholds.

Response: The concern that the rules do not set a separate threshold for non-water fracks is facially valid, and the rulemaking must address that concern. The administrative rules, as proposed, address part of the concern. "Hydraulic fracturing fluid" is defined in the rules as "the mixture of the base fluid and all the hydraulic fracturing additives, used to perform hydraulic fracturing." 245 Ill. Admin. Code 245.110. The rules then define "base fluid" as "the continuous phase fluid type, including, but not limited to, water or nitrogen gas used in a high volume horizontal hydraulic fracturing operation." 245 Ill. Admin. Code 245.110.

As such, the use of nitrogen is specifically contemplated and addressed by the rules. Moreover, the use of the "including, but not limited to" language (which was also used in the HFRA at 225 ILCS 732/1-5) is inclusive, so even though other gases or foams are not specifically mentioned, they are, in fact, regulated under IDNR's rules.

The Department has considered not only the comments, but some of the ample available articles and literature on non-water fracturing, including in particular "Waterless Fracking: Not Yet a Justifiable Alternative to Hydraulic Fracturing" by Glenn Selker, which was provided by multiple commenters. Also of use to the Department was public industry information, such as Halliburton's disclosure of formulations for some of its projects.[1] The Department also consulted a consulting engineer from Carnegie-Mellon, and considered discussions of which it was aware between the Office of Attorney General and one or more industry representatives.

The Department finds that, in general, the use of gas rather than water is a positive rather than a negative in hydraulic fracturing for oil and gas. Earth's atmosphere is primarily nitrogen, and nitrogen is not considered a greenhouse gas.[2] So long as nitrogen is not combining with other elements to form noxious compounds, its escape into the atmosphere is largely if not totally

benign.[3] Most "gas fracs" are not in fact entirely gas, but a combination of gas, water, chemicals, and of course proppant. To the extent that gas replaces water in hydraulic fracturing, it reduces the amount of water that is required, consumed, or removed from the hydrological cycle, and/or required to be captured as flowback. Reducing water use and water flowback, in turn, has the benefit of reducing the amount of truck traffic to and from a well site, which in turn lowers noise and pollution and impact on the surrounding area.

Based on review of all the definitions in the statute, the Department believes that the drafters of the legislation were aware of the possibility of gas being substituted for water in hydraulic fracturing, and intended to regulate all HVHHF (or "slickwater frac jobs") regardless of the type of base fluid used or whether it was shipped or injected in liquid or gaseous state. Note that nitrogen is not the only gas being used or considered for use in hydraulic fracturing. Others include carbon dioxide, propane, and natural gas itself. Some of these have not yet been proven practical for HVHHF, and some have considerable carbon footprints. The Department will consider the environmental impact on a case-by-case basis.

To the extent that chemicals and proppant are prime concerns, the substitution of gas for some or most of the water in hydraulic fracturing does not change the equation. Nor does it alter the amounts of produced water originating from the formation, the amount and nature of drill cuttings, or many other aspects of concern about HVHHF that prompted regulation.

The question, then, is how to treat gas, substituted for water or fluid in hydraulic fracturing, in administration of the HFRA. Liquid nitrogen expands at about a 695:1 ratio and commercial compressed nitrogen ships, typically, in cylinders at 2000 psi[4], expanding at about a 136:1 ratio. Because nitrogen reduces to roughly 1/700 its volume when liquefied, a million gallons of gaseous nitrogen if liquefied take up less than 1,450 gallons. Neither the liquid volume nor the volume of compressed gas are useful for purposes of determining whether an HVHHF permit is needed, or disclosing volumes under the HFRA or the rules. However, for the Department to calculate and publish conversion formulae for each and every possible formulation or combination of gas – nitrogen, carbon dioxide, or anything else in compressed or liquid or gel or foam form – would be inefficient.

Rather, the Department will use and require (in application and permitting) the uncompressed, unpressurized, surface-level, or the "standard temperature and pressure" (i.e., at atmosphere) volume of any gas, whether or not added to water or other liquid. The Department is aware of no literature indicating that the use of gas results in a smaller volume of borehole and fissures – the total space into which water would otherwise be forced – and the published results of gas or foam fracs confirms that gas injected into a well expands to the volumes that a water-based fracturing would require. The onus will be on the applicant to calculate and disclose the "uncompressed" volume, based on whatever type of gas the applicant plans to use.

Department Action: Section 245.110 Definitions is amended as follows:

"Base fluid" means the continuous phase fluid type, including, but not limited to, water, nitrogen <u>gas, or other</u> gas *used in a high volume horizontal hydraulic fracturing operation.* (Section 1-5 of the Act), <u>"Base fluid" shall also include both hydrocarbon and non-hydrocarbon fluids in gas and</u>

or liquid form used in high volume horizontal hydraulic fracturing operations. Calculation and reporting of volumes for all base fluid shall be for the normal volume that the base fluid would occupy at 20° C and one atmosphere (National Institute of Standards and Technology Standard Temperature and Pressure, or "STP"). If part or all of the base fluid will contain any component that at STP would exist in a gaseous state, then, regardless of whether said component is transported or injected or combined in any other form or at any other temperature or pressure, or whether when mixed with other substances the component forms a foam or gel or other dispersion, the volume of that component shall be calculated and reported as the uncompressed volume at STP for all purposes under these rules.

Rule 245.210(a)(6) is modified as follows:

6) High Volume Horizontal Hydraulic Fracturing Operations Plan*A detailed description of the proposed high volume horizontal hydraulic fracturing operations, including, but not limited to, the following* (Section 1-35(b)(6) of the Act)*:*

A) *the* formations *affected by the high volume horizontal hydraulic fracturing operations, including, but not limited to, geologic name and geologic description of the* formations *that will be stimulated by the operation* (Section 1-35(b)(6)(A) of the Act), and a description of the confining zone and the formations constituting or contributing to that zone, including, but not limited to, a description of the lithology, extent, thickness, permeability, porosity, transmissive faults, fractures, water or water source content, and susceptibility to vertical propagation of fractures~~,~~ of the confining formations~~, if known after reasonable inquiry~~;

B) *the anticipated surface treating pressure range* (Section 1-35(b)(6)(B) of the Act);

C) *the maximum anticipated injection treating pressure* (Section 1-35(b)(6)(C) of the Act);

D) *the estimated or calculated fracture pressure of the producing and confining zones* (Section 1-35(b)(6)(D) of the Act);

E) *the planned depth of all proposed perforations or depth to the top of the open hole section* (Section 1-35(b)(6)(E) of the Act); and

F) the anticipated type, source and volume of the base fluid anticipated to be used in the high volume horizontal hydraulic fracturing treatment. The applicant must calculate the total estimated fluid volume that will be used for the hydraulic fracturing treatment at downhole conditions. The volume estimate for any base fluid component that at 20° C and one atmosphere would exist in a gaseous state must use the volume that that component of the fluid would occupy at standard temperature and pressure, not its volume in compressed or liquefied form.

[1] See *Pennsylvania Foam Frac Formulation*, Halliburton (March 30, 2012), http://www.halliburton.com/public/projects/pubsdata/Hydraulic_Fracturing/disclosures/Pennsylvania_FoamFrac_Formulation.html.

[2] United States Environmental Protection Agency. *Overview of Greenhouse Gases* (August 4, 2014), http://.gov/climatechange/ghgemissions/gases.html.

[3] Nitrous oxide is a potential greenhouse gas emission that can occur when nitrogen mixes with soil. See *Id.*

[4] See, e.g., *Teck & Safety Data: Volume of Gas in a Cylinder*, Scott Specialty Gases, (Aug. 18, 2014), http://www.scottecatalog.com/scotttec.nsf/74923c9ec562a6fb85256825006eb87d/79aab9774bd29d3a8525699f0050436a.

245.110 Definitions

Comments: Besides the many comments on "aquatic life," "well site," "landowner/owner," and various undefined terms, the Department received hundreds of comments on various other definitions in 245.110. Commenters included IIRON Student Network, Illinois People's Action, IPC, Chicagoland Against Fracking, Fair Economy Illinois, Peoria Families Against Toxic Waste, IPA, ONE Northside, SAFE, The Nature Conservancy, IPHA, CS Geologic LLC, Illinois Section American Waterworks Association, ILOGA, the IMA, IEC/NRDC/ELPC/FIP/RHA and dozens of individuals.

Under this section, there was no single overriding concern, but rather a few more technical concerns. Those concerns are summarized below and considered in turn:

- *The definition of "stimulation treatment" conflates high volume horizontal hydraulic fracturing operations that the HRFA sought to regulate and unnecessarily expanded the scope of the law. In particular, IPC thinks "stimulation treatment" should have a separate definition that recognizes the wider range of operations it would cover.*

Response: The Department agrees that there is a broader range of stimulation treatments and activities at well sites than simply the discrete act of pumping base fluids into a well. IDNR has an interest in regulating, or at least monitoring, those activities. The definition should reflect that. IPC has provided a broader definition that the Department finds useful. See language below.

Department Action: Definition of "stimulation treatment" is amended as follows:

"Stimulation treatment" ~~shall have the same definition as "hydraulic fracturing".~~ means any physical, mechanical, or chemical means, or any combination thereof that is used to initiate, restore, or improve the productive capacity of an oil or gas well by means of fracturing or otherwise applying force or matter to a formation.

- *The definition of "real property surface interest" creates an entirely new interest in property that goes beyond the HFRA.*

  Response: See IDNR's response to Section 245.110 Landowner/Property Owner.

  Department Action: None.

- *The definition of "aquifer" is too restrictive, as it is based on economic usefulness and does not clarify if the 70 gpm standard applies to each individual water source or is cumulative.*

Response: The definition in the administrative rules, including the economic component, was incorporated directly from a specific definition in the HFRA (Section 1-5). No further definition is necessary, as the rule includes a limitation that directly references an ISWS map.

Department Action: None.

- *The separate definitions of "flowback water," "flowback period," and "produced water" are unnecessary as they all essentially describe the same concept, and that concept would be better regulated as a whole. As such, the separate definitions are arbitrary.*

Response: The HFRA explicitly defines "flowback period" and "produced water" (Section 1-5) and IDNR incorporated these definitions into the rules. Although these are related concepts, and flowback and produced water arguably overlap, the HFRA makes the distinction based in part on the phase of well development. IDNR agrees that the distinction is useful.

Department Action: None.

- *Definitions of "certified local health department" and "local public health jurisdiction" are needed.*

Response: In drafting, the Department considered using the IPHA definitions, but because "local health" and "health department" were not terms used in the rules, the Department saw no need for such a definition. If these rules are modified as proposed, certain notices will be made to local health departments. The Department agrees further definitions are useful.

Department Action: the following definitions are included:

<u>"Certified local health department" means a local governmental agency that has been certified by the Illinois Department of Public Health to meet the requirements set forth in Subparts C and D and Section 600.210 of 77 Ill. Admin. Code 600.</u>

- *The definition of "pollution or diminution" should clarify that it is relative to the baselines established pursuant to 245.600.*

Response: See IDNR's response to 245.620.

Department Action: None.

- *The definition of "ordinary high water mark" should include the word "surface" for clarity.*

Response: No change is needed in this definition. First, the definition's subsequent references to rivers, lakes, etc. is clear that this applies only to surface water. Second, IDNR developed this definition in consultation with IDNR's Office of Water Resources, and the proposed definition is well-established under Illinois law.

Department Action: None.

- *The definition of "medium volume hydraulic fracturing operations" should change the word "in total" to "cumulatively."*

Response: The "in total" language must be preserved to maintain consistency with the definition of "high volume horizontal hydraulic fracturing operations," which comes directly from the HFRA (Section 1-5).

Department Action: None.

- *The definition of "health care services" should be limited to health effects associated with the regulated activity.*

Response: Such a limitation is not needed. The rule applies only to health care services received "for an illness or injury diagnosed by the health professional to be caused by exposure to any chemicals used in high volume horizontal hydraulic fracturing operations that are subject to a claim of trade secret by a permittee or contractor." See 245.110.

Department Action: None.

- *The definition of "fresh water" sets too high a standard (10,000 ppm of total dissolved solids) as water that is above 1,000 ppm is rarely suitable for the uses listed in the definition.*

Response: No change to the rule is needed. First, the definition was taken directly from the HFRA (Section 1-5). Second, the provisions of IDNR's rules that use the phrase "fresh water" involve the testing, monitoring, reporting, and identification of fresh water. A higher threshold would require more water to be tested, monitored, reported, and identified. This definition is in the State's best interest, as it gives IDNR great ability to protect water supplies and is consistent with the purpose of the HFRA.

Department Action: None.

- *The definition of "base fluid" should include carbon dioxide and propane to recognize other base fluid compositions.*

Response: IDNR agrees that the definition of "base fluid" should be construed broadly to include carbon dioxide or propane, which may be used in base fluid compositions. This is consistent with the statute, because the statute indicates that the fluid type is not limited to water alone. Section 1-5. This change is reflected in IDNR's response to 245.100 Non-water Fracturing, which contains more information on this issue.

Department Action: None.

- *The definition of "completion combustion device" should exclude the phrase "ignition device" as that does not accurately explain the scientific process.*

Response: IDNR incorporated the definition that is used in the HFRA, so it cannot be amended by rule at this time. On this issue, IDNR recognized the discrepancies between the definitions of "completion combustion device" and "flare" in the statute. (Section 1-5). To try

and determine the legislature's intent for the difference between the two, IDNR consulted with IEPA and researched the U.S. EPA regulations on this issue. The NSPS (Subpart OOOO) defines "completion combustion device" using the same language as the U.S. EPA rules:

> § 60.5430 What definitions apply to this subpart?
>
> ***
>
> Completion combustion device means any ignition device, installed horizontally or vertically, used in exploration and production operations to combust otherwise vented emissions from completions.

As a result, IDNR recognizes that the definition may not be the most common terminology used in practice. However, the rule incorporates the definition used in the statute and the definition that will be used by IEPA in its permitting program. For more information on this issue, see IDNR's response to comments on Sections 245.845 and 245.900.

Department Action: None.

- *The definition of "diesel" includes substances that are not universally recognized as diesel.*

Response: IDNR incorporated the definition directly from the HFRA and finds the definition workable. It is consistent with the statutory purpose to err on the side of over-inclusion rather than to create opportunity for technical loopholes.

Department Action: None.

- *The definition of "high volume horizontal fracturing" could unnecessarily expand or limit the scope of the act.*

Response: In its first draft, IDNR incorporated the definition set out in the statute (245.110): "High volume horizontal hydraulic fracturing operations" means all stages of a stimulation treatment of a horizontal well as defined by this Act by the pressurized application of more than 80,000 gallons per stage or more than 300,000 gallons total of hydraulic fracturing fluid and proppant to initiate or propagate fractures in a geologic formation to enhance extraction or production of oil or gas. Section 1-5.

Since the threshold for high volume horizontal fracturing is born out of the HFRA, it is beyond the scope of the rulemaking to limit or expand it further. The addition of a definition for medium volume horizontal fracturing simply clarifies the scope of the rules for applicants and the public.

The Department recognizes that the Hydraulic Fracturing Regulatory Act does not in fact regulate all hydraulic fracturing, and in particular does not regulate the type of hydraulic

fracturing that advocates assert “has been done for 60 years.” The Department would support legislation to include all types hydraulic fracturing within the ambit of one statute, especially given that most spills and contaminations come not from the fracturing itself but from the failure of cement or casing at surface or intermediate levels.

Department Action: None.

245.110 Definitions – Aquatic Life

Comments: The Department received nearly 400 comments concerning the definition of "aquatic life" in Rule Subsection 245.100. Most comments were generated as a result of an organized effort by Fair Economy Illinois, but commenters were also affiliated with (or included) Illinois People's Action, Illinois Wesleyan University, Peoria Families Against Toxic Waste, SAFE, RISE, IIRON Student Network, and U Chicago Climate Action Network. The environmental coalition representing thousands of Illinoisans addressed this point in its formal joint comment, as did NRDC/ELPC's preliminary comment submitted at public hearing. Online comments were also submitted by dozens of unaffiliated individuals.

The essence of all the comments was that the definition of "aquatic life" ("all fish, reptiles, amphibians, crayfish, and mussels") is too limited and narrow and should be expanded to include the larger aquatic ecosystem, including other plant, animal, and micro-organism species. Most of the comments suggested specific scientific standards be developed to include biological standards, high quality water resources, modified or limited water resources and stressor identification. One suggestion was to adopt the definition from the Pollution Control Board's water pollution regulations, at 35 Ill. Adm. Code 301.220.

Response: The Department agrees with the intent of the comments, but believes that the solution should be statutory rather than via rulemaking. In the First notice draft of this subsection, IDNR incorporated the statutory definition, which provides that "aquatic life" means "all fish, reptiles, amphibians, crayfish and mussels." Section 1-5. This definition, at the time the Act was passed, was similar to that found in the Fish and Aquatic Life Code (515 ILCS 5/1-20), paralleling a definition of "wildlife" found in the Wildlife Code. The Department notes that the Fish and Wildlife Code was recently amended by Public Act 098-0752 to remove reptiles and amphibians. A more expansive definition appears in the Fish and Aquatic Life Code, that also includes crustaceans, algae or other aquatic plants and invertebrates, but that definition is for Section 20-90 (aquaculture permits). Thus, Illinois law now contains at least three different definitions of "aquatic life" in different statutes.

IDNR understands the appeal of using a definition borrowed from the old Fish and Aquatic Life Code, but also notes that that definition of "aquatic life" is designed mainly to regulate the taking, propagation (hatching, breeding, raising, etc.), and transportation of aquatic life. For purposes of the HFRA, the definition in the PCB's water pollution regulations (cited above) would indeed be more relevant to the potential environmental impacts to water-based life forms. However, adopting that in the rules would create a conflict between the rules and the Act.

Not including additional forms of life in the definition, however, does not preclude the Department from taking into account, in its HVHHF permitting or enforcement, harms or potential harms to aquatic plants or microorganisms, or from considering potential impacts to such aquatic organisms that citizens bring to the Department's attention. Moreover, the statutory duties of IDNR require the Department to protect all flora and fauna. 20 ILCS 805/805-105. The Department's ability and resolve to do this does not turn on one definition in one statute.

Department Action: No change is made to the proposed rule definition of "aquatic life."

245.110 Definitions – Landowner, Owner

The Department received dozens of comments concerning the definition of "landowner" in Subsection 245.110, primarily from individuals but also including the Nature Conservancy. The essence of the comments was that the administrative rules do not adequately represent private property rights in a number of ways. Among the issues raised were the following:

- *The rules deprive property owners of their property rights without notice and compensation*
- *The term "landowner" in 245.210(a)(16)(A), 245.250(a)(1)(A), and 245.270(a)(1)(A)(i) deviates from the statutory definition (Section 1-5) because it specifies only those landowners with "surface interests"*
- *The rules do not require the applicant to obtain consent from property owners, with either surface or subsurface rights, where the well will be drilled*

The commenters provided a number of recommendations with respect to these property issues:

- *The definition of landowner should include the holder of a conservation easement*
- *The scope of the definition should include more than those with "surface rights"*
- *The permit application should require the applicant to obtain consent from any owners of real property on which, under which, or through which the vertical and horizontal wells are to be drilled*
- *Require that an applicant notify all owners of real property on which, under which, or through which the vertical and horizontal wells are to be drilled*

Response: The Department understands the concerns raised in the comments, which arise from the interplay between the Illinois Oil and Gas Act and the HFRA, minor inconsistencies within the HFRA, and Illinois case law regarding property rights.

First, the HFRA provides different definitions of "landowner" and "owner." The rules definition of Landowner is verbatim that of the HFRA:

> "Landowner" means the legal title holder or owner of real property and includes an owner of an undivided interest, a life tenant, a remainderman, a public or private corporation, a trustee under an active trust, and the holder of the beneficial interest under a land trust. "Landowner" does not include a mortgagee, a trustee under a trust deed in the nature of a mortgage, a lien holder, or a lessee. (Section 1-5 of the Act; Section 245.110).

Although included in the definitions section, 1-5, the HFRA then never uses the term landowner again.

The definition of "landowner" in the HFRA also uses, within the definition, the word "owner." That term, however, is defined in the statute – and in the first notice draft of the administrative rules – as having the same meaning as provided in Section 1 of the Illinois Oil and

Gas Act, which is limited to "the person who has the right to drill into and produce from any pool [of oil or gas]." 225 ILCS 725/1. Meanwhile, in numerous instances the HFRA also uses the phrase "owner of real property." E.g., Section 1-35(b)(16), Section 1-40(c)(1).

The Department on First notice attempted to resolve the incongruities between the terms "landowner," "owners of real property" and "owner" by use of the "surface interest" phrasing that caught the attention of the commenters here. On review, and on closer analysis of how "owner" is used both in the Oil and Gas Act and throughout the HFRA, the Department elects a different method, so that the definition does not unintentionally over-restrict the class of persons intended.

In the Oil and Gas Act, "owner" refers exclusively to someone who has mineral rights. Those rights may well derive from surface interests, but that is not how the term is used. In all instances but one, "owner" is used in the Oil and Gas Act to refer to someone with drilling rights into a pool; in one instance, the term refers to someone with coal mining rights. *See* 225 ILCS 725/18 ("the owner of any working coal seam").

In the HFRA, the term "owner" is used over and again in contexts where it cannot possibly mean simply a person who has oil or gas drilling rights. Just a few examples: Sec. 1-25(a)(1) refers to "the owner of the residence" for purposes of setbacks. Sec. 1-25(a)(3) refers to the owner of a water well or developed spring. Sec. 1-80(b) refers to the "owner of the water source." Sec. 1-80(d) refers to the "owner of the private property [on which a well or pond is 'wholly contained']." Sec. 1-35(b)(10)(E) has a similar reference to "the owner of the property." Sec. 1-75(e)(4)(A), in encouraging green completion methods, refers to "the surface owner of the well site." In none of these examples would substituting the Oil and Gas Act definition of "owner" make any sense at all.

The Department believes that this inconsistency results from the HFRA drawing on multiple sources, including definitions borrowed from the Oil and Gas Act, rather than from any intent to confuse or limit. The Department does believe that in the context of rights to drill into a pool, the term "owner" should have the meaning of that in the Oil and Gas Act – but that it makes little sense otherwise.

The Department will clarify by amending the definition of "owner" in the definitions section.

"Real property" has a long and well-understood meaning under Illinois law and case law and requires no additional administrative definition by the Department. Real property may or may not include surface rights. In general, an owner of land is entitled to the surface and all that is below it (*Save Our Little Vermillion Environment, Inc. v. Illinois Cement Co.*, 311 Ill. App. 3d 747 (3d Dist. 2000)). Minerals lying beneath the surface or on the surface unworked constitute land or real estate with all the attributes and incidents peculiar to the ownership of land or real estate (*Failoni v. Chicago & N.W. Ry. Co.*, 30 Ill. 2d 258 (1964)). Just as mineral rights are real property, so also are houses or condominium units that do not necessarily have rights to land, and so are lesser interests such as easements and licenses.

It would be incongruous to exclude owners of subsurface rights from the ambit of "owner of real property" when the entire thrust of the definition of "owner" in the Oil and Gas Act is directed toward subsurface rights. It would also be confusing to applicants, residents, hearing officers, and the Department to retain cumbersome phrases such as "landowners of any real property surface interest in land" while also employing a definition of "landowner" that does not differentiate between surface and mineral interests.

The Department understands the concern of some commenters that interests of those other than surface owners might from time to time be difficult to ascertain. The Department finds that the concern is adequately addressed by the limitations imposed by the "recording" requirement. Moreover, the applicant is already required to make such search and secure such rights under the Illinois Oil and Gas Act. As set out in the statute, an applicant must have obtained all applicable authorizations in the Oil and Gas Act.[1] One of the requirements in the administrative rules implementing the Oil and Gas Act is that an application must contain "[i]nformation to show the applicant has 100% of the rights to drill and to operate a well on the lands in question. The applicant shall submit copies of the recorded operative lease instruments or assignment." 62 Ill. Adm. Code 240.220(d). Illinois has well-established case law regarding ownership of mineral rights, trespass, and the effect of oil and gas leases.

Finally, the non-industry commenters may not be considering that IDNR's regulations, pursuant to the Oil & Gas Act, set out spacing requirements for wells, including those where directional drilling is planned. According to those rules, IDNR shall not issue a permit unless all portions of the horizontal drainhole are no less than 330 feet from the nearest external boundary lines of the horizontal drilling unit nor less than 660 feet from the nearest location of a producing well, a well being drilled, or a well for which a permit has been previously issued (but under which the well has not yet been drilled) using the same reservoir.[2] See 62 Ill. Adm. Code 240.400 *et seq*. This is another measure that ensures an applicant does not encroach on the property rights of adjacent owners. Surface owners are protected by other statutes as well, including the Drilling Operations Act, 765 ILCS 530/1 *et seq*.; Oil and Gas Recovery Act, 765 ILCS 525/0.01 *et seq*.; and the Severed Mineral Interest Act, 765 ILCS 515/1 *et seq*.

Department Action:

No change is made to the definition of "Landowner."

Section 245.110 Definitions is modified as follows:

"Owner" where used with reference to oil and/or gas rights *shall have the same meaning as provided in Section 1 of the Illinois Oil and Gas Act*, but where used with a modifying prepositional clause or in context of ownership of anything other than oil and gas drilling rights shall have its plain and ordinary meaning. (Section 1-5 of the Act)

Rule (245.210(a)(16)) is modified as follows:

16) ~~Landowner~~ Owner and Permittees Information

A) *The names and addresses of all* ~~land~~owners *of any real property* ~~surface interest in land~~ *within 1,500 feet of the proposed well site as disclosed by the records in the office of the recorder of the county or counties* (Section 1-35(b)(16) of the Act);

B) *The names and addresses of all* persons with an oil and gas lease in land *within 1,500 feet of the proposed well site as disclosed by the records in the office of the recorder of the county or counties* (Section 1-35(b)(16) of the Act); and

C) *The names and addresses of all* permittees under the Act or the Illinois Oil and Gas Act, in land *within 1,500 feet of the proposed well site*;

Rule (245.250(a)(1)(A)) is modified as follows:

A) *all persons identified as* ~~land~~owners *of* any *real property* ~~surface interest in land~~ *within 1,500 feet of the proposed well site as disclosed by the records in the office of the recorder of the county or counties*;

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[1] "[a] person may not drill, deepen, or convert a horizontal well where high volume horizontal hydraulic fracturing operations are planned or occurring…unless the person has been issued a permit by the Department under this Act and has obtained all applicable authorizations required by the Illinois Oil and Gas Act." Section 1-30(a).
[2] 900 feet for a reservoir in which the top lies at or below 4,000 feet beneath the surface.

245.110 Definitions – Well Site

Comment: The Department received over 200 comments concerning Section 245.110's definition of the term "well site." Commenters were mostly individuals commenting online. The essence of the comments was that the definition of "well site" should be expanded from the "*surface areas, including the* surface location of the *well, occupied by all equipment or facilities necessary for, or incidental to, high volume horizontal hydraulic fracturing operations,* construction, *drilling production, or plugging a well*" to also include the surface area above all underground vertical/horizontal legs of the well. The policy justifications in the comments advocating for this proposed change were:

- *that the current definition is based on the traditional vertical well model rather than the new horizontal leg model used in fracking operations;*
- *that leaks can occur at horizontal legs as well as the vertical shaft; and*
- *that the definition is important because it affects the application of the setback requirements.*

Response: IDNR, in the First notice draft of the rule, incorporated the HFRA's definition of "well site" almost verbatim. The statute's "well site" definition pertains to "surface areas" where the well, equipment, and facilities are located. This definition is different than the Act's definition of "well," which pertains to the subsurface "drill hole."

The First notice rule definition of "well site" added "surface location" before the reference to "well" to reduce any potential confusion, since "well" otherwise in the statute refers to the well bore below the surface. The Department viewed the intent of the statutory definition as clear, but the statutory definition itself as inadvertently ambiguous draftsmanship. The Department also added the word "construction" because that it is a critical component of HVHHF operations regulated by the statute and the administrative rules (see Subpart E: Well Construction).

The alternate interpretation of "well site" would make little sense because the statutory definition begins by saying that well site means "surface areas," so to include subsurface areas would not work. The many comments as to whether the surface well site should be the reference point with respect to activities that will occur underground, perhaps considerably distant from that point, are not without merit. Nevertheless, the legislative intent here seemed clear, and thus a morphing of the definitions would not be the appropriate means to address those concerns.

On review, IDNR believes that the proposed rule and its gentle clarification of the definition is not only consistent with, but necessary to give meaning to, the legislative intent. To alter the scope of numerous other sections that use the term "well site" by way of a tweak in the opposite direction would not be.

Department Action: None.

245.110 Definitions – Undefined Terms

The Department received over two hundred comments on terms that appear in the rules but that are undefined in Section 245.110. Commenters included the Nuclear Energy Information Service, Fair Economy Illinois, NRDC/ELPC, Chicagoland Against Fracking, Illinois People's Action, and several dozen unaffiliated individuals. Most of the terms commenters noted have been addressed in IDNR's responses, elsewhere in this document, for the specific sections wherein the terms appear. These include "competitive value" (see response to comments on §245.730), "wholly contained" (see response to comments on §245.210), "serious violation" (see response to comments on §245.200), "affected patient" (see response to comments on §245.730), and "cost effective" (see response to comments on §245.845).

Other comments on undefined terms, and the Department's response, are as follows:

- "Flowback" (used in Sections 245.840, 245.845, 245.850, and 245.900)

Response: "Hydraulic fracturing flowback" is already defined in the statute, and IDNR incorporated that definition directly into Rule 245.110: *"Hydraulic fracturing flowback" means all hydraulic fracturing fluid and other fluids* or materials *that return to the surface after a stage of hydraulic fracturing has been completed and prior to the well being placed in production.* (Section 1-5). While the Department believes this definition is sufficiently clear to cover the intended activities, to leave no doubt IDNR will define "flowback" as "hydraulic fracturing flowback."

- "Adjacent to" in Section 245.850(e): Before *plugging and site restoration* required by Section 245.1030, *the ground adjacent to the storage tanks and any hydraulic fracturing flowback reserve pit must be measured for radioactivity* (Section 1-75(c)(7) of the Act).

Department Action: None.

Response: "Adjacent to" is the phrase used in the statute (Section 1-75(c)(7)) and has a relatively unambiguous "plain text" meaning. Any specific measurement delineated would be to some degree arbitrary. IDNR declines to implement such a rule, in order to retain the flexibility to deal with well sites on a case by case basis.

Department Action: None.

- "Naturally occurring" in Section 245.600(d)(1)(B)(v):

B) each sample collected shall be submitted to and analyzed by an Agency-accredited or -certified independent testing laboratory (Section 1-80(b) of the Act) for the following:

***

v) gross alpha and beta particles to determine the presence of any naturally occurring radioactive materials (Section 1-80(e)(5) of the Act);

Response: *See* IDNR's response to the comments on Radioactivity.

Department Action: The following will be added to the Definitions in Rule 245.110: "Flowback" means the same as "hydraulic fracturing flowback" wherever used without the preceding phrase "hydraulic fracturing".

- *Use of the term "affected patient" is misleading.*

Response: See the Department's response to the comments on Rule 245.730. The term affected patient is no longer being used in the rules.

Department Action: The term "affected patient" is deleted from Rule 245.110.

245.115 Incorporated Materials

Comments: The Department received two comments concerning Rule 245.115, which lists the documents that are incorporated into or are referenced by the rule. Commenters included one individual and the IPC. The comments requested incorporation of OSHA regulations into the rule and identified a potential incorrect document citation.

Response: The OSHA rules are federal law and need not be incorporated into the Illinois rules to be legally binding on an operator. Also, the application section of the rules already requires the operator to submit a well site safety plan that "complies with federal and state law." See Section 245.210(a)(12). Similarly, Section 245.320(a) on Permit Conditions requires an applicant to comply with all applicable federal laws. Therefore, the rules adequately address this issue, and no change is required. See IDNR's response to Section 245.210(a)(12) Well Site Safety Plan for more information about the applicability of OSHA regulations.

The suggestion of the IPC that the rule provides an incorrect citation for a referenced document (245.115(a)(4)) is appreciated, and the second notice rule can address this concern. The document cited in Section 245.115(a)(4) may in fact be correctly cited. The commenter suggests that the title should be "Bow-Spring Casing Centralizers" rather than "Bow-String Casing Centralizers." The confusion arises from the source document itself. The actual title page to the document has the main title "Bow-String," but the text of the document references "Bow-Spring."

The Department believes that "bow-spring" is the correct term. To facilitate locating this reference within this response, a clarifying addition is made to the rule.

Department Action: Section 245.115 is modified as follows:

Section 245.115 Incorporated Materials

a) The following documents are incorporated or referenced in various Sections of this Part:

1) ANSI/API Specification 10A, Specification for Cements and Materials for Well Cementing, December 2010 (API Spec 10A)

2) API Specification 5CT, Specification for Casing and Tubing, July 2011 (API Spec 5CT)

3) ANSI/API Recommended Practice 5A3, Recommended Practice on Thread Compounds for Casing, Tubing, Line Pipe, and Drill Stem Elements, November 2009 (API RP 5A3)

4) ANSI/API Specification 10D, Specification for Bow-String Casing Centralizers (alternatively: Specification for Bow-Spring Casing Centralizers), September 2002, Reaffirmed August 2010 (API Spec 10D)

5) API Technical Report 10TR4, Selection of Centralizers for Primary Cementing Operations, May 2008 (API Spec 10TR4)

6) ANSI/API Recommended Practice 10D-2, Recommended Practice for Centralizer Placement and Stop-collar Testing, August 2004, Reaffirmed July 2010 (API RP 10D-2)

7) API Specification 16D, Specification for Control Systems for Drilling Well Control Equipment and Control Systems for Diverter Equipment, July 2004, 2-Year Extension May 2010 (API Spec 16D)

b) All incorporations by reference in this Part refer to the standards on the date specified and do not include any additions or deletions subsequent to the date specified.

c) All materials incorporated by reference are available for inspection and copying at the Illinois Department of Natural Resources, One Natural Resources Way, Springfield IL 62702-1271.

245.200 Registration Procedures

Comments: The Department received dozens of comments on various aspects of the Department's proposed pre-permit application registration procedures not discussed otherwise in this Response.

Commenters included the Illinois Attorney General, the environmental coalition's group submission, the NRDC/ELPC submission, GROW-IL, the Illinois Chamber of Commerce, the Illinois Manufacturers' Association, the Illinois Oil and Gas Association, the Illinois Petroleum Council, the Illinois Public Health Association, numerous individuals, and testimony by several individuals at public hearings. The essential points of the comments, and Department response, are as follows:

- *Local health departments should be notified of all registrations.*

Response: Notifying local health departments of pre-permit application registration by operators with the Department would require additional administrative action without significant public benefit. The registrations do not identify particular permit locations, so local health departments would gain little to no useful information at this stage. Relevant local health department involvement (and public involvement in general) begins with a permit application for a particular well location, which is why public notice is provided after permit application. See Sections 245.240 and 245.250. Based on the foregoing, no change is made to the rule to address this issue.

Department Action: None.

- *Many commenters believed that the required insurance coverage amount of $5,000,000 is too low, while others thought it was too high. Commenters disagreed as to whether the amount should be "per occurrence."*

- *The Department should interpret "per occurrence" narrowly to provide as much coverage as possible.*

Response: The HFRA sets out a specific amount of minimum insurance coverage that an operator must obtain. Section 1-35(a)(3). The Department as yet has no operational experience to determine that this amount is insufficient or excessive. As such, it would be imprudent to raise the amount before the Act has had any chance to take effect. As to lowering the amount, the Department views the statutory requirement as an intended minimum protection that the Department could not decrease unilaterally via administrative rule.

Regarding the "per occurrence" issue, that is a valid part of the rule's insurance requirement. The Act does not mandate "flat threshold" or "total operations" coverage. Therefore, "per occurrence" is not inconsistent with any specific language in the Act. Also, given that the insurance can potentially cover multiple wells, the Department's determination that the required insurance should be "per occurrence" coverage is a logical approach to ensuring the coverage contemplated by the Act. It is not unusual for general liability insurance policies to be

based on a "per occurrence" basis.[1] On the contrary, requiring a flat amount would discriminate against small operators and allow the lowest per-well coverage to the operators posing the greatest cumulative risk. Based on the foregoing, no change is made to the rule to address this issue.

Department Action: None.

- *The reporting requirement of "serious violations" is not defined.*

- *Other commenters contended that it should be defined more narrowly to cover only violations specifically to the conduct of HVHHF operations.*

Response: See IDNR response to Section 245.110 – Definitions.

Department Action: None.

- *Many commenters contended that the 60 days to notify the Department of changes to the registration information previously provided is too long, while others argued it was too short*

Response: Commenters argue that 60 days to notify the Department of changes to the registration information is too long because the information may change after the public comment period, such that the public would not have the opportunity to comment on up-to-date information. However, this time period is reasonable, considering that the registrant will need to update this information on a corporate basis (the registrant or any parent, subsidiary, or affiliate), which could take some time based on the entity structure. In addition, the permit application process requires a certification that registration information is up to date as of the filing of the permit application, which provides certainty to the information at least as of that date. See Section 210(a)(20).

The argument that this time period is too short is not persuasive because the Department and the public need updated information to ensure compliance with the regulations and accountability for enforcement purposes.

Department Action: No change is made to the rules.

- *The registration forms and the current registration status of each operator should be posted on a searchable Department website database.*

Response: IDNR agrees that the registration forms should be posted to IDNR's website. The Department is already required by the HFRA to create and maintain a comprehensive website dedicated to providing information concerning HVHHF operations. Section 1-110(b). Posting this information is also supported by the general policy of transparency in the HFRA, which sets out that "all information submitted to the Department under the Act is deemed public information…" Section 1-110(a). However, no rule is required to accomplish this.

Department Action: None.

- *Future registration resubmittals (245.200(g)) should be divided over the 4 quarters of each year to spread out the administrative work associated with reviewing them.*

Response: The Department recognizes that requiring all resubmittals due on the same date may create a significant influx of paperwork (although the number of resubmittals to expect is uncertain at this time). Section 245.200(g). However, this is only one of many instances where the Department will have to plan wisely in the use of its resources in the permit review process. Further, separating and monitoring resubmittals to take place on a quarterly basis throughout the year would create its own additional administrative challenges.

Department Action: No change is made to the rule to address this issue.

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[1] Stephen Dvorkin & Jared Zola, *Hydraulic Fracturing Liabilities Suggest Insurance Coverage*, Oil & Gas Journal (May 24, 2012), available at http://www.ogj.com/articles/print/volume-108/issue-19/exploration-development/hydraulic-fracturing.html.

245.200(b)(1)(B) – Disclosing Violations

Comments: IDNR received several comments concerning rule subsection 245.200(b)(1)(B) as it relates to hydraulic fracturing operators disclosing violations when applying for a permit.

The Commenters included IIRON Student Network, Fair Economy Illinois, the Illinois Oil and Gas Association, and thirty-five individuals. The essence of the comments from the general public was that hydraulic fracturing operators should be required to report all past violations. Many commenters suggested increasing the timeframe (for reporting violations) from 5 to 10 years. Other comments suggested that no time frame be included for reporting past violations, thereby requiring operators to report all past violations regardless of when or where they occurred.

The commenters were also concerned that the term "serious" (as in a "serious" violation) is not defined in the administrative rules. Given this, commenters were concerned that operators' opinions or understandings of what a serious violation is might differ from the Department's, or from what the statute intended, and that as a result, operators would fail to report violations.

Comments from other groups, by contrast, argued that the requirement to disclose past violations was meant to refer only to those violations specific to the conduct of hydraulic fracturing; in other words, violations of other oil and gas laws or regulations are not subject to the reporting requirement and, therefore, do not have to be reported. These commenters suggested that language be included to clearly limit reportable violations to only include past HVHHF violations.

Response: The concern of the non-industry commenters as to the lack of a definition for the term "serious" rests on a misunderstanding. "Serious violation" is not defined in this subsection of the rules because it is already defined in the "Definitions" section of the statute: "'Serious violation' means any violation set forth in 62 Ill. Adm. Code 240.140(c)." HFRA §1-5. That reference is to ten types of violations listed in the administrative rules for the Illinois Oil and Gas Act, namely, drilling or operating without a permit or permit transfer; operating a well with pressure on the annulus (i.e., with leaks); failure to maintain required a bond or pay annual well fees; failure to renew or secure Temporary Abandonment status on a well; failure to establish or repair mechanical integrity on a Class II well; operating a well designated for Plugging and Restoration; failure to provide emergency response for a crude oil or saltwater spill; improper discharge or disposal of produced fluids; operating a well in violation of spacing requirements or permit conditions; and failure to restore a well site.

To make clearer what is considered "serious," an edit could be made, but defining something in two separate places raises the possibility of confusion if one is later amended but the other inadvertently is not. The Department believes applicants will read the Definitions. Therefore, the Department declines to so edit, and simply refers to what is already defined.

As to the look-back period, the 5-year period in the rule for reporting past violations was incorporated directly from the HFRA. The Department believes that the legislature intended this

time frame for "look-back," and that the 5-year period provides ample opportunity for the Department to be alerted to past bad practices.

As to the scope of violations reportable, the reference to the Oil and Gas Act – under which only one HVHHF has previously been conducted in Illinois – makes clear that the intent of the HRFA was that previous oil and gas violations, not just HVHHF violations, be reported by a registrant-applicant, to be considered by the Department in the permit issuance decision. In addition, several provisions within the HFRA underscore this intent. First, Section 1-53(a)(5) of HFRA requires applicants to demonstrate as a condition of permit issuance that they do not have any unabated oil and gas violations (not just unabated HVHHF violations). Second, Section 1-60(a)(3) of HFRA allows the Director to refuse to issue a permit to anyone who has violated *any* provision or regulation of the Illinois Oil and Gas Act, not just provisions or regulations relating to HVHHF. Finally, Section 1-53(a)(8), which requires a showing of "no good cause to deny" the permit, refers back to Section 1-60(a) which, again, includes all such oil and gas violations.

Because, manifestly, the existing wording allows for argument, the Department will clarify the rule to leave no doubt.

Department Action: Rule 245.200(b)(1)(B) is modified as follows:

B) *disclosure of all findings of a serious violation*, as defined, or all findings of ~~*of*~~ *an equivalent violation under federal, Illinois or other state laws or regulations in the development or operation of an oil or gas exploration or production site via hydraulic fracturing by the registrant or any parent, subsidiary, or affiliate of the registrant within the previous 5 years* (Section 1-35(a)(2) of the Act);

245.210 Permit Application Requirements

Comments: The Department received thousands of comments concerning the various permit application requirements set out in rule subsection 245.210. Many of those comments were so voluminous as to warrant analysis by IDNR separately (*see* IDNR responses to comments on 245.210(a)(7) Maps, Diagrams through 245.210(a)(15) Traffic Management Plan, *infra*). This response considers the remaining sections. The various points made by the comments are set out below, and are considered in turn:

- ***245.210(a)(4) Directional Drilling Plan****: One commenter noted that this rule does not explicitly require that the applicant provide a map that depicts the exact location of the wellbore, which is critical information for identifying previously unplugged wells within 750 feet of the wellbore.*

  Response: See IDNR's response to Section 245.210(a)(7).

  Department Action: None.

- *One commenter recommended that parts (A) and (C) of this Directional Drilling Plan be clarified to include the "proposed" depths, as opposed to the "approximate" depths.*

  Response: The context of this rule section is an application, which implies that it is a *proposed* depth, so this change is not needed.

  Department Action: No change to the rule is made in response to this comment.

- ***245.210(a)(6)(A) High Volume Horizontal Hydraulic Fracturing Operations Plan:*** *One commenter recommended clarifying that the phrase "if known after reasonable inquiry" should apply only to the last item on the list, "susceptibility to vertical propagation of fractures of the confining formations."*

- *Food & Water Watch's representative criticized Section 245.210(a)(6)(A)'s use of a "reasonable" effort standard as allowing the applicant to avoid showing that they understand the underlying geology and hydrology, which FWW termed "critical to actually knowing whether or not the fracking that would be permitted will create significant short-term or long-term risks" to water. Several thousand commenters used the Food & Water Watch webform to echo this sentiment, terming the criteria "vague."*

Response: IDNR's rationale for the "if known after reasonable inquiry" was that the other information, such as a detailed description of the confining zone, might not be known to operators until more drilling activity takes place in Illinois. However, IDNR is not eager to add another case-by-case analysis to each permit review. Moreover, the information requested is not unusual. For comparison, an application for an injection well in Michigan, which like HVHHF involves pumping fluid into a formation under pressure, asks the applicant to list the following with respect to the proposed confining zone:

- The geological name of the stratum or strata making up the confining zone and the top and bottom depths of the confining zone
- An isopach map showing thickness and areal extent of the confining zone
- Lithology, grain mineralogy and matrix cementing of the confining zone
- Effective porosity of the confining zone including the method of determination
- Vertical and horizontal permeability of the confining zone and the method used to determine permeability; horizontal and vertical variations in permeability expected within the area of influence
- The occurrence and extent of natural fractures and/or solution features within the area of influence
- Chemical and physical characteristics of the fluids contained in the confining zone and fluid saturations
- Formation fracture pressure, the method used to determine fracture pressure and the expected direction of fracture propagation
- The vertical distance between the top of the confining zone from the base of the lowest fresh water strata
- Other information the applicant believes will characterize the confining zone
- Information demonstrating injection of liquids into the proposed zone will not exceed the fracture pressure gradient
- Information showing injection into the proposed geological strata will not initiate fractures through the confining zone
- Information showing the anticipated dispersion, diffusion and/or displacement of injected fluids and behavior of transient pressure gradients in the injection zone during and following injection.[1]

The Chicago-based Region 5 of the USEPA, for its injection well permitting, requests information similar to what IDNR has proposed.

The confining zone (or confining formation) and its ability to act as a cap, and prevent fluids from migrating upward toward the water table, older wells, existing fissures, etc., is absolutely key to the safety of HVHHF. Even *with* a good description, the determination of the "adequacy" of confining conditions is not always absolute.[2] If the confining formation cannot be described, IDNR will only know that a great deal of rock exists above the target formation, and IDNR will be unable to determine that the permit applied for is safe or that the plans submitted are adequate and effective to protect health, property, wildlife, aquatic life, or the environment. Thus, the information that IDNR requests is not only consistent with the purposes of the statute but critical to its functioning. The legislature did not indicate standards with respect to geological description, but left that to IDNR. The standards supplied are reasonable and within the mainstream.

Of course, an applicant cannot state what it does not know. If any of the elements of the geology of the confining formation are unknown to the applicant at the time if application, it can state that. However, the less information that is provided, the less able IDNR will be to make the determinations necessary for issuance.

Department Action: To remove any ambiguity, the rule is modified as follows:

6) High Volume Horizontal Hydraulic Fracturing Operations Plan
A detailed description of the proposed high volume horizontal hydraulic fracturing operations, including, but not limited to, the following (Section 1-35(b)(6) of the Act):

A) *the* formations *affected by the high volume horizontal hydraulic fracturing operations, including, but not limited to, geologic name and geologic description of the* formations *that will be stimulated by the operation* (Section 1-35(b)(6)(A) of the Act), and a description of the confining zone and the formations constituting or contributing to that zone, including, but not limited to, a description of the lithology, extent, thickness, permeability, porosity, transmissive faults, fractures, water or water source content, and susceptibility to vertical propagation of fractures~~,~~ of the confining formations~~, if known after reasonable inquiry~~;

- *One commenter suggested that the term "affected" in 245.210(a)(6)(A) be changed to "targeted" because the term "affected" is not defined and could be interpreted in any number of ways.*

Response: IDNR drafted this section using the same language as the statute, so no change will be made at this time. IDNR interprets "affected" according to its ordinary dictionary definition ("to produce a material influence upon or alteration in").

Department Action: None.

- ***245.210(a)(9) Water Use Self-Certification:*** *One commenter noted that applicants should be required to submit their water needs and plans to local Soil and Water Conservation Districts ("SWCDs") and/or regional water authority that will be impacted. These entities should have to certify compliance with the Water Use Act, and there should be a public participation component to this decision.*

- *One commenter recommended that IDNR should post or provide a link on its website to any previous review undertaken by a Soil and Water Conservation District, pursuant to Section 5 of the Water Use Act of 1983, concerning the effect of any proposed water withdrawal via high capacity well upon the users of the water.*

Response: The first concern is valid, insofar as local Soil and Water Conservation Districts or regional water authorities are the most appropriate entities to make decisions regarding local water supply issues. In considering this comment, IDNR consulted with the Illinois State Water Survey ("ISWS"), the Illinois Association of Soil and Water Conservation Districts ("IASWCD"), and the Illinois Department of Agriculture regarding the process for complying with the Water Use Act. Under the current law, a land occupier or person who proposes to develop a new point of withdrawal for a "high-capacity" well (where the rate or capacity of water withdrawal of all wells on the property is equal to or in excess of 100,000

gallons during any 24-hour period), must notify the pertinent Soil and Water Conservation District ("SWCD") before construction of the well begins. See 525 ILCS 45/5. SWCDs have created forms that a well owner must complete.

In practice, the SWCDs send these forms to ISWS, which maintains the information in a database. However, IDNR believes that the review required by the Water Use Act on the proposed withdrawal's effect upon other users of the water is rarely carried out, due to lack of resources.

While IDNR finds that obtaining certification from SWCDs would be beneficial, under the HFRA the permit application only requires self-certification of compliance with the Water Use Act. Section 1-35(b)(9). IDNR does not have authority to order an SWCD to submit such a certification. However, it is reasonable due diligence to require that the applicant, as part of its self-certification, submit a receipt or other proof of delivery of the plan to the applicable SWCD.

The Act also requires IDNR to give notice to the Illinois Water Survey of the application. 1-40(b); 245.240(b). IDNR finds it would be most appropriate for the Water Survey to determine compliance with the Water Use Act based on its review of the application, and to advise IDNR during the application review period of the results of the Water Survey's review.

As to public participation, the Department declines to create an additional component of process for a permitting scheme that already has timing challenges. The public may of course comment on any portion of the plan submitted.

With respect to the second comment, IDNR recognizes that any reviews conducted pursuant to the Water Use Act of 1983 may be of public interest in the context of a high volume hydraulic fracturing permit application. However, as mentioned above, these reviews are rarely completed in practice. In addition, the Illinois State Water Survey or the local SWCD would be the most appropriate entity to provide information regarding any proposed high-capacity wells. In this respect, the Illinois Department of Agriculture may be a resource as well, as it maintains a Directory of Soil and Water Conservation Districts on its website: http://www.agr.state.il.us/land-water-resources/

Department Action: Section 245.210(a)(9) is modified as follows:

9) Water Use Self-Certification
A self-*certification* explaining the applicant's *compliance with the Water Use Act of 1983* [525 ILCS 45] *and applicable regional water supply plans* (Section 1-35(b)(9) of the Act), and including receipt or other proof of the applicant's delivery of the plan to the applicable Soil and Water Conservation District and any Community Water Supply, as defined at 415 ILCS 45/5, within 20 miles of the proposed water source;

- ***245.210(a)(13) Containment Plan:*** *One commenter recommended that IDNR should require that, as part of the containment plan, applicants evaluate different containment*

practices and equipment that could be used at the site, and utilize the most effective containment practices/equipment that are technically/economically feasible.

- *Another commenter noted that the rules do not set minimum standards for containment.*

Response: The first suggestion is consistent with the purposes of the HFRA to require a containment plan to use best available technology. However, the Department believes that the difficulty of determining "best available technology" on a well-by-well basis in the timeframe provided for permit review, coupled with the disputes that such a standard could open up, outweighs the benefits of imposing such a requirement. The Department retains authority to revisit and modify the requirements program-wide as better technology becomes available.

The second concern is mistaken because the proposed rules do address containment plans, in accordance with the statutory requirements. Section 245.210(a)(13) specifically sets out that the containment plan must comply with Sections 245.820, 245.825, and 245.830. Those rule sections detail the exact specifications for secondary containment inspections, general fluid storage, and reserve pits. IDNR adopted these standards based on the corresponding provisions of the HFRA. See Section 1-35(a)(13).

Department Action: No changes to the rules are made.

- ***245.210(a)(16) Landowner and Permittees Information:*** *One commenter recommended that the permit application require that the applicant show it has obtained the consent of all the owners of real property on which, under which, or through which the vertical and horizontal wells are to be drilled.*

Response: See IDNR's response to comments on Section 245.110 Definitions - Landowner, Property Owner.

- ***245.210(a)(19):*** *One commenter noted that only permittees, not contractors, should be required to have insurance.*

Response: Section 1-35(b)(19) of the HFRA specifically requires that a permittee show proof of insurance to cover injuries, damages, or loss related to pollution in the amount of at least $5,000,000. As a result, the commenter is accurate that it does not refer to contractors. However, it furthers the public protection purposes of the statute that HVHHF operations be adequately insured. Moreover, it is commonplace for a party who controls a project to shift to the downstream parties who are most able to control the risk of loss the costs associated with that risk.[3] However, since the contractor is not the party applying for a permit, it does not make sense to impose within a rule a requirement on the contractor. Consequently, IDNR amends the rule by requiring the applicant show that contractors are insured.

Department Action: Rule 245.210(a)(19) is amended as follows:

19) Proof of Insurance
Proof of insurance by the applicant~~, and~~ that it and any contractor performing high volume horizontal hydraulic fracturing operations at the proposed well~~, that each is insured~~ are each insured *to cover injuries, damages, or loss related to pollution in the amount of at least $5,000,000* per occurrence (Section 1-35(b)(19) of the Act);

- ***245.210(a)(21) Access Roads:*** *One commenter recommended that IDNR require an applicant to include the access roads on the map that needs to be provided under 245.210(a)(7) so that it can be determined whether the access roads are located as far as possible from occupied structures, places of assembly, and property lines of unleased property as required by Section 1-70(b)(1) and 245.410.*

Response: The access road is already a necessary feature of the map required under 245.210(a)(7)(B).

Department Action: No changes to the rules are made.

- ***245.210(a)(25) Applicant Disclosure*** *One commenter noted that the required disclosures in this section are redundant because this is addressed by the registration procedures in Rule 245.200.*

- *One commenter argued that the disclosure should not be "adjudication" of violations, but violations for which a final decision has been made*

Response: The first comment is incorrect. There is a difference between the registration section, which requires disclosure of all serious violations in oil and gas operations (Section 1-35(a)(2)), and this section, which involves specific types of business violations (Section 1-60(a)(4)). The statute makes a distinction between these disclosures, so IDNR incorporated these terms directly into the rules.

With respect to the second comment, it is valid that "adjudication" is an ambiguous term in this context. The corresponding section of the statute is broad; it does not require a formal adjudication or finding. This disclosure was added to ensure the integrity of the permitting process. Pursuant to the HFRA, one of the causes IDNR has for denying a permit is "using fraudulent, coercive, or dishonest practices, or demonstrating incompetence, untrustworthiness, or financial irresponsibility in the conduct of business in this State or elsewhere untrustworthiness, or financial irresponsibility in the conduct of business in this State or elsewhere." Section 1-60(a)(4). These reasons are incorporated into the disclosure. After reconsideration, the Department agrees that "adjudication" is vague, and also that the Department would like to know, during permitting, if an applicant is under indictment or standing trial for gross business violations.

Department Action: the rule is modified as follows:

25) Applicant Disclosure
Disclosure of and a written explanation for the following, which must be supplemented if any changes occur after the application is submitted:

A) any conviction, adjudication, finding, or pending charge of ~~any adjudication of violations by the applicant involving~~ *fraudulent, coercive, or dishonest practices, or demonstrating incompetence, untrustworthiness, or financial irresponsibility in the conduct of business in this State or elsewhere* (Section 1-60(a)(4) of the Act);

B) any revocation of a *high volume horizontal hydraulic fracturing permit, or its equivalent, in any other state, province, district, or territory for incurring a material or major violation or using fraudulent or dishonest practices* (Section 1-60(a)(5) of the Act);

- ***245.210(a)(26) Contractor Information:*** *One commenter pointed out that this section might not cover all of the personnel whose contact information should be provided. For example, should suppliers of chemicals be included?*

Response: IDNR's original rationale was that the Department would need the contractor's information if it was not the same as the applicant's contact information. IDNR included only the operator because that entity would be able to provide supplemental information, such as contact information for entities like suppliers, subcontractors, etc. IDNR finds that this should be sufficient in order to contact the pertinent individuals or entities working at a site.

Department Action: No changes to the rules are made.

- *One commenter noted that requiring each applicant to list the contractors in 245.210(a)(26) is completely unnecessary and not required in any other type of permitting scenario.*

- *It will also be difficult to comply with this step because the operator may not know at the time the application is submitted which service company will be contracted to do the work.*

- *In contrast, another commenter argued that an applicant should be required to know the contractor when they apply so that the public can evaluate the integrity of the contractor at the time of the submission*

Response: This concern is understandable, but the permit application under the Oil and Gas Act administrative rules already requires similar information, namely, the name and address of the drilling contractor and the type of drilling tools or equipment to be used. See 62 Ill. Adm. Code 240.220(f); IDNR Form OG-10, Permit Application to Drill, Deepen, or Convert a Well. The Department also routinely requires persons with whom it does business, such as grantees and vendors, to disclose subcontractors. Here, such information is necessary for accountability,

to secure public confidence in the program, and to prevent unscrupulous or sloppy operators or contractors from hiding behind the shell of a newly-created applicant corporation or LLC.

IDNR recognizes that the public may be interested in knowing and commenting on the contractor an applicant will hire to perform hydraulic fracturing operations. That information also is relevant to the Department's permitting decision. However, as mentioned above, an applicant may not know the contractor at the time of submission of the application because of timing, availability, cost, or other factors. To address this concern, the rule specifically provides that if any information is not known about the contractor at the time of the application's submission, it shall be supplemented as soon as known, and in all cases before the fracturing operations begin. See 245.210(a)(26).

IDNR finds it is reasonable to require the applicant to supplement this information. It is in the applicant's best interest to do so as soon as possible during the permitting process to avoid delay in issuance or operations. It should be noted that the contractor must also have proof of insurance (Section 245.210(a)(19)) and meet the same chemical disclosure requirements and chemical use prohibitions (Section 245.710; Section 245.715).

Department Action: Rule 245.210(a)(26) is modified as follows:

26) Contractor Information
A statement indicating whether the applicant or a contractor <u>of applicant</u> will be performing the high volume horizontal hydraulic fracturing operations. If a contractor will be performing the high volume horizontal hydraulic fracturing operations, provide the contractor's name, address and telephone number, and the direct telephone number of the person responsible for high volume horizontal hydraulic fracturing operations at the well site for the contractor. If any information is not known about the contractor at this time, the application shall be supplemented <u>as soon as possible and in all events</u> before the high volume horizontal hydraulic fracturing operations begin;

- ***245.210(a)(27) Violations Report:*** *One commenter recommended that contractors be subject to the same disclosures in the violations report*

Response: The concern is valid, insofar as contractors must perform operations in accordance with the HFRA and the administrative rules, and in many cases, the contractor may have more of a history than the applicant. However, requiring this information might result in fewer applicants disclosing their contractors. The Department will monitor the performance of contractors under the HFRA and retains the option to add this as a rule in the future if evolution of the industry in Illinois so warrants.

Department Action: No changes to the rules are needed.

- ***245.210(a)(28) Compliance with Consultation***: One commenter argued that since the legislature did not address consultation in the statute, to require it in a permit application is outside the scope of the rulemaking.

Response: IDNR is the state agency responsible for implementing the consultation procedure concerning impacts on State endangered and threatened species and natural areas, as required by state law. See 17 Ill. Adm. Code 1075.10 *et seq*.; Section 11(b) of the Illinois Endangered Species Protection Act (520 ILCS 10/11); and Section 17 of the Illinois Natural Areas Preservation Act (525 ILCS 30/17). This is a necessary component of the permit application, since the consultation process is required under Illinois law.

Department Action: None.

- ***245.210 (generally):*** *One commenter recommended that the Permit Application require a non-refundable fee of $5,000 (in addition to the free paid to IDNR) paid to each certified local health department whose local public health jurisdiction will be affected by the proposed hydraulic fracturing operation*

Response: Although local health departments need and would benefit from increased funding, adding such a fee would amount to an amendment of the statute. IDNR declines to attempt this through a first rulemaking.

Department Action: No changes to the rules are made.

- *One commenter noted that there are too many plans required under Section 245.210, which has the effect of discriminating against smaller operators with fewer resources. The commenter recommends that only plans specific to groundwater and safety should be required.*

Response: IDNR is cognizant of the fact that the permit application requires many parts. However, each component is necessary to carry out a purpose of the statute. Responsible HVHHF is a significant investment and it is possible that it is not scalable downwards. See also the Department's Response to comments on impact on small businesses.

Department Action: No changes to the rules are made.

- ***245.210(d) Application Fee:*** *IEPA requested a clause that IDNR shall remit to the Agency $2,500 times the number of permit applications received for the reporting period. The remittance shall be deposited into the Illinois Clean Water Fund for the Agency to use to carry out its functions.*

Response: The IDNR fiscal office consulted with the IEPA fiscal office, and IDNR will submit a quarterly payment to IEPA. This approach will prevent a build-up of cash in the fund. However, IDNR does not find that a rule change is needed, since the payment to IEPA is set out in the statute. Section 1-35(e).

Department Action: None.

- *One commenter noted that the permit application fee is too high, and should be the same as a regular drilling permit.*

- *Another commenter requested that IDNR increase the application fee to $20,000.00*

Response: Section 1-35(e) of the statute specifically sets out the application fee. While it is possible that the per-well or per-well-site costs of permitting, inspection, and enforcement will exceed the revenue to the Department, and that these costs may likely increase with time, changing the fee would amount to an amendment of the statute.

Department Action: No changes to the rules are made.

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[1] Michigan Dept. Enviro. Quality, *Permit Application Instructions for Disposal, Storage, or Brine Production Wells,* (Aug. 18, 2014), http://www.michigan.gov/deq/0,4561,7-135-3311_4111_4230-64189--,00.html. *Cf.* . http://water.epa.gov/learn/training/dwatraining/upload/EPA-DWA-Intro-to-Permitting-Module-2.PDF.

[2] Robert E. Bergstrom, *Feasibility of Subsurface Disposal of Industrial Wastes in Illinois*, Illinois State Geological Survey, Circ. 426, at 9 (1968).

[3] M. Bell, *Indemnity and Additional Insured Requirements: Why Am I Demanding Them, Why Do Others Want Them, and What Does It All Mean?*, irmi.com (May 2013), http://www.irmi.com/expert/articles/2013/bell05-construction-liability.aspx

245.210(a)(7) Maps, Diagrams

Comments: The Department received over 2,600 comments on this subsection. Commenters included Illinois Petroleum Council, Food and Water Watch, IOGA, Illinois People's Action, members of the UIS community, Community Energy Systems, Peoria County Board of Health, SAFE, IIRON Student Network, Frack Free Illinois, Second Unitarian Church, Central Illinois Global Warming Solutions Group, Fair Economy Illinois and numerous individuals. The essential points of the comments are listed below and are considered in turn:

- *A number of commenters pointed out that this rule section does not require the exact location of the wellbore to appear on a map, which is needed to have adequate protection against new fractures that intersect with old wells.*

- *Along the same lines, one commenter pointed out that 245.210(a)(7)(C) could be construed to suggest that the operator would be required to supply a map that identifies the surface location of any previous drill well located* ***throughout the entirety of the geologic formation****, not just in the immediate area surrounding the newly proposed well. The commenter recommends that it should be only required for wells within 750ft of any part of the horizontal well bore.*

Response: Although IDNR contemplated that the exact location of the wellbore would be included under the proposed rules as part of 245.210(a)(7)(C) and (D), IDNR finds it would be beneficial, and consistent with the purposes of the HFRA, to clarify that the map must show the full horizontal leg of the wellbore. In addition, the second comment above is addressed by clarifying the rule to require indication of all known previous well bores within 750 feet of any part of the horizontal well bore. This is derived from the statutory language at Section 1-35(b)(7): "plat showing all known previous well bores within 750 feet of any part of the horizontal well bore that penetrated within 400 vertical feet of the formation that will be stimulated as part of the high volume horizontal hydraulic fracturing operations." Re-shifting the focus to a simple surface measurement will eliminate problems or disputes involving calculations in three dimensions of underground features, and is better suited to a two-dimensional map. While the presence of an existing well within 750 feet of the vertical plane above a proposed HVHHF horizontal wellbore will not necessarily preclude the issuance of a permit for the well that includes that horizontal leg, because there may be sufficient intervening distance and formation between the bottom of the old well and the bore of the new one. Nevertheless, the Department cannot evaluate the potential risk, and the public comment on it, if the proximity of existing wells, regardless of asserted depth, is not disclosed.

Department Action: The rule is modified as follows:

C) a scaled top-view diagram showing the well location, direction of drilling below the surface entry point ~~into~~ to the intersection with the formation to be stimulated, and the horizontal leg to its total length ~~total depth~~. Also indicate the location at the surface of all known previous well bores within 750 feet of the vertical plane above any part of the horizontal well bore

~~that that penetrated within 400 feet of the formation that will be stimulated as part of the high volume horizontal hydraulic fracturing operations~~; and

D) a scaled cross-section of the well bore from the surface through the horizontal leg's total length ~~total depth~~, providing the information required in subsections (a)(4) and (a)(5), and showing the formations to be stimulated as described in subsection (a)(6)(A);

- *Commenters suggested that maps should be given to the local health department within 15 days of the application*

Response: The HFRA sets out which entities get notice (Section 1-40) and it does not require public health departments to receive notice of an application. However, local public health departments will be able to obtain this information on the IDNR website (Section 1-110).

Department Action: No change to the rule is made.

- *The operator should be required to locate and plug all old abandoned wells*

Response: See IDNR response to Section 245.1000 Plugging and Restoration Requirements.

Department Action: None.

- *One commenter requested that an applicant provide an "easily understood" map of proposed drilling sites, including the exact location of the wellbore*

- *For instance, commenters suggested that the application require a "schematic map" in addition to a scaled cross-section map*

Response: The concern is valid, and the proposed rules address this concern. Section 245.210(a)(7) requires several maps that cover many aspects of the proposed operations, including the exact location of the well and a scaled-cross section of the well bore from the surface to the total depth. If a person has questions regarding a map included in an application, that person may submit a comment to IDNR during the comment period. See Section 245.260.

Department Action: No change to the rule is made.

245.210(a)(8) Chemical Disclosure Report

Comments: The Department received numerous comments on 245.210(a)(8) regarding the Chemical Disclosure Report required to be submitted with an HVHHF permit application. Commenters included and/or self-identified with the IPC, Peoria County Board of Health, Frack Free Downstate, Illinois People's Action, Central IL Global Warming Solutions Group, Frack Free Illinois, SAFE, Fair Economy Illinois, UIS, Triangle Branch of WILPF, Progressive Democrats of Greater Springfield, IEC/NRDC/ELPC/FIP/RHA, NRDC/ELPC and dozens of individuals, including 11 persons who spoke or submitted comments at public hearings.

Some of the concerns overlap with those relevant to 245.720 Department Publication of Chemical Disclosures and Claims of Trade Secret, and may be addressed in the Response to the comments related to that subpart of the rules.

The general consensus of most of the comments was that IDNR should demand the maximum amount of disclosure possible in the report required by 245.210(a)(8). Most commenters objected to the provision allowing applicants to delay disclosure and specifically singled out the language "to the Department's satisfaction" as being too vague, claiming that this essentially made chemical disclosure voluntary.

On the other hand, the IPC claimed that the disclosure standards articulated in the rules are unworkable. IPC claimed that operators rarely know what chemicals they will use, or the amounts they will use, more than a few days before they actually begin operations. Thus, they would be unable to comply with this section in a useful amount of time. IPC also noted that the chemicals used would frequently change over the course of stimulation operations, and that post-operations reports would thus be more useful. Finally, IPC recommended the use of the FracFocus.org website.

Response: The Act contemplates the filing of a master list of chemicals disclosing all the chemicals the applicant anticipates using throughout the State in its HVHHF operations. The chemical disclosure report is simply a site-specific disclosure concerning a subset of chemicals which will have been disclosed by the applicant at or before the filing of the application.

IDNR agrees that transparency and public participation are principal purposes of the HFRA, and that the chemical disclosure requirements should provide the maximum amount of disclosure. With respect to this subsection, IDNR tracked the language in the HFRA almost exactly. See Section 1-35(b)(8). The rationale for including the phrase "to the Department's satisfaction" was to ensure that it would be IDNR who would evaluate the reason given by the applicant; otherwise, the question arises, "Documents to whom?" Although the standard is not a firm benchmark, it allows IDNR to evaluate the reason given by the applicant on a case-by-case basis, and would ensure that the applicant's subjective assertion that it had "documented" the reason would not suffice. The phrase does not weaken, but strengthens, the intended result.

As for the potential of delay in the disclosure, the statute specifically contemplates that the applicant may not have the information at the time the application is submitted. (See Section 1-35(b)(8): "unless the applicant documents why the information is not available at the time the

application is submitted…") If the permittee does not have the information available at the time of the application, Section 1-77 of the HFRA requires the permittee to submit this information to the Department in electronic format no less than 21 calendar days prior to performing the HVHHF operations. See 1-77(a).

The Department has heard the concern that this will incentivize operators to all claim ignorance of their chemical mix, thus defeating the purpose of this section of the statute. The Department has also reviewed the IPC's comment that operators will rarely know what chemicals they will use until very close to the start of operations. The answer to both of these is that the HFRA and the rule section clearly require disclosure of the "anticipated" volumes, additives, chemicals and concentrations. Section 1-35(b)(8)(A)-(D); 245.210(a)(8)(A)-(D). Any qualified applicant will present its project with a fairly good idea of the conditions it will encounter and what has worked for that applicant best in the past. Thus, even though the exact chemical composition may change before HVHHF operations begin, the operator will have a reasonable estimate of its chemical toolkit and anticipated chemical approach to a well as part of a responsible business plan.

Moreover, the Department can only grant a permit if the record demonstrates that the HVHHF operations will be done in a way that protects people and the environment. As a practical matter, omission of the list of chemicals, regardless of reason, can only increase skepticism and distrust, and will increase the difficulty of the Department being able to conclude, in supportable fashion, that the standards of the Act are met. Thus, it will be in every applicant's interest to present as complete a picture of its anticipated operations as possible.

Finally, the HFRA and the rules require that the applicant must provide the following certification:

> "I certify, under penalty of perjury as provided by law and under penalty of refusal, suspension, or revocation of a high volume horizontal hydraulic fracturing permit, that this application and all attachments are true, accurate, and complete to the best of my knowledge." (Section 1-35(f) of the Act)

If the estimated values in the chemical disclosure report change significantly from the application, the operator will have to provide a reason to IDNR. If the operator cannot substantiate and justify the change, IDNR may have to suspend or revoke the permit for not providing true, accurate and complete information at the time of the application.

For all the foregoing reasons, the Department disagrees that the chemical disclosure report will play out as a component routinely or even frequently left blank at time of application on the allegation of the applicant that it doesn't know what it might use.

Department Action: Section 245.200 will contain the following new section:

(h) At or before the time of the applicant's filing of its first application pursuant to this Act, the Applicant must have on file with the Department a master list of chemicals, as required in Section 1-77 of the Act.

The following are Department responses to the less-common concerns expressed with respect to this subsection:

- *IDNR should require that the chemical disclosure report go to local public health offices*

Response: Local public health authorities will be able to access the master list online. The Department is willing to entertain intergovernmental agreements for more formalized data-sharing but that can be done without a rule.

Department Action: None.

- *The distinction between permittees and contractors does not appear in the rules, and only the permittee should be allowed to delay disclosure.*

Response: The Department does not anticipate that the contractor can delay disclosure. Again, note that it is in the applicant's interest, in order to receive a permit, that the applicant supply the Department with the information necessary for the Department to be able to assess safety and environmental protection, key prerequisites to permit issuance.

Department Action: None.

- *IDNR should specify how it wants permittees to calculate the anticipated concentration of chemicals used pursuant to 245.210(a)(8)(D).*

Response: Concentration is a relatively commonly understood term, but a formula is added in D below.

Department Action: See below.

- *IDNR should specifically address endocrine disruptor chemicals.*

Response: Many of the chemicals to be disclosed have harmful effects. The Department declines to single out one class of potential harms (e.g., endocrine disruption) as somehow worse than others (e.g., carcinogens, neurological hazards).

Department Action: None.

- *IDNR should reference other workplace health and safety laws such as the Workers Compensation Act.*

Response: The Act and rules already require compliance with all applicable federal, state, and local laws.

Department Action: None.

- *IDNR should post chemical disclosures on FracFocus.org*

Response: Putting the information in as many places as possible is a useful endeavor, although there are staff time costs and benefits to consider. IPC's suggestion of post-operation disclosure is also valid, but it is covered by §245.860. In either case, no new rule is necessary.

Some of the documents and websites that IDNR considered or consulted in preparing this response are as follows:

- U.S. House of Representatives Energy Committee (Minority Staff) report: "Chemicals Used in Hydraulic Fracturing"
- New York State Dept. of Environmental Conservation, "Well Permit Issuance for Horizontal Drilling And High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs," Chapter 6.
- California Statute SB 4, Sec. 3160(b)(2)
- Colorado Hydraulic Fracturing Rule 341
- NRDC Issue Brief: State Hydraulic Fracturing Rules and Disclosure: A Comparison;
- Intermountain Oil and Gas Project Best Management Practices: Hydraulic Fracturing;
- FracFocus.org
- http://formulas.tutorvista.com/chemistry/mass-percent-formula.html (for the mass formula, recommended by NSD)

Department Action: Section 245.210(a)(8) is amended as follows:

8) Chemical Disclosure Report
Unless the applicant documents to the Department's satisfaction *why the information is not available at the time the application is submitted* (in which case the applicant shall comply with Sections 245.700 and 245.720), *a chemical disclosure report identifying each chemical and proppant anticipated to be used in hydraulic fracturing fluid for each stage of the* high volume horizontal *hydraulic fracturing operations*~~,~~. If this information is not available pursuant to a Trade Secret claim under Sections 245.700 and 245.720, the permittee shall submit redacted and un-redacted copies of the documents identifying the specific information on the master list of chemicals claimed to be protected as trade secret. The Department shall use the redacted copies when posting the master list of chemicals on its website. The redacted copy must also be submitted to the certified local public health department. The report must contain ~~including~~ *the following* (Section 1-35(b)(8) of the Act)*:*

A) for each stage, *the total volume of water anticipated to be used in the* high volume horizontal *hydraulic fracturing treatment of the well or the type and total volume of the base fluid anticipated to be used in the* high volume horizontal *hydraulic fracturing treatment, if something other than water*. (Section 1-35(b)(8)(A) of the Act) If the total volume has not been determined at the time of the application, the permittee shall submit an

estimate for the maximum volume of water or base fluid anticipated to be used;

B) *each hydraulic fracturing additive anticipated to be used in the hydraulic fracturing fluid, including the trade name, vendor, a brief descriptor of the intended use or function of each hydraulic fracturing additive, and the ~~Material Safety Data Sheet (~~MSDS~~)~~, if applicable.* (Section 1-35(b)(8)(B) of the Act) If this information is not available pursuant to Sections 245.700 and 245.720, then the chemical family and chemical effects of each additive must be disclosed. If the additives have not been determined at the time of the application, the permittee must submit all possible additives that could be used;

C) *each chemical anticipated to be intentionally added to the base fluid, including, for each chemical, the C~~hemical~~ ~~Abstracts~~ ~~Service~~ number, if applicable.* (Section 1-35(b)(8)(C) of the Act) If this information is not available pursuant to Sections 245.700 and 245.720, then the chemical family and chemical effects of each chemical must be disclosed. If the chemicals have not been determined at the time of the application, the permittee must submit all possible chemicals that could be used*; and*

D) *the anticipated concentration in the base fluid, in percent by mass, of each chemical to be intentionally added to the base fluid* as calculated by the equation Mass Percent = g solute/g solution X 100. If the concentration has not been determined at the time of the application, the permittee shall submit an estimate and identify such as an estimate (Section 1-35(b)(8)(D) of the Act).

245.210 (a)(10) Permit Application Requirements – "Wholly Contained"

Comments: The Department received dozens of comments regarding rule subsection 245.210(a)(10) and its use of the phrase "wholly contained." The commenters included the IEC/NRDC/ELPC/FIP/RHA coalition submission, the NRDC/ELPC, and other individuals. One commenter wanted the exception for waters wholly contained on a single property to be removed entirely. Most commenters wanted to define "wholly contained" waters to establish that a water body is "wholly contained" on a single property only if it has no hydrological connection, perennial or otherwise, to a water body outside the property.

Response: This concern is valid, and can be addressed by rulemaking.

The Department notes that the statute uses the term "wholly contained" in more than one subsection, but does not define the term. Section 1-25(b); Section 1-35(b)(10)(E); Section 1-80(d). However, it is apparent from these sections – which provide exceptions to setback requirements, water management plans, and water quality monitoring – that the underlying rationale behind the legislative insertion of this exception was that "wholly contained" water sources will not impact other water sources since they are located entirely within an owner's property.

Commenters pointed out that the surface boundary of a water source may be located entirely within one owner's property, but the source itself may nonetheless have a hydrological connection to a water body outside the property. As a result, either withdrawal or pollution of water from such a "contained" source would have likely and possibly severe impacts on neighboring property owners or bodies of water.

The Department agrees that what may appear "wholly contained" on a two-dimensional map is no guarantee of hydrological independence in a three-dimensional geology. Aquifers, groundwater, subterranean and streams may link bodies of water, either directly or through filters such as wetlands.

IDNR consulted with its Office of Water Resources ("OWR") to determine whether a more appropriate definition could be developed. OWR staff confirmed that it is difficult to conceive of a water source that would be located entirely on one property. The only examples OWR staff could envision that would be "wholly contained" would be something like an onsite reservoir with an impervious bottom, and filled only by rainwater originating within a property.

To determine whether a water source is in fact wholly contained on one property, a rather complicated study of groundwater flow, surface water flow, and the interconnections thereof would be necessary. Surface water watersheds can usually be defined by topographic mapping, unless the ground is so flat that flood flows can flow from one watershed into another "interbasin flow," and is possible in some watersheds in Illinois. Groundwater boundaries are much more regional in nature and therefore, more difficult to determine.

To ignore these types of hydrological connections by leaving "wholly contained" undefined would undermine the purpose of the legislation, which is intended to provide protection against water pollution and diminution through setback requirements, water management plans, and water quality monitoring. IDNR has explicit authority to adopt rules that carry out the purposes of the HFRA, see Section 1-130.

In addition to consulting with the IDNR Office of Water Resources, IDNR considered the well-publicized intent of the HFRA to protect water resources, the recent history of drought in Illinois, common law with respect to water withdrawals from a source serving more than one property, and the complex hydrological connections between various water sources.

The Department also considered other State legislative expressions of water policy, including the statement that "it is in the public interest: to better manage and conserve water …and to provide for public notice of planned substantial withdrawals of water from new points of withdrawal before water is withdrawn." Water Use Act, 525 ILCS 45/2. The Department notes that it is likely that HVHHF operations in many circumstances will have to comply with that Act and notify the local Soil and Water Conservation District and/or a local community water supply.

Department Action: The following definition is added Rule 245.110:

<u>"Wholly contained" with respect to a fresh water source, means located on a single property, without any hydrological connection, perennial or otherwise, to any other fresh water sources, whether surface or groundwater, located on a different property.</u>

245.210(a)(10) Permit Application Requirements – Water Management

Comments: IDNR received at least 500 comments that directly addressed, or addressed the issue of water management without specifying the rule section, Rule 245.210(a)(10), which specifies the water management plan an applicant must file. Many citizens expressed concern that water resources would be severely impacted by the water-intensive HVHHF process. Entity commenters included the environmental coalition's group submission, students affiliated with UIS, University of Chicago, and ISU, Peoria City/County Health Department, Illinois People's Action, Avrom Systems, Central Illinois Global Warming Solutions Group, the Unitarian Universalist Church of Bloomington, SAFE, Sierra Club Prairie Group, Fair-Economy Illinois, Frack Free Downstate Organization, Regional Association of Concerned Environmentalists, Food & Water Watch, Gib Woods Oil Company, and the Illinois Petroleum Council. Hundreds of individuals also commented, including many at public hearings.

Representative comments:

"*I believe using millions of gallons of fresh water for fracking will contribute to the water shortages we are seeing around the country, and will cause shortages here in Illinois.*"

"*Fracking uses a lot of water. Water is necessary for drinking, farming, transportation and existing industries. Clean water is the only possible medium that aquatic life can exist in…Please do more to protect water supplies.*"

"*I'm a customer/user of Fort Massac Water District. The water sold by Fort Massac Water comes from the aquifer that sits under much of the proposed fracking sites in southern Illinois. Therefore, the inadequate water plans and lack of local control in the permitting process is of great concern to me and my neighbors."*

"*I live in Bloomington-Normal, and we were in a big drought the last two summers. We cannot afford fracking to deplete our water supply!*"

"*Water is precious…All fracking water use plans should have their plans approved by local water management institutions.*"

"*Citizens are fined for watering their lawns or gardens outside the time guidelines imposed during water restrictions, but the industry can get away with taking millions of gallons of water for fracking. How can IDNR justify this?*"

As these examples show, the concerns about water management were diverse. The essential suggestions made by the comments are summarized below and considered in turn:

- *In regions that are already water-stressed, HVHHF operations can have a significant impact on water supplies*

- *There should be limits regarding the amount of water to be used in HVHHF operations*

- *IDNR needs to better define the terms in the plan, otherwise the water management plan will be difficult to apply or enforce*

- *In particular, IDNR should clarify the elements of a showing that fresh water withdrawals have been minimized "as much as feasible," and the types of measures that must be evaluated in order to minimize impacts to aquatic life*

Response: IDNR recognizes that one of the salient concerns with HVHHF operations across the country in general is the amount of water involved in the process – considerable amounts in drilling, and much more in stimulation of the well. According to the US EPA, estimates of water needs per well have been reported to range from a low of 65,000 gallons for coal bed methane production to up to 13 million gallons for shale gas production, depending on the characteristics of the formation being fractured and the design of the production well and fracturing operation. Hard data and apples-to-apples comparisons are not easy to come by because HVHHF is often not distinguished from lower-volume vertical hydraulic fracturing, a well can have multiple stimulations of the same formation, a well site can have more than one well, and much reporting is voluntary. The most commonly reliable figures indicate a range of 4.4 to 5 million gallons per well for a HVHHF. For comparison, five million gallons of water are equivalent to the water used by 50,000 people in one day, assuming a per capita use of 100 gallons daily.[1]

From one perspective this is a small amount, compared to many other uses of water. In America, and Illinois, we have and use a lot of water. The 5 million gallons used by an average HVHHF well roughly equals the fresh water the Mississippi River puts into the Gulf of Mexico every second, or the water usage of New York City in 6 hours. Illinois industry, farms, government, small businesses, and households collectively withdraw roughly 20 *billion* gallons a day from surface waters and another billion gallons a day from groundwater. Thermoelectric power generation – electric power plants with steam-driven turbines – accounts for nearly half the water withdrawals in America, and an even greater percentage in Illinois. Illinois withdraws more water for its nuclear- and coal-powered plants than any state in the U.S. except for much larger California. Were Illinois to have 200 HVHHF wells drilled annually, each using 5 million gallons for drilling and hydraulic fracturing, that would use a billion gallons a year – but that would be a fraction of 1% of the water that Illinois withdraws from surface and underground sources each year.

Such figures that minimize HVHHF's water consumption, however, need another perspective for balance, for two reasons. First, the overwhelming amount of water withdrawn in this state is used in northern Illinois, where most of the population, business, and industry are located. By contrast, expectations are that most HVHHF will occur in southernmost and especially southeastern Illinois where the New Albany shale is thickest and its organic content highest; thus, statewide figures, or comparisons to the power plants that serve the 6-county region in NE Illinois, are somewhat inapt. Second, nearly all of the other water uses mentioned above return the withdrawn water to the hydrologic cycle, either directly or indirectly.[2] HVHHF,

by contrast, is an unusual "consumptive use" in that much water used returns neither to groundwater aquifers nor surface waters, nor to the atmosphere, nor even to the ocean, but is injected deep into the earth, taking it out of the hydrologic cycle.

Looking at HVHHF in context of southern Illinois water use yields a somewhat different picture than comparing with all of Illinois. Exclusive of power generation, the total daily water use for the Saline and Big Muddy regional planning areas, combined, is about 90 million gallons a day.[3] Power generation likely only doubles this figure because of the large component used for agriculture. The 200-well, billion-gallons-a-year example used above would equal about 6 days' worth of water use by that entire region. Five billion gallons, or 1,000 wells @ 5Mg/well, is comparable to the annual water withdrawal from Rend Lake.[4]

Southern Illinois has shallow sand-and-gravel fresh water aquifers, in general, and is historically the rainiest part of Illinois. Thus the aquifers on the one hand easily and frequently recharge, especially after the not-infrequent floods. However, because these aquifers are shallow, they can also be depleted quickly, and southern Illinois has experienced severe droughts periodically in recent memory. In such droughts, groundwater, the flow of smaller streams and rivers, and the depth and quality of some ponds and lakes have been threatened. In such conditions, the withdrawal and removal of millions of gallons would be significant, and could conflict with other human and ecological needs.

In its first draft, IDNR incorporated, almost word for word, the section in the HFRA regarding the water source management plan (Section 1-35(b)(10)):

> (b) Every applicant for a permit under this Act must submit the following information to the Department on an application form provided by the Department:
>
> ***
>
> (10) a fresh water withdrawal and management plan that shall include the following information:
> (A) the source of the water, such as surface or groundwater, anticipated to be used for water withdrawals, and the anticipated withdrawal location;
> (B) the anticipated volume and rate of each water withdrawal from each withdrawal location;
> (C) the anticipated months when water withdrawals shall be made from each withdrawal location;
> (D) the methods to be used to minimize water withdrawals as much as feasible; and
> (E) the methods to be used for surface water withdrawals to minimize adverse impact to aquatic life.

The rationale for the proposed rules was that, to fully understand water impacts, it is important to know not only how much water an operator uses, but also the sources being tapped. The statutory scheme is that plans are evaluated on a permit by permit basis, taking into

consideration the proposed withdrawal in relation to overall uses from that water source. As with many permitting schemes, such an approach tends to discount cumulative impacts from all permitted operations.

After reviewing the comments, IDNR believes the water source management plan subsection must be refined so that IDNR will receive the information it needs to determine within the statutory timeframe whether the plan is "adequate and effective," so that information to the public is more comprehensive and transparent, and to set out a clearer standard for industry and applicants as to what will be deemed "adequate and effective." The touchstone must be the statutory goal of the water source management plan, which is to ensure that HVHHF operations will be conducted so as to protect the public and the environment. The Department must also bear in mind the multiple other precepts in the statute to protect public health, public wildlife, aquatic life, and the environment.

Accordingly, the information provided in the water management plan will also be beneficial during the public participation process: since the plan will be included in the application, people may submit written comments on the proposed plan or raise issues at a public hearing. However, the burden of examining plans cannot be shifted onto the lay public, in an extremely short timeframe, especially considering that most of the public won't get specific notice of the application, the plan, or the permit review process.

With this in mind, IDNR looked at the plans required in other states and provinces. Several other jurisdictions are administering or developing regulatory regimes that require submission of water management plans.

West Virginia, for example, has a Natural Gas Horizontal Well Control Act under which a water management plan must be submitted, on an individual well or watershed basis, along with the permit application if the well requires more than 210,000 gallons of water from state waters during any 30-day period. This plan must include the following: type of water source, county of each source to be used, latitude and longitude of each withdrawal location, anticipated volume of each withdrawal, months when withdrawals are expected to be made, planned management and disposition of wastewater after completion, and, for all surface water withdrawals, an identification of the current designated and existing water uses (including public water intakes within 1 mile), a demonstration that sufficient in-stream flow will be available immediately downstream of the withdrawal location, and methods to be used to minimize adverse impacts to aquatic life. Permittees have to then also comply with the WV Water Resources Protection and Management Act and register with the WV Department of Environmental Protection ("WVDEP") Water Use Section, updating the WVDEP annually, and must register as a large-quantity user and report their water use and disposal through an online Frac Water Reporting Form.[5]

The Pennsylvania Department of Environmental Protection ("PADEP") requires an approved water management plan similar to the one proposed in the HFRA.[6] The PADEP plan includes information about the sources of water to be used in the fracking process, expected impacts of withdrawals on water resources, and proof of approval by the appropriate river basin commission, among other items.

Ohio's freshwater and recycled water use rules require operators to identify each proposed source of groundwater and surface water that will be used.[7] The estimated rate and volume of withdrawal for production must be provided.

A quasi-governmental committee in Maryland, which like Illinois is in the process of formulating its HVHHF rules, has recommended "a quantitative analysis of acceptable water withdrawals to ensure that all users of the resource are protected and that water withdrawal should occur only from the region's large rivers and perhaps from some reservoirs, [and] an analysis of any invasive species that may be present in the source water and power washing of the withdrawal equipment before it is removed from the withdrawal site."[8] Maryland's Departments of Environment and Natural Resources (the equivalent of our IEPA and IDNR) agree that practices are necessary to control invasive species, but they will likely decline to add water appropriation provisions to their HVHHF regulations "because current Maryland laws and regulations protect other users of the water resource and the resource itself" through a comprehensive surface water withdrawal permitting system, which Illinois, despite having a near-identical common-law body of law as Maryland, and similar duties of water trusteeship for the state, does not have.

Already-existing Maryland law that will govern HVHHF withdrawals requires Department of Environment approval and issuance of an "appropriation permit" before anyone can withdraw any surface water, or more than 5,000 gallons per day (gpd) of ground water as an annual average. COMAR 26.17.06.02. Requests for withdrawals may trigger required aquifer testing and other technical analyses, plus notification of contiguous property owners, compliance with State plumbing code, requirements for water conservation technology, plus a public information hearing. Criteria for approval of the appropriation permit include "impact on other users and the waters of the State, and the aggregate changes and cumulative impact that the particular request and future appropriations in an area may have on the waters of the State." COMAR 26.17.06.05; COMAR 26.17.06.06.

Note that the Maryland laws predate HVHHF considerations and exist as overarching protections for that state's waters. By comparison, Illinois law on water withdrawal generally, irrespective of HVHHF, does not give the comparable Illinois agencies comparable control for purposes of environmental protection or consideration of cumulative impact.

Lastly, several commenters pointed out that the USEPA is conducting a study to better understand the potential impacts of hydraulic fracturing for oil and gas on drinking water resources. The progress report was released in December 2012 and a draft report is expected to be released for public comment and peer review in 2014.[9] IDNR reviewed the progress report and will review the final report when available, but notes that water management affects more than drinking water. Drinking water is only a fraction of fresh water use in Illinois.

IDNR's rule subsections 245.210(a)(10)(C) and (D) do require disclosure of recycled water and non-freshwater sources to be used, and the anticipated volume. These two data points do help give IDNR a more complete picture of water usage used for HVHHF statewide, and will

enable IDNR to promote these non-freshwater sources where possible. They do not, however, by themselves make the HFRA one of the stronger state regimes for regulating water for HVHHF.

After reviewing the comments and additional sources, IDNR believes that the rules, in order to achieve statutory purpose and the promise of the HFRA, should incorporate language to ensure that the permittee is using accurate methods to monitor and record the amount of water withdrawn from these sources. Methods for monitoring and measuring the volume and rate of water withdrawal are well known in the water resource profession, and staff at the IDNR Office of Water Resource will be able to assist in this review. See the proposed rule change below.

With respect to establishing precise limits on water use, fresh water sources for HVHHF operations will vary significantly. The water source could be a river, lake, stream, well, etc.[10] As a result, what may be a reasonable limit for one water source may not be for others. Consequently, IDNR is incorporating into the permit decision section (245.300) specific criteria that IDNR will consider to determine whether the plan is "adequate and effective."

As to clarifying the terms in this section, such as what "methods" need to be used to minimize water withdrawals and adverse impact on aquatic life, a case by case approach is again more appropriate because methods will vary by water source. However, the Department needs to be given, in the application, the information necessary to evaluate the plan. Given the 60-day timeframe for permit review, IDNR cannot be counted on to already have at its ready, nor to go out and research, the numbers and data against which to compare the applicant's proposal. The API executive summary on water management[11] recommends that the operator proactively meet with local water supply and governmental authorities, to get that data and hear their concerns and put it into the plan before coming to an agency such as IDNR. Such reconnaissance and research will also give the applicant itself useful information about the context in which its proposal will function.

The PADEP plan also does not define this type of standard further, but gives examples in guidance documents of such methods, such as seasonal withdrawal scenarios.[12] The API Guidance Document HF2 ("Water Management Associated with Hydraulic Fracturing") also provides alternatives for operators to consider, such as using abandoned surface coal mining pits for the storage of water or excavating low lying areas to allow for rain water harvesting.[13] A 2014 report from Ceres recommends promoting non-freshwater sources such as recycled water, wastewater, or brackish water.[14] These are examples of methods IDNR will look at when reviewing a water management plan.

Department Action: 245.210(a)(10) is modified as follows:

10) Water Source Management Plan

A) If fresh water is anticipated to be used in the high volume horizontal hydraulic fracturing treatment, *a water* source *management plan that shall include the following information* (Section 1-35(b)(10) of the Act)*:*

i) *the* name and location (county, latitude, longitude) of the *source of the* fresh *water, such as surface or groundwater, anticipated to be used for water withdrawals, and the anticipated withdrawal location* (Section 1-35(b)(10)(A) of the Act);

ii) *the anticipated volume and rate of each* fresh *water withdrawal from each withdrawal location*, and quantification of that withdrawal as a percentage of, or by comparison with, as applicable, existing levels, volume, capacity, and other withdrawals of or from the water source (Section 1-35(b)(10)(B) of the Act);

iii) *the anticipated months when* fresh *water withdrawals shall be made from each withdrawal location* (Section 1-35(b)(10)(C) of the Act);

iv) the methods to be utilized for accurately monitoring the amount of water withdrawn from each source, and how such data will be recorded and maintained;

v) the seven day ten year low flow discharge (commonly referred to as the 7Q10 flow) for surface streams at the point of withdrawal. The permittee shall agree to not withdraw water when the stream is at the 7Q10 flow, nor shall the permittee withdraw water when that withdrawal causes the stream to fall to or below the 7Q10 flow;

vi) *the methods to be used to minimize* fresh *water withdrawals as much as feasible* (Section 1-35(b)(10)(D) of the Act)*;*

vii) *the methods to be used for surface water withdrawals* and transportation and/or delivery of that water to the well site *to minimize adverse impact to aquatic life*, including impact from invasive species (Section 1-35(b)(10)(E) of the Act); and

viii) The Department's determination of the Water Source Management Plan's adequacy and effectiveness under 245.300(c)(4) shall consider all water uses from the designated sources, the low flow analyses provided by the applicant, the in-stream flow needs of any source stream, available regional water supply plans, whether drought conditions exist or are likely to exist, and any other relevant information known or made known to the Department.

B) *Where a surface water source is wholly contained within a single property, and the* landowner *of the property expressly agrees in writing to its use for* fresh *water withdrawals, the applicant is not required to include this surface water source in the fresh water withdrawal and*

management plan (Section 1-35(b)(10) of the Act). For this exception to apply, the water use agreement with the landowner of the property must be provided with the permit application. Any confidential provisions of a water use agreement may be redacted by the applicant;

C) If recycled water is anticipated to be used in the high volume horizontal hydraulic fracturing treatment, describe the source of the recycled water and the anticipated volume to be used; and

D) If water other than fresh water or recycled water is anticipated to be used in the high volume horizontal hydraulic fracturing treatment, describe the source of such other water and the anticipated volume to be used <u>if the water derives from a river, lake, stream, other surface water, or groundwater, and but for the TDS levels would be considered fresh water, then the applicant shall provide the information required by Subsection 245.210(a)(10)(A)</u>.

- *The plan should require approval from local municipalities, water districts, or other governmental units*

- *There is no process for sharing the frack operator's water plan with other state or regional agencies responsible for water usage for their input*

Response: With respect to these comments, the HFRA and the proposed rules address this concern to the extent possible.

Section 245.210(a)(9) requires an applicant to certify that it complied with the Water Use Act of 1983 and applicable regional supply plans. Among other things, the Water Use Act requires a person who proposes to develop a new point of withdrawal for a "high-capacity" well to notify the pertinent Soil and Water Conservation District ("SWCD") before construction of the well. 525 ILCS 45/1 *et seq*.

In the second notice version of the rules, IDNR will also require, as part of that certification, proof that the applicant provided the plan to the applicable SWCD. See IDNR's Response to Section 245.210. The rules also require IDNR to give notice to the Illinois Water Survey of the application, which includes the water source management plan. 1-40(b); 245.240(b). IDNR will also require the operator to provide the plan to any community water supply, to make the HFRA consistent with existing groundwater protection law.

Beyond these certifications, it would not be feasible to require approval from local entities that do not have the necessary procedures in place. For instance, as explained in the response to Section 245.210, SWCDs send the forms for high-capacity wells to ISWS for review of the proposed withdrawal's effect upon other users, but that review is rarely carried out.

By way of comparison, the PADEP plan mentioned above requires an operator to include a copy of the appropriate river basin commission approval.[15] However, Illinois does not have the

same type of "river basin commissions" that exist in Pennsylvania. Consequently, certifying compliance with the Water Use Act of 1983 and applicable regional water supply plans (and providing proof) is the next best option under the current framework. Section 1-35(b)(9).

The best way to address the commenters' concern is a more comprehensive, statewide approach to water supply issues. Regional water supply planning is continuing in Illinois, with plans having been completed in Northeastern Illinois, in the Mahomet Aquifer region, and in the Kaskaskia River region. Additional regional plans are being developed and will continue based on available resources. Also, in February of 2014 IDNR recommended that the General Assembly pursue legislation to authorize and fully fund a statewide water supply plan and its implementation to better understand water withdrawals in Illinois and the competing uses of industrial, agricultural, and general water use as well as provide a minimum flow in streams for fish and wildlife.[16] However, these measures can't be advanced by these rules.

Department Action: 245.210(a)(9) is modified as follows:

9) Water Use Self-Certification
A self-*certification* explaining the applicant's *compliance with the Water Use Act of 1983* [525 ILCS 45] *and applicable regional water supply plans* (Section 1-35(b)(9) of the Act), and including receipt or other proof of the applicant's delivery of the plan to the applicable Soil and Water Conservation District and any Community Water Supply, as defined at 415 ILCS 45/5, within 20 miles of the proposed water source;

- *There should be rules for limiting or ceasing water usage for HVHHF purposes in drought conditions*

Response: IDNR recognizes that numerous droughts have occurred in Illinois, with the most significant occurring in the 1930s, 1950s, 1988, 2007, and 2012.[17] In the Governor's Drought Response Task Force report on the drought of 2012, the task force noted that while most public water supply systems in Illinois had adequate supplies to meet the demands of public usage, studies demonstrated that several systems were "at risk" of not being able to meet the water supply demands of their users for a minimum of 18 months.[18]

IDNR believes that the rules as proposed address this issue. The HFRA and the rules explicitly set out that IDNR may suspend or revoke a HVHHF permit for the following cause:

f) the existence of an *emergency condition under which the conduct of high volume horizontal hydraulic fracturing operations would pose a significant hazard to public health, aquatic life, wildlife, or the environment* (Section 1-60(a)(6) of the Act)*;*

A drought would be the type of emergency situation that could pose such a significant hazard. However, to remove any doubt, IDNR added a consideration of drought conditions when approving a water source management plan. (*See* Section 245.300 above).

Department Action: None.

- *The Illinois Petroleum Council objected to the contradictory definition of freshwater, recommending that IDNR focus on protection of water resources that are readily available*
- *The Illinois Petroleum Council made the comment that by restricting use of water sources with elevated TDS (>1,000 ppm TDS) the Department is unnecessarily limiting operators' ability to use water that is not reasonably suited for other uses.*

Response: The Department appreciates the IPC raising the first point but believes that it is not a restriction. IDNR incorporated the definition of fresh water directly from the statute (Section 1-5), which defines fresh water as containing less than 10,000 ppm TDS. If the proposed source does not qualify as fresh water, then it is some other fluid under the HFRA.

As to the second point, the Department after review agrees that the IPC is correct that a distinction should not be made based solely on the TDS standard for purposes of this section, since the State still has the same interest in the information. The requirements for water sources that, but for the elevated TDS, would be considered fresh water, will apply to such water sources.

Department Action: Section 245.210(a)(10)(D) is modified as follows:

D) If water other than fresh water or recycled water is anticipated to be used in the high volume horizontal hydraulic fracturing treatment, describe the source of such other water and the anticipated volume to be used <u>if the water derives from a river, lake, stream, other surface water, or groundwater, and but for the TDS levels would be considered fresh water, then the applicant shall provide the information required by Section 245.210(a)(10)(A) of these Rules</u>.

- *Local public health department should receive notice of the water management plan*

Response: IDNR agrees that local public health departments should receive notice of the permit application. The application will be available online and will contain the water source management plan. See IDNR's Response to Section 245.240. This notification is necessary because the Illinois Department of Public Health works through the county health departments to regulate the construction of all water wells. See 77 Ill. Adm. Code 920.10 *et seq*. Among other things, the construction must meet all codes for well construction and must be drilled by a licensed water well driller.

Department Action: None.

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[1] United States Environmental Protection Agency, *Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources*, EPA 601/R-12/011, available at http://www2.epa.gov/sites/production/files/documents/hf-report20121214.pdf (December 2012). This figure has been critiqued as including non-personal water use within a community nonetheless attributed to individuals on a per capita basis.

[2] IDNR, *Water Use and Supply*, http://dnr.state.il.us/orep/ctap/ctapvol2/p101-112.htm
[3] Ill. St. Water Survey, *Water Withdrawals and Population in Various Regions of Illinois*, electronic database, available at http://www.isws.illinois.edu/wsp/faq/fr.asp (last visited July 20, 2014).
[4] Rend Lake Conservancy Dist., http://rendlake.org/
[5] Hansen, E., D. Mulvaney, and M. Betcher, *Water Resource Reporting and Water Footprint from Marcellus Shale Development in West Virginia and Pennsylvania,* p. 70, available at www.downstreamstrategies.com/documents/reports_publication/marcellus_wv_pa.pdf (Oct. 2013).
[6] Penn. Dept. of Environ. Protection, Model Water Management Plan, available at http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-10554 (last visited July 10, 2014).
[7] Ohio Rev. Code §1509.06(A)(8)(a).
[8] Md. Dept. of Enviro., *Marcellus Shale Safe Drilling Initiative Study Part II -- Interim Final Best Practices*, http://www.mde.state.md.us/programs/Land/mining/marcellus/Documents/7.10_Version_Final_BP_Report.pdf
[9] United States Environmental Protection Agency, *Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources*, EPA 601/R-12/011, available at http://www2.epa.gov/sites/production/files/documents/hf-report20121214.pdf (December 2012).
[10] Veil, J., *Water Availability and Management in Shale Gas Operations*, Argonne National Laboratory, presentation for 17th International Petroleum and Biofuels Environmental Conference, available at http://ipec.utulsa.edu/Conf2010/Powerpoint%20presentations%20and%20papers%20received/Veil_9_Plenary_recvd_9_20_10.pdf; http://www.shalegas.energy.gov/resources/HF2_e1.pdf (Sept. 2, 2010).
[11] American Petroleum Institute, *Water Management Associated with Hydraulic Fracturing,* API Guidance Doc. HF2, 1st ed., available at http://www.shalegas.energy.gov/resources/HF2_e1.pdf (June 2010).
[12] http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-10554;
[13] API, *Water Management Associated with Hydraulic Fracturing,supra.*
[14] Freyman, M., *Hydraulic Fracturing & Water Stress: Water Demand by the Numbers*, Ceres, available at http://www.ceres.org/resources/reports/hydraulic-fracturing-water-stress-growing-competitive-pressures-for-water/view (February 2014).
[15] http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-10554
[16] The report was submitted to the General Assembly pursuant to Section 1-97 of the HFRA.
[17] Ill. Dept. of Nat. Res., *The Drought of 2012, a Report of the Governor's Drought Response Task Force,* available at http://www.isws.illinois.edu/hilites/drought/archive/2012/docs/TheDroughtOf2012.pdf (March 2012).
[18] *Id.*

245.210 (a)(11) Permit Application Requirements – Calculate Tank Size

Comments: The Department received approximately 100 comments that addressed the subject of Rule Subsection 245.210(a)(11), concerning storage tank sizes for flowback. Commenters besides individuals included the Nature Conservancy, Fair Economy Illinois, Frack Free Illinois, and the Illinois Attorney General's Office. The essence of the comments was that the proposed HFRA rules do not contain a formula for calculation of storage tank sizes for flowback, thus allowing operators to install under-sized tanks, which in turn would bring open-air reserve pits into use more frequently and increase the possibility of pollution. One commenter recommended that this section should require permit applicants to provide an estimate of the flowback anticipated from the well, along with supporting documentation.

Response: IDNR's first draft of the rule incorporated, almost identically, the language from the HFRA at Section 1-35(b)(11), which is fairly specific as to the elements required in a flowback plan. However, the point made by the commenters as to the proper calculation for storage tanks is consistent with the intent and purposes of the HFRA. Section 1-35(b)(11) states that "[t]he plan shall describe the capacity of the tanks to be used for the capture and storage of flowback and of the lined reserve pit to be used, if necessary, to temporarily store any flowback in excess of the capacity of the tanks." Inherent in that requirement is that the capacity of the storage tanks should be commensurate to the anticipated flowback. The only reason to ask the applicant to state the volume of the tanks is to compare with the capacity needed. The statute is also clear that reserve pits should only be used under rare circumstances, out of necessity, and not simply because a permittee did not properly calculate the size of the storage tanks. Section 245.830 clarifies that a permittee will only be able to use a reserve pit under limited circumstances.

A permittee will have an idea of the permeability and fluid absorption and retention properties of the target formation when applying, such that an estimate of anticipated flowback is not burdensome, and the requirement that tanks be able to handle that flowback, reasonable. IDNR finds that the most efficient approach to ensuring storage tanks are sufficient, consistent with statutory purpose, is to require that estimate as part of the storage tank plan. Disclosing the flowback rate and amount, and the frequency with which the storage tanks will be emptied, will enable the Department to determine if the proposed storage tanks will protect public safety and resources. Without such information, IDNR would be hampered in its ability to determine if the tank storage plan is "adequate and effective." *See* Section 245.300(c)(3).

Because of the potential liabilities that the HFRA and the rules impose, it is also in the best interest of the permittee to accurately estimate the size of the storage tanks needed. This minor change provides additional protection for both the public and the permittee.

Department Action: 245.210(a)(11) is modified to read as follows:

11) Hydraulic Fracturing Fluids and Flowback Plan
A hydraulic fracturing fluids and flowback *plan for the handling, storage, transportation, and disposal*, recycling, *or reuse of hydraulic fracturing fluids and hydraulic fracturing flowback* consistent with the requirements of Subpart H.

The plan shall identify the specific Class II injection well or wells that will be used to dispose of the hydraulic fracturing flowback or the facilities where the hydraulic fracturing flowback will be reused or recycled. *The plan shall describe the capacity of the tanks to be used for the capture and storage of* all the anticipated hydraulic fracturing *flowback*, the expected flowback rate and amount, and the frequency that the storage tanks will be emptied. The plan shall also describe the capacity ~~*and*~~ *of the lined reserve pit to be used, if necessary, to temporarily store any flowback in excess of the capacity of the tanks. Identification of the Class II injection well or wells shall be by name, identification number, and specific location and shall include the date of the most recent mechanical integrity test for each Class II injection well* (Section 1-35(b)(11) of the Act);

245.210(a)(12) Well Site Safety Plan

Comments: The Department received numerous comments concerning worker safety issues and the adequacy of the safety plan requirements in the proposed rules. Commenters included the entities (or persons affiliated with) Fair Economy Illinois, IOGA, Food and Water Watch, Illinois People's Action, Illinois State University, SAFE, Sierra Club, Frack Free Illinois, UIC School of Public Health, the Illinois Attorney General's Office, and The Nature Conservancy. The majority of comments were concerned about the lack of reference to the Occupational Safety and Health Administration ("OSHA") standards, exposure of workers to silica, dust and radiation, and long work hours which might result in accidents. Many were concerned about elevated risk of cancer and other illnesses from exposure to hazardous materials. One commenter took issue with the lack of protections for first responders.

The commenters also raised specific concerns, including the following:

- *A reference/requirement to adhere to OSHA standards (including availability of Material Safety Data Sheets on site) on dust and radioactivity*
- *A requirement to test for exposure to contaminants/hazardous materials*
- *Collection of test data and reporting testing results publicly*
- *Requirement to limit working hours, based on labor standards*
- *A requirement for an emergency response plan component, which also considers the safety of first responders.*

On the other hand, two comments suggested that the safety requirements were redundant and create extra paperwork, and that the application process should be streamlined to require only summaries of standard safety practices.

Response: IDNR recognizes that HVHHF sites expose workers to health and safety hazards. OSHA acknowledges that workers at HVHHF sites may be exposed to hazards similar to those at other oil and gas drilling sites, such as being struck by equipment, fires or explosions from flowback fluids, or working in confined spaces.[1] It is now well-documented that workplace fatalities and injuries have increased, sometimes dramatically, in states or counties that have experienced a large increase in HVHHF operations.

With these dangers in mind, IDNR's rationale in the first draft was to include the protections as provided for in the HFRA. As part of the permit application, the statute requires the submission of "a well site safety plan to address proper safety measures to be employed…for the protection of persons on the site as well as the general public." Section 1-35(b)(12). The statute also includes timeframes for the applicant to supply a copy of the plan to the county/counties involved and the State Fire Marshal. Section 1-35(b)(12).

The rule as proposed provides almost identical language to the HFRA. The rule requires a plan to address the safety measures for persons on site and the public, but also specifies that the plan must comply with federal and state law. The proposed rule also requires the safety plan to identify the presence of any hazardous material used or stored at the site, provide contact

information for all appropriate emergency responders, and provide contact information for the applicant to be used by emergency responders.

In its analysis, IDNR reviewed the OSHA regulations pertaining to hydraulic fracturing.[2] OSHA has jurisdiction over the safety and health of workers at HVHHF sites through its General Industry Standards (29 CFR 1910) and the General Duty Clause of the Occupational Safety and Health (OSH) Act. OSHA's jurisdiction includes standards for silica exposure,[3] for which OSHA and the National Institute for Occupational Safety and Health issued a hazard alert in 2012.[4] (29 CFR 1910.1000 Table Z-3). As part of the enforcement of these regulations, five OSHA regions use national, regional, and local emphasis programs to inspect oilfield worksites, including those that may have ongoing hydraulic fracturing operations.[5]

Federal law applies regardless of IDNR's rules. Compliance with federal law such as the OSHA is required by the Act. Sec. 1-120. Consequently, it is not necessary for IDNR to incorporate standards that operators are already required by law to follow. Yet, IDNR agrees that adding a reference to the OSHA regulations will help ensure that applicants have applicable safety rules in mind, especially in view of OSHA having issued an alert.

Despite OSHA's primary role in regulating workplace health and safety, IDNR is the designated permitting agency in the HFRA. IDNR also has an important role to play with respect to the well site safety plan. IDNR researched well site safety plans in other states to find best practices. West Virginia, for instance, requires the following information in a well site safety plan (W. Va. Cd. Ann. § 22-6A-7):

> (b) Every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information:
>
> …. (13) A well site safety plan to address proper safety measures to be employed for the protection of persons on the site as well as the general public. The plan shall encompass all aspects of the operation, including the actual well work for which the permit was obtained, completion activities and production activities, and shall provide an emergency point of contact for the well operator. The well operator shall provide a copy of the well site safety plan to the local emergency planning committee established pursuant to §7, Article 5(a), ch.5 of this code, for the emergency planning district in which the well work will occur at least seven days before commencement of well work or site preparation work that involves any disturbance of land.

IDNR's rules mirror the West Virginia regulation, and in some respects go beyond its requirements. Regarding the public comments concerning emergency responders, the proposed rule sections 245.210(a)(12)(C)-(E) do provide measures to assist emergency responders.

As a result, IDNR does not believe that the rules are redundant or add unnecessary paperwork – all of these elements are crucial components of a safety plan. OSHA has compliance assistance specialists throughout the nation. OSHA specialists can provide information to employers and workers about OSHA standards, short educational programs on

specific hazards or OSHA rights and responsibilities, and information on additional compliance assistance resources. These OSHA resources specifically cover oil and gas well drilling and servicing, and can help operators identify workplace hazards and provide possible solutions that may be relevant to their safety program.[6]

The Attorney General's Office, along with other commenters, suggested that the well site safety plan should include a required "emergency response" plan. The comment cites the Center for Sustainable Shale Development (CSSD) Performance Standards[7] which address various emergency response requirements. IDNR finds this a useful suggestion; it furthers the statutory intent that IDNR only permit operations that, as proposed, are reasonably expected to be conducted in a manner that will protect public health and safety. Section 1-53(a)(4).

Department Action: the rule is amended as follows:

12) Well Site Safety Plan
A well site safety plan to:

A) *address proper safety measures to be employed during high volume horizontal hydraulic fracturing operations for the protection of persons on the* well *site* (Section 1-35(b)(12) of the Act) that complies with federal and State law, including applicable OSHA regulations;

B) *address proper safety measures to be employed during high volume horizontal hydraulic fracturing operations for the protection of the general public* (Section 1-35(b)(12) of the Act) that complies with federal and State law;

C) address proper safety measures to be employed during an emergency. The plan should consider issues such as whether local responders have appropriate equipment and training to respond to an emergency at a well;

~~C~~D) identify the presence of any hazardous materials used or stored at the well site;

~~D~~E) provide contact information for all appropriate emergency responders; and

~~E~~F) provide contact information for the applicant to be used by emergency responders.

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[1] U.S. Dept. of Labor / OSHA, *Frequently Asked Questions about Silica and Hydraulic Fracturing*, Occupational Safety & Health Administration (Aug. 15, 2014), https://www.osha.gov/dts/hazardalerts/hydraulic_frac_hazard_faq.html.
[2] U.S. Dept. of Labor / OSHA, *Safety and Health Topics Oil and Gas Extraction* (Aug. 15, 2014), https://www.osha.gov/SLTC/oilgaswelldrilling/index.html. A synopsis of OSHA's authority and regulations with respect to hydraulic fracturing is available at https://www.osha.gov/dts/hazardalerts/hydraulic_frac_hazard_faq.html.
[3] 29 CFR 1910.1000 Table Z-3.
[4] U.S. Dept. of Labor / OSHA, *OSHA and NIOSH issue hazard alert on ensuring workers in hydraulic fracturing operations have appropriate protections from silica exposure* (Aug. 15, 2014), https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=NEWS_RELEASES&p_id=22596.
[5] Center for Disease Control and Prevention, *Worker Exposure to Silica during Hydraulic Fracturing*, (2012), http://stacks.cdc.gov/view/cdc/11919.

[6] United States Department of Labor, *Oil and Gas Well Drilling and Servicing eTool*, Occupational Safety & Health Administration (Aug. 15, 2014), https://www.osha.gov/SLTC/etools/oilandgas/sitemap.html.

245.210 (a)(15) Traffic Management Plan

Comments: The Department received approximately 150 comments concerning rule subsection 245.210(a)(15) and its requirement of a Traffic Management Plan. Commenters included 31 entities (including more units of government than commented on any other aspect of the rules) and at least 115 individuals. The groups included: the Counties of Ogle, Williamson, Fulton, Tazewell, Logan; the County Highway Departments of Clay, Washington, Cumberland, White, Jefferson, Sangamon, Wayne, Stephenson, Perry, Dewitt; Cities of Carmi, Olney, and Mount Carmel; Villages of West Salem and Elizabethtown; Rochester Township; Regional Planning & Development Commissions of South Central Illinois, Greater Wabash; Illinois Department of Transportation; ILOGA; Illinois Chamber of Commerce; Fairfield Community High School District #225; Community Energy Systems; and the Illinois Association of County Engineers.

Nearly all of the commenters, particularly the local highway departments, expressed the concern that HVHHF operations will damage local roads and/or endanger other drivers through the numerous repetitive truck trips that are required to carry out drilling activities. The essential points of the comments are set out below, and considered in turn:

- *The rules do not address the upgrade, maintenance, or repair of roadways needed to accommodate activities that will occur if permits are issued under the Illinois Hydraulic Fracturing Act*

- *The rules should require Road Use Maintenance Agreements ("RUMA") to ensure these issues are addressed.*

Response: IDNR recognizes that HVHHF operations lead to a substantial increase in traffic in many communities, and that this increase in traffic can have a profound impact on the transportation infrastructure. This is well-documented in studies, reports, and articles, some of which are listed in an appendix to this filing. The Illinois HFRA requires a traffic management plan, but it does not directly address the issues of maintenance or repair. The only substantive requirement in the HFRA is that the plan must identify "the anticipated roads, streets, and highways that will be used for access to and egress from the well site." Section 1-35(b)(15).

Procedurally, the HFRA requires the applicant to provide a point of contact to discuss issues related to traffic management, and requires the applicant to provide a copy of the plan to the county or counties in which the well is located. Section 1-35(b)(15). Finally, Sec. 1-53 of the statute requires that the record of decision demonstrates that the applicant's traffic management plan will be "adequate and effective." However, the standard for making that determination is left to the Department to interpret and/or set.

The Department is not a transportation agency, and while it does partner in occasional road and bridge construction, does not in general exercise oversight over, or analyze, traffic issues. Yet the Department is charged with evaluating the adequacy and effectiveness of traffic management plans. The Department also observes that a management plan must encompass

more than disclosing what roads and streets will be used, and must tell IDNR the means and methods that the applicant will use to reduce, mitigate, and/or compensate for its traffic.

It is clear that the legislature intended for the applicant to discuss the traffic management plan with the affected localities. For that reason, IDNR, in the first notice draft, required contact information of the local highway authorities. Moreover, highway authorities own property; IDNR agrees that roads and traffic may be "adversely affected" by HVHHF operations.

As a result, IDNR believes that it would further the legislative intent, and address the commenters' concerns most efficiently, to require the applicant to at least consult with local highway authorities. In addition, IDNR can assist applicants by setting forth in rule some of the information it will require in order to assess whether the applicant has proposed an adequate and effective traffic management plan. Because traffic and congestion and noise are historically among issues that objectors most commonly raise against projects of all sorts, it behooves applicants to address those issues proactively.

A number of commenters recommended that the rules require RUMAs, and argued that RUMAs are common in other states. The Department believes that to *require* the applicant to enter into a RUMA would constitute a statutory amendment beyond the scope of the rulemaking, better accomplished by legislation.

Department Action: See rule change below.

- *HVHHF operations will affect traffic flow during and after drilling activities; IDNR should develop rules that address truck transportation to and from the site*

Response: Again, IDNR acknowledges that HVHHF activities in other states have been shown to affect traffic flow in a variety of ways and at different stages of the operations. For the same reasons, IDNR finds that traffic flow should be considered as part of an adequate and effective traffic management plan. However, given that IDNR has not yet had the opportunity to evaluate a single applicant traffic management plan, and given the lack of a data set as to how HVHHF truck activities under such plans will impact traffic flow here, it is premature to issue rules on truck transportation.

Department Action: See rule change below.

- *IDNR should remove the term "preferably" in the initial paragraph to require that dialog occurs with the impacted highway authorities early in the permitting process*

Response: As described above, IDNR agrees that coordination needs to occur between the applicant and the local highway authorities, as these entities will have firsthand knowledge about traffic and needs of its community. The applicant should consult and coordinate with these entities. The Department emphasizes that it is not by this rule requiring any local authority's approval. Obviously, an applicant who does secure approval of the local road authorities is unlikely to face their objections during permitting, and that approval will carry some weight with this Department.

Department Action: See rule change below.

- *Increased traffic and working conditions create a danger for workers driving to and from fracking operations*

Response: IDNR recognizes the dangers associated with increased traffic.[1] This is another reason for applicants work closely with local experts in transportation, and to develop routes and manage time of transport so as to reduce the most likely conflicts with other vehicles and drivers. However, IDNR will not in this rulemaking require particular measures.

Department Action: Rule 245.210(a)(15) is modified as follows:

15) Traffic Management Plan
A traffic management plan that is developed by the applicant, ~~preferably~~ in coordination with the impacted highway authorities (county, township, road district system, and municipal street system, as applicable), to *identify the anticipated roads, streets, and highways that will be used* (Section 1-35(b)(15) of the Act) to facilitate the well site construction, drilling operations, high volume horizontal hydraulic fracturing operations, production, and continued operations of the well site. The traffic management plan shall include the following:

A) a scaled map of the proposed routes the applicant intends to use to construct the well site, perform high volume horizontal hydraulic fracturing operations, production and continued operations, for at least a 10 mile radius around the well site, identifying all the different highway jurisdictions;

B) anticipated well site construction and drilling operations start and end dates, high volume hydraulic fracturing operations start and end dates, and other high traffic operations start and end dates;

C) identification of any management measures that will be used to minimize, mitigate, or compensate for stress to local roads and/or impact on regular traffic flow;

~~C~~D) contact information for the applicant's representative with knowledge of the traffic management plan; and

~~D~~E) contact information for a representative of each impacted highway authority;

[1] E.g., I. Urbina, *Deadliest Danger Isn't at the Rig but on the Road*, N.Y. Times (May 14, 2012), http://www.nytimes.com/2012/05/15/us/for-oil-workers-deadliest-danger-is-driving.html.

245.210(b) Local Government Consent

Comments: IDNR received over 1,700 comments concerning Rule subsection 245.210(b), as it relates to local governments (other than municipalities) having the power to grant or withhold consent during the hydraulic fracturing permitting process.

Commenters included the SAFE / Frack Free Illinois petition signers, Central Illinois Global Warming Solutions Group, IIRON Student Network, Progressive Democrats of Greater Springfield, Illinois People's Action, SAFE, Peoria Families Against Toxic Waste, the City of Rosiclare, members of the Illinois State University, University of Illinois at Springfield, and University of Chicago communities, and over 100 other individuals, including one or more local government elected officials.

The essence of the comments was that 245.210(b) unfairly granted fewer rights to county governments than to municipal governments, and/or in so doing discriminated against (or gave fewer rights to) rural residents, and that the rule should be amended to require the consent of county governments, or to otherwise give county governments a role equal to that of municipalities in the HVHHF permitting process. As context, Section 245.210(b) currently reads, in pertinent part, as follows:

> when an application is made to conduct high volume horizontal hydraulic fracturing operations at a well site located within the limits of any city, village, or incorporated town, the application shall state the name of the city, village, or incorporated town and be accompanied with a certified copy of the official consent for high volume horizontal hydraulic fracturing operations to occur from the municipal authorities where the well site is proposed to be located.

In other words, an HVHHF applicant must secure the consent of a local municipality if the HVHHF operations are to occur within city or village limits. The Department, like the commenters, reads the statute and first notice draft rule as not including counties within the definition of "municipal authority."

Commenters contended that most HVHHF operations in Illinois will not take place within the boundaries of cities, villages or towns, but within unincorporated areas within the various counties throughout Illinois, especially in southern Illinois. As such, many commenters recommended that IDNR amend 245.210(b) to expressly allow county governments to be able to exercise the same "veto power" that municipalities have during the hydraulic fracturing permit application process. A number of commenters asserted that disparate treatment of residents of different areas amounted to denial of equal protection. Other commenters did not urge the "veto" solution, but believed that counties were unfairly shut out of the permitting process.

Response: The concern is valid and some of the arguments compelling, but the statute in this instance is clear, and gives cities powers it does not give counties. The regulatory language within 245.210(b) was taken virtually verbatim from the HFRA at section 1-35(c). That section, in turn, parallels a long-existing provision in the Illinois Oil and Gas Act, at 225 ILCS 725/13.

Historically, counties are not considered municipalities or municipal authorities, and are distinct from cities, towns, and villages. This is a fundamental aspect of Illinois local governmental law, of which the General Assembly can be presumed to have been aware when it passed the HFRA.

This issue cannot be resolved by this rulemaking but could be addressed by the legislature. Meanwhile, counties and other governments have specific input opportunities under HFRA, and police power authority of their own, with which an applicant must comply. Neither the HFRA nor the rules preempt long-held powers of counties to regulate activities within their jurisdiction under the Counties Code or established case law.

Department Action: No change is made to the rule.

245.220 Permit Bonds or Other Collateral Securities

Comments: The Department received a large number of comments concerning permit bonds (or other collateral securities) required to be posted by an HVHHF permittee. Commenters included individuals associated with SAFE, the University of Chicago, the Illinois Attorney General's Office, Fair Economy Illinois, Illinois People's Action, and Community Energy Systems. The points raised in the comments were that the amount of the bond is not high enough; that each well should be bonded separately instead of a blanket bond for several wells; that handling of the funds should be "transparent"; and that IDNR should specify how "cash" will be handled.

Response: The amounts of $50,000 per permit or a blanket bond of $500,000 for all permits is established by statute, as is the authorization of a blanket bond (Section 1-65(a)). However, the Department should have the discretion to determine whether a blanket bond is appropriate based on the circumstances; accordingly, a rule amendment is made to clarify this.

The desire for transparency is reasonable, but the bond will be public record. Also, no "funds" will be delivered to the Department as a result of a bond unless there is forfeiture. Moreover, Section 1-65 (e) of the Act states that all forfeitures shall be deposited in the Mines and Minerals Regulatory Fund to be used, as necessary, to mitigate or remediate violations of this Act or rules adopted under the Act. The fund expenditures are already public record.

With respect to cash bonds, IDNR consulted its fiscal office and determined that no rule change is required. Under the Oil and Gas Act, cash bonds are an option, but in practice they are rarely received by IDNR. If a cash bond is received under the HFRA permitting process, the IDNR fiscal office will transmit it to the state treasurer's office within 24-48 hours, as current policy requires.

Department Action: The rule is modified to clarify that IDNR has the discretion to offer or require the blanket bond:

b) All applicants *for a permit under this* Part, and persons requesting permit transfers, *shall provide a bond* at the time of filing an application for permit pursuant to Section 245.210 or at the time of filing a request for transfer of permit pursuant to Section 245.340. <u>The Department may require that the bond be provided per permit, or as a blanket bond covering all permits.</u> *The bond shall be in the amount of $50,000 per permit or a blanket bond of $500,000 for all permits.* (Section 1-65(a) of the Act) All bonds must meet the following requirements during the permit application process and through the entire term of an issued permit until the bond is released as provided by subsection (d):

245.230 Permit Application Receipt and Department Review

Comments: The Department received hundreds of comments concerning rule subsection 245.230(e) as it relates to deficiencies in permit applications, the opportunity of the applicant to submit additional information, and the 60-day permit review timeline. Commenters included the Illinois Attorney General's Office, the Sierra Club Illinois Chapter, The Nature Conservancy, the Illinois Environmental Council, and hundreds of individuals. The comments generally expressed concern that Rule 245.230(e) does not allow the public adequate time to review revisions made to a permit application during the 60-day permit application review period, because applicants could submit additional, relevant information very late in the application period. Commenters also argued that this system invites abuse by creating an opportunity to supply material information only after the public participation process has ended.

Response: The Department, in the First notice draft of this subsection, acknowledged the need of the public to receive accurate information on pending permit applications early in the review period so that interested persons had a meaningful opportunity to comment. The mechanism the Department settled on in to require complete information in applications was simply to reject incomplete applications if the applicant failed to provide adequate supplemental information. Section 245.230(e). In addition, applicants must avow that an application is "true, accurate and complete," under penalty of perjury. Section 1-35(f); Section 245.210(e).

IDNR's rationale for this proposed rule was driven by the tight timeline set out in the statute, which admittedly contains conflicting provisions. The HFRA specifies that every applicant for a permit must submit and disclose information, ranging from a directional drilling plan to a water source management plan, in an application form. Much of the information is technical in nature. To implement the statutory safeguards and directives, the application will be substantial, with over two dozen parts. Section 245.210.

According to the statute, once an application is "received," the Department has no more than 60 days *from receipt* to approve, modify or reject the permit; this 60-day period is referred to as a "deadline." Section 1-35(i). The statute further states that if at *any time* during the review period the Department determines that the permit application is incomplete or deficient, the Department *must allow* the applicant to correct the deficiencies and to provide any information the Department requests to complete the application. Section 1-35(j). If the applicant fails to provide adequate supplemental information within the review period, the Department may reject the application. Section 1-35(j). It is important to note that rejection of the application means the applicant forfeits its application fee of $13,500, which the statute clearly establishes is "non-refundable." Section 1-35(e).

The difficulty that IDNR encountered, which the public comments both on this section and in the sections on the hearing process and post-hearing application modifications pointed out, is that the clock starts running for public notice, public comment, and the 60-day deadline upon the Department's "receipt" of an application. Within 5 days after "receipt," the statute requires the Department to post notice of its receipt and a copy of the permit application on its website (Section 1-40(a)) and to notify other state entities of the permit application (1-40(b)). In addition, pursuant to the statute, the public comment period begins 7 calendar days after the

Department's receipt of the permit application and then lasts for 30 calendar days. Section 1-45(a).

The combined effect of the above provisions is, indeed, that an applicant could submit new information *after* the public comment period has ended, effectively bypassing transparency provisions and limiting the ability of citizens, governmental bodies, and businesses to provide input on the final, "real" application. To be sure, an applicant may waive the 60-day deadline (Section 1-35(i)) as a way to ensure it corrects deficiencies identified by the Department, but IDNR is not given power to extend that deadline unilaterally. Also, the statute is silent as to how waiving the deadline interfaces with the public comment period.

Many of the commenters made recommendations to fix the problems, including the environmental coalition, the office of the Attorney General, The Nature Conservancy, and the Illinois Chapter of the Sierra Club. The options suggested by these groups and many individual commenters included the following: adding a "completeness review" period before the comment period commences; enabling the Department to “suspend” the 60-day timeframe; or requiring the applicant to waive the 60-day timeframe.

IDNR closely analyzed all of these proposed options. Each recommendation has merit, but all conflict, at least arguably, with one or more provisions of the statute. Nevertheless, *leaving the scheme as is* also sets up a conflict between the statute’s multiple goals, themselves. IDNR finds that a rule change is necessary to address this problem while also fulfilling some primary purposes of the statute, which include:

- An HVHHF application supplying sufficient information for Department determination of the adequacy and effectiveness of the applicant's plans
- An expeditious Department review of a complete application prior to a permit decision
- A meaningful opportunity for public review of and comment on a complete application
- An opportunity for an applicant to correct deficiencies identified by the Department

The question is how best to regulate the statute while varying the least from its intended scheme. The Department considered, and initially favored, a provision that would allow it to “stop the clock” – that is to say, still only allowing 60 days, but interrupting the running of that time period – if further time was necessary to allow an applicant to correct deficiencies or supply additional information under Section 1-35(j). However, the statute’s use of the word “deadline” in conjunction with “60 calendar days” led the Department to conclude that that option is foreclosed.

Alternatively, the Department considered creative interpretation and definition of “application” to deem an application not operant until after a completeness review. However, the Department was loath to resort to a facially self-contradictory legalism in a regulatory regime where the trust of both the public and industry are necessary. Defining an application as “not an application” until after a pre-review also set up the possibility of non-transparent review, out of the public’s eye, in contravention of an important goal of the statute.

Accordingly, IDNR has settled upon attempting to harmonize the important goals of the HFRA while also ensuring the Department has a limited initial opportunity to review the permit application forms to ensure they contain all necessary responses, in sufficient factual detail, so that IDNR and the public can understand the proposed activities. This will help to prevent applicants from under-disclosing on an application. To be sure, it also assists the applicants, because without such a step, IDNR's remaining option is to deny an application on the grounds that the applicant did not provide enough information (Section 1-35(j)), or because the applicant falsely certified the applicant was complete (Section 1-35(f)), thus making an applicant forfeit the $13,500 fee.

To harmonize these goals, the Department utilizes two minor changes, both within the overall design of the statute. The first, made within this Section, will allow for an immediate return of patently incomplete applications before they are considered received. The second change will address commenters' concerns by making explicit an authority the Department already had, to request a waiver of the 60-day deadline in the case of a deficiency in an application discovered during the review process, but coupling it with the option to add opportunity for Department and public review, and the consequence that refusal to allow for such additional review will result in the rejection of the application. For this modification, see the Response to comments on Section 245.270 and the changes to 245.270(n).

These changes are reasonably necessary to effect statutory purposes under §1-130 of the HFRA. Without such rules, the application made available for public comment could shift up to, and even after, the public comment and hearing process, undermining the statutory promise of meaningful public participation. Of course, these rules do not guarantee that amendments will not be made after the public hearing process, but at least the public will have had the benefit of hearing on an application that contained all necessary parts.

As a final note, the Department points out that much of this discussion may be academic. Because many operators will plan to apply for multiple well permits, it is not in the applicant's interest to secure a permit through gamesmanship. The Department expects that as both the industry and the Department become more familiar with the process, applications will arrive at the Department complete and ready to be reviewed on their merits.

Department Action: Section 245.230 shall be amended as follows:

a) All registrants who anticipate filing a permit application with the Department shall notify the Office of Oil and Gas Resource Management at least 5 business days before the anticipated date of filing by both email at DNR.HFApplication@partner.illinois.gov and by telephone at 217-782-7756 to advise the Office of the anticipated permit filing. The registrant shall provide the name of the applicant and the name and telephone number of an applicant contact person in case the Office has any questions.

<u>b) In no event will a permit application be considered received until after one full business day following the delivery to the Department of all the materials required by Section 245.210. When the Department has in its possession all of the required materials, the Department will promptly check the materials to see that all of the components listed in</u>

Section 245.210 are present, and in such format and detail that the Department will be able to review the proposed plans and activities. The Department, before the end of the first full business day following delivery, will determine whether the components are present and can be subject to permit review. If the Department so determines, the application will be considered received effective start of business the first full business day following the completeness check, and the applicant so notified. Such determination and notification will in no way signify any Department approval of the adequacy of any component of the application, or all of it, only its submission and susceptibility to review. If the Department, however, determines that the application has any patently or facially incomplete or deficient parts or components, the Department will promptly notify the applicant that it does not consider the application properly submitted or received.

~~b~~c) Upon receipt of a permit application, the Department shall provide *notice to the applicant that the permit application was received* (Section 1-40(b) of the Act) and of the following:

1) the review number assigned by the Department to the permit application;

2) the date of receipt of the permit application;

3) the dates of the public comment period on the permit application; and

4) the date, time and address of the public hearing and the name of the Hearing Officer scheduled to preside over the public hearing for the permit application that will apply should a request for public hearing be filed.

~~c~~d) Any application received by the Office after 12:00 p.m. (Central Standard Time) will be considered received on the following business day.

~~d~~e) *Upon receipt of a permit application, the Department shall have no more than 60 calendar days from the date it receives the permit application to approve, with any conditions the Department may find necessary, or reject the application for the high volume horizontal hydraulic fracturing permit. The applicant may waive, in writing, the 60-day deadline upon its own initiative or in response to a request by the Department.* (Section 1-35(i) of the Act)

~~e~~f) *If, during the review period, the Department determines that the permit application is not complete under* the *Act, does not meet the requirements of Section* 245.210*, or requires additional information, the Department shall notify the applicant in writing of the application's deficiencies and allow the applicant to correct the deficiencies and provide the Department any information requested to complete the application. If the applicant fails to provide adequate supplemental information, the Department may reject the application.* (Section 1-35(j) of the Act)

245.240 Public and Governmental Notice by the Department

Comments: The Illinois Department of Transportation and the Illinois Public Health Association, as well as a number of individuals, commented on the notice provided by the Department to public and governmental entities of the filing of HVHHF permit applications.

The essential points made by the comments are set forth below in bullet points and considered in turn:

- *Local public health departments should be provided specific notice of the filing of high volume horizontal hydraulic fracturing permit applications (and the right to request and participate in public hearings).*

Response: The Department, in the First notice draft of this Section, was attempting to incorporate the notice requirements of HFRA Sections 1-40 and 1-50. The Department was also attempting to provide fairness and due process to involved persons and entities.

IDNR agrees that notifying local public health departments furthers the statutory purpose of ensuring that the proposed hydraulic fracturing operations will be conducted "in a manner that will protect the public health and safety." Section 1-53(a)(4). Local public health departments play an important role in protecting public health in their communities, and their potential input and expertise would be valuable. However, they are not listed in the statutory statement of what entities an applicant must notify (Section 1-40(c)). The Department elects not to place the onus for this on the applicant and agrees to assume that task because the Illinois Department of Public Health maintains a list of Local Health Departments readily accessible online.[1] This change is incorporated into the rule below.

With respect to the right to request and participate in a public hearing, IDNR agrees that it furthers the statutory goals for local public health departments to have the opportunity to request a hearing. The statute is specific as to who may request a hearing: "any person having an interest that is or may be adversely affected, *any government agency that is or may be affected*, or the county board of a county to be affected under a proposed permit…" Section 1-50 (emphasis added). IDNR finds that local health departments are "government agencies" that could be affected by a pending permit application.[2] The rule change below affirms that. Any request for hearing by the local public health department must contain the requirements set out in 245.270(a)(3), and a hearing officer may decline to hold a hearing if the request is frivolous (Section 245.270(a)(5)).

Department Action: Section 245.240(b) is modified as follows:

b) *Within 5 calendar days after the Department's receipt of the permit application, the Department shall provide the Agency, the Office of the State Fire Marshal, Illinois State Water Survey, ~~and~~ Illinois State Geological Survey*, and the certified local public health department *where the well site is located with notice of the application* (Section 1-40(b) of the Act).

See also IDNR response to Section 245.250.

- *Traffic highway authorities should be provided specific notice of the filing of high volume horizontal hydraulic fracturing permit applications (and the right to request and participate in public hearings).*

Response: Notifying traffic highway authorities would advance the purposes of the HFRA, and IDNR recognizes traffic and road safety are issues critical to protecting public health and safety while allowing HVHHF in Illinois. See Response to 245.210(a)(15), Traffic Management Plan. However, the proposed rules already address this issue in Section 245.250(a)(4): within 15 days the applicant must provide a copy of the permit application's traffic management plan to the county or counties in which the well site is located, *and any impacted highway authorities identified in the traffic management plan* pursuant to Section 245.210(a)(15). The applicant's coordination with local authorities will also likely result in earlier actual notice. See IDNR's response to Section 245.250(a)(4).

Department Action: No rule change is made.

- *Notice should be provided of a proposed permit rather than a high volume horizontal hydraulic fracturing permit application.*

Response: Providing notice of a proposed permit, rather than a high volume horizontal hydraulic fracturing permit application, would disrupt the scheme of the HFRA while not significantly advancing the statutory purposes. The tight 60-day timeframe does not allow for "other counties to be heard from" at the last minute. Moreover, the statute already provides that the Department's website shall indicate whether an HVHHF permit was approved or denied and provide a copy of the approval or denial. Section 1-53(e).

Department Action: No rule change is made.

- *Notice should be provided online.*

Response: IDNR believes that online publication is an extremely valuable tool in maintaining transparency in the permitting process. The statute requires that IDNR create and maintain a comprehensive website dedicated to providing information concerning HVHHF operations (Section 1-110(b)), which would include the permit application. Thus, the proposed rules explicitly set out that IDNR must post information regarding the public comment periods on the website within 5 days. See Section 245.240(a). Moreover, in IDNR's notice to local health departments and highway authorities, it will advise them that the application, including the traffic management plan, is available online.

- *Commenters referring to the public hearing process of Section 245.270 Public Hearings asked IDNR to provide the address for the Hearing Officer (in addition to his or her name) in the notice posted on the Department's website.*

Response: IDNR agrees that including the mailing address of the hearing officer will help provide interested persons the information necessary to request a hearing. See also IDNR's response to Section 245.270.

Department Action: The following modification is made to Rule Section 245.240(a)(5):

5) the date, time and address of the public hearing and the name and mailing address of the Hearing Officer scheduled to preside over the public hearing on the permit application should a request for public hearing be filed; and

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[1] Illinois Department of Public Health, Local Health Department Alphabetical Listing, (Aug. 18, 2014), http://www.idph.state.il.us/local/alpha.htm.

[2] Illinois Department of Public Health, Local Health Departments in Illinois, (Aug. 18, 2014), http://www.idph.state.il.us/about/lhdq&a.htm

245.250 Public and Governmental Notice by the Permit Applicant

Comments: The Department received approximately 61 comments concerning Rule Section 245.250 as it relates to notice provided by the applicant to public and governmental entities of the filing of high volume horizontal hydraulic fracturing permit applications.

Commenters included the Illinois Department of Transportation, the Illinois Environmental Council, the Illinois Public Health Association and the Nature Conservancy, as well as many individuals. In the First notice draft of this section, IDNR was attempting to incorporate the public notice and participation requirements set forth in the HFRA Sections 1-40 and 1-50. The Department was also attempting to provide fairness and due process to involved persons and entities. The essence of the concerns raised by the commenters are summarized below in bullet points and considered in turn:

- *Local public health departments should be provided specific notice of the filing of high volume horizontal hydraulic fracturing permit applications (and the right to request and participate in public hearings).*

Response: IDNR agrees that notifying local public health departments furthers the statutory purpose of ensuring the proposed hydraulic fracturing operations will be conducted "in a manner that will protect the public health and safety." Section 1-53(a)(4). IDNR will include this component in in its own notice requirements. See IDNR's response to Section 245.240.

Department Action: None.

- *Traffic highway authorities should be provided specific notice of the filing of high volume horizontal hydraulic fracturing permit applications (and the right to request and participate in public hearings).*

Response: See 245.250(a)(4), and IDNR's response to comments on Section 245.210(a)(15). Note also that in the proposed rules, IDNR included a "government agency that is or may be affected" as those entities identified as receiving specific notice or a copy of any plan pursuant to Sections 245.240 or 245.250. This clarifies what was already implicit, that a highway authority is a government agency that may be affected and that may request a public hearing (or to petition to participate under 245.270(a)(6)). Requests for hearing, including those submitted by local highway authorities, must still contain the requirements set out in 245.270(a)(3).

Department Action: None.

- *Notice should not be limited to surface owners, but should be provided to owners of any real property interest.*

Response: See IDNR's response to comments on 245.110 Definitions – Landowner, Property Owner.

- *Notice to landowners only within 1500 feet of well sites is inadequate when horizontal legs of the well can run significantly longer than 1500 feet.*

Response: This concern is similar to that about who can request a hearing. See Rule 245.270(a)(16)(B). The rule tracks the statute, which for most distance purposes does not address possible migration of liquids or gases from horizontal wellbore to groundwater or surface. The Department did consider contrary science and evidence brought to its attention by commenters, as well as studies and reports it researched, but believes that the legislative intent was to address surface interests only for purposes of entitlement to notice. Persons living beyond 1500' still have rights to public participation.

- *The Department's review period should not start until the high volume horizontal hydraulic fracturing permit application is determined to be complete*

  Response: See IDNR's response to Section 245.230(e).

- *In 245.250(b), 35 days for the applicant to document compliance is too long, as this risks a deficiency not becoming apparent until over half the review period has passed, which would effectively cancel unnoticed individuals/entities' participation rights under the rules.*

Response: The argument that 35 days is too long for the applicant to document its compliance with the rule's notice requirements is understandable. However, such a length of time does not prejudice the public's participation in the process.

First, the notices required by the applicant entail certified mail and newspaper publication. Section 1-40(c). Documentation of such notices necessitates the return of certified mailing receipts and publication certificates, which all take time to obtain.

Second, as part of the application, the applicant must include "landowner and permittee" information, which must include the names and addresses of all landowners, oil and gas lessees, and other permittees. See 245.210(a)(16). Over the course of public comment and review period, IDNR and the public will be able to review this information to see if it is accurate and complete.

Finally, if IDNR learns that any entitled person or entity did not receive notice pursuant to 245.250(a)(1), the Department must deny the permit. Section 245.300(c)(9)) states:

> c) The Department shall issue a high volume horizontal hydraulic fracturing permit, with any conditions the Department may find necessary, only if the record of decision demonstrates that (Section 1-53(a) of the Act):
>
> ***

9) The registration and permitting procedures set forth in Subpart B have been satisfied.

Additionally, Section 245.310 states that, in addition to failing to meet the requirements of Section 245.300(c)(1) through (c)(7), the Department may also refuse to issue a high volume horizontal hydraulic fracturing permit for (Section 1-60(a)):

a) *providing incorrect, misleading, incomplete, or materially untrue information in a permit application or any document required to be filed with the Department* during the permit application process (Section 1-60(a)(1) of the Act);

In sum, IDNR will use the review period (and potentially a public hearing, if requested) to verify that the required notices were made as disclosed in the application and as required by 245.250. IDNR is required to deny the permit if notice requirements are not satisfied.

Department Action: None.

- *The well location requirements provided in the notice improperly provide for survey work done by professional engineers in addition to licensed land surveyors.*

Response: In analyzing these comments, IDNR reviewed the Illinois Professional Land Surveyor Act of 1989 (225 ILCS 330) and consulting with staff from the Illinois Department of Financial and Professional Regulation. The Department agrees that the survey work at issue is legally required to be conducted only by licensed land surveyors that that the well location requirements provided in the notice improperly provide for survey work done by professional engineers in addition to licensed land surveyors. Based on the foregoing, the rule is modified to remove reference to professional engineers in the requirements for determining well locations.

Department Action:

Section 245.250 is modified as follows:

a) *The applicant shall provide the following public* and governmental *notice* (Section 1-40(c) of the Act):

1) *Applicants shall mail specific public notice by U.S. Postal Service certified mail, return receipt requested, within 3 calendar days after submittal of the high volume horizontal hydraulic fracturing permit application to the Department to*:

A) *all persons identified as* ~~land~~owners *of* any *real property* ~~surface interest in land~~ *within 1,500 feet of the proposed well site as disclosed by the records in the office of the recorder of the county or counties*;

***

5) *The specific and general public notices required under* subsections (a)(1) and (a)(2) shall be on forms provided by the Department and *shall contain the following information* (Section 1-40(c)(3) of the Act):

***

D) *the proposed well name*, review number assigned by the Department, well location, *and legal description* per the Public Land Survey System *of the* well, *well site, and its unit area* (Section 1-40(c)(3)(D) of the Act). The well location shall be surveyed by an Illinois licensed land surveyor ~~or Illinois registered professional engineer~~ and the description of the surveyed well location shall also include the legal description, the GPS latitude and longitude location, and ground elevation of the well. The GPS location shall be recorded as degrees and decimal degrees recorded to 6 decimal places in the North American Datum 1983 projection and shall be accurate to within 3 feet. The reported GPS location is required to be an actual GPS field measurement and not a calculated or conversion measurement;

245.260 Public Comment Periods

Comments: The Department received several comments concerning rule subsection 245.260, as it relates to various aspects of the public comment periods during the permit review process.[1] Commenters included the Nature Conservancy, the Illinois Public Health Association, Food & Water Watch, and a few individuals. The comments addressed several issues with the timing and procedure for the public to submit comments to the Department on a permit application. The essential points raised by the commenters are listed below and are considered in turn:[2]

- ***Overall Timeframe****: 60 days is too short of a timeframe between the initial application and the permit decision for the average citizen to prepare and submit meaningful comments on a permit application*

Response: IDNR recognizes that the timeframe between receipt of the application and the permit decision is very short considering the complexity and volume of an application, and the degree of stakeholder and public participation anticipated. Under the rules, an application must contain over two dozen components, many of which are highly technical. The Department anticipates that applications could be several hundred pages long.

Moreover, the public does not really have 60 days. That is the timeframe in which the Department is supposed to issue a decision. The public has a 30-day window to comment, beginning about a week after the permit application is filed. A shorter comment period, limited to comments on matters that arose during a hearing, may be granted in the last few weeks of a permit review period. However, in crafting the proposed rules, IDNR was constrained by the timeline set out in the statute, which dictates a 60-day turnaround unless the applicant waives that deadline.

In order to make the scheduling of the hearing as efficient as possible, IDNR in the draft rules proposed setting a date for the public hearing as soon as an application is received, even before any request for such hearing is filed. See 245.230(b)(4). This unusual measure was the only way to ensure that the necessary notifications are afforded.

The 60-day deadline is also very short considering the administrative procedural requirements involved. The statute mandates IDNR to treat a hearing request as a "contested case." That mandate triggers numerous requirements under the Illinois Administrative Procedure Act. Section 1-50(c). For instance, it requires that a proposal for decision be served upon the parties, that an opportunity be afforded to each party adversely affected to file exceptions and to present a brief, and, if the agency so permits, provide oral argument to the agency officials who are to render the decision (5 ILCS 100/10-45). It will be extremely difficult to squeeze all of these procedural steps into a 60-day schedule.

However, without an amendment to the HFRA, IDNR cannot unilaterally extend the permit review period. This is the principal constraint on public review and input. As is, the Department was able to enact a public comment period in these rules that satisfies the statutory minimum, and had no better option.

Department Action: No change was made to the proposed rules in response to these comments.

- ***Commencement of Comment Period:*** *The public notice and comment period should not start until the application is considered complete and free of deficiencies and until required notifications have occurred.*

Response: With respect to the recommendation that the comment period should not start until the application is considered complete and free of deficiencies, see IDNR's response to Section 245.230(e).

The recommendation that the public comment period should not begin until required notifications have occurred (15 days from the time of the application) is logical, because no one can comment on something for which they have not received notice. However, section 1-45(a) of the HFRA states that "[t]he public comment period shall begin 7 calendar days after the Department's receipt of the permit application and last for 30 calendar days." The proposed administrative schedule observes the statutory dictates. See Section 245.260(b).

Department Action: None.

- ***Posting of Public Comments:*** *The Department should post all public comments on its website within two business days after the end of the public comment period*

Response: In response to this recommendation, IDNR finds that the burden on the Department in taking this step would outweigh its value. First, due to the tight 60-day deadline, IDNR staff must focus on reviewing and analyzing all comments in order to make a permit decision. Since written public comments may be filed via mail or electronically, it would absorb significant staff time and resources to make the comments available online so quickly. If IDNR receives a large number of comments, this would also make scanning and uploading to the internet more difficult in a short timeframe. Second, since the comment period will be closed at this time, there is no opportunity to submit additional comments, even if a person was alerted to new issues by others' comments.

However, IDNR is required to make the complete administrative record available on the IDNR website when a decision is made on the permit, pursuant to 245.300(g). IDNR will attempt to do so as soon as possible. This will include all written comments received during the comment periods, along with the record from the public hearing, which are part of that record. See 245.300.

Department Action: No change was made to the proposed rules in response to these comments.

- ***Participation in General:*** *The public should be fully able to participate during the public comment periods due to the potential hazards of hydraulic fracturing operations*

Response: IDNR agrees that public participation would be meaningful due to the potential impacts, positive and negative, of hydraulic fracturing operations. The public has several opportunities to participate in the permitting process, which are outlined below.

Inclusivity: During the initial public comment period, **any person** may file written comments to the Department concerning **any portion** of the permit application and **any issue** relating to the applicant's compliance with the requirements of the Act (Section 1-45(c) of the Act), this Part, the Illinois Oil and Gas Act and the administrative rules promulgated under that Act. 245.260(a). In addition, any person having an interest that may be adversely affected may request a public hearing. Section 245.270.

Flexibility: Written public comments may be filed **via mail or electronically**. 245.260(c).

Accountability: The Department may **request that the applicant respond** to any substantive public comments, objections and recommendations obtained during the public comment periods Section 1-45(d); Section 245.260(e). If the applicant fails to provide adequate supplemental information, the Department may reject the application. Section 1-35(j); Section 245.230(e).

Department Action: No change was made to the proposed rules.

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[1] This section should be distinguished from the public comment period held after IDNR's proposed administrative rules were on First notice review. For that issue, please see the Department's response to comments on 245.260.
[2] A number of related comments raised the issue of public comment periods being extended if there are post-public comment corrections to an application. This is addressed in the Department's response to comments on 245.270.

245.270 Public Hearings

Comments: In addition to the many comments on some specific subsections of Rule 245.270 that follow in other responses, the Department received hundreds of comments concerning various other aspects of the procedures for public hearings set out in this Section. Commenters included the Illinois Attorney General's Office, NRDC/ELPC, and many individuals. Issues raised ranged from the overall purpose and structure of the hearing to the content of the hearing request. The essential points made by the commenters are set forth below in bullet points and considered in turn:

- *The proposed hearing procedure is at odds with the purpose of the hearing in the HFRA, which is to establish an evidentiary record and not to adjudicate whether claims are "valid"*

Response: The Illinois Attorney General's Office was the primary advocate of this position. That office recommended that the structure of the hearing be amended to modify Section 245.270(c)(2)(powers of hearing officers) and strike 245.270(h)(issues presented), 245.270(i)(burden of proof), 245.270(m)(hearing decision).

The Department's reason for including these elements in the first notice draft was that the statute on its face requires the public hearing to comply with the contested case requirements of the Illinois Administrative Procedure Act ("IAPA"). Section 1-50(c). A "contested case" is defined in the APA as "an adjudicatory proceeding (not including ratemaking, rulemaking, or quasi-legislative, informational, or similar proceedings) in which the individual legal rights, duties, or privileges of a party are required by law to be determined by an agency only after an opportunity for a hearing." 5 ILCS 100/1-30.

However, the commenters correctly point out that an agency possesses broad discretion in conducting its hearing. *Wegmann v. Department of Registration and Ed.*, 61 Ill. App. 3d 352, 356 (1st Dist. 1978). An agency's rules for a contested case must comply with the IAPA minimums. However, aspects of the hearing process such as pre-hearing conferences, the standard of proof used, and discovery procedures are left to the agency's discretion, and the IAPA specifically acknowledges that an agency may make its own rules for contested cases. 5 ILCS 100/10-10.

Upon review of the hearing procedure in context of all public comment, and after reviewing its own experience in contested hearings since the first notice draft of the rules was published, IDNR agrees that the hearing procedure should be modified, largely as the Attorney General suggests, geared more toward adducing facts and issues, as opposed to a process that "adjudicates" a claim. While triggered by a person with an "objection," ultimately the hearing will function to develop part of the overall record, which the Department must consider when deciding to grant or deny the permit. *See* IDNR's response to Section 245.300.

However, IDNR finds it would be valuable for the Department to benefit from a Hearing Officer's recommended findings as to the objections or concerns raised by the requestors.

Department Action: See the end of this response for the changes to Section 245.270.

- *245.270(n) regarding post-hearing corrections to the application should be deleted from the rules.*

Response: The Department received thousands of comments concerning rule subsection 245.270(n), which allows applicants to correct deficiencies in their applications after the public hearing, if any deficiencies are identified. Commenters included Fair Economy Illinois, Abbott, Peoria Families Against Toxic Waste, SAFE, Illinois People's Action, UIS, IIRON Student Network, Central Illinois Global Warming Solutions Group, the SAFE / Frack Free Illinois petitioners, Clay Lick Creek Pottery, NRDC/ELPC, Illinois Environmental Council, the Illinois Sierra Club, and thousands of individuals. As with the previous concern, the Attorney General's Office recommended that this provision be deleted from the rules.

The universal concern was that post-hearing "corrections" made by the applicant would not be subject to public comment. Many viewed this as an opportunity for applicants to purposefully avoid public scrutiny by waiting until late in the 60-day window to make changes to an application -- a bait-and-switch. Many commenters suggested a timeframe in which those changes could be made, and/or urged extending the date of issuance of the permit after that to allow review by the public. There was also concern about the language that IDNR "may" reject an inadequate application, rather than "shall." This concern is connected with IDNR's response to comments on Section 245.230(e) regarding permit application receipt and department review.

IDNR's original rationale for this rule was based entirely on the statute. Under the HFRA, if at *any time* during the review period the Department determines that the permit application is incomplete or deficient, the Department *must allow* the applicant to correct the deficiencies and provide any information requested to complete the application. Section 1-35(j). If the applicant fails to provide adequate supplemental information within the review period, the Department may reject the application. Section 1-35(j). Taken literally, this wording gives an applicant unlimited opportunity, even up to the last minute, to change or add to an application; when combined with the 60-day deadline, that could create potential administrative nightmares for the Department, and obviously conflicts with the statutory goals of transparency and public participation. Any Rule attempting to implement all these provisions runs into difficulty.

IDNR views public participation as a fundamental value of the HFRA, embodied both in written comment submissions and in public hearings for potentially adversely affected parties. The opportunity for applicants to fix deficiencies must also be included but surely was not intended to be a means to circumvent public participation. To harmonize these provisions, the rules will be modified to give IDNR the ability to re-open the public comment period for written comments that specifically relate to any significant "deficiency corrections." It will also enable the hearing officer to reopen the public comment period specifically as it relates to objections or concerns raised at the public hearing.

Department Action: Section 245.260(f) is added:

<u>f) If during the review period the Department allows the applicant to correct deficiencies pursuant to Section 245.230(e), the Department may require an additional public</u>

comment period or hearing related specifically to those changes made in the application. If there is not sufficient time to hold an additional comment period or hearing within the 60 calendar days to make a permit decision, the applicant must waive the 60-day deadline, or the Department may reject the application.

- *The public hearing requestor should only have to file a request with IDNR (245.270(a)(2) and (a)(6)).*

Response: Several commenters contended that the rules go beyond the requirements of the statute because 245.270(a)(2) requires a requestor (and in 245.270(a)(6), a petitioner) to serve the Hearing Officer, the Department, and the applicant. Thus, the comments recommend amending the rules so that a requestor is only required to file the request for hearing with the Department. Alternatively, the comments suggest adding a provision stating that failure to serve the applicant or the Hearing Officer should not be grounds for a denial of the request.

With respect to serving the request for hearing in 245.270(a)(2) and 245.270(a)(6), in the first notice draft IDNR was attempting to reduce the administrative burden on the Department, especially considering the 60-day timeframe to approve or reject a permit. *See* 245.230(d). The thought was that requiring a requestor to serve the Hearing Officer and the applicant would minimize any delay of notifying interested parties of a hearing.

In its analysis, the Department reviewed the regulations of other state agencies. The procedures among agencies vary as to which entities must be served with a request for hearing. For instance, the Department of Labor's administrative rules for whistleblower protection require that a "Request for Hearing" be served by the requestor on other parties. 56 Ill. Adm. Cd. 353.330. The Department also considered the need for efficiently notifying all parties of a hearing request, since any delay will make it more difficult to comply with the 60-day timeline.

On balance, the Department finds that it is reasonable for a requestor to serve a request for hearing on the Department and the applicant, but unnecessary to serve the hearing officer (who IDNR will appoint.) Serving the applicant is fair and will not be too burdensome, particularly since the rule allows for service via e-mail. Most importantly, the notice provided by IDNR of an application on its website will include "directions…on how and when to request a hearing." 245.240(a)(6). The Department will ensure the directions contain the contact information for the Department and the applicant. The applicant's email and mailing addresses are required as part of the application, so the Department will be able to provide this information in the notice. 245.210(a)(1). In addition, the notice required by the permit applicant must include the Department's website and telephone number, along with statements that the information filed by the applicant is on the Department's website and that a public hearing may be requested. See 245.250(a)(5).

Department Action: Section 245.270(a)(2) is modified as follows:

2) The request for hearing shall be served by electronic mail or certified mail, return receipt requested, upon ~~the Hearing Officer,~~ the Department~~,~~ and the applicant. All requests for hearing shall be received by the Department before 5 p.m. on the

last day of the initial public comment period established under Section 245.260(a).

- *The rule should state that failure to include all of the contents for hearing request (in 245.270(a)(3)) is not grounds for denial of the hearing request.*

Response: The underlying policy concern of the comments is that these additional requirements are burdensome and will discourage public participation, particularly for a person advocating on his or her own behalf. 245.270(a)(3) requires the request to contain certain content, such as the objections, the specific facts, a reference to the statute or regulation, a list of witnesses, and identification of documents. The Department's rationale for including these elements in the first draft was, again, the contested case requirements of the IAPA, which require that all parties shall receive reasonable notice of a hearing. 5 ILCS 100/10-25(a). Among other things, the notice must contain "[a] reference to the particular Sections of the substantive and procedural statutes and rules involved." 5 ILCS 100/10-25(a)(3). In addition, in a contested case, "[a]n opportunity shall be afforded all parties to be represented by legal counsel and to respond and present evidence and argument." 5 ILCS 100/10-25(b).

Illinois courts, however, have held that administrative complaints are not required to state the charges with the same precision, refinements, or subtleties as pleadings in a lawsuit. *Shachter v. City of Chicago*, 962 N.E.2d 586 (1st Dist. 2011). Charges filed before an administrative agency need only reasonably apprise a party of the case against him, so as to prepare his defense. *Id.* (citing *Vuagniaux v. Department of Professional Regulation*, 802 N.E.2d 1156 (2003)).

The elements of 245.270(a)(3), as drafted, were designed to ensure that all parties have reasonable notice of the challenges being made to the permit application, in order to respond and present evidence and argument on those issues. Once again, this was driven in part by the 60-day timetable: ordinarily, in the Department's administrative process, there is time for a pre-hearing conference (akin to a case management conference in civil litigation) that allows a hearing officer to organize the process, gauge the number of witnesses, and set a discovery schedule. But the 60 day timeline does not allow for such an organizational tool, so the Department attempted to piggyback some of those functions onto the initial hearing request.

The Department recognizes that too-complicated hearing request requirements may operate as an unfair barrier to persons with legitimate objection to a permit application. Also, it creates an asymmetry if the requestor, who may have had only days to review a thick application, is required to file the equivalent of a pre-trial order along with his or her request, while the applicant is not required to declare a corresponding quantum of evidence or witnesses. Still, the Department has an interest, as well, in knowing in advance what the objections are, how long a hearing is likely to take, and what the arguments will be, to make the hearing more meaningful and efficient for all, and so that the record developed truly assists the Department to evaluate the merits of the permit application.

IDNR does not believe it is necessary to add a provision stating that failure to include the contents is not a grounds for denial. Parts (A) through (D) are necessary to apprise the parties of

which issues will be raised. Parts (E) through (G) already indicate that the information is only needed *if known*, so a permit cannot be denied on these grounds.

After reviewing these comments, IDNR found that the rule can be improved in several ways. First, IDNR can consolidate subsections C and D. These subsections are already interrelated, and this will serve to simplify and clarify this component of the request. Additionally, items F and G can be characterized not as requirements, but information requested, and the Department will develop a template form to assist the layperson or *pro se* requestor.

Department Action: Rule 245.270(a)(3) is modified as follows:

3) *The request for hearing shall contain a short and plain statement:*

A) stating the permit review number and acknowledging the date, time and location of the hearing;

B) *identifying the person*, government agency or county *and:*

i) if a person, *stating facts demonstrating that the person has an interest that is or may be adversely affected* (Section 1-50(a) of the Act) by the proposed permit as defined in subsection (a)(1)(A);

ii) if a government agency, stating facts demonstrating that the government agency is or may be affected by the proposed permit as defined in subsection (a)(1)(B); and

iii) if a county, stating facts demonstrating that it will be affected by the proposed permit as defined in subsection (a)(1)(C);

C) identifying each objection to, or concern with, the permit application, and to the extent possible, explaining the specific fact or facts upon which each objection or concern is based;

D) ~~explaining the specific fact or facts upon which each objection or concern is based;~~ referencing, if known, any statute Section and/or regulation upon which each objection or concern is based, if known;

E) ~~listing all witnesses that will or may be called at the hearing, including their name, address and phone number and a summary of their expected testimony, if known. If any witness will be used as an expert, documentation of that witness' relevant qualifications, if known; and~~ Hearing requestors are encouraged, in addition, to list:

(i) known witnesses that will or may be called at the hearing, including if possible their name, address and phone number, and a summary of their expected testimony, if known, and if any witness

will be used as an expert, documentation a c.v. or statement of that witness' relevant qualifications, if known; and

(ii) if known at the time of the request for hearing, any documents supporting any objection or concern. The disclosure of witnesses and documents is not required to request a hearing but the Department, to facilitate the orderly presentation of facts, will provide optional space for such information on any hearing request form the Department develops for use under this subsection. ~~identifying any documents supporting each objection or concern that will or may be used at the hearing (other than the permit application), if known~~

- *Decisions on requests for hearing should be made within 7 days of receipt by IDNR or at the public hearing (245.270(g)).*

Response: The commenters who raised this point sought to minimize expense and unfairness to petitioners who prepare for a hearing, but then learn only at the hearing that the request is denied because the requestor is deemed not adversely affected or the request is deemed frivolous (Section 1-50(a) of the Act)). Although this is a thoughtful concern, IDNR is again limited by the 60-day timeframe in the HFRA. Pursuant to the statute, the Department is required to let any person that is adversely affected request a public hearing; that request can be made "during the public comment period" which begins 7 calendar days after the Department's receipt of the permit application and lasts for 30 days. Sections 1-45(a), 1-50. Since a hearing request may come in on day 37 after Department receipt, and a 15-day comment period after the hearing has to be allowed for, the only time to hold hearings is the one week starting on day 38. That does not allow time to make pre-hearing procedural decisions.

Any "solution" to this dilemma results in a less-than-ideal process. The timeframe makes the hearing process like a balloon animal, where if one section is squeezed, another becomes distorted and over-pressured. On balance, the Department believes that the broad statutory wording as to who has standing, the time and distance involved in a hearing, and the public understanding of what a hearing is and is not, as the body of regulation develops, will make this problem largely hypothetical. Also, waiting until hearing for decisions on whether a requestor is not "adversely affected," or that the request is frivolous, provides an opportunity for the requestor to be heard and make an offer of proof to the contrary. Finally, the hearing officer needs discretion to issue appropriate orders at the appropriate time, and is not aided by constraints of a strict timeframe. On balance, the Department finds that it should not change this subsection based on this concern.

Department Action: No change is made to the rules.

- *The rules in 245.270(i) "reverse" the burden of proof at the hearing: it should be on the applicant to demonstrate it is entitled to a permit, not the person requesting the hearing.*

- *Neither the Act nor the Illinois Administrative Procedure Act ("APA") mandates a particular burden of proof, nor do they require that a burden of proof be specified at all for these proceedings. 5 ILCS 100/10-10.*

- *Rural residents with limited resources will have difficulty establishing the validity of their objections because high-volume horizontal hydraulic fracturing is new to the state and technical in substance.*

Response: These three comment areas, while distinct, are interrelated and can be considered together. The Department received hundreds of comments concerning rule subsection 245.270(i) as it related to the burden of proof. Commenters included the Attorney General's Office, the environmental coalition's group submission (IEC/NRDC/ELPC/FIP/RHA), Fair Economy Illinois, Frack Free Illinois, Illinois Sierra Club, and over 250 individuals.

IDNR's response to other comments regarding the proposed hearing procedure addresses these concerns. As explained above, IDNR's original rationale for establishing a "burden of proof" was to comply with the contested case requirements of the IAPA. Yet, aspects of the hearing process, such as pre-hearing conferences, the standard of proof used, and discovery procedures, are left to the agency's discretion. 5 ILCS 100/10-10. IDNR has recently promulgated administrative rules it intends to use as a default for contested cases in subject matter areas where no specific procedures are set forth. *See* 17 Ill. Admin. Code 2530 *et seq*. The default will be hearings that result in findings and recommendation by the hearing officer, rather than a decision after "proof."

Thus, in this second notice draft of the rules, IDNR deletes the burden of proof section, as suggested by the Attorney General, clarifying that the purpose of the hearing is to elicit evidence that will create a complete record to make a decision on the permit. IDNR may only issue a permit if the record demonstrates all the requirements are met. *See* Section 245.300. With this change, IDNR believes that the hearing process will enable adversely affected parties a fair opportunity to raise issues before a hearing officer, while not prejudicing the applicant.

Of course, the hearing is not the only input into the hearing decision. The application will in most cases form the bulk of the administrative record. Also, the public may comment in writing, not just at public hearing, and any facts relevant to the permit decision will be given due weight.

Department Action: Section 245.270(i) is modified as follows:

~~i) Burden and Standard of Proof~~
~~Parties requesting the public hearing and, if applicable, petitioning to participate in the public hearing shall have the burden of establishing the validity of their objections and concerns through the introduction of credible evidence. The standard of proof is the preponderance of the evidence.~~

Following is the entirety of Section 245.270 containing changes:

Section 245.270 Public Hearings

a) *Participation*

* * *

v) any other person ~~that is or may be adversely affected~~ whose written request ~~who can directly demonstrate in writing within the request~~ for public hearing shows that the person actually has a real property interest in or uses resources of economic, recreational or environmental value that may be adversely affected by the granting of the permit at issue at the public hearing.

* * *

2) *The request for hearing* shall be served by electronic mail or certified mail, return receipt requested, upon ~~the Hearing Officer,~~ the Department, and the applicant. All requests for hearing shall be received by the Department before 5 p.m. on the last day of the initial public comment period established under Section 245.260(a).

3) *The request for hearing shall contain a short and plain statement:*

* * *

C) identifying each objection to, or concern with, the permit application, and to the extent possible, explaining the specific fact or facts upon which each objection or concern is based;

D) ~~explaining the specific fact or facts upon which each objection or concern is based;~~ referencing, if known, any statute Section and/or regulation upon which each objection or concern is based, if known;

E) ~~listing all witnesses that will or may be called at the hearing, including their name, address and phone number and a summary of their expected testimony, if known. If any witness will be used as an expert, documentation of that witness' relevant qualifications, if known; and~~ Hearing requestors are encouraged, in addition, to list:

(iii) known witnesses that will or may be called at the hearing, including if possible their name, address and phone number, and a summary of their expected testimony, if known. I and, if any witness will be used as an expert,

documentation a c.v. or statement of that witness' relevant qualifications, if known; and

(iv) if known at the time of the request for hearing, any documents supporting any objection or concern. The disclosure of witnesses and documents is not required to request a hearing but the Department, to facilitate the orderly presentation of facts, will provide optional space for such information on any hearing request form the Department develops for use under this subsection. ~~identifying any documents supporting each objection or concern that will or may be used at the hearing (other than the permit application), if known~~

* * *

b) Public Hearing Procedures and Location

* * *

2) All public hearings under this Part ~~will~~ shall be held in the county where the well site is located or such other ~~location~~ local venue as the Department deems ~~appropriate~~ necessary and available, but in no event more than 30 miles outside the county where the proposed well site is to be located.

c) Hearing Officer

* * *

2) The Hearing Officer shall take all necessary action and shall have all powers necessary to render a decision on requests for public hearings and on petitions for participation, to avoid delay, to maintain order, to develop a clear and complete record, and to conduct a fair hearing ~~and to issue a hearing decision addressing issues raised by requests for public hearings and petitions for participation or, alternatively, to dispose of any case by dismissal, stipulation, agreed settlement, consent order or default~~, including the following:

* * *

f) Failure to Appear at Hearing

If any party, after making a proper request for public hearing, fails to appear at the hearing, ~~and,~~ absent an emergency situation beyond the party's control, that party's request for public hearing shall be dismissed. If other proper requests for public hearing remain, the public hearing will proceed with any remaining parties.

If the party failing to appear is the applicant, the hearing may proceed at the election of the requestor(s) for such testimony, evidence, or statements that persons present wish to adduce, but absent an emergency situation beyond the applicant's control, the Department will reject the permit application. If the applicant fails to appear but sends a satisfactory written explanation to the hearing officer explaining why emergency circumstances out of the applicant's control existed, and the applicant waives the 60 day deadline set forth in 245.230(d), then the hearing officer may reschedule the public hearing. In such an event, the applicant shall be responsible for payment of all the costs associated with the first hearing. ~~will not proceed and, absent an emergency situation beyond the applicant's control, the Department will reject the permit application.~~

* * *

~~h) Issues Presented~~

~~The issues presented to the Hearing Officer at the public hearing are the validity of objections and concerns set forth in requests for hearing or petitions for participation. In determining whether an objection to or concern with a permit application is valid, the issue presented is whether the permit application or any portion of the permit application fails to comply with the identified requirements of the Act or this Part.~~

~~i) Burden and Standard of Proof~~

~~Parties requesting the public hearing and, if applicable, petitioning to participate in the public hearing shall have the burden of establishing the validity of their objections and concerns through the introduction of credible evidence. The standard of proof is the preponderance of the evidence.~~

~~j~~h) Evidence

* * *

~~k~~i) Record of Proceedings; Testimony

A complete record of the public *hearings and all testimony shall be made by the Department and recorded stenographically or electronically* (Section 1-50(c) of the Act). Any person testifying shall be required to do so under oath.

j) Recommended Findings

1) After the close of evidence at any public hearing held under this Section, the Hearing Officer shall prepare recommended findings regarding the objections and concerns raised by the parties at the public hearing, and identifying any potential impact on the pending permit application based on the evidence and testimony presented at the hearing.

2) The Hearing Officer shall issue and serve on all parties the recommended

findings within 7 days after the close of evidence.

3) The Department shall take into consideration the recommended findings when making a permit decision consistent with 245.300.

~~l) Settlement Discussions~~

~~The Hearing Officer may provide an opportunity for the parties to enter into settlement discussions before issuing the hearing decision within such time as the Hearing Officer shall determine taking into consideration that the Department shall have no more than 60 days from the date it receives the permit application to approve or reject the permit application.~~

~~m) Hearing Decision~~

~~1) After the close of evidence at any public hearing held under this Section, the Hearing Officer, after consultation with the Department staff regarding any technical issues as necessary, shall prepare a hearing decision determining the validity of the objections and concerns set forth in the request for hearing and petitions for participation and identifying any potential impacts on the pending permit application based on the evidence and testimony presented at the hearing. The hearing decision shall provide necessary findings of fact and conclusions of law in making this determination.~~

~~2) If applicable, the hearing decision shall also report any settlement agreement reached between parties along with a determination whether the settlement agreement is consistent with the requirements of this Part and the Act.~~

~~3) The Hearing Officer shall issue and serve on all parties the hearing decision within 7 days after the close of evidence taking into consideration that the Department shall have no more than 60 days from the date it receives the permit application to approve or reject the permit application.~~

~~4) The Department shall incorporate the Hearing Officer's hearing decision into the permit application process for consideration consistent with Section 245.300.~~

~~n) Post Hearing~~

~~*If* the hearing decision *determines that* a valid objection or concern with the permit application exists such that there is a potential impact to the pending permit application, *the applicant* may attempt to *correct the deficiencies and provide the Department any information* required to address the valid objection or concern. *If the applicant fails to provide adequate supplemental information* to address a valid objection or concern, *the Department may reject the application* or condition the permit accordingly. (Section 1-35(j) of the Act)~~

245.270 (a)(1) Public Hearings – Who Can Request

Comment: The Department received a number of comments concerning rule subsection 245.270(a)(1) as it relates to who can request a public hearing on a permit application. Commenters included the Illinois Oil & Gas Association, the Illinois Department of Transportation ("IDOT"), the Illinois Chamber of Commerce, the GROW Coalition, the Illinois Manufacturers Association, the environmental coalition's group submission, the Illinois Attorney General, and a number of individuals. Most comments centered on the standards for establishing whether a party is "adversely affected" for purposes of requesting a public hearing. The specific issues are listed below and considered in turn:

- *The proposed standard for "adversely affected" is overly broad, particularly with respect to subsection 245.270(a)(1)(A)(v).*

Response: Section 245.270(a)(1)(A)(v) implements Section 1-50(a) of the HFRA, and enables a person to request a hearing if the requestor can demonstrate he or she actually uses resources of "economic, recreational or environmental value" that may be adversely affected. The commenters' concern is that this standard is too general, and could lead to abuse of the hearing process. For instance, one commenter contended that the standard is too "open-ended," and could lead to requests for a hearing based on generalized claims, such as climate change. Overall, these comments suggest that the rule should be "tightened" so hearings are limited to those persons who have a real property interest or direct economic interest.

The statute does not explicitly define "adversely affected." 225 ILCS §732/1-50. The concern of the commenters regarding an overly broad definition is understandable. Too broad a scope would be unfair to applicants. However, the proposed rules are supported by the statutory language, the statutory purpose, similar regulations, and other state policy considerations.

The original rationale for wording 245.270(a)(1)(A)(v) as it appears was that hydraulic fracturing is in fact a complex process that may potentially impact the public health and safety, economic, recreational, or environmental interests of the communities where hydraulic fracturing will occur. Thousands of commenters have said as much during the public comment period for these administrative rules, and both print media and the Internet are suffuse with argument and evidence to this effect. That is the principal reason why HVHHF is controversial. The statute recognizes this fact, insofar as the permit application must include plans for containment, well site safety, and traffic management, among many others, which potentially bear interests. Section 1-35.

The Department could have left "adversely affected" undefined. However, the Department, which has years of experience in contested hearings involving fossil fuel extraction, believes that to do so would invite motion practice, or its equivalent, during the permitting process, hindering the Department's attempts to process a complex application in a short period of time. Also, a standard rather than an open-ended phrase can only help filter the universe of potential requestors. The definition does not expand the statute at all.

Support for such a definition comes from a similar definition of "adversely affected" that is used effectively in another IDNR permit program. The administrative rules for surface coal mining and reclamation operations use a definition of "adversely affected" that extends to a person who "uses any resources of economic, recreational, esthetic, or environmental value that may be adversely affected by coal exploration or surface coal mining…" 62 Ill. Adm. Code 1701.App. A. If anything, the definition here, by omitting "esthetic," is more restrictive. The rule's definition also disincentives those whose interest is purely ideological, philosophical, or based on broader national or international concerns, as opposed to those who actually live in the community or use land or resources near where the HVHHF operations are to occur. This is fairer to all.

Also, the comprehensive definition of "adversely affected" in the proposed rules helps to ensure that the permit application meets all of the requirements in the statute by enabling a person to receive a formal hearing on these concerns before the Department. Overly limiting participation invites challenge which can only add to cost and delay.

In addition to safeguarding the rights of stakeholders, the hearing process may also provide information to the Department that was otherwise unavailable. Thus, a broad definition of "adversely affected" that includes environmental concerns is valuable, affording recognition to the reality that air, water, wildlife, aquatic life, and even seeds and plants do not confine themselves to a small locality or bounded acreage. The proposed definition of "adversely affected" also allows for the participation of those who use or benefit from land and water even if they do not necessarily live there. That recognizes another reality, that tourism, ecotourism, fishing, hunting, camping, hiking, canoeing, boating, bird watching, tracking, and similar activities are economic and cultural activities extremely important to Illinois and Illinoisans, that often involve Illinoisans "using" a locale other than their residence.

Protecting environmental and recreational values is a key IDNR mission, entrusted to the agency by the legislature. The word "environment" or "environmental" appears 20 times in the HFRA. Protecting the environment cannot be gainsaid as a key statutory purpose of both the HFRA and the creation of the IDNR. As to recreation, the HVHHF must be read *in pari material* with multiple instructions by the legislature for the Department to promote and protect same. The natural resources of the State include more than individual tangible living and inanimate objects: the value of citizens being able to view, photograph, walk through, play in, and simply enjoy the out-of-doors, is reaffirmed throughout Illinois law.[1]

Finally, the definition of "adversely affected," as proposed, must be read in conjunction with the authority of the hearing officer to deny requests that are too general or indirect. First, the requestor must provide a short and plain statement of the facts demonstrating that the person has an interest that is or may be adversely affected. Section 1-50(a). The proposed rules require the requestor to state facts to this effect in the request for hearing. Section 245.270(a)(3)(B). Second, pursuant to the statute, the Department has the authority to deny a request for hearing if it determines that the request is "frivolous." Section 1-50(a). The proposed rules enable the hearing officer to deny a "frivolous" request when it is determined that the grounds are "readily recognizable as devoid in merit." Section 245.270(a)(5)(B).

The proposed definition of "adversely affected" balances the need for an inclusive hearing process with safeguards against abuse by using a simple standard. The proposed rule's definition is consistent with the purposes of the HFRA and the statutory duties of the IDNR.

Department Action: No change is made to the rules.

- *IDOT provided a specific recommendation that impacted highway authorities should receive notification of plans submitted pursuant to Section 245.240 or 245.250, which would enable them to request a hearing under 245.270(a)(1)(A)(iv).*

Response: IDNR agrees that impacted highway authorities should qualify as being "adversely affected." The rule already accomplishes that objective because such authorities own or use property or resources that could be adversely impacted. See IDNR's response to Section 245.250. No change to the rule is necessary.

Department Action: None.

- *The 1500 ft. distance as part of the definition for "adversely affected" is too narrow.*

Response: The Department received numerous comments concerning rule subsection 245.270(a)(1) specifically as it related to the 1500-foot distance for certain persons to qualify as "adversely affected" for purposes of requesting a public hearing. On this particular issue, commenters included Peoria Families Against Toxic Waste, Unitarian Universalist Church, Food and Water Watch, The Nature Conservancy, Artezen, LLC, and many individuals.

The commenters' main concern was that air pollution, as well as ground water contaminants, would travel much farther than the specified 1,500 feet, so others should be allowed to request a hearing or be allowed to participate at the hearing.

The concerns are valid regarding a possible adverse effect on people outside the 1,500 foot distance. However, the 1500-foot distance does not set an absolute limitation, rather, it is the parameter for determining who may request hearing without any further showing. IDNR realized this issue in its first draft, and therefore added subsection 245.270(a)(1)(A)(v), which enables a person to request a hearing if the requestor can demonstrate that he or she actually uses resources of "economic, recreational or environmental value" that may be adversely affected (see IDNR's response to the first comment above). Basically, landowners and oil and gas lessees/permittees with property interests within 1,500 feet of the proposed well site are "automatically" qualified to request a hearing without any additional showing of possible adverse effect. That doesn't rule out such a showing by others, it just doesn't grant them the same automatic presumption of potential adverse effect. IDNR's rationale in the first notice draft was to set an objective standard. The distance is based on the statutory notice provision that requires applicants to list in the applications all real property owners within 1,500 feet of the proposed well site. (Section 1-40(c)).

Several commenters were concerned that they were required to have to show the effect on them before they could request a hearing. This is not a new requirement of IDNR's rules, but

follows from the HFRA, which requires any person who thinks they have an adversely affected interest to state facts to that effect in writing. Section 1-50(a). Under the rules, the owners within 1,500 feet may have an easier path to requesting a hearing/participation, but others can participate if they show they are affected. The showing should not be difficult; the Department does not anticipate a lengthy brief, but something more than a vague, abstract claim. The "adverse effects" are not limited to property, but also include interests of "economic, recreational or environmental value." Possible hearing rights, depending on what the requestor puts in writing, are available to farmers, businesspersons, local governments, hunters, anglers, water users, tenants, motorists, livestock owners, and campers, among others, as well as qualified organizations under well-established principles of group standing. While the statute enables IDNR to deny frivolous hearing requests (Section 1-50(a)), it is hard to think of legitimate stakeholders who might be excluded. Moreover, even if a person cannot request a hearing, he or she may still comment on any portion of an application. Section 245.260(a).

Through these rules, IDNR anticipates it will reduce time-consuming and distracting arguments about standing, while fulfilling the statutory purpose of meaningful public participation.

Department Action: None.

- *The definition of "adversely affected" is circular.*

Response: IDNR agrees that the definition was unintentionally self-referential, and could be made clearer.

Department Action: Rule 245,270(a)(1)(A)(v) is amended as follows:

v) any other person ~~that is or may be adversely affected~~ whose written request ~~who can directly demonstrate in writing within the request~~ for public hearing shows that the person actually has a real property interest in or uses resources of economic, recreational or environmental value that may be adversely affected by the granting of the permit at issue at the public hearing.

[1] See, e.g., the Abandoned Mined Lands and Water Reclamation Act, 20 ILCS 1920/1.02 ("promote the natural beauty and aesthetic values of this State and enhance the environment"); Department of Natural Resources (Conservation) Law, 20 ILCS 805/805-225 ("maintain or enhance natural or scenic resources"); Recreational Trails of Illinois Act, 20 ILCS 862/15 (promotion of recreation and conservation); Illinois Hunting Heritage Protection Act, 520 ILCS 30/15(b) ("support, promote, and enhance recreational hunting opportunities"); Rivers, Lakes, and Streams Act, 615 ILCS 5/16, 5/19 ("preservation and beautifying" the State's public bodies of water, and facilitate the public's use of shore lands and waters "for pleasure, recreation, and sport").

245.270(b)(2) Permit Application – Public Hearings Location

Comments: The Department received approximately 426 comments on Rule 245.270(b)(2) as it relates to the location of public hearings for pending permit applications. Commenters included the Illinois Attorney General's Office, Illinois Farm Bureau, the Nature Conservancy, the environmental coalition's group submission, Central Illinois Global Warming Solutions Group, Fair Economy Illinois, Frack Free Illinois, Food & Water Watch, Heart of Illinois Group – Sierra Club, Illinois People's Action, Illinois State University/Normal, Peoria Families Against Toxic Waste, Roosevelt University/Chicago, SAFE, and hundreds of individuals. The essence of these comments was that the locations for IDNR public hearings regarding pending HVHHF permit applications should be held locally, relative to the proposed operations. The rationale was that this would promote regulatory transparency, and that failure to do so would inhibit meaningful public participation (i.e. questions/answer, witness testimony, etc.) by persons living in the counties and communities affected by the proposed well. Commenters wanted to make sure local concerns were heard by the Department, and to reduce the hardship of long-distance travel.

Response: The comments suggest that some, perhaps many, commenters misread the Department's intent. The Department, in the first notice draft of this subsection, did make public hearings for the affected communities the default, by requiring that public hearings be held in the county where the proposed well site is located. The Department, however, was also attempting to provide flexibility for scheduling local public hearings at other locations in the event of: (1) insufficient or unavailable hearing facilities within that county; (2) additional scheduling options for potentially lengthy public hearings, and (3) other scheduled uses of local facilities, such as schools or public buildings. The Department did not intend that public hearings be held at geographic locations distant or remote from the proposed well site, such as Chicago for a well site in Johnson County.

In considering whether or not a change is necessary, the Department first looked to its experience in holding hearings on coal mining operations, dams, shoreline projects, and ecological restoration projects throughout the State. The goal of the Department is to make hearings as meaningful as is possible and to include as many participants as is practical and permissible under the rules. IDNR understands and has seen firsthand how important such hearings are to the people impacted by the Department's decisions, and how sometimes local, easily accessible hearings are the only meaningful way that potentially impacted persons can participate in the decision-making process.

The Department also recognizes that the Department's commitment to holding local hearings could encounter difficulties under some circumstances, especially if the number of applications objected to were voluminous. Some of the suggestions the Department received indicated that the Department should use web-based technology or local radio/television media to broadcast public hearings and allow participation from community members located outside of the affected county. Unfortunately, these methods could lead to people unable to use such technology being left out. Another suggestion was that the Department define the term "local" to mean "within 30 miles away from the county of the proposed well site." Such a suggestion is consistent with the Department's original intent, while preserving some flexibility in the case of

necessity for convenience. Moreover, in some cases a setting in another county may be a more convenient setting for nearby residents, if the closest appropriate "in-county" hearing venue is more distant. The Department will incorporate such language into the rule.

Department Action: Rule 245.270(b)(2) is modified as follows:

2) All public hearings under this Part ~~will~~ shall be held in the county where the well site is located or such other ~~location~~ local venue as the Department deems ~~appropriate~~ necessary and available, but in no event more than 30 miles outside the county where the proposed well site is to be located.

245.270(f) Public Hearings – Failure to Appear

Comments: IDNR received approximately 250 comments on Rule 245.200(f) as it relates to parties, including the permit applicant, appearing at public hearings for HVHHF permits. Commenters included the environmental coalition's group submission, Fair Economy Illinois, and hundreds of individuals. The essence of the comments was objection to the possibility under 245.270(f) that a permit might be approved despite the applicant failing to appear at a public hearing, if the applicant can show good cause for the failure to appear. Some commenters suggested that the applicant be required to attend the hearing, and if the applicant does not attend but can show good cause why the applicant did not attend, then the 60 day schedule should be reset (and if there is no good cause shown, then the permit should be denied).

Response: The sentiments of the commenters express the same concerns that the Department weighed when it crafted the first draft of the rule. IDNR's approach was to promote public review and participation as intended by the Act. The applicant, members of the public with standing, and other parties to this decision-making process deserve a forum to call witnesses and elicit testimony when requested.

The first draft of the rule contemplated that if the applicant fails to appear, then the permit will be denied. That was apparently unclear. The Department will change the rule to clarify that in case of failure to appear for good cause, the hearing will be rescheduled, and if necessary, the applicant must waive the 60 day time restriction.

Department Action: Section 270(f) is changed as follows:

f) Failure to Appear at Hearing

If any party, after making a proper request for public hearing, fails to appear at the hearing, ~~and,~~ absent an emergency situation beyond the party's control, that party's request for public hearing shall be dismissed. If other proper requests for public hearing remain, the public hearing will proceed with any remaining parties. If the party failing to appear is the applicant, the hearing may proceed at the election of the requestor(s) for such testimony, evidence, or statements that persons present wish to adduce, but absent an emergency situation beyond the applicant's control, the Department will reject the permit application. If the applicant fails to appear but sends a satisfactory written explanation to the hearing officer explaining why emergency circumstances out of the applicant's control existed, and the applicant waives the 60 day deadline set forth in 245.230(d), then the hearing officer may reschedule the public hearing. In such an event, the applicant shall be responsible for payment of all the costs associated with the first hearing. ~~will not proceed and, absent an emergency situation beyond the applicant's control, the Department will reject the permit application.~~

245.270(g)(6) Public Hearing – Department Role and Testimony

Comments: The Department received over a hundred comments on Rule Subsection 245.270(g)(6) as it relates to the Department's role and testimony at pre-decisional public HVHHF permit hearings. Commenters included Fair Economy Illinois, and at least 80 individuals. The essence of the comments was that the proposed HFRA rules do not require the Department to testify at permit hearings, and that a representative of the Department should be required to appear at the hearing, testify under oath, and be subject to cross-examination by the other parties.

Response: The commenters seek to apply to the pre-decision hearing aspects more appropriate to a proceeding that might occur after the Department has already made a decision. Public hearings under HFRA are inherently pre-decisional.[1] The purpose of the public hearing is to give persons and entities with "an interest that is or may be adversely affected" an opportunity to present their own facts and concerns, and to question the *applicant*. Public hearings also assist the Department in creating a complete and accurate record so that the Department has all available evidence when deciding whether or not to grant the permit.[2]

After hearing all the evidence presented at the hearing, the Department considers that information as part of its review when making the final permit decision.[3] The Department is the ultimate finder of fact, not a party to the case. The Department cannot be subject to examination or cross-examination, as it has no independent knowledge of the facts underlying the permit application decision.

The Department's decision to make is what hangs in the balance. The Department hearing the case will normally not also act as witness. Hearing requestors who wish to elicit testimony from the Department about what they think is a bad decision will not be left without a remedy. The Department's decision to approve or deny a permit is a final administrative decision appealable under the Administrative Review Act.[4] At that point the Department's decision is ripe for appeal, and the Department, no longer the decision maker, can be questioned about its decision. But there is no benefit, and some awkwardness, in asking the Department about its decision to approve or deny a permit when the Department is still in the deliberative process, gathering information.

Department Action: None

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[1] See the Department's response to the comments concerning Rule 245.270(i).
[2] See 225 ILCS 732/1-50(a).
[3] 245.300(b)(3)(B).
[4] 225 ILCS 732/1-53(d).

245.300 Permit Decision

Comments: The Department received approximately 50 comments explicitly about Rule 245.300, in general, as it relates to permit decisions. Commenters included the Illinois Attorney General, the environmental coalition's group submission, IPHA, Peoria Department of Public Health, The Nature Conservancy, and a number of individuals.

Comments regarding rule subsection 245.300(c)(4) will be discussed in the succeeding comment. Comments concerning other topics that are dealt with by way of change to 245.300 are addressed in the responses to those comments. Below is a summary of all the various other concerns raised by commenters about Rule 245.300 as well as the Department's response:

- *Rule 245.300(c)(6) should be expanded to include violations that have not been finally resolved (i.e., not only those that have been specified in a final administrative decision).*

Response: The Department interprets this rule in a manner that already addresses this concern. IDNR's original rationale for this rule was to mirror the statute, which specifies that the application must demonstrate that the "applicant or any parent, subsidiary, or affiliate thereof has not failed to abate a violation of this Act or the Illinois Oil and Gas Act a violation of the act."[1] IDNR included additional language to expand this section to include violations of the administrative rules. Evidence of this intent can be seen by the Department's deliberate choice to use the conjunction "or" between the additional requirements, indicating that a violation of any one of these requirements is sufficient grounds to deny a permit.

It is more appropriate to consider Director's Decision as opposed to Notices of Violations under 245.300(c)(6). The procedure for Director's Decisions (see Section 245.1120) provides an opportunity for the Director to investigate and potentially modify or vacate a violation, and it gives the permittee a mechanism to contest a violation. Since the Notice of Violation may change significantly after this process, out of fairness, a decision on a different permit should be based on final determinations, as opposed to pending Notices of Violations. It should be noted that if a pending violation does result in serious finding, IDNR always has the ability to suspend or revoke a permit under Section 245.1100.

Note that the Department will consider any information known to it or brought to its attention with respect to the applicant and its record of compliance with laws and regulations.

Department Action: None.

- *The Illinois Attorney General has suggested that the Department delete the requirement that the Department review the Hearing Officer's hearing decision in subsection (b)(3)(B).*

Response: See the Department's discussion on modifying the hearing process in its response to the comments for Section 245.270.

Department Action: Subsection (b)(3) of Rule 245.300 will be modified as follows:

3) *all* supplemental *information provided by the applicant in response to*:

A) *any public comments* (Section 1-53(b)(3) of the Act);

B) recommended findings of hearing officer if a public hearing was held ~~the hearing decision~~;

C) the requirements of this Part; and

D) Department requests for information, including any information required or requested to demonstrate preparation against the risk of earthquake, flood, or other natural disaster ~~Department requests for information~~;

- *Rule 245.300 must clarify what activities are being approved (i.e., the drilling of the well or the fracturing operations).*

Response: The section already specifies what activities are being permitted; performance of HVHHF operations at a well site.[2] IDNR drafted this section based on the exact language in the statute. However, the statute is also clear that no one may drill a well where HVHHF activities are anticipated without securing a permit under these rules. It would be extremely difficult to drill a well without securing a permit, then announce a change of plans and attempt to secure, after the fact, Department approval for an HVHHF permit, given all the plans and necessary inspections.

Department Action: None.

- *In Section 245.300(b)(7), the Class II injection well must be shown to be in compliance at the time of disposal of waste fluids, not at the time of issuance.*

Response: IDNR cannot make the proposed change in the rules because the current language is necessary to ensure compliance with the rules pertaining to the Class II injection wells. If IDNR issues a permit without establishing a satisfactory well complies with the rules, and the operator raises an issue at a later date, both IDNR and the operator will be in an emergency situation trying to find a suitable well for disposal. Consequently, the Class II well must be in compliance at the time of permit issuance.

Department Action: None.

- *Local public health departments should be notified when a permit decision is made*.

Response: In IDNR's response to 245.240, IDNR added local public health departments to the list of entities that will receive notice of the application from the Department. By making this change, it ensures that the local public health department will also receive notice when a decision is made based on 245.300(d) (the Department shall provide the decision "to any person or unit of local government who received specific public notice under Section 245.240 or 245.250 or participated in any public hearing under Section 245.270.")

Department Action: None.

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[1] Section 1-53(a)(6).
[2] HFRA § 1-5.

245.300(c)(4) Permit Decision – Demonstration of Safety

Comments: The Department received approximately 549 comments critical of the standard set forth in the first notice draft of subsection 245.300(c)(4).[1] Representative comments included:

> *"This change from the mandate of the statute to a reasonableness standard in the regulations diminishes the express protection the law was intended to provide"*
>
> *"The phrase 'are reasonably expected to' is inconsistent with the Act"*
>
> *"DNR has changed the legislature's language, which would result in lowering the standard"*
>
> *"This lowers the standard and is inconsistent with the legislature's stated purpose"*

Such criticisms were included in the comment of the Illinois Attorney General, the Illinois Environmental Coalition, the Environmental Law and Policy Center, The Nature Conservancy, and over 500 individual Illinoisans. The gist of the complaint was that the difference between the language of section 1-53 of the Act and that of subsection 330(c)(4) of the first notice rules effected a critical shift in what a permit applicant need prove.

Response: On their face, the semantic objections of most commenters are well-taken. Section 1-53(a)(4) of the Act states that the Department shall issue a permit "only if the record of decision demonstrates that … the proposed hydraulic fracturing operations will be conducted in a manner that will protect the public health and safety and prevent pollution or diminution of any water source." The proposed rule subsection, by contrast, directed the Department to issue a permit if the record demonstrates that, *inter alia*, "the high volume horizontal hydraulic fracturing operations, as proposed, are reasonably expected to be conducted in a manner that will protect the public health and safety and prevent pollution or diminution of any water source." Thus, the rule substituted the words "are reasonably expected to be" for "will be," swapping a certain statement of future occurrence for a subjective possibility.

The original rationale behind the rule language was an attempt to avoid the legalistic trap that a demonstration of what "will" protect the public and prevent pollution is difficult. The Department assumed that the legislature had not intended to set a standard impossible to meet.

When examining the comments to the first draft of this subsection, the Department here took into consideration the intent of the statute, the plain and ordinary meaning of the proposed rule text, uses of "reasonable expectation" doctrine in other areas of Illinois, and common law. The Department agrees that requirement of a demonstration of safety and non-impact was key to the many other tradeoffs in the legislation. By neither stating whose expectations needed to be met – the Department's, the applicant's or some other person's – nor defining what would pass muster as "reasonable," the first draft's attempt to adopt a standard used in other areas of law, while well intended, created new problems, even as it sought to solve others.

The comments also make clear that the first notice rule language could be interpreted in multiple ways. "Reasonable expectation" in contract and insurance law attempts to address ambiguities by resolving them in favor of the party with less bargaining power.[2] In privacy law, by contrast, the doctrine has often been used to limit what persons in society can expect will remain private.[3]

The Department is not required in its rules to parrot the language of a statute; the test of validity is whether the rule advances the statutory purpose. Here, a reasonable interpretation of the first notice text is that its variance from the statute could allow an applicant to prove less than the statute dictated, weakening what was supposed to be a stringent regulatory regime. So the concerns behind the commentary on this rule are understandable. Moreover, the rule's variance from the language of the statute replaced the demonstration of a future condition with a formulation of a "reasonable expectation" standard that contained its own ambiguities. Therefore, the statute's wording, in this case, will be restored. If the statutory language proves unworkable, the Department retains the ability to propose alternative language.

Department Action: Subsection 245.300(c)(4) will be modified as follows.

4) *the* high volume horizontal *hydraulic fracturing operations,* ~~as proposed, are reasonably expected to~~ will *be conducted in a manner that will protect the public health*, public safety, property, wildlife, aquatic life, and the environment, ~~*and safety*~~ *and prevent pollution or diminution of any water source* (Section 1-53(a)(4) of the Act). For purposes of determining whether the conduct of high volume horizontal hydraulic fracturing operations will protect public health, public safety, property, wildlife, aquatic life, and the environment, the Department shall consider and make specific findings on the following:~~;~~

(i) any input received during the permitting process from local, regional, or state governments, or members of the environmental community;

(ii) any input received during the permitting process from local, regional, or state public health agencies, officials, or representatives, or members of the public health community;

(iii) any relevant baseline knowledge of ecosystems in the area likely to be impacted by the HVHHF operations;

(iv) any specific facts or opinions received bearing on environmental or ecological impacts of the proposed permit, including but not limited to information on habitat, food supply, migration, breeding or nesting, invasive species, noise, viewshed, light, and hunting or angling opportunities;

(v) any relevant baseline knowledge of public health in the population area likely to be impacted by the HVHHF operations;

(vi) any specific facts or opinions received bearing on public health impacts of the

proposed permit, including but not limited to information on air quality, water quality, public safety, traffic and transportation, recreation, and ecosystems;

(vii) the incremental environmental impact of the HVHHF operations that would be allowed by the permit when added to other past and present HVHHF operations and reasonably foreseeable future HVHHF operations in the vicinity or county, and the cumulative effect of all such operations; and

(viii) whether allowance of the permit would have a positive, negative, neutral, or undetermined effect on public health, public safety, property, wildlife, aquatic life, or the environment.

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[1] Note: a few commenters raised this same concern with respect to rule section 245.800, so those comments are addressed here.

[2] For example, an attorney fee agreement is construed against the attorney who drafted the agreement, because the parties have unequal bargaining power concerning the transaction at issue. *Guerrant v. Roth*, 334 Ill.App.3d 259, 777 N.E.2d 499 (1st Dist. 2002).

[3] *People v. Cornelius*, 213 Ill.2d 178, 821 N.E.2d 288 (2004); *Bureau of Credit Control v. Scott*, 36 Ill.App.3d 1006, 345 N.E.2d 37 (4th Dist. 1976).

245.310 Permit Denial

Comments: The Department received approximately 290 comments on Rule 245.310, relating to permit denials. Commenters were primarily individuals from downstate Illinois but also included The Nature Conservancy, the GROW Coalition, the Illinois Oil and Gas Association, the Peoria County Health Department, individuals self-identifying as affiliated with the IIRON Student Network, Frack Free Illinois, Central Illinois Global Warming Solutions Group, Peoria Families Against Toxic Waste, SAFE, Illinois People's Action, and persons who spoke at public hearings. The comments grouped into several different main points:

- *Parties who successfully challenge a permit should be awarded attorney's fees.*

Response: The most common comment was to urge that attorney's fees be awarded to persons who successfully challenged permits. The consensus argument was that challenging a permit would be so complex for the average person that professional legal assistance would be required. Commenters felt that the HFRA's fee-shifting provision in § 1-101(f) (to those who prevailed in a circuit court action) as well as the Administrative Procedure Act's award of fees to a party who succeeds in having an administrative rule invalidated,[1] warranted the imposition of a similar economic incentive (or playing-field leveler) to permit challengers.

At first glance, there is some logic to these comments, and allocation of attorney's fees would be within the range of procedural rulemaking discretion afforded the Department. The answer involves examining the purpose of fee-shifting. The "American rule" is that, in general, the prevailing party in litigation still pays his or her own attorney fees, unlike the norm in many other Western countries with civil legal systems.[2] There is now a "vast theoretical modeling literature on fees,"[3] and at gross risk of oversimplification, one historical justification for the American rule is that it discourages frivolous suits. Some economic analysis suggests that on the contrary, adopting a "loser-pays" rule would reduce overall litigation and trials by raising the risk level for both sides, whereas the current system allows even a party with a bad case to know that the opponent will bear some of the cost of litigation – inducing the other side to compromise even when its position is correct. In other words, arguably the American rule encourages both nuisance suits and "frivolous defenses." But some analyses suggest that both systems are comparably efficient.[4]

Another rationale for our system is concern that plaintiffs are often already at an economic disadvantage. The marginal cost of fees – and thus the risk-cost of litigation – is disproportionately high for a litigant of modest means, the argument goes, and would discourage righteous cases where the plaintiff could not hazard even a small risk of loss.[5] As a result, many of the fee-shifting provisions in American law operate primarily or only in favor of a successful plaintiff or victim, not a defendant. This legal asymmetry theoretically serves a greater societal purpose by incentivizing actors to behave in ways that are safer for society as a whole.[6]

Fee-shifting as a playing-field leveler is embodied in HFRA Section 1-101(f), whereby a plaintiff may recover his or her fees in an HFRA enforcement suit. Commenters are correct that in most cases an applicant for an HVHHF permit will have far more resources at its disposal: developing an HVHHF well site is not an activity possible without capital. However, the

legislature inserted no specific provision, comparable to that in the judicial review section, in the portions of the Act relating to permit hearings.

Fee-shifting is relatively unusual in the administrative law context.[7] For one reason, administrative law, often in the nature of agency fact-finding, is intended to be less adversarial than full litigation. For another, an administrative proceeding is rarely the final say; in most cases (as with the HFRA), judicial review is available. Also, administrative proceedings are typically less formal than in a courtroom before a jury or judge: the rules of evidence may be relaxed; the conduct of the hearing may be less stilted; procedure may vary at the discretion of the agency attempting to determine or elicit facts; accommodation is made to parties not represented by counsel. For these reasons, incentivizing or facilitating the hiring of attorneys for parties or intervenors has not, historically, been a policy objective of government regulation.

Moreover, statutory attorneys' fees are most commonly awarded under statutes where a private plaintiff is simultaneously vindicating public rights. But in the HVHHF permitting context, (a) the Department, which does have legal resources, is already charged with looking out for public interests in health, safety, and environment, (b) local governments, likewise vested with protecting the public interest, have the ability to comment or request a hearing, or to provide input into a permit review, and (c) organizations with group standing, who may have more resources than an individual objector, may likewise request a hearing or comment, or provide input into a permit application hearing or consideration. The interest of an objector, therefore, is primarily in protecting his, her, or its private interests.

Furthermore, the applicant will have already paid an application fee of $13,500, and undoubtedly at least that much again in its own personnel, engineering, consulting, and legal fees, simply to file an application, whereas the objector need not pay anything, but simply by interposing objection may subject the applicant and the Department to take a great many more actions and steps. The applicant that has its permit application denied will have invested considerable time and cost at a loss.

Finally, in a typical fee-shifting situation the law is helping to right a wrong, i.e., making the party that has violated civil rights make the victim completely whole. In the HFRA permitting context, the unsuccessful applicant has committed no wrong but has simply failed to present sufficient demonstration of the required factors. Fee-shifting in this context, absent some showing of frivolousness in the application, would punish in a context where it is unwarranted. In the case of a frivolous or egregious application, or a proceeding where an applicant has unduly vexed and multiplied the proceedings, the Department has power to issue an appropriate order, which conceivably could include an award of fees. No change to this subsection is required.

Department Action: None

- *An additional burden should be placed on any permit denial based on "emergency condition," requiring such a condition to be "proven to exist" based on the opinions of persons trained in oil and gas operations.*

Response: The concern of the two organizational commenters that denial based on "emergency condition" not be arbitrary is understandable. However, the statute makes clear that the burden of demonstrating to the Department's satisfaction that the criteria for issuance of a permit are met is upon the applicant. The Section 245.310 conditions warranting denial of a permit mirror the statutory provisions in HFRA § 1-60(a)(6). These are not exhaustive, but inserted as belt-and-suspenders provisions underscoring particular instances in which permits absolutely should not be issued. To overlay a burden of proof upon the Department would undo the statutory scheme. No change to this subsection on the basis of this comment is made.

Department Action: None.

- *Anti-industry groups would use impact to health as a reason to challenge every permit.*

Response: The commenter's concern over objectors' potential abuse of health impact is understandable but somewhat misplaced. It is understandable because opponents of HVHHF have indeed consistently maintained that HVHHF is unsafe. The concern is somewhat misplaced because the Department is already required to take public health into account in its permitting decision;[8] therefore, regardless of 245.310, there need be no showing of emergency, for a permit to be denied.

Department Action: None

- *Additional specific triggers for denial of a permit should be added, e.g., an applicant's record of past violations even if abated; site unsuitability; or impact to wildlife or aquatic life or their habitat, even if not an emergency.*

Response: As with the comment addressed immediately above, the concern that certain conditions for denial are omitted is understandable but somewhat misplaced. The permit cannot be issued unless it satisfies a number of conditions. One is a finding that the plans are adequate and effective to fulfill the statutory purposes; another is that all information required by the Department has been provided; another is that pollution, which the statute broadly defines to include harms to wildlife or aquatic life, not occur. The Department believes that it has ample other tools to protect the environment during permitting, and that the legislature intended in this Section of the statute only to address emergency conditions.

Department Action: No change.

- *The Peoria County Health Department wanted notice of permit denial to be sent to all affected local health agencies.*

Response: The purpose of notifying a government body that may have an interest in a permit application is so that it is aware of proposed activity within or affecting persons or property within its jurisdiction, and so that it may provide input if it desires into the permitting. A permit denial poses no additional harm to a local government body; there is no need to impose an additional burden of notification upon the Department. However, it is a legitimate request that

all parties who have commented on an application, whether by writing or at a hearing, receive notice of the decision.

Department Action: None.

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[1] 5 ILCS 100/10-55
[2] T. Rowe Jr., *The Legal Theory of Attorney Fee Shifting: A Critical Overview*, 31 Duke L. J. at 651 (1982).
[3] Theodore Eisenberg and Geoffrey P. Miller, *The English vs. the American Rule on Attorneys Fees: An Empirical Study of Attorney Fee Clauses in Publicly-Held Companies' Contracts*, N.Y.U. L. and Econ. Working Papers No. 241, available at http://lsr.nellco.org/nyu_lewp/241 (2010).
[4] Shavell, *Suit, Settlement, and Trial: A Theoretical Analysis under Alternative Methods for the Allocation of Legal Costs*, 11 J. Legal Stud. 55 (1982).
[5] L. Bebchuk and H. Chang, *An Analysis of Fee-Shifting Based on the Margin of Victory: On Frivolous Suits, Meritorious Suits, and the Role of Rule 11*, 25 J. Legal Stud. 371 (1996).
[6] E.g., Rowe, supra.
[7] See, e.g., *K.I. v. Wagner*, 2014 DJDAR 5546 (Cal. Sup. Ct. 4th Dist., Div. 1, May 2, 2014), http://www.courts.ca.gov/opinions/documents/D063822.PDF (social service claimants were entitled to recover superior court attorney's fees under fee-shifting statute, but not fees incurred in the administrative hearing process); but cf. *Jester v. District of Columbia*, 474 F.3d 820 (D.C. Cir. 2007)(administrative hearing and judicial review comprised a unitary action for purposes of fee-shifting statute).
[8] HFRA § 1-53(a)(4).

245.320 Permit Conditions

Comments: The Department received several comments concerning rule subsection 245.320 regarding permit conditions. Commenters included the Illinois Oil and Gas Association, the Illinois Petroleum Council, the County of McLean, Illinois, Illinois Public Health Association and several individuals. Below is a summary of the comments, and the Department's response to each:

- *IDNR's ability to impose additional terms and conditions on the permit is overly burdensome and broad, exceeds the statutory thresholds in HFRA, and is not subject to public review.*

Response: Two organizations made this comment. One suggested that any conditions the Department chooses to impose should be subject to public review. Neither organization described in any detail how the Department's ability to impose conditions on permits is overly broad, nor did they give any examples of how the rule exceeded the Department's statutory authority.

The breadth of authority to set conditions is statutory. Section 1-53(a) of the Act grants the Department to approve a permit "with any conditions the Department may find necessary." The ability to have flexibility in the capacity of regulator is an important statutory grant for executive agencies like IDNR. Without flexibility, IDNR could not fairly and accurately account for the unique circumstances that surround each permit. Uniformity would lead to inequitable treatment. For example, if the Department developed a uniform well plugging regime and had no flexibility to change it due to formation conditions, wells that potentially need to be plugged might be left open, or, conversely, operators would be forced to plug wells in no danger from their activities. The result would be risk of pollution, economic waste, or both. The Department's capabilities to impose permit specific conditions under Rule 245.320(c) results from sound policy.

Department Action: None.

- *The Department should develop a performance based approach instead of a prescriptive approach when determining how operators must conduct their operations.*

Response: One organization comment indicated that the rules were fundamentally unfair to operators because the Department has adopted a prescriptive approach that, in the commenter's view, significantly limits flexibility, removes many technically sound options, and can limit implementation of new or improved techniques that are part of the normal process of technology development. The Department agrees that techniques that vary from the statute or rules might save the operator money; they might also cause a well to fail, or a neighbor's well to be polluted. The Department's ideal role under the HFRA is to try to prevent such occurrences, not to police them after they have occurred.

A performance based regulation "sets performance goals, and allows individuals and firms to choose how to meet them . . ."[1] Performance based standards tend to be imprecise when

the standard is loosely defined, and some standards are difficult to measure when the standards are based on predictions and not actual events.[2]

The HFRA statutory regime created by the Illinois legislature is not conducive to a performance based set of rules, because the statute is prescriptive in nature. The statute sets forth numerous guidelines for most processes and procedures throughout the application, permitting, and operational stages. There is no room for the Department to instead implement an alternative approach.

In sum, the plain language of the Act precludes the Department from adopting a more performance based rule set; even if it were allowed, the Department finds that such a move would be inappropriate, given the nascent state of knowledge about the long-term and cumulative impacts of HVHHF.

Department Action: None

- *Operators should be required to report actions taken to adjust to field conditions to the administrator of the local health department, as well as to IDNR, and the term "actions" should be further defined in the rules.*

Response: Operators are required to report certain field conditions to IDNR. The operator and/or permittee is required to notify the Department and/or other appropriate agency throughout the drilling process when cementing the surface casing (245.530), when setting intermediate casing (245.560), when conducting pressure testing (245.810), when there is a mechanical integrity failure (245.835), when the Department gets copies of fluid handling reports (245.850), when there are spills (245.855), and other instances not here mentioned. Permittees are required to report to the Department actions throughout the HVHHF operations, and the term "action" is defined in the statute by the multiple instances where reporting is required.

The entitlement of local health departments to be notified, and the burdens and value of notifying health departments at various stages in the process, has been addressed throughout these responses. Affected local health departments will be notified of pollution, and issues over which they have some jurisdiction, but will not be copied on every notification the Department receives. Note, the Freedom of Information Act is not abrogated by the HFRA, and interested parties may periodically request such notifications in the aggregate for purposes of research.

Department Action: None

- *The rule should specifically acknowledge that counties' authority under adopted zoning codes pertinent to HVHHF operations is not preempted.*

Response: One of the conditions of a HVHHF permit is that the permittee "comply with all provisions of this Act and all other applicable local, State, and federal laws, rules, and regulations in effect at the time the permit is issued."[3] Nothing in the HFRA indicates preemption, and rules need not restate law. The Department addresses this issue in response to the comments concerning subsection 245.210(b).

Department Action: None.

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[1] Coglianese, Cary, Jennifer Nash, and Todd Olmstead, *Performance-Based Regulation: Prospects and Limitations in Health, Safety, and Environmental Protection*, Regulatory Policy Program Report No. RPP-03 (2002).
[2] *Id.*
[3] HFRA §1-55(a).

245.330 Permit Modifications

Comments: The Department received approximately 1,000 comments relating to various aspects of the rule section on Permit Modifications, which requires a permittee to get approval from the Department for actions that materially deviate from the original permit. The issues the commenters had with this section are explained below and considered in turn.

First, the Department received hundreds of comments concerning rule subsection 245.330 pertaining to the perceived narrowness of what "significant deviation" would or would not trigger public comment processes. Commenters included Fair Economy Illinois, Faith in Place, Central Illinois Global Warming Solutions, Peoria Families Against Toxic Waste, Abbott, Clay Lick Creek Pottery, IIRON Student Network, Second Unitarian Church, Illinois People's Action, students affiliated with Illinois State University and Frack Free Illinois. The majority of commenters argued that the "significant deviation" standard was much narrower than the statute intended. Many believed the rule should be expanded to be more inclusive, in line with the intent of HFRA §1-55(c).

The underlying policy concern of the commenters was that the vagueness of "significant deviation" would let permit holders pull a "bait and switch": obtaining a permit for one type of operation, then obtaining a modification to allow more problematic activities, without public scrutiny. Commenters suggested that a significant deviation should include proposed actions that "materially differ" from those associated with the original permit application. Several comments also suggested adding the phrase "including, but not limited to," so that IDNR had more discretion to consider other actions significant deviations. Other related issues will be discussed below, in turn.

Response: The HFRA in Section 1-55 required Department approval for all modifications to a permit, and mandated that for at least some of them the full notice and review process that applied to initial applications should be enforced. However, the legislation was silent as to what might not qualify as a significant deviation. For the entire field of modifications, the statute authorized – in fact required – the Department to "adopt rules regarding procedures for a permit modification."

In response, IDNR established a fee structure and created the "insignificant deviation" category so that a permittee would not have to pay $13,500 and go through all the procedures warranted for a material deviation from the permit already granted, if the modification requested were truly not significant. IDNR's original rationale was that the Department would have broad discretion to determine what constitutes a "significant deviation." That was not intended to weaken the standards or public notice. The establishment of a "Modification Lite" category was intended to regulate the statute by filling in a void, i.e., modifications that would not cost the Department $11,000 in resources to review, and where the public interest in full-blown process might not be as great as with an initial permit or a material modification. It parallels the "insignificant modification" designation used in the Department's coal permitting.

As minimum standards, subsections 245.330(c) and (d) set out, respectively, proposed modifications that are *automatically* considered "significant deviations": moving the well,

adding new horizontal well bores, or adding length to well bores, because those might result in a modified permit for which potentially affected persons never received notice. The rule also preserved treating as significant permit modifications that present a serious risk to public health, life, property, aquatic life, or wildlife (Section 1-55(c)). However, apparently the intent did not translate for many readers, possibly because, other than the few examples, what would constitute "insignificant" was not defined and, conversely, what would not qualify as "insignificant" was not illuminated either.

It is impossible to list every circumstance that might constitute "material deviation." However, the Department can make a fuller effort to clarify what might or might not constitute a modification that triggers full fee and review.

Department Action: The rule is amended as follows:

Section 245.330 Permit Modifications

a) Except for the actions allowed pursuant to Section 245.320(e), actions that materially deviate from the original permit require the permit to be modified prior to being conducted. *No permit issued under this* Part *may be modified without approval of the Department* pursuant to this Section (Section 1-55(c) of the Act).

b) Applications for permit modification shall be made on a Department permit application form and shall specifically identify the applicant, the well, and each proposed deviation to the original permit.

1) Sections of a permit modification application that ~~are~~ do not affect or change ~~not the subject of a proposed deviation from~~ terms or conditions of, or information on the ~~an~~ original permit are not required to be completed, other than that information necessary to identify the applicant, operator, well site, and well. All sections of a permit modification application that are not completed will be considered to incorporate the original permit (and original permit application) as the content of the permit modification application for those sections.

2) *Each* permit modification *application submitted under this* Part *shall be signed, under the penalty of perjury, by the applicant or the applicant's designee who has been vested with the authority to act on behalf of the applicant and has direct knowledge of the information contained in the* permit modification *application and its attachments. Any person signing a* permit modification *application shall also sign an affidavit with the following certification*:

> *"I certify, under penalty of perjury as provided by law and under penalty of refusal, suspension, or revocation of a high volume horizontal hydraulic fracturing permit, that this application and all attachments are true, accurate, and complete to the best of my knowledge."* (Section 1-35(f) of the Act)

c) ~~If a permit modification application proposes to move the well, including the horizontal well bore, add new horizontal well bores, or add length to any existing or planned horizontal well bores, such that any address of a different person, any different municipality or different county would receive notice if the proposed modification application were a new permit application, the permit modification shall be considered *a significant deviation from the original application and permit* (Section 1-55(c) of the Act).~~ The permit modification application for a significant deviation shall be accompanied by a non-refundable fee of $13,500 as set forth in Subsection 245.210 and shall be reviewed and approved or rejected as if it were a completely new permit application under the permit application procedures set forth in this Part. The permit modification application for a significant deviation shall be accompanied by a non-refundable fee of $13,500 as set forth in Section 245.210, and shall be reviewed and approved or rejected with all the opportunities for notice, comment, and hearing required under Sections 1-45 and 1-50 of the Act and subsections 245.240 through 245.270, inclusive, as if it were a completely new permit application under the permit application procedures set forth in this Part. The applicant shall confer with the Department prior to filing the application for modification so as to coordinate scheduling. The following modifications shall be considered a significant deviation, but are not intended to be exclusive: A permit modification application that proposes to:

1) move the vertical part of the well;

2) move, extend, or add to any dimension of the horizontal well bore;

3) add a new horizontal well bore or bores;

4) move, extend, or add to the well site;

5) make any change such that any person or entity who did not receive specific notice of the original application would receive notice if the proposed modification application were a new permit application;

6) materially alter any part of any plan submitted the Department with the original application, including but not limited to any material alteration of plans for containment or storage, transportation of materials (including produced hydrocarbons) to or from the well site, or management of emissions if such alteration results in an increase in emissions, venting, or flaring; or

7) request relief from any condition imposed upon or attached to the original permit.

d) ~~*If* a permit *modification presents a serious risk to public health, life, property, aquatic life, or wildlife* (Section 1-55(c) of the Act), the modification shall be considered a significant deviation from the original application and permit. The permit modification application for a significant deviation shall be accompanied by a non-refundable fee of~~

~~$13,500 as set forth in Section 245.210 and shall be reviewed and approved or rejected as if it were a completely new permit application under the permit application procedures set forth in this Part.~~ If the Department, after receipt of an application for modification, determines that a permit modification presents a possible serious risk to public safety, public health, life, property, aquatic life, wildlife, or the environment (Section 1-55(c) of the Act), and the application is not already being treated as one for modification representing a significant deviation, the Department shall inform the applicant, and the applicant, if it wishes to proceed with the application for modification, shall pay a non-refundable fee totaling $13,500 (after credit for any payment for insignificant modification already tendered) as set forth in Section 245.210, and the application shall be reviewed and approved or rejected with all the opportunities for notice, comment, and hearing required under Sections 1-45 and 1-50 of the Act and subsections 245.240 through 245.270, inclusive, as if it were a completely new permit application under the permit application procedures set forth in this Part. The applicant shall confer with the Department after notification of such treatment so as to coordinate scheduling.

e) All other permit modification applications may be filed as an insignificant permit deviation and accompanied by a non-refundable $5,000 permit modification fee. However, the Department has the discretion to determine that the permit modification is a significant deviation based on the content of the application. The permit modification application for insignificant permit deviation shall be reviewed and approved or rejected under the following procedures:

1) The Department's record of decision shall include the original permit record of decision, information provided by the application for permit modification pursuant to subsection (b), and any other additional information provided by the permittee in response to requests by the Department. The Department shall provide a copy of the modification application to any of the entities entitled to receive notice in Section 245.240 (the Agency, the Office of the State Fire Marshal, Illinois State Water Survey, and Illinois State Geological Survey) if it proposes to modify a plan they received under 245.240.

2) The Department shall approve or reject the proposed insignificant permit modifications within 90 days after receipt of the permit modification application based on the requirements of Section 245.300(c). The Department's decision to approve or reject the proposed insignificant permit modifications shall be considered a final administrative decision subject to judicial review under the Administrative Review Law and the rules adopted under that Law.

3) Approval of an insignificant permit modification shall result in a modified permit that shall be considered a permit under this Part and, therefore, subject to all conditions and requirements for permits under the Act and this Part.

4) The Department shall, by U.S. Mail and electronic transmission, provide the applicant with a copy of the modified permit as issued or its final administrative decision rejecting the modification request.

5) The applicant shall, by U.S. Mail or electronic transmission, provide a copy of the modified permit as issued to any person or unit of local government who received specific public notice under Section 245.250 or participated in any public hearing under Section 245.270 for the original permit or any significant modifications of that permit. The applicant shall notify the Department within 30 days after receipt of the modified permit that it has complied with this subsection (e)(5).

6) Following completion of the Department's review and approval process, the Department's website shall indicate whether an individual high volume horizontal hydraulic fracturing permit modification was approved or denied and provide a copy of the approval or denial.

7) The complete record shall be maintained and shall be accessible to the public on the Department's website <u>at least</u> until final release of the applicant's bond.

f) If the Department determines that an application for an insignificant deviation in subsection (e) is a significant deviation based on the content of the application, the Department shall notify the applicant and the applicant shall be required to increase the non-refundable application fee to $13,500 as set forth in Section 245.210. Once the full application fee is received, the permit modification application shall be reviewed and approved or rejected as if it were a completely new permit application under the permit application procedures set forth in this Part.

- *The Department received hundreds of comments concerning rule subsection 245.330(b)(1), which states, in pertinent part: "Sections of a permit modification application that are* ***not the subject of*** *a proposed deviation from an original permit are not required to be completed." (emphasis added). Commenters on this issue included Fair Economy Illinois, Illinois People's Action, students affiliated with UIS, Frack Free Illinois, Central Illinois Global Warming Solutions, Our Lady of Lourdes Church, Illinois People's Action, One Northside, students affiliated with ISU, Peoria Families Against Toxic Waste, Roosevelt University, Abbott, SAFE, Illinois Environmental Council, Second Unitarian Church, IIRON Student Network, NRDC/ELPC, Lick Creek Pottery, and at least 50 individuals. The essence of these comments is that the potential significant impact of a modification will often not be the "subject of" the modification, but rather a consequence of it, and those portions of the permit modification should also be completed when the modification would <u>impact</u> those sections. Many suggested that the language be modified to state that application sections "not impacted by" the proposed modification need not be completed.*

Response: IDNR agrees that a revision to this section can address the concern and clarify the rule.

Department Action: See Subsection (b)(1) above.

- *Another group of over 500 comments concerned section 245.330(d) as it relates to the definition of "serious risk." The commenters included Peoria Public Health, Peoria Families Against Toxic Waste, Illinois Manufacturers Association, Sierra Club, Frack Free Illinois, Jackson County Health Department, Clay Lick Creek Pottery, Fair Economy Illinois, Central Illinois Global Warming Solutions Group, Illinois People's Action, students at Roosevelt University, Second Unitarian Church, and the IIRON Student Network. The essence of the comments was that the subsection seems to suggest that a permit modification could be allowed even if there is a "serious risk" to the public health or the environment (as prohibited under 245.300(c)(4)) and would like language to reference to 245.300(c)(4).*

Response: IDNR recognizes the apparent conflict that the Department would make a determination that a proposed modification would constitute a "serious risk," and then, after the public participation period, determine that the modification should be approved. However, that framework is explicitly set out in the HFRA:

> If the Department determines that the proposed modifications constitute a significant deviation from the terms of the original application and permit approval, ***or presents a serious risk to public health, life, property, aquatic life, or wildlife***, the Department shall provide the opportunities for notice, comment, and hearing required under Sections 1-45 and 1-50 of this Act. (Section 1-55(c))(emphasis added).

However, the rules as proposed address this concern. Section 245.330 specifically states that this type of permit modification will be reviewed, approved, or rejected as if it were a completely new permit application. That means it must also comply with all the standards required for issuance of an initial permit. The proposed rule does not create any opportunity for approval of a permit that represents such a risk, any more than the initial permitting does.

Department Action: See IDNR's response to Section 245.300(c)(4).

- *There were also a small number of comments that were concerned about the public input process and requested that <u>all</u> modifications be subject to public comment. One comment suggested that any and all modification requests be posted on IDNR's website, and that all persons who received special notice of the original permit application, or anyone who was party to a hearing concerning it, should receive notice as well.*

Response: The proposed rules address this issue. First, if a permit modification is found to be a "significant deviation," it must be reviewed and approved or rejected as if it were a completely new permit, which includes the public notice and participation requirements (and posting to the website.) The procedure for insignificant permit modifications does not require the same process because IDNR made the threshold determination that it does not result in a substantial change to the permit. The rule still requires the applicant to provide a copy of the modified permit to any person or entity that received notice (under the original application) or

participated in any hearing. 245.330(e)(5). Lastly, IDNR must post the decision on an insignificant permit deviation and the complete record on the website pursuant to 245.330(e)(6).

In reviewing this rule, however, IDNR found that the entities entitled to receive specific notice under 245.240 (IEPA, the Office of the State Fire Marshal, Illinois State Water Survey, and Illinois State Geological Survey) do not receive notice of the modification application. IDNR will amend the rule so that they receive a copy if it affects a plan they were to receive under that section.

Department Action: Section 245.330(e)(1) is amended as follows:

1) The Department's record of decision shall include the original permit record of decision, information provided by the application for permit modification pursuant to subsection (b), and any other additional information provided by the permittee in response to requests by the Department. <u>The Department shall provide a copy of the modification application to any of the entities entitled to receive notice in Section 245.240 (the Agency, the Office of the State Fire Marshal, Illinois State Water Survey, and Illinois State Geological Survey) if it proposes to modify a plan they received under 245.240.</u>

- *One comment suggested the establishment of a three-person review committee on amended applications, consisting of two IDNR employees and one appointed by the Sierra Club.*

Response: The HFRA sets out that IDNR makes the decision on a permit application and modification (Section 1-53), so IDNR cannot delegate that authority to a committee.

Department Action: None.

- *One comment suggested that all modifications should require a public hearing, and that any landowner over any part of the well be required to be personally notified and that alteration of contents of fluids be subject with full public review prior to alteration.*

Response: As explained above, a modification that is a "significant deviation" will be treated like a new application, so the public hearing and notice requirements will apply. The Department finds that requiring a public hearing for insignificant modifications would not serve the public interest.

Department Action: None.

- *One comment suggested the local health department receive $5,000 fee from the applicant for filing a permit or modification and $1000 for insignificant modification or transfers.*

Response: Although IDNR agrees that local health departments would benefit from additional funding, there is no basis in the statute for providing a portion of the fee to local health departments.

Department Action: None.

- *One comment was concerned that the proposed modification process is too time consuming and would cause delays and costs to the operator. For example, 90 days to approve the change is too long, and should be shortened to 14 days.*

Response: Although IDNR recognizes the modification procedure will take time, it is necessary for IDNR to have this information to make an informed decision regarding permit modifications. These procedures will help ensure integrity in the permitting process by avoiding the accusation of "bait and switch." Given that priority must be given to new permit applications, 90 days is a reasonable time, and in many instances the review and approval may not take the full 90 days.

Department Action: None.

- *One comment objected to an additional fee for permit modifications and thought this provision should be removed.*

Response: IDNR is permitted to assess fees for certain operations. The processing of permit modifications will require staff time and other costs to the Department that need to be covered.

Department Action: None.

245.340 Permit Transfers

The Department received several comments concerning Rule Subsection 245.340 as it relates to permit transfers. Commenters included the Illinois Oil and Gas Association, Jackson County Public Health Department, Peoria City/County Public Department, and Illinois Public Health Association, as well as one individual. The essential points made by the comments are listed below and considered in turn:

- *Notification of permit transfers to county/local public health agencies.*

Response: With respect to permit transfers, the only applicable provision in the HFRA states that: "No permit may be transferred to another person without approval of the Department." Section 1-55(b). The statute is silent as to what IDNR might require in order to grant its approval. Thus, this is an area that IDNR might flesh out extensively, or leave simple.

IDNR drafted the first notice version of this rule in belief that because the large substantive questions that go into a permit or modification decision are absent with a transfer, the notice requirements that apply to new permit applications need not apply to permit transfers. IDNR's rationale is that only the permittee is changing, not any other component of the permit (other components would need to go through the modification process under 245.330). IDNR has criteria set out in 245.340 to ensure that the proposed new permittee meets all of the requirements (registration, insurance, bonding, etc.). However, in reviewing this rule section, IDNR found that the entirety of Section 245.310 should apply as reasons that a transfer could be denied (such as using fraudulent business practices, having a HVHHF permit revoked in another state, or an emergency condition exists). In other words, no one should get a permit via transfer who could not have obtained one on their own.

Department Action: Subsection 245.340(d) is modified as follows:

Section 245.340 Permit Transfers

d) The Department shall approve a permit transfer, with any conditions the Department may find necessary, only if:

1) the proposed new permittee certifies that its registration information provided pursuant to Section 245.200 is accurate and up to date;

2) the permit for the well issued pursuant to the Illinois Oil and Gas Act is approved for transfer to the proposed new permittee under the requirements for permit transfers under the Illinois Oil and Gas Act administrative rules;

3) the proposed new permittee ~~and, if applicable, any contractor performing high volume horizontal hydraulic fracturing operations at the proposed well,~~ provides proof of insurance that each is insured *to cover injuries, damages, or loss related to pollution in the amount of at least $5,000,000* (Section 1-35(b)(19) of the Act);

4) there is no good cause to deny the permit transfer under Section 245.310~~(a)~~;

5) the request for permit transfer is accompanied by a bond as required by Section 245.220;

6) there are no outstanding unabated violations by either the current or proposed new permittee of this Part, the Act, the Illinois Oil and Gas Act, or the administrative rules promulgated under that Act, as specified in a final administrative decision by the Department.

- *Non-refundable $5,000 fee to county/local health department for additional services.*

Response: Although local health departments need and would benefit from increased funding, the statute does not authorize such an additional fee to an agency not administering the HFRA. Section 1-35(e) of the statute specifically sets out the application fee.

Department Action: None.

- *No proof of insurance should be required for contractors performing high volume horizontal hydraulic fracturing operations at a proposed well (245.340 (d)(3)).*

Response: Section 1-35(b)(19) specifically requires that a permittee show proof of insurance to cover injuries, damages, or loss related to pollution in the amount of at least $5,000,000. As a result, IDNR must require a permit transferee to obtain the required insurance. It also furthers the purpose of the statute that HVHHF operations be adequately insured by requiring the contractor be named as an additional insured. This proposed change is made to be consistent with Section 245.210(a)(19) (See IDNR's Response to 245.210 Application Requirements).

Department Action: See above change to 245.340(d)(3).

- *Eliminating or changing $2,000 permit transfer fee because it is excessive*
- *Clarification and/or changing $2000 permit transfer fee as to applicability as a single transaction well transfer fee, regardless of numbers of permitted wells, where entire company assets are transferred to another party.*

Response: IDNR has the authority to impose such a fee, as the permit review process will take significant staff time and resources. IDNR believes this should be required per transfer on a permit by permit basis (as opposed to an aggregate fee) because costs will be associated with reviewing each transfer. There is also a public interest in discouraging multiple transfers of the same permit, as multiple transfers could impede transparency and accountability.

Department Action: None.

245.350 Permit Release

Comments: IDNR received one comment regarding permit releases under Section 245.350. The commenter was the Peoria City/County Health Department. The comment contended that local certified public health departments should be notified when a permit is released under Section 245.350.

Response: The comment did not specify why such a notice requirement to the health department is necessary. The primary purpose of the permit release is for IDNR to ensure that the plugging of the well and restoration of the well site is completed properly. If the permit is released, the plugging and restoration will have occurred and there should be no public health issue. The location of the well will already be known to the public health authority, assuming they retained their records of earlier steps in the well history.

There are ways in which the data might be of interest to local health departments, but not to the degree that warrants expenditure of Department resources. The release of the well permit should be a public record and the local health authority will have ready access.

On a longterm basis it may be possible for the Department to partner with an agency in more frequent communication with local health authorities, such as the Department of Public Health, on a more formal arrangement. For now, however, the Department finds no compelling reason for a Rule as requested.

Department Action: None.

245.360 Judicial Review

Comments: The Department received one comment from the Illinois Petroleum Council concerning Rule 245.360 as it relates to the Department determinations being subject to judicial review. The IPC argued that the rule should provide for an intermediate appeal process for appealing Department permit decisions administratively before Department permit decisions are appealed to judicial review. The commenter believed this would avoid unnecessary burdens on the judicial system and ensure that only the most difficult appeals go before the courts.

Response: The Department, in the First notice draft of this Section, incorporated the Act's requirements that all Department decisions generally (Section 1-125) and Department permit decisions specifically (Section 1-53(c)) are subject to judicial review.

There are many forms of administrative process, and countless statutes and ordinances do provide for an intermediate, or agency, appeal process. Yet, there is no requirement of having anything besides the appeal route through the courts, and many administrative schemes have no internal appeal process.

The potential upsides of an internal review step are those that the commenter identified, and, in various contexts, other efficiencies. The downsides are increased delay and cost before potential final resolution, and frustration of a party's legitimate claims. Also, as the HFRA already builds in the possibility of a hearing before the permit is issued, an internal appeal might require the Department to use and/or hire a second hearing officer. Even if not, any internal appeal would put greater stress onto an agency that may already be challenged to afford the amount of process mandated.

As it turns out, the policy question of whether or not to add such a step is moot. After review of the concern raised and of the Act's applicable sections, the Department is convinced that the HFRA does not allow it to add an internal administrative step, but requires direct judicial review of the agency decision. Section 1-125 of the Act provides:

> Section 1-125. Administrative review.
>
> All final administrative decisions, including issuance or denial of a permit, made by the Department under this Act are subject to judicial review under the Administrative Review Law and its rules.

Additionally, Section 1-53(d) provides:

> (d) The Department's decision to approve or deny a high volume horizontal hydraulic fracturing permit shall be considered a final administrative decision subject to judicial review under the Administrative Review Law and the rules adopted under that Law.

The key phrase in these provisions of the Act (particularly Section 1-53(d)) is "final administrative decision." The administrative law of Illinois is structured so that there is no

further agency appeal after a "final administrative decision," but only the option of resort to the courts. The only way to build in a pre-court second agency review step would be to insert such a step *before* the permit decision. Because of the tight timeframes demanded by the statute , inserting an entire procedure like that would be extremely difficult and would require amending a dozen or more provisions of the very interdependent rules, amounting to a substantial amendment of the statute. Such a change is not consistent with the statutory goal of relatively quick finality at the agency level.

Department Action: None.

245.400 Setback Requirements

Comment: The Department received approximately 100 comments concerning Rule Subsection 245.400 on setback requirements. Commenters included the Illinois Attorney General's Office, Illinois Association of Groundwater Professionals, Sierra Club North VOF, SAFE, Food and Water Watch, The Nature Conservancy, IIRON Student Network, Unitarian Universalist Church, Illinois Petroleum Council, Illinois Environmental Council, and numerous individuals. The specific concerns of the commenters will be individually described and responded to below.

- *The Department should generate a standard form for a landowner to waive setback requirements.*

Response: Several organizations suggested that the Department create a standard form for setback waivers. The rationale for doing so was that burying non–standard waivers in an application would be confusing and potentially difficult to find for persons reviewing the applications. While the Department understands the sentiments behind these comments, creation of another form in addition to all the forms and reports that the HFRA implementation will require is of minimal benefit compared to the alternative of letting applicants use their own waivers. Since it is a question applicants will have to answer, the Department assumes any such waiver will be included in a table of contents or index to an application.

Also, a waiver is a contractual agreement between the permittee, operator, or contractor and the surface owner where the well site will be located. The Department is not a party to this agreement. These agreements could conceivably be negotiated in a myriad of different ways with different rights, different compensation mechanisms, and other clauses that may be difficult to incorporate in a standard form. The Department believes it has little cause to inject itself into the decisions and negotiations between surface owners and permittee, operator, or contractor.

Furthermore, the Drilling Operations Act does not require that surface rights owners sign a standard agreement with the drilling operator; only that an agreement be provided or the other conditions of the statute met.[1] While not providing a standard form might potentially be more confusing in some instances, it gives the involved parties an opportunity to craft an agreement that is tailored to their specific needs.

Department Action: None

- *The setback for nature preserves should specify that the nearest boundary to the well site is the measuring point for the setback.*

Response: Subsection (5) of Rule 245.400 creates a 750 foot setback for a "nature preserve or a site on the Register of Land and Water Reserves." This language is taken directly from the Act.[2] There are both dedicated state nature preserves created by statute[3] and private nature preserves created by contractual agreement. Both of these types consist of real property[4] which has been set aside to be preserved. Real property is recorded and has a legal description setting forth the boundaries.

The statute and rules state plainly and clearly that there must be a minimum distance between a nature preserve and a well site of 750 feet. Neither the Act nor the rules states that the applicant can pick any point in the nature preserve to measure from. By exclusion of any exception which can be seen at other places in the setback rule,[5] the default must mean that no portion of the well site can be within 750 feet of any portion of a nature preserve. Logic dictates that the method by which to measure the setback is to pick the closest boundary of the nature preserve when determining the setback for the well site. No change is required, because the Act and rules already address the commenters' concerns.

Department Action: None

- *The rules are unclear as to whether or not the measuring point takes into consideration the horizontal leg of the well, and if not then what good is a setback if the horizontal bore can go right under what is being sought to protect.*

Response: Numerous commenters questioned whether or not the rules took into consideration the location of the horizontal wellbore when determining the setback requirements. The Act and rules determine the setback from the "closest edge of the well site."[6] The term "well site" is defined as the "surface areas, including the surface location of the well, occupied by all equipment or facilities necessary for, or incidental to, high volume horizontal hydraulic fracturing operations, construction, drilling, production, or plugging a well."[7] Stationary fueling tanks are also included in the definition of well site for the purposes of determining the setback requirements.[8] The well site does not include the underground portions of the well, which are regulated through the permitting process and elsewhere in the Act and rules. The setback is calculated from the closest point of the surface operations.

Illinois is not unique in not considering the underground portion of the well when determining the measuring point for setbacks. Michigan requires setbacks to be measured during a survey from a stake or marker denoting the well location.[9] New York and North Dakota measure setbacks from the well pad.[10] Arkansas has different measurements for the well pad and from the tank battery.[11] Wyoming defines the well site by listing all the specific equipment which must be outside the setback area.[12] Ohio uses the surface location for the well as the measuring point.[13] Much like the HFRA and rules, all of these codes regulate the placement of the underground segment of the well through the permitting process and elsewhere in the rules.

The policy reason for relying primarily or exclusively on surface operations for setback purposes revolves around the likely dangers and obstacles. When filing an application for HVHHF operations, the applicant must submit a detailed plan describing the underground geology, confining formation, any faults, any aquifers, and much more information.[14] A different plan of action is needed for surface operations than the sub-surface operations. No one lives deep underground where the HVHHF horizontal wells will go, and the danger of water contamination is greatest from surface or near-surface operations. The most important issue for underground operations is determining whether or not the aquifers are protected and ensuring zonal isolation so that any injected hydraulic fracturing fluid or flowback is isolated in the fracked formation. Prescriptive requirements can only go so far, such as requiring that cement

be pumped to surface or mandating what types of techniques can be used to achieve the safest result possible.

In contrast, the surface operations are easily visible and capable of inspection. The HFRA and rules set forth strict guidelines on how surface operations can be conducted because surface operations lend themselves to such a regime. Tank batteries, wellheads, and open pits can be inspected. Setbacks can be measured.

Department Action: None

- *The setback requirements are too close and need to be set further away from the areas they are meant to protect.*

Response: The HFRA sets forth in § 1-25 a series of minimum setbacks in the form of absolute prohibitions. Beyond these minimum setbacks that operators must observe and that the Department must enforce, the Act is silent as to what factors or considerations the Department should apply in the zone between a setback boundary and an infinite distance away. In the first notice draft of the rules, Rule 245.400 essentially repeated the statutory minimum. However, any setback distance is somewhat arbitrary; no science will support saying there is a danger at only 499 feet away but complete safety at 500. Reality is that risk is a sliding scale, and that a regulatory agency charged with protecting health, safety, and the environment must have discretion to require more of a buffer than the minimum if circumstances warrant.

The HFRA minimum setbacks are within the midrange of setback provisions that other states have adopted or are in the process of adopting. For example, Illinois has a minimum setback for occupied dwellings of 500 feet,[15] as do Michigan,[16] New York,[17] North Dakota,[18] and Wyoming.[19] Pennsylvania has a 500 foot maximum setback that can be waived shorter.[20] Ohio[21] and Arkansas[22] use a shorter 100 feet and 300 feet, respectively, whereas North Carolina mandates 650 feet[23] and Maryland[24] and Colorado[25] use 1000 feet, twice the distance of Illinois.

Overall, the statutory Illinois minimums are stronger than those of other states like Ohio but not as stringent as states like New York and Michigan, and in multiple respects shorter than comparable states not yet experiencing significant HVHHF activity (such as Maryland and North Carolina) and still in process of developing rules.

One area of silence in the Act is that of floodplains, about which the Department received many comments. Michigan and New York have setbacks from floodplains, North Carolina's mining commission has recommended a 200' buffer, and Pennsylvania's 2012 Act 13 barred open pits and required floodproofing for tanks in floodplains.[26] The Department is well-familiar with the force of floods and also knows that floodplains periodically extend the reach of freshwater rivers or streams. However, the Department does not find that the legislature intended any setbacks within or from floodplains, and therefore the Department imposes no setback by rule. The Department does have existing rules for construction in floodplains and floodways. See generally the response to comments on natural disasters (floods, tornadoes, earthquakes).

For similar reason as for floodplains, the Department adds no protection for wetlands, about which the HFRA is also silent. The Department notes that Pennsylvania provides a 300 foot setback for any wetland larger than 1 acre, and Michigan has a 1320-foot buffer for any wetland.

IDNR does have the authority under section 245.320 to impose conditions on a permit by permit basis or deny a permit to protect fresh water or the environment.

Department Action: Subsection 234.400(a)(7) is added:

7) The Department reserves the right to impose setbacks of additional distances for the setbacks described above or include in the permit a condition requiring an additional setback for protected areas not described above, should the administrative record before the Department warrant for the protection of public health, public and safety, property, wildlife, aquatic life, or the environment.

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[1] 765 ILCS 530/3
[2] HFRA § 1-25(a)(5).
[3] Illinois Natural Areas Preservation Act, 525 ILCS 30/1 *et seq*.
[4] For an example see the definition of "natural area" in 525 ILCS 30/3.10.
[5] See subsections (1) and (6) for other measuring points the rules proscribe, as cited verbatim from the Act.
[6] HFRA § 1-25(a), Rule 245.400(b).
[7] HFRA § 1-5, Rule 245.110.
[8] Rule 245.825(d)(2).
[9] Mich. Admin. Cd. § 324.201(b)(iv).
[10] NYCRR § 560.4, N.D. Cen. Cd. 38-08-05(2).
[11] Compare Ark. Fire Prev. Cd. § 3406.3 and AOGC Gen. R. 8-26.
[12] 3 Wyoming Cd. §22(b).
[13] Ohio Cd. § 1509.21.
[14] See generally HFRA § 1-35.
[15] HFRA § 1-25.
[16] Mich. Admin. Cd. § 324.201.
[17] NYCRR § 560.4.
[18] N.D. Cen. Cd. 38-08-05(2).
[19] 3 Wyoming Cd. §22(b).
[20] *See generally* P.A. Act 13, §3215, HB 1950 (2012).
[21] O.R.C. § 1509.21.
[22] Ark. Fire Prev. Cd. § 3406.
[23] John Murawski, *NC fracking panel sets safe drilling distances from homes, streams*, Charlotte News-Observer (January 31, 2014), http://www.newsobserver.com/2014/01/31/3580659/nc-fracking-panel-sets-safe-drilling.html
[24] Maryland C.O.M.A.R. § 26.19.01.09(g)
[25] Col. O.G.C.C.R. § 604(a). Colorado allows 500' for certain uses, but also has a measure pending to increase setbacks to 2000 feet; such was not Colorado law at the time of the writing of this document.
[26] N. Atkinson & K. King, *Flooding and Fracking, A Review of Extreme Weather Impacts on Drilling Activities*, 27 NAT. RESOURCES & ENVIRO. 28 (ABA Section on Enviro., Energy, and Resources, Fall 2012). *See generally* P.A. Act 13, §3215, HB 1950 (2012).

245.410 Access Roads, Public Roads and Topsoil Conditions

Comments: The Department received 372 comments concerning Rule 245.410 as it relates to location, use, access, improvements, construction, repair, reclamation and restoration, including road bed materials, of roads used to access a well site. Commenters included Fair Economy Illinois, Illinois Oil & Gas Association, South Central Illinois Regional Planning and Develop Commission, the Greater Wabash Regional Planning Commission, Southeastern Illinois Regional Planning and Development Commission, Southwest Illinois Metropolitan and Regional Planning Commission, White County Road Commission, Village of Allendale, and numerous individuals and businesses. The comments fell into five general categories, responded to below:

- *IDNR has no authority to regulate road access leases, easements, and agreements between the operator and surface owner, and interference with such is an unlawful taking*.

Response: Access road location is a site preparation standard under the HFRA, §1-70(b)(1), so IDNR has inarguable authority to regulate and implement access roads. The HFRA, while also referencing the Illinois Oil and Gas Act ("OGA"),[1] requires that such roads be "located as far as practical from occupied structures, places of assembly, and property lines of unleased property." Regulating access roads does not conceivably amount to a "taking" under American law. Regulating the location of roads and protecting existing residents and enterprises against the noise and disturbance of new industrial activity via setbacks or buffers, are both well-established as governmental functions within the police power.

Department Action: None

- *Subsection (b) of the rule is burdensome, may interfere with operator's internal policies, and is redundant because IDOT can always just conduct the repair and bill the operator.*

Response: Permittees and operators should craft their internal procedures around the Act and the regulations, not the other way around. It is true that IDOT can conduct road repairs, but IDOT was not created to clean up after for-profit enterprises. This rule, using language directly from §1-70(b)(4), provides for a way by which the operator can conduct the necessary repairs.

Department Action: None

- *The Department should further describe the type of topsoil to be used during the reclamation process if the topsoil is to be replaced, such as requiring that the soil should be similar to pre-drilling soil materials in quality/type and in pre-measured volume.*

Response: Rules 245.1020 and 245.1030 already require the permittee to restore used lands to "a condition as closely approximating the pre-drilling conditions before the land was disturbed." Soil survey data in Illinois has been compiled historically since the late 1800's to promote agricultural land uses, promote crop and cattle productivity, to minimize soil erosion, and to manage water runoff.[2] The concern about topsoil quantity and quality will be addressed through the permitting process, and any unusual existing soil types can be addressed by way of a permit condition.

Department Action: None

- *The Department should allow the topsoil to be used for other similar purposes such as for cover in a landfill, or subsection (d) should be deleted altogether because soil is not a valuable asset.*

Response: The Act, like restoration/reclamation laws generally, contemplates that topsoil will be used in the same location if possible.[3] Depositing the topsoil in a landfill as cover does not comport with the intent of the statute to minimize permanent impacts of HVHHF activities. Soil is a valuable commodity in Illinois. Marketing of Illinois agricultural commodities generates about $8 billion a year.[4] Better soil increases crop growth.[5] Illinois topsoil deserves the protection it has been afforded in the Act, preserved in the rules.

Department Action: None

- *Fugitive dust control regulations should be eliminated because farmers are not held to any fugitive dust standard, and the term "economically reasonable" is vague and ambiguous.*

Response: The non-exhaustive list of measures in the rule to control fugitive dust comes generally from USEPA recommendations on how to control fugitive dust from farms.[6] Fugitive dust both contributes to soil loss and sedimentation of waterways. As has been described in numerous comments and addressed in the rules, the soil and resultant dust from HVHHF operations can sometimes be contaminated with elements from deep in the ground, or chemicals or sand used during HVHHF operations, if safety protocols are not properly followed. The state has a strong policy interest in preventing fugitive dust.

The term "economically reasonable" in the Act and the rule is intended to convey that the legislative intent was not to require all possible dust prevention measures, regardless of cost, but to require measures where benefit justifies the operator assuming a reasonable cost. The term will have different meanings depending on the circumstances, the location of the well site, the size of the operations, etc. The Department, by simply adopting the wording in the Act, preserves the flexibility to administer the rules fairly.

Department Action: None.

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[1] 225 ILCS 725/1 *et seq.*
[2] Illinois Soil and Water Conservation District Database, Association of Illinois Soil & Water conservation districts (Aug. 18, 2014), http://www.aiswcd.org/your-district/.
[3] 225 ILCS 725/1-75(e)(10)
[4] Illinois Department of Agriculture, *Farmland Protection: Why is Farmland Important* (July 31, 2014), http://www.agr.state.il.us/Environment/LandWater/farmlandprot.html.
[5] Darmody, R.G., R.E. Dunke, and R. I. Barnhisel, *Reclamation of Mined Lands to Higher Agricultural Uses*, New Frontiers in Reclamation: Facts and Procedures in Extractive Industry. Issue 19-21. Greece: Milos (2001).
[6] USEPA Office of Air Quality Planning and Standards. *Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures*, EPA-450/2-92-004 (1992).

245.500 General Conditions and Requirements

Comments: The Department received several comments on the general conditions and requirements for well construction. Commenters included the Illinois Association of Groundwater Professionals ("IAGP") as well as individual citizens. The IAGP found the rule sufficient to protect shallow potable aquifers, but citizen commenters were concerned that the rule did not safely protect against fugitive methane. Another concern was about the longevity of wells. The representative comments were as follows:

> "*IAGP considers the rules … sufficient to protect shallow potable aquifers during drilling activities.*"
>
> "*Concrete crumbles. Steel rusts. What does fracking use to keep these deadly chemicals out of our drinking water? Steel and concrete.*"
>
> "*245.500 requires that wells be constructed to prevent the migration of gases and fluids. However, no mention is made of the escape of methane from wells.*"

Response: The Department has considered in this Second notice draft not only the comments received on this topic, but also the requirements of other subsections, in particular section 245.520 on Casing Requirements. The Department consulted its Office of Oil and Gas Resource Management with respect to longevity of wells, and reviewed multiple articles and studies.[1]

The concerns behind the request for better cement are valid, but are addressed in other rulemaking. Engineers themselves appear to disagree, and/or opine that the subject needs more inquiry and research. However, the text of 240.500 is simply a restatement of the statute at section 1-70(d). This subsection is not meant to be exclusive. On the contrary, rules at 245.520(c)(6) address the escape of gas during drilling by prohibiting the escape of gas through the annulus; 245.520(f) requires the installation of a blowout preventer; 245.845 addresses gas escaping during the flowback period; and 245.900 addresses gas escaping during production.

With respect to longevity, while concrete exposed to the elements can indeed crumble, and steel does rust, the wells in question are unlikely to be in production during that length of time. The production curve of wells stimulated by HVHHF tends to fall off rapidly, and the lifespan is usually 30 years or less, often much less, after which the well is plugged and abandoned. A plugged well is essentially a block of cement, or cement on top of cast iron, shielded from rain and snow and ice, akin to a rock in the ground, plugging a deep hole from which, by definition, the hydrocarbons have been largely removed. Additionally and typically, further down the wellbore, a greater amount of cement is set to isolate the bore from the hydrocarbon-producing zone. Following plugging, restoration of the site is required under the HFRA, further isolating the wellbore from interaction with the environment. See section 245.1000. Some casings are removed.[2]

Corrosion from minerals and caustic agents in the soil or formations is more likely to cause failure than are the elements. Once the well is plugged, escape of hydrocarbons from the

producing formation is unlikely. Massive force was required to coax the hydrocarbons from the shale to begin with. If, even without plugging, the oil and gas had slowed to such a trickle that it made economic sense to shut down the well, it is extremely unlikely that hydrocarbons will manage to force their way up past a plug. In short, if there was not migration from the fracking under high pressure, there is even less likely to be migration upward as a result of an abandoned, depressurized well.

Department Action: No change was made to the proposed rules in response to these comments.

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[1] Lloyd H. Hetrick, *Well Integrity Case Study*, EPA Hydraulic Fracturing Study Technical Workshop #2 (March, 2011), http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/upload/wellintegritycasestudy.pdf; Barry Stevens, *Shale Gas Casing and Cementation Will Fail, but When?*, OIL & ENERGY INSIDER (June 13, 2012), available at: http://oilprice.com/Energy/Energy-General/Shale-Gas-Casing-and-Cementation-Will-Fail-but-When.html; Josh Fox and Barbara Arrindell, *Fracking is hardly leakproof*, timesunion.com (June 20, 2012), http://www.timesunion.com/opinion/article/Fracking-is-hardly-leakproof-3646458.php; *Well Integrity Management*, Linkedin, (Aug. 18, 2014), http://www.linkedin.com/groups/Longevity-well-casing-cement-3901272.S.180851222; James Conca, *The Fracking Solution Is A Good Cement Job*, FORBES (Sept. 10, 2012), http://www.forbes.com/sites/jamesconca/2012/09/10/the-fracking-solution-is-a-good-cement-job/; Associated Press, *Western Pennsylvania wells had casing failures in complaint area* (Feb. 27, 2012), http://www.cleveland.com/business/index.ssf/2012/02/western_pennsylvania_wells_had.html.

[2] Occupational Safety & Health Administration, *Oil and Gas Well Drilling and Servicing eTool: Plug and Abandon Well* (Aug. 18, 2014), https://www.osha.gov/SLTC/etools/oilandgas/abandoning_well/abandoning.html; See generally the rules for plugging of wells set forth in the Oil and Gas Act, *Section 240.1150 Specific Plugging Procedures.*

245.510 Well Drilling, Storage and Disposal of Drilling Waste

Comments: The Department received about a dozen comments on several aspects of the relatively technical subsection 245.510, which addresses well drilling, storage and disposal of drilling waste. Contributors included the ELPC, the environmental coalition's group submission, the IPC, Frack Free Illinois, ILOGA and individual commenters. The essential points raised by the commenters are listed below and considered in turn:

- *Disposal of radioactive drilling waste should not be allowed on the landowner's property*

Response: Section 1-70(c)(11) of HFRA does not directly address the testing and disposal of drilling waste that tests positive for radioactivity. The first draft of the rules tracked the language of HFRA and did not directly address these issues either. It should be noted that radioactivity plays little role in most Department functions. After review of the comments and of literature on the topic, and consultation with IEMA, the Department has concluded that regulation of HVHHF must protect against possible higher-than-acceptable levels of radioactivity[1] in order to be true to the statutory purpose and strong legislative statements, in other law, designed to protect Illinoisans and the environment. The HFRA defines pollution as including radioactivity, and mandates testing for radioactivity in water samples, flowback, and on the well site prior to plugging and restoration. Radioactivity testing and disposal protocol are being addressed in other sections of the second draft. This rule, meanwhile, will be modified to indicate that all drilling fluid, cuttings, and wastes shall be tested for radioactivity, and if positive, disposed of in accordance with the standards set forth in the second draft of the rules.

Department Action: The following subsection (f) shall be added to 245.510 of the rules:

(f) Notwithstanding the above, drilling fluid, drilling cuttings, and drilling waste shall be tested for radioactivity, and if above the levels identified in the Rules, disposed of in accordance with the radioactive materials management plan set forth in Section 245.210(a)30. Drilling fluid, drilling cuttings, and drilling waste that tests positive for levels of radioactive contamination shall not be stored in open pits.

- *Drilling waste should not be stored in open pits.*

Response: Section 1-70(c)(11) of HFRA allows for "drill cuttings, drilling fluids, and drilling waste not containing oil-based mud or polymer based mud" to be stored "in tanks or pits." Thus a clear legislative statement has been made that potential pollutants not be stored onsite of HVHHF activities. The Department does not conclude from the prohibition that the legislature intended radioactive waste to be stored in open pits. The topic of radioactivity, while noted in some other areas of the statute, was simply not addressed. The rule will be changed so that drilling fluid, cuttings, and waste that tests positive for radioactivity cannot be stored in open pits, but be disposed of according to the protocol set forth in the rules. However, the HFRA clearly allows other drilling waste to be so stored.

Department Action: None.

- *The term "drilling fluid waste" is not defined in HFRA, and should not be used in the rules.*

Response: Section 245.510 does not use the term "drilling fluid waste." Consequently, this is a non-issue.

Department Action: None.

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[1] The Institute For Energy & Environmental Research for Northeastern Pennsylvania, *Does Marcellus shale pose a radioactivity risk?* (Aug. 18, 2014), http://energy.wilkes.edu/ pages/184.asp; Chester Dawson, *Radioactive Waste Is North Dakota's New Shale Problem*, Wall Street Journal (April 15, 2014), http://online.wsj.com/news/articles/SB10001424052702304026304579453992970960368.

245.520 Cement Requirements

Comments: The Department received approximately 135 comments concerning Rule 245.520 and general cement requirements. Commenters included GROW Illinois, IPC, Food & Water Watch, the IOGA, Fair Economy Illinois, the environmental coalition's group submission, NRDC, ELPC, and dozens of individuals. The following issues were identified, and will be responded to in turn:

- *The rules should identify minimum industry standards for cement and provide a method for updating those standards.*

Response: Section 1-70(d)(1) of the HFRA requires that "all casings conform to the current industry standards published by the API." In turn, the first draft of the rules incorporates the most current API standards applicable to HVHHF operations in Rule 245.115. Rule 245.520(a) identifies and requires cement to conform to the relevant API standard in Rule 245.115. The Department has identified the standards in one section, and is kept aware of updates to those standards. Rules can be updated annually, or even more frequently, and the Department often does so. The rulemaking process, including the Illinois Administrative Procedure Act and the Department's own policies and procedures, provides a method for so updating the rules.

Department Action: None

- *Requiring operators to maintain a well file on site is too onerous, and requiring them to mail in cement job logs and compressive strength tests within 30 days of completion of cementing activities is too soon.*

Response: Subsection 245.520(h) describes what cement job logs must contain, and specifies how cement job logs and compressive strength tests must be kept at the well site and given to the Department. One organization commented that keeping a well file at the site is too onerous because there is no place to put them. While the Department recognizes the transient nature of HVHHF operations, keeping the documents at the well site for IDNR inspectors, as well as other potential regulators, to review is an important part of ensuring that the requirements of the Act and rules have been met.

Another commenter indicated that 30 days is too soon to require operators to mail in cement job logs and compressive strength tests to the Department. The Department finds that giving operators an entire month to mail in reports is more than enough time, and that, in fact, allowing more time would increase the likelihood of noncompliance due to record loss, moving on to other projects, etc. Such reports are typically provided to operators at the time of the pour or right after the conducting of the test. This requirement is not too onerous.

IDNR has an important administrative duty in maintaining these records. This is the history of the well. Long after the operator has ceased operations, conducted remediation, sealed the well, and destroyed the records – possibly decades later – IDNR will need the information if future wells are placed in the same area. Likewise, should there be a leak or problem at the

plugged well, the Department will be able to review the record to see what might have gone wrong. Finally, the cumulative knowledgebase of the records of pours, when compared with any later failures or breaches, will serve an important function for industry and policy-makers. These documents serve an important function, and IDNR needs timely copies of them.

Department Action: None

- *The requirement that "the cement must be pumped at a rate and in a flow regime that inhibits channeling of the cement in the annulus" is too onerous.*

Response: Multiple organizations commented that the Act's mandate that the "cement must be pumped at a rate and in a flow regime that inhibits channeling of the cement in the annulus"[1] is too onerous on operators. However, not only does the Act require this, but it is also an industry standard that the cement be poured in a flow regime that prohibits channeling of the cement in the annulus.[2] There are multiple pouring methods available, such as pulsation, to achieve such a flow regime. The intent of achieving such a flow regime is to prevent structural weaknesses in the cement when cured. There is no need to change this statutory requirement in the rules.

Department Action: None.

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[1] HFRA § 1-70(d)(7)
[2] American Petroleum Institute, *Isolating Potential Flow Zones during Well Construction*, API 65-2, 2d. (2010).

245.530 Surface Casing Requirements

Comments: The Department received several dozen comments concerning rule subsection 245.530 about surface casing requirements. Commenters included the environmental coalition's submission, Illinois Oil and Gas Association, Fair Economy Illinois, the Illinois Petroleum Council, GROW Illinois, Food & Water Watch, and dozens of individuals. IDNR considered all of the comments and relevant articles and sources.[1] The essential points made by the comments are listed below and are considered in turn:

- *The requirement of Class A cement for surface casing is too restrictive*.

Response: The intent of IDNR in drafting this rule was to ensure that high quality cement be used for the surface casing. The surface casing serves an important function: zonal isolation, especially as a barrier against contamination of the aquifer. The compressive strength, impermeability, and longevity of the surface casing cement are one of the strongest safeguards against contamination. The HFRA requires generally that "cement must conform to current industry standards published by the American Petroleum Institute and the cement slurry must be prepared to minimize its free water content in accordance with the current industry standards published by the American Petroleum Institute." Section 1-70(d)(4).[2]

Class A cement without additives is the strongest surface cement in terms of compressive strength. See API Spec 10A, Table 2. The added strength of Class A cement is a more desirable characteristic, and a local industry standard. Other classes of cement such as Class B and Classes G and H have also been allowed by some other states, but they lack the compressive strength. Classes G and H are different mixes of plain Portland cement.[3] The HFRA requires that the cement have "a 72-hour compressive strength of at least 1,200 psi, and the free water separation shall be no more than 6 milliliters per 250 milliliters of cement, tested in accordance with current American petroleum Institute standards." Section 1-70(d)(8). API Spec 10A Table 2 requires that Class A cement have a 24 hour compressive strength of 1800 psi and Class B 1500 psi. They have no free-fluid content allowance. *Id.* Classes G and H have no requirement under API standards for a 24 hour compressive strength and a free fluid allowance that would not meet HFRA's cement requirements, whereas Classes A and B would.

The rules add another minimum requirement that the cement be mixed at a minimum density of 14.5 lb/gal. Section 245.530(h). The proper mix of Classes A and B cement yields a density of 15.6 lb/gal.[4] Class B cement is essentially Class A cement with a smaller ratio of sulfur trioxide ($S0_3$). API Spec 10A, Table 1. Class B cement can be mixed two different ways for use when conditions require moderate or high sulfate resistance. API Spec 10A, 4.1.1.3. The rules should allow for Class B cement to be used when circumstances dictate. On review, IDNR finds that the proper mixing of Classes A and B cement would meet all the requirements of HFRA and the proposed rules.[5]

Department Action: The rule is amended as follows:

h) Surface casing cement must:

1) be Class A cement, ~~with a minimum density of 14.5 lbs./gal.~~ or alternatively, if the applicant requests before the pour in writing with sufficient proof of need as determined by the Department, and the Department approves the use in writing before the pour, Class B cement. Class A and Class B cement means Class A and Class B cement as described in the document referred to in Section 245.115(a)(1);

2) meet the cement requirements of Section 245.520(a) and (b) including but not limited to being poured with the ratio of water to cement mix and density described in the document referred to in Section 245.115(a)(1); and

3) be applied behind the casing according to the requirements of Section 245.520(c) and (d).

- *Requirement of use of centralizers more restrictive than statute*.

Response: According to Section 1-70(d)(3)of HFRA:

> Surface casing shall be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In non-deviated holes, pipe centralization as follows is required: a centralizer shall be placed every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers shall meet specifications in, or equivalent to, API spec 10D, Specification for Bow-Spring Casing Centralizers; API Spec 10 TR4, Technical Report on Considerations Regarding Selection of Centralizers for Primary Cementing Operations; and API RP 10D-2, Recommended Practice for Centralizer Placement and Stop Collar Testing. The Department may require additional centralization as necessary to ensure the integrity of the well design is adequate. All centralizers must conform to the current industry standards published by the American Petroleum Institute.

In turn, 245.520(f)(1-6) of the first draft of the rules simply mirrors the language of HFRA. The Act sets an appropriate minimum standard and there is no reason to weaken the statutory requirements set forth in § 1-70(d)(3) of HFRA. The option to require additional requirements is necessary to give IDNR regulatory flexibility to achieve the statutory goals of protecting the public health and safety, and preventing pollution or diminution of any water source (*e.g.*, groundwater).

Department Action: None.

- *Requirement that operators provide IDNR 24 hour notice (during normal business hours) before pouring is too onerous.*

- *Subsection (k) is duplicative of the notice requirements in Sections 245.540 and 245.550*.

Response: Section 1-70(d)(11) of HFRA requires, in pertinent part, that IDNR "must be notified at least 24 hours prior to surface casing cementing operations." In turn, the first draft of

Rule 245.530(e) implements this by stating that the permittee shall notify the Department's District Office during normal business hours by phone and electronic mail at least 24 hours before setting and cementing surface casing to enable an inspector to be present. To contact IDNR during normal business hours will require applicants to plan ahead when scheduling these tests, but the advance notice is necessary for IDNR to coordinate staff resources efficiently.

With respect to subsection 245.530(k), Sections 245.540 and 245.550 pertain to different issues, MIT and blowout prevention equipment, respectively. There is no need to delete 245.530(k).

Department Action: None.

- *It is not possible to test the cement after it has been placed behind surface casing*

Response: The Department received a few comments indicating that it is impossible to test the integrity of the surface casing cement once the casing is set. The first draft of 245.530(j) of the rules requires a comprehensive strength test, among others. The test must be performed in accordance with industry standards. 245.520(g). This section should be read to require a compressive strength test, not a comprehensive strength test. The American Petroleum Institute has identified a proper method for testing the cement in Spec 10A, therefore, it is not impossible as the comment suggests.

Department Action: Subsection 245.530(j) shall be modified as follows:

j) *After the cement is placed behind the* surface *casing* (Section 1-70(d)(8) of the Act), the cement must be tested (~~comprehensive~~ compressive strength test) and cement job logs maintained pursuant to the requirements of Section 245.520(f) through (h).

- *A caliper log test should be required to determine well bore diameter, and the volume of concrete that will need to be pumped into the bore hole*

Response: Section 1-70(d)(11) of HFRA and 245.530(i) of the first draft of the rules require that the cement be pumped in an amount so there is 25% excess, unless a different amount is required by the Department. Originally, the Department intended to deal with this issue on a case by case basis to determine the amount of cement needed. However, many commenters indicated that a borehole caliper log test be run before the pour to give a baseline determination of how much cement would be needed.

Caliper or borehole diameter logs are one of the most useful and simple of all logs obtained in borehole geophysics.[6] U.S. Department of the Interior Engineering Geology Field Manual, page 74. They are used to determine the diameter of the borehole, thus giving the tester the ability to determine the volume of the annulus. Caliper logs come with anywhere from 1 to 6 arms or more.[7] The Department of the Interior recommends a borehole caliper log test with 4 arms for accurate results.[8] Caliper logs should be used on all multi-stage cementing jobs.[9] Caliper logs offer a fairly accurate estimate of the diameter of the borehole, but washouts, mudcake and borehole spiraling can render the results inaccurate. They are a baseline test, and

not completely accurate. The Department will still need discretion to require a different amount of cementing depending on the results of the caliper log test.

Department Action: Subsection Rule 245.530(i) shall be modified as follows:

i) *Surface casing must be fully cemented to the surface with excess cements. Cementing must be by the pump and plug method with a minimum of 25% excess cement with appropriate lost circulation material,* as determined by a caliper log test to determine the volume of the annulus to be conducted by the applicant before the pour and after the flushing described in subsection (d) above, *unless another amount of excess cement is approved by the Department. If cement returns are not observed at the surface, the permittee must perform remedial actions as appropriate.* Caliper log test results are to be kept at the well site for the life of the well and made available to the Department upon request before the pour in the same manner as the compressive strength results and cement job logs referenced above in subsection (j). (Section 1-70(d)(11) of the Act). (Section 1-70(d)(11) of the Act)

- *The Rule should be strengthened to protect ground water.*

Response: The Department recognizes the importance of ensuring that the surface casing is capable of handling the high pressures generated by HVHHF. The baseline for the integrity of the cement and casing established by the legislature is adherence to the American Petroleum Institute's model code. The first draft of the rules, with the changes described in this response, are intended to ensure that operators follow best practices, as outlined by the API, when constructing the surface casing and surface casing matrix.

Department Action: see Department's responses.

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[1] Piot, B. *Cement and Cementing: An Old Technique with a Future?* Society of Petroleum Engineers Distinguished Lecturers Program PowerPoint presentation, available at http://www.spe.org/dl/docs/2009/Piot.pdf (2013). ;Society of Petroleum Engineers. Table 9.5 – Physical Requirements of Various Forms of Cement. http://petrowiki.org/File%3ADevol2_1102final_Page_388_Image_0001.png. (2012); American Petroleum Institute. API Specification 10A. (24th Ed. 2011); U.S. Department of the Interior Bureau of Reclamation, *Engineering Geology Field Manual* (2d ed. 2001); E.B. Nelson, *Well Cementing*, 12-12 (1990).

[2] The statute has no requirement as to what type of cement must be used to secure the surface casing. The rules are more specific and restrictive, indicating in the first draft that Class A cement shall be used to secure the surface casing, and have a minimum density of 14.5 lb/gal. 245.530(h). Additionally, the cement must "meet the cement requirements of Section 245.520(a) and (b)." In turn, 245.520(a) states that the "cement must conform to the industry standards set forth in the document referenced in Section 245.115(a)(1)." The document referenced in Section 245.115(a)(1) is "ANSI/API Specification 10A, Specification for Cements and Materials for Well Cementing, December 2010 (API Spec 10A)." This is the most current API specification available for cement.

[3] Piot (2013).

[4] *Id.*

[5] The Department's original rationale for excluding Class B cement was that high sulfate levels have not traditionally been a major concern in the regions where fracking will take place. Also, the rules should accurately reflect the standards set forth in API Specification 10A. There can be no interpretation that allows operators to mix otherwise permissible concrete at a different density, which could potentially compromise the desirable properties of the cement.

[6] U.S. Department of the Interior, *Engineering Geology Field Manual*, page 74 (2014).

[7] *Id.*
[8] *Id.*
[9] *Well Cementing* (1990).

245.540 Establishment of Internal Mechanical Integrity

Comments: The Department received approximately two dozen comments concerning rule subsection 245.540 relating to the establishment of internal mechanical integrity within wells. Commenters included Fair Economy Illinois, IOGA, the Illinois Public Health Association, the Illinois Manufacturers' Association, and the Illinois Section American Water Works Association. The essential points of the comments are listed below and considered in turn:

- *The requirement to use fresh water or brine to conduct mechanical integrity tests should be deleted because operators normally use mud instead of fresh water or brine*

Response: In its first draft, IDNR's rationale for excluding mud was that it will temporarily plug any holes or leaks in the casing/cement, and result in a higher, inaccurate pressure test reading. Water or brine (less viscous fluids) will not do that. If the holes or small leaks are plugged during the test, it could cause a well to fail when using water. After reviewing this comment, IDNR confirmed with its well inspectors that mud should not be used during an MIT because using water or brine is crucial to obtaining an accurate mechanical integrity test.

Department Action: None.

- *Test results should be submitted prior to fracturing, and the Department should add the word "within" before "30 days" in 245.540 (d)(2).*

- *The results of MIT testing should be posted on the IDNR website within 30 days of receipt by the Department*

Response: IDNR agrees that test results should be submitted to the Department before fracturing operations. The intent of the rule was to have the records submitted "within" 30 days after completion of well construction. The first concern is already addressed by the rules in subsection 245.540(d)(1), which requires an operator to submit the records before conducting HVHHF. The second concern can be addressed in a rule change (see below). As to posting the results on the website, IDNR finds that the administrative cost would outweigh the benefits. However, posting the results is an option IDNR will consider.

Department Action: 245.540(d)(2) is amended as follows:

2) Permittee shall provide the Department with a copy of all internal mechanical integrity pressure test results for all casing strings <u>within</u> 30 days after completion of well construction; and

- *Requiring operators to provide notice during normal business hours at least 24 hours in advance of a mechanical integrity test would create significant economic impacts on operators. Operators would limit weekend operations. The rules should allow the operator to call an answering service or maintain "on call" personnel that can witness the tests on the weekend and during evening hours.*

Response: Section 245.540(a), which requires the operator to contact IDNR at least 24 hours before the MIT, is based on the HFRA. Section 1-70(d)(16) sets out that:

> The operator shall contact the Department's District Office for any county in which the well is located at least 24 hours prior to conducting a pressure test to enable an inspector to be present when the test is done.

As with the surfacing casing requirements, the only way to determine with certainty that the MIT is performed correctly is to have a well inspector present. To contact IDNR during normal business hours will require applicants to plan ahead when scheduling these tests, but the advance notice is necessary for IDNR to coordinate staff resources efficiently.

Department Action: None.

- *Rules are too lax when the violation involves failing to follow guidelines when building/developing a well or testing its integrity.*

Response: The commenter believes the well construction standards are the most important in the rules for protecting public health and the environment and, consequently, the commenter believes the penalties should be the most severe if operators violate these standards. IDNR agrees these are vital components of the administrative rules, but addresses enforcement issues in its response to 245.1100 Suspension, Revocation, Remediation and Administrative Penalties.

Department Action: None.

245.550 Installation and Testing of Blowout Prevention

Comments: The Department received approximately twenty comments relating to the installation and testing of blowout prevention equipment. Commenters included Fair Economy Illinois, IOGA, the Illinois Public Health Association, and several individuals. The essential points made by the comments are listed below and considered in turn:

- *The notification requirement for inspection is redundant with the notification requirements imposed in Section 245.540 and should be deleted. As drafted, the regulations appear to require multiple notifications and inspections for similar activities.*

Response: IDNR understands that the mechanical integrity test in 245.540 is a similar activity to the blowout prevention testing in 245.550. However, each test is a discrete step that should require notification to the Department to enable an inspector to attend. The HFRA sets out in 1-70(e) that blowout prevent standards must be met, and enabling a well inspector to attend will further that statutory purpose.

Department Action: None.

- *Drilling and completion operations are separate and distinct phases in the well development process. Blowout preventers are used during drilling while well trees are used to manage downhole pressure during the completion operation. The proposed regulations should incorporate language that recognizes the technical differences between these types of operations to ensure that the correct type of well control system is being used during the appropriate phase.*

Response: IDNR recognizes this distinction and agrees that the rules should incorporate language that will encompass the technical differences and better reflect terminology used in Section 1-70(e) of the HFRA.

Department Action: Subsection 245.550(e) is modified as follows:

e) *Pressure testing of* <u>all pressure control equipment, including</u> *the blowout preventer and related equipment for any drilling or completion operation must be performed.*

- *The Department should adopt regulations to set out standards for acceptable training programs for installation/testing/use of blowout preventers.*

Response: IDNR agrees that completion of a training program is important to ensure that the permittee's representative is qualified to witness the installation and testing of the blowout preventer. However, IDNR will evaluate the training programs (which must be accredited) on a case by cases basis, instead of establishing requirements in these administrative rules.

Department Action: None.

- *IDNR should add a rule requiring that the permittee submit the results of testing the blowout equipment to the Department through the Department's website and that the test results be posted on the Department's website in a database that can be searched by county.*

Response: Similar to IDNR's response in 245.540, IDNR finds that the administrative cost of posting these test results would outweigh the benefits. However, IDNR will consider this option.

Department Action: None.

- *IDNR needs to investigate the range of blowout prevention on the market, insist that companies deploy only those models with the best reputations for safety and reliability and to periodically and randomly inspect the blowout preventers.*

Response: IDNR understands that proper blowout preventers are vitally important to conduct HVHHF operations safely, as the failure of a blowout preventer can cause the leakage of large volumes of fracking fluids. For example, serious blowouts have occurred in North Dakota[1] and Pennsylvania.[2] However, the rules as proposed implement the provisions in the HFRA (Section 1-70(e)(1)), which establish adequate standards, such as: notification to IDNR before conducting pressure tests, oversight by a certified representative, and testing that must be conducted in accordance with American Petroleum Institute specifications, among other requirements. See section 245.550. At this time, IDNR will not require certain models in the rules.

Department Action: None.

- *Rules are too lax when the violation involves failing to follow guidelines when building/developing a well or testing its integrity. IDNR should revoke the permit in the company fails to comply with Section 1-7 of the Act.*

Response: The context for this comment is that the commenter believes the well construction standards are the most important in the rules for protecting public health and the environment, so the penalties should be the most severe when it comes to violating these standards. IDNR agrees these are vital components of the administrative rules, and addresses enforcement issues in its response to 245.1100 Suspension, Revocation, Remediation and Administrative Penalties.

Department Action: None.

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[1] Reuters, *UPDATE 2-Oil well in North Dakota out of control, leaking* (Feb. 14, 2014), http://www.reuters.com/article/2014/02/14/energy-crude-blowout-idUSL2N0LJ15820140214.

[2] Seamus McGraw, *Pennsylvania Fracking Accident: What Went Wrong* (April 21, 2011), http://www.popularmechanics.com/science/energy/coal-oil-gas/pennsylvania-fracking-accident-what-went-wrong-5598621.

245.560 Intermediate Casing Requirements

Comments: The Department received several dozen comments concerning rule subsection 245.560 about intermediate casing requirements. Commenters included the Illinois Public Health Association, Peoria City/County Health Department, the environmental coalition's group submission, Illinois Oil and Gas Association, Fair Economy Illinois, the Illinois Petroleum Council, GROW Illinois, Food & Water Watch, and dozens of individuals. The comments identified a number of discrete issues relating to subsection 560:

- *Applicants should notify Department and local city and county health departments of the location and depths of any hydrocarbon or fresh-water bearing zones that require intermediate casing.*

- *Cement evaluation log should be required instead of temperature logs in 245.560(k).*

- *245.560(l) inappropriately equates returns to the surface with an adequate cement bond.*

- *"Or" should be inserted at end of subsection (a) of (b)(4) so there is no confusion that operators would have to comply with (a) and (b).*

- *Centralizer requirement in (h) is inconsistent with the statute.*

- *Requirement of relief valve in (o) should be only during fracking operations.*

- *Requirement in (b)(2) of pumping to 600 feet of protected zones should be 500, so as to be consistent with production well requirements. It is a "rule of thumb" anyways.*

- *Requirement of bringing cement to surface in (b)(2) could be dangerous when annular gas flow is present (API 65-2).*

The Department reviewed these comments and consulted with its Oil and Gas Resource Management division, and in addition reviewed the following sources; Schlumberger & Piot, *Society of Petroleum Engineers Distinguished Lecturers Program* (2013), http://www.spe.org/dl/docs/2009/Piot.pdf; American Petroleum Institute, *API Standard 65 Part 2. Isolating Potential Flow Zones During Well Construction* (2nd ed. 2010); E.B. Nelson, *Well Cementing*, (1990). The Department found that a number of the comments presented concerns that should be addressed in the second notice draft, while others did not. Specific concerns and response/action are as follows.

- *Operators should notify Department and local city and county health departments of the location and depths of any hydrocarbon or fresh-water bearing zones that require intermediate casing.*

Response: Numerous local health departments commented that they should be notified when the Department is notified by an operator that intermediate casing is needed to isolate hydrocarbon and freshwater zones. The comments did not specify why such a notice

requirement to the health department is necessary. HFRA vests the Department with jurisdiction over the operation of high volume horizontal fracturing operations. The breaching of a hydrocarbon bearing zone or freshwater zone, in and of itself, is not within the regulatory jurisdiction of local health departments.

The intent of these comments appears to be to make the public health community aware of possible water pollution. In the event that contamination does occur, local health departments will be notified of the pollution pursuant to subsection 615 of the rules.

The Department, however, on review of this rule, finds that possible ambiguity should be eliminated to clarify that all freshwater encountered should be reported. This will help develop a greater understanding of groundwater that will assist the Department (and industry) in permitting of future wells. Note that the records of freshwater encountered will be public record, which public health agencies can request if they wish.

Department Action: Rule 245.560(c) shall be modified as follows:

c) *The location and depths of any hydrocarbon-bearing zones or fresh water zones* requiring intermediate casing or *that are open to the wellbore above the casing shoe must be confirmed by coring, electric logs, or testing and must be reported to the Department.* (Section 1-70(d)(12) of the Act)

- *Cement evaluation log should be required instead of temperature logs in 245.560(k).*

Response: The default requirement here is the radial cement bond evaluation log, but the rule is intended to accommodate the possibility of advances in methods that may yield equally accurate record. A temperature log is cited as an example of one of the alternate means of evaluation the Department might feasibly accept. All alternative methods must, however, be submitted for approval of the Department, and approval is at the Department's discretion. The rule is intended to allow Department flexibility yet oversight, and achieves that balance.

Department Action: No change is made to the rule.

- *245.560(l) inappropriately equates returns to the surface with an adequate cement bond*

Response: 245.560(l) states: The cementing and testing requirements of subsections (b)(2), (b)(3), (b)(4), (c) and (k) may be waived if all intermediate casing strings are cemented to surface. Of the sections referenced, only (k) pertains to testing to determine the bond. A return to the surface does not mean that there is an adequate bond, even though a return to the surface is an indicator that the proper pouring technique was used. API 65-2. The reference to K shall be deleted.

Department Action: Subsection (l) of Rule 245.560 shall be modified as follows:

l) The cementing and testing requirements of subsections (b)(2), (b)(3), (b)(4), and (c) ~~and (k)~~ may be waived if all intermediate casing strings are cemented to surface.

- *"Or" should be inserted at end of subsection (a) of (b)(4) so there is no confusion that operators would have to comply with (a) and (b)*

Response: In the last paragraph in section 1-70(d)(12) of HFRA, there is an "or" between the two sentences that the Department otherwise incorporated verbatim as subsections (b)(4)(a) and (b)(4)(b) of 245.560. An "or" will be inserted back into the rule to clarify any confusion.

Department Action: Subsection (b)(4)(a) of Rule 245.560 shall be modified as follows:

A) *to a point at least 600 true vertical feet above the shallowest hydrocarbon bearing zone;* <u>or</u>

- *Centralizer requirement in (h) is inconsistent with the statute.*

Response: The centralizer requirements in subsection (h) of 245.560 are taken directly from section 1-70(d)(3) of HFRA, with only minor grammatical changes to indicate the current industry standards the Department has adopted.

Department Action: No change is made to the rule.

- *Requirement of relief valve in (o) should be only during fracking operations.*

Response: As identified in the first draft of the rules, the American Petroleum Institute has indicated that best practices require a pressure relief valve be installed before the casing between the intermediate casing and surface has been completely cemented. The HFRA does as well. HFRA § 1-70(d)(17). The problem with this section is that the excess fluids produced when the relief valve is tripped need to go to a tank, not directly into a pit. The HFRA requires that all fluids be deposited into a tank. *Id.* See also HFRA § 1-75(c)(1). The rule will be changed accordingly.

Department Action: Subsection (o) of 245.560 shall be modified as follows:

o) If the annulus between the production casing and the surface of intermediate casing has not been cemented to the surface, the intermediate casing annulus shall be equipped with an appropriately sized and tested relief valve. The flow line from the relief valve should be secured and diverted to a ~~lined pit or~~ tank. (See API HF1 – Hydraulic Fracturing Operations – Well Construction and Integrity Guidelines, 1st Edition, October 2009, Section 10.4.2, Pressure Monitoring.)

- *Requirement in (b)(2) of pumping concrete to 600 feet of protected zones should be 500, so as to be consistent with production well requirements. It is a "rule of thumb" anyways.*

Response: The rule tracks the statutory requirement in section 1-70(d)(12) of HFRA. While that might seem inconsistent with the production well requirements, this rule governs the circumstances under which intermediate casing is required, namely, encountering water or hydrocarbons below surface casing.

Department Action: No change is made to the rule.

- *Requirement of bringing cement to surface in (b)(2) could be dangerous when annular gas flow is present (API 65-2).*

Response: As was stated above, the language tracks the statute. Furthermore, API 65-2 does not indicate that pumping cement to the surface is dangerous when annular gas flow is present. On the contrary, API 65-2, paragraph 5.10.3 states that "every effort should be made to ensure that the primary job circulates cement to surface."

Department Action: No change is made to the rule.

245.570 Production Casing Requirements

Comments: The Department received several dozen comments concerning Rule 245.570, which regulates production casing. Commenters included IOGA, IPHA, the environmental coalition's group submission, Fair Economy Illinois, IPC, and a number of individuals. The following issues relating to Subsection 570 were identified:

- *The rule should give operators ability to use alternative cementing methods when cementing to 500 feet above the top of the perforated zone is not feasible.*

Response: The Department received several different comments from organizations indicating that paragraph (a) of Subsection 570 that "the casing be cemented from the shoe to 500 feet above the top of the perforated formation, if possible," and otherwise "at least from just above the top of the perforated formation to 500 feet above . . .," should be modified. Some comments indicated that the rule should be simplified to give the Department more discretion when determining the appropriateness of alternate cementing methods, whereas others suggested different, more detailed, minimum cementing requirements.

The first sentence of paragraph (a) is taken directly from Section 1-70(d)(14) of HFRA. The purpose of pumping concrete to above 500 feet above the top of the perforated zone is to achieve zonal isolation up the vertical run. HFRA gives the Department discretion to approve alternate concrete plans. *Id.* The first draft of the Rule 570 goes further by requiring that if oil and gas production is inhibited by the default rule, then concrete must at least be pumped from just above the perforated zone to five hundred feet above. This is to ensure that there is substantial cement in the annulus between the intermediate casing and production zone, again for zonal isolation.[1] The rule shall be modified to require written approval of the Department for use of the alternate method, and make clear that the alternate method is a minimum, for use only when the default is not feasible.

Department Action: Rule 245.570(a) is modified as follows:

a) *Production casing must be fully cemented from the production casing shoe to 500 feet above the top perforated* formation, *if possible* (Section 1-70(d)(14) of the Act). However, if that cementing requirement will inhibit the production of oil or gas from the targeted formation, the operator must make a written or electronic mail request to the Department in writing for an alternate cementing plan, and in no event shall the cementing of the production casing ~~must~~ be completed from less than ~~at least~~ just above the top of the perforated formation to 500 feet above the top of the perforated formation.

- *Depth requirement should be 500 vertical feet, not 500 feet.*

Response: The phrase "500 feet" comes directly from HFRA Section 1-70(d)(14). The 500 feet requirement recognizes that there may not be 500 vertical feet before the production casing makes a horizontal turn into the perforated zone (although that would be contrary to almost all representations as to where and how HVHHF will take place in Illinois). The Department wants at least a 500 foot buffer of concrete in the annulus between the intermediate

casing shoe and production casing perforated zone. If the horizontal zone is to be anywhere near a depth of 500 feet below the surface, then the chances of interaction with groundwater are significantly higher and the Department would be disinclined to relax this rule. No change is necessary.

Department Action: None

- *Centralizer requirements are unnecessary.*

Response: Except for paragraph 2, the requirements in Subsection (f) of 245.570 come directly from HFRA. Paragraph 2 requires 80% standoff between the borehole wall and production casing in the horizontal part of the well, an important requirement to achieve adequate cement thickness.[2] The 80% standoff is listed as a benchmark that will likely be achieved if the rigid centralizers are placed according to HFRA and the rules. If 80% standoff is not achieved with the default standard of centralizer placement, then the lack of 80% standoff is justification for the Department to require more centralizers. It is not listed as an independent requirement in and of itself. No change is necessary.

Department Action: None

- *Results of production casing inspections should be made available online.*

Response: Section 1-75(f) of HFRA and Section 245.860 of the first draft of the rules contemplate the operator filing a completion report after fracking operations are complete. Baseline water tests are also required to be reported on the website. HFRA 1-80(b). Confirmed water pollution cases are also required to be reported online. *Id.* § 1-80(h). Results of casing inspections in and of themselves have little value except to the Department. The Department is charged with requiring that the casings comply with the terms of the Act. The HFRA and these rules already require or commit the Department to posting substantial information online.

Department Action: None.

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[1] *See* E.B. Nelson, *Well Cementing.* (1990).
[2] Piot, Bernard. Society of Petroleum Engineers Distinguished Lecturers Program. Retrieved from http://www.spe.org/dl/docs/2009/Piot.pdf. (2013).

245.580 Establishment of Formation Integrity

Comments: IDNR received several comments concerning Rule 245.580 as it relates to the establishment of formation integrity. Commenters included IPHA, FEI, Illinois People's Action, Food and Water Watch, the environmental coalition's group submission, and a few individuals. The essential points made with respect to this subsection are addressed in turn:

- *The results of all formation integrity testing be reported to the Department should be available online.*

Response: The Department is given broad discretion in Section 1-110(b) of HFRA to disclose information about permitted HVHHF operations throughout the state. The Department's ultimate goal is to provide as much information on its website as is practical. The Act mandates a minimum amount of information that must be posted, and it does not include the results of tests. The Department will not commit at this time to post such information online, and does not find that such obligation need be enshrined in a rule. However, as soon as the Department is capable, its intention is to post all unprotected information, including the results of all tests, online. There is no mandate in the Act or rule to the contrary.

Department Action: None.

- *Test for radioactivity.*

Response: The purpose of the formation integrity test ("FIT") is to determine whether or not there is a leak in the well near the shoe that would allow gases or fluids to leak into other strata. The underlying goal is to ensure that the hydraulic fracturing fluids and flowback are wholly contained in the stratum that is being fracked and that other strata are not compromised. The purpose of radioactivity testing is to ensure that there is no surface contamination from radioactive material. There is no need for radioactivity testing at the formation integrity test stage.

Department Action: None.

- *The Department should add that in case of a failed test, remedial measures must be performed.*

Response: The concern behind this request is valid. However, the rulemaking need not address this concern any further. If the permittee is unable to establish that it complied with Rule 245.580 by supplying the Department with the necessary reports, the permittee will not be allowed to begin hydraulic fracturing.

Department Action: None.

- *245.580(d)(1) and (2) appear to conflict. Also, the Department should add the word "within" before "30 days".*

Response: Rule 245.580(d)(1) addresses record-keeping for FIT results and the location

of the records. Rule 245.580(d)(2) addresses the need to file the FIT results with the Department within 30 days after completion of well construction. These are two distinct requirements, both designed for the purpose of ensuring that the Department always has the ability to review the results of these tests. If the Department only required mailing it a copy, the results could get lost in the mail. If the Department were unable to view these documents, its only recourse would be to suspend operations until they were provided to the Department.

As for adding the term "within" before "30 days," the Department does not believe this is necessary. Permittees retain the flexibility and are encouraged to file the report with the Department at any time before the 30 day period has lapsed. The rule is sufficiently clear on this point. No change is necessary.

Department Action: None.

- *Actual fracture pressure could exceed 6000 psi. By only allowing 1500 psi maximum fracture pressure, the test cannot be successfully accomplished in deeper zones.*

Response: The comment seems to misunderstand the operation of the rule subsection. Rule 245.580(c) states that "[t]he actual hydraulic fracturing treatment pressure must not exceed the mechanical integrity test pressure of the casing tested pursuant to Section 245.540 at any time during high volume horizontal fracturing operations." 245.540 states that the MIT for the surface and intermediate casing must be conducted at a pressure "no less than 0.22 psi per foot of casing string length or 1,500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield…" The production casing has a similar requirement under Rule 245.540. The term "minimum internal yield" is commonly understood in the industry to mean the "internal pressure at which permanent casing deformation could take place assuming no external pressure."[1]

Rule 245.540 sets forth a minimum floor of 1,500 psi and maximum ceiling of 70% of minimum internal yield strength. The maximum is entirely dependent on the type of casing that the operator purchases, and how the casing is installed. The MIT is conducted in order to demonstrate that the casing can actually handle these pressures. The requirement in 245.580(c) simply requires that the operational pressures not exceed the pressures achieved during the MIT. The Department does not want operators working at pressures in excess of those demonstrated to be safe during the MIT. If an operator wants to work at a greater pressure than the minimum, it will have to test at more than 1,500 psi. Again, the maximum pressure is entirely dependent on the materials used and method of installation.

Department Action: None.

[1] Division of Mineral Resources Management, Oil and Gas, Ohio Administrative Code, Chapter 1501:9 (January 2012).

245.600 Water Quality Monitoring

Comments: The Department received approximately 6,400 comments pertaining to water quality and/or water quality monitoring, the subject of Section 245.600. Commenters included the Illinois Attorney General's Office, The Nature Conservancy, RISE, Fair Economy Illinois, Food and Water Watch, Illinois Farm Bureau, IPHA, DuPage Birding Club, IPC, Prairie Rivers Network, Dundee Stewardship, Illinois People's Action, Sierra Club (North Valley of the Fox), SAFE, Jackson County Health Department, ILOGA, and thousands of individuals and businesses, some of which are engaged in the business of environmental sampling and testing.

Probably the single most pervasive comment the Department received from the general public in the first notice period of this rulemaking was that HVHHF will cause pollution of groundwater, particularly from the migration of fracking fluid and flowback from the fracked formation to other, unintended formations. While there are 6,400 comments which were expressly counted with respect to this Section, many more, perhaps thousands, could have been placed in this category based on concerns raised. Requirements and prohibitions designed to protect Illinois groundwater are interwoven throughout the Act and rules in nearly every section.

The Department takes the concerns of the public very seriously in this regard. Many HVHHF wells will descend through the water table. Typically, HVHHF operations use and must then dispose of millions of gallons of water during the drilling, stimulation, and production phases.[1] The choices for disposal are recycling, reinjection, off-site disposal, or treatment. Contamination of wells due to oil and gas production has increased along with growth in exploration and production, and HVHHF has been alleged to be the cause of groundwater contamination in several instances.[2]

The HFRA and the rules are aimed at preventing water pollution. The statute contains setback from some freshwater and aquatic resources. The rules require a detailed water management plan presenting the source of the water the applicant will use, anticipated volume and rate, timing for water withdrawals, methods to minimize water withdrawals, and methods to minimize adverse environmental impacts.[3] The Act and rules then provide for Department-supervised pouring of casing cement, demonstrations of mechanical integrity, regulations pertaining to what and how HVHHF fluids can be stored and disposed of, radioactivity testing on site, and disposal of wastewater, among the numerous measures that directly or indirectly pertain to water pollution prevention.

Water quality testing is admittedly a reactive rather than preventive measure. Positive testing results only indicate that damage has already been done, and are used to force a permittee to mitigate an exposure or as evidence in a court. The preventative function of a testing regime is effective only to the degree to which the knowledge that water will be tested, and that a failed test has consequences, incentivizes safe practices in conducting HVHHF operations. Numerous individual comments and ideas regarding how the Department may achieve these important goals are addressed individually as follows:[4]

- *Public health agencies should be given a copy of the water quality monitoring plan and baseline testing results.*

Response: The Department has every intention of posting such information online in its database. The water quality monitoring plan is part of the initial application. The database will be accessible to everyone, including local health departments, at no cost and at all times. Local health departments are encouraged to regularly monitor the Department's website. Sending the individual health departments the plan is beyond the anticipated resources of the Department at this time.

Department Action: None.

- *IDNR must ensure that certification of water quality testing labs is efficient.*

Response: There appears to have been some confusion by the commenters regarding what labs will be allowed to conduct water quality monitoring tests required in the Act. The term "Agency" is defined in the Act and the rules is the IEPA.[5] The Act specifies that IDNR will be working jointly with IEPA to develop a water quality monitoring program.[6] Rule 245.600(a)(5) indicates that the testing can occur through a laboratory accredited through the Agency (IEPA), or through an agency in another state or federally if the accreditation is similar to the standards under Section 4(o) of the Illinois Environmental Protection Act, 415 ILCS 5/1 *et seq.* The Department never intended to create a new accreditation or certification regime, but to use the regime that the IEPA already has in place.

Department Action: None.

- *The requirement that the permittee test all water sources within 1500' of well site should be expanded.*

Response: Numerous commenters suggested that the 1500' testing radius is inadequate, and that testing should be required along the entire horizontal length of the well bore, or alternatively that the boundary be expanded to a much further distance, such as one mile. The concern is that underground conditions might allow fracking fluid to contaminate aquifers through various pathways. Fluid can seep through transmissive fractures, though defects in the casing and cement, or through improperly plugged wells in the zone.[7]

Rule 245.600 tracks Section 1-80(b) of the Act in requiring that the 1500' testing radius be measured "horizontally from the nearest edge of the well site." The term "well site" does not include the subsurface well or the horizontal well bore. Surface water testing requirements are generally designed to address pollution caused by surface operations; i.e. spills, leaking tanks, intentional conduct and the like. The 1500' radius here includes the water sources most likely to be contaminated in such an event. As discussed in the Department's response to the comments on Rule 245.400, the statute by using surface measures does not require testing at the surface along the entire length of the horizontal well bore if that wellbore exceeds 1500'.

Subsurface fluid migration is taken seriously in the Act and rules. The Department requires that the applicant provide in the application a detailed analysis of the confining zone, the formation above the fracking zone that is impermeable to fluid migration.[8] However, in reviewing the USGAO's June 2014 report, it appears that many states are requiring applicants to

at least review a wider area than Illinois does,[9] as well as requiring that applicants provide information on existing possible pathways for fluid migration, especially other existing wells. The draft rules are being revised to give greater consideration to such pathways.

No matter what the testing regime, contamination due to underground fluid migration is much harder to prove. Careful analysis of the record with complete and accurate maps of the underground geology and surface conditions, and proper well construction techniques are the safeguards in the HFRA against unintended fluid migration. Should the Department determine that expanded testing or documentation is needed because of lack of information, a specific geologic feature, or other condition, it has the power to do so either by requesting more information during the application review process itself under Rule 245.230(e), or by requiring such additional information and/or testing as a condition of the permit, to be fulfilled before the final approval to drill is issued pursuant to Rule 245.300(c).

Department Action: None.

- *Water quality testing is too infrequent.*

- *Seasonal, naturally occurring conditions and other variables might skew testing results.*

Response: Many commenters suggested that the Act did not require enough frequency of water quality monitoring. According to Section 1-80(c) of the Act, baseline testing must occur before commencement of HVVHF operations, and under (c)(2), follow-up testing 6 months, 18 months and 30 months after completion. The Department has incorporated the water quality monitoring work plan into the application requirements at 245.210(a)(24). Baseline testing consists of "at least three" separate samples for each water source. 245.600(d)(1)(A).

The Department concedes that certain conditions might skew testing results, and that samples might not be representative. The Department notes that its counterpart in Maryland has asserted that "a minimum of 2 years of pre-development baseline data is necessary to evaluate the condition and characteristics of aquatic resources, particularly the living resources, since statewide monitoring experience demonstrates there is great variability on a seasonal and annual basis." This is especially so with respect to rivers and streams. The Department has insufficient data at this point to require as a matter of course a higher number of samples than the statutory minimum. Obviously, a plan that is able from a scientific standpoint to comprehensively establish baseline data for nearby water sources is ideal.

The Department has set forth in Subsection (d) of the rule detailed testing and reporting requirements for the independent third party laboratories that will be sampling, handling, testing, and reporting on samples. The procedures require reporting of the date and time the sample was taken, among others, which will give the sampler an indication of what the conditions were like. Should the geography, the number of wells, water sources, or other circumstances germane to the application, brought to the Department's attention during permit review, or the Department's own knowledge, indicate that more than three samples should be taken, the Department retains authority to require greater baseline testing as a condition of permit.

The Department may revisit this rule based on its experience in the future, but in the interim will rely on the discretion afforded to the Department to require sufficient sampling and testing as a condition of permit, coupled with the self-interest of the applicant. The Department will not substantively change the rule but will add text to emphasize its discretion in this regard. The Department will also modify the permit approval subsection to underscore that the work plan must not simply be submitted, but approved.

Department Action: Subsection 245.600(d) is modified as follows:

d) Laboratory Analysis Procedures

1) *Sampling shall, at a minimum, be consistent with the* water quality monitoring *work plan* as approved by the Department, with any conditions placed upon the permit, *and allow for a determination of whether any hydraulic fracturing additive or other* oil or gas well *contaminant has caused pollution or diminution* (Section 1-80(e) of the Act). For each water source required to be sampled and tested under subsections (b) and (c):

A) *a minimum of 3* separate *samples*, or as many as required by the work plan and any conditions placed upon the permit, *shall be collected by the independent third party, under the supervision of a* licensed *professional engineer or professional geologist* (Section 1-80(b) of the Act) consistent with the approved water quality monitoring work plan; and

B) each sample collected *shall be* submitted to and *analyzed by an* Agency-accredited or -certified *independent testing laboratory* (Section 1-80(b) of the Act) for the following:

i) *pH* (Section 1-80(e)(1) of the Act);

ii) *total dissolved solids, dissolved methane, dissolved propane, dissolved ethane, alkalinity, and specific conductance* (Section 1-80(e)(2) of the Act);

iii) *chloride, sulfate, arsenic, barium, calcium, chromium, iron, magnesium, selenium, cadmium, lead, manganese, mercury, and silver* (Section 1-80(e)(3) of the Act);

iv) *BTEX* (Section 1-80(e)(4) of the Act);

v) *gross alpha and beta particles to determine the presence of any naturally occurring radioactive materials* (Section 1-80(e)(5) of the Act);

2) The independent third party's laboratory request submitted to the Agency-accredited or -certified independent testing laboratory shall include:

A) the applicant's name, well name, well location and permit number;

B) a detailed description of the sampling methods used to collect the samples, the date and time of the sampling collections, the location where each sample was collected and by whom, and the specific testing requested;

C) the chain of custody for the samples up to the point when the samples are relinquished to the laboratory; and

D) a specific request to the laboratory that the laboratory's report also include:

i) the name and address of the laboratory;

ii) the sampling method and testing requested in subsection (d);

iii) the analyses being performed;

iv) the test methods used to perform the analyses;

v) the date and time of the analyses;

vi) the identification of any test results performed by a subcontracted laboratory;

vii) the name of any subcontracted laboratory used and the applicable accreditation that the subcontracted laboratory holds and maintains for the analyses performed;

viii) the complete chain of custody through all the analyses in the laboratory and any subcontracted laboratory used;

ix) the test results with the units of measurements used, when appropriate;

x) an interpretation of the test results, including the definitions for any data qualifiers applied to the test results;

xi) the name, title and signature of the person authorizing the test results; and

xii) a summary of the laboratory's quality control results for the analyses performed;

- *Water quality monitoring will be poor because there are poor mapping of aquifers.*

Response: The Department concedes that in many instances downstate, the overall depth

and flow of aquifers is poorly mapped. The Department also agrees that the HFRA is drafted as if the primary (or only) relevant groundwater is that directly below the well site that will be penetrated by the vertical borehole. The rules require that surface[10] and intermediate[11] casings be set in a manner that isolates freshwater zones. When such zones are encountered, the operator is required to contact the Department and set casing according to the guidelines.

The HFRA approaches groundwater as it does because the horizontal drilling portion of HVHHF and the fracturing itself normally occur far below water-bearing formations. It is the intersection of the well with the shallower freshwater zones that pose the greatest vulnerability for fresh water, especially in the event of casing or cement failure.

The Department is also aware of the more remote possibilities that existing routes or geological features might allow for migration of fluids into water. The comments did not suggest a better way to address this than through the permitting process as has been discussed in this section and in the Department's Response to the comments to Rule 245.400.

Department Action: None.

- *Neither the Act nor the rules prevent IDNR from releasing Non-Disclosure Agreements via FOIA or other right to know laws.*

Response: This is correct, and potential parties to such agreements should bear that in mind. The NDA being a public document is not inconsistent with the purposes of the HFRA. On the contrary, since a prime goal of the Act is protection of water, and another is transparency, the hope is that such agreements would be the exception. Hence, there is a requirement of a good faith effort by the permittee to gain access and testing.

In the process of reviewing this Section, however, the Department was made aware of a technical change needed in this section. Section (a)(8)(C) is intended to reference (a)(8)(D), but it misidentifies the correct reference.

Department Action: 245.600(a)(8)(C) is modified as follows:

> C) *the permittee shall not file with the Department the results of the water quality testing, except that under subsection* (a)(~~7~~8)(D) (Section 1-80(d)(3) of the Act)*; and*

- *Fracking operators are allowed to assert they couldn't contact the landowner, thus making monitoring entirely optional.*

Response: Should the permittee be unable to secure permission or proof of refusal from all the landowners in the 1500' radius, the permittee must show a good faith effort in attempting to contact the landowners, as well as providing contingency measures if there is water contamination. This language is taken from Section 1-80(a)(7) of the Act. The Department retains discretion to determine whether a "good faith effort" was made, and what is a "practicable contingency." These issues will be decided by the Department on a case-by-case

basis reviewing the totality of the circumstances surrounding the permittee's efforts and plan. Again, should early experience with administration of the HFRA show that what is meant to be an exception is instead the rule, and that operators routinely invoke this subsection such that monitoring becomes meaningless, new rules can and will be promulgated. However, the Department at this juncture declines to assume that operators will not use good faith.

Department Action: None.

- *The test results should contain the GPS location of the testing site.*

Response: Subsection (b)(4)(A) of the rule require that the well name, location and permit number be identified on test results. The first draft of the rules did not require that the results contain a description of the location where the test sample was obtained. The Department agrees that this is a good idea. Subsection (b)(4) will be modified to require that the results contain the GPS coordinates where the sample was obtained, a requirement IDNR has requested in several other places throughout the rules. Additionally, (A) will be modified to make clear that the term "location" refers to the well site location.

Department Action: Subsection (b)(4) is modified as follows:

4) *The Department shall post the results* of the baseline sampling and analysis conducted under this subsection (b) *on its website within 7 calendar days after receipt. The* posted *results shall, at a minimum, include* the following:

A) the well name, well site location and permit number;

B) the sampling site GPS latitude and longitude location, and ground elevation of the well. The GPS location shall be recorded as degrees and decimal degrees recorded to 6 decimal places in the North American Datum 1983 projection and shall be accurate to within 3 feet. The reported GPS location is required to be an actual GPS field measurement and not a calculated or conversion measurement;

~~B~~C) *a detailed description of the sampling and testing conducted under this subsection* (b), including the results of the sampling and testing;

~~C~~D) *the chain of custody of the samples*; and

~~D~~E) *quality control of the testing*. (Section 1-80(b) of the Act)

- *Where an operator has extensive operations, a general monitoring program should be allowed rather than a well by well approach.*

Response: The rules already provide that a sample of nearby water with respect to one well may be used for another well within thirty days, thus creating economies of scale for the permittee with multiple wells. The applicant also has the capability to create a comprehensive

plan so long as it adheres to the minimum provisions set forth in Part 600 of the rules. If the applicant chooses to conduct additional testing in the area, the Department encourages such efforts. The Act and rules set a floor for water quality testing. Applicants are likely to exceed these criteria on a regular basis, because applicants who desire additional permits have an economic incentive in obtaining proof that they are not the cause of pollution in a given area. Only thorough baseline sampling and routine monitoring, as well as adhering to industry best practices for safety and operations, will allow applicants to demonstrate that they are not the cause of pollution or diminution of a water source.

Department Action: None.

- *Baseline water quality testing is too expensive for private owners, and the applicants should be responsible for paying for the cost.*

Response: The applicant will bear the cost for third party testing in the 1500' radius. Private owners will be responsible for testing outside of the radius. There is no doubt that some persons who want their water tested will be unable to do so. Unfortunately, the Act provides no required relief for persons outside the radius. Such a program would be subject to an act of the legislature and appropriation.

Again, the Department has authority to require as a condition of a permit testing in excess of the statutory minimum, whether in terms of number of samples or the location of those samples, take place before HVHHF permits are approved or HVHHF operations are to begin. The individual geography and ecology relevant to a permit application will determine whether such condition should be imposed. Applicants also have the freedom to propose, in their water quality monitoring work plan, sampling that exceeds the statutory minimum, and are encouraged to do so. Also, a comprehensive survey of the quality of well water and other water sources throughout Illinois and in particular southern Illinois would be of enormous value to the people of the State, and the State should consider such a program.

Department Action: None at this time.

- *The Department should require a network of monitoring wells around the well site drilling pad.*

Response: The Act expressly forbids the Department from requiring monitoring wells to ensure compliance if a water source cannot be tested within the 1500' radius.[12] While the Department appreciates these concerns and would like to have more flexibility to require greater water quality monitoring depending on the circumstances, such a change would require an act of the legislature.

Department Action: None.

- *The list of chemicals is incomplete or inaccurate*

Response: See the Department's Response to the comments pertaining to Rule 245.700

and Rule 245.620.

Department Action: None.

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[1] United States Environmental Protection Agency, *Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources*, EPA 601/R-12/011, available at http://www2.epa.gov/sites/production/files/documents/hf-report20121214.pdf. (December 2012). ("USEPA DW 2012"). This USEPA publication was a progress report on a full report due out in 2014. The Department expects that additional changes will need to be made in the Illinois HVHHF program based on the recommendations contained in this study, the most in depth of its kind by the federal government.

[2] United States Government Accountability Office, *Drinking Water: EPA Program to Protect Underground Sources from Injection of Fluids Associated with Oil and Gas Production Needs Improvement*, GAO-14-555 (June 2014)("USGAO June 2014"). A Canadian researcher over a decade has collected a list of disparate leakage and contamination incidents that, while colored by the author's involvement in litigation against a gas producer, nevertheless provides a useful roadmap. Ernst Environmental Services, *Brief review of threats to Canada's groundwater from the oil and gas industry's methane migration and hydraulic fracturing* (June 16, 2013), available at http://www.ernstversusencana.ca/wp-content/uploads/2013/06/Brief-review-of-threats-to-Canadas-groundwater-from-oil-gas-industrys-methane-migration-and-hydraulic-fracturing-v4.pdf. An online version is viewable without downloading at http://www.frackingcanada.ca/industrys-gas-migration/

[3] Rule 245.210

[4] USEPA DW 2012, *supra* n.1.

[5] HFRA § 1-5, Rule 245.110.

[6] HFRA § 1-83(b).

[7] USGAO June 2014 at 23-24.

[8] Rule 245.210(a)(6)(A). The USEPA states that "a permit cannot be issued until confining formations are determined to be sound and capable of containing injected fluids." USGAO, June 2014, at 77.

[9] For example, Maryland's Department of Environment has recommended an approach to permitting and siting considerably more holistic than Illinois's well-by-well permitting. *See* Md. Dept. of Enviro., *Marcellus Shale Safe Drilling Initiative Study Part II Best Practices (Draft for Public Comment)*, available at http://www.mde.state.md.us/programs/Land/mining/marcellus/Pages/MSReportPartII_Draft_for_Public_Comment.aspx. On July 11, 2014, the Maryland DNR and Department of Environment released a follow-up 255-page "interim" final report; the ultimate final report, due August 2014, is now scheduled to be released by the end of 2014. *Marcellus Shale Safe Drilling Initiative Study Part II -- Interim Final Best Practices*, http://www.mde.state.md.us/programs/Land/mining/marcellus/Documents/7.10_Version_Final_BP_Report.pdf . Due to the recency of the release, this Department has not had opportunity to fully review and integrate the Maryland study.

[10] Rule 245.530.

[11] Rule 245.560.

[12] Rule 245.600(b).

245.610 Water Pollution Investigations

Comments: The Department received over 5,000 comments on Section 245.610, Water Pollution Investigations. Commenters included the environmental coalition group submission, Illinois Public Health Association, the Peoria County Health Department, Food & Water Watch, Fair Economy Illinois, Food & Water Watch, and thousands of individuals via online, in writing, and at the public hearings. The general issues raised by the commenters are preceded by bullet points and responded to in turn, as follows:

- *Local public health officials should be notified of the commencement of a pollution investigation, and that the results of the investigation should be posted on IDNR's website.*

Response: Local public health departments will be notified of the results of pollution investigations, and the results will be posted on the Department's website. The Department has no plans at this time to announce the commencement of investigations, because that could jeopardize the investigation. For a further discussion, see the Department's response to the comments on Rule 245.615.

Department Action: None.

- *The Department should broaden the scope of persons eligible to initiate a pollution investigation and what can be investigated.*

Response: According to subsection (a) of the rule and section 1-83(a) of the Act, "any person who has reason to believe he or she has incurred pollution or diminution of a water source as a result of a high volume horizontal hydraulic fracturing treatment of a well may request . . . an investigation . . ." The HFRA provides that such a request is not an exclusive remedy; any person with an interest that may be or is adversely affected can compel the Department to Act, and any person who is injured in his or her person or property by a violation of the Act has standing under the Act.[1] Moreover, the Department currently acts on solid information received, and has the authority to do so, regardless of the HFRA.

Some commenters were concerned that the rule was too narrow because the term "high volume horizontal fracturing treatment" does not include all phases of the HVHHF operations. The rules, however, already clarify in the definitions that the term "high volume horizontal fracturing treatment" has the same meaning as high volume horizontal fracturing operations.[2]

Others were worried that the rules did not address pollution that is only discovered years after the end of HVHHF operations. The HFRA creates administrative remedies that are in addition to all other common law and criminal remedies. The HFRA remedies are not exclusive. Moreover, nowhere in the Act or rules is there a time limit for when a claim can be made. Problems likely to arise will come from the limitation on permittee water quality monitoring requirements provided in Rule 245.600(c). Without a recent sample, permittees may be able to

easily rebut the presumption of pollution or diminution, although "rebuttal" does not resolve the case, but merely overcomes the presumption.

Department Action: None.

- *The Rule should require the petitioner to specify what contaminants the petitioner believes are the cause of the pollution.*

Response: One commenter indicated that the rules are overly burdensome on operators and permittees, and allow people to file frivolous pollution complaints based on pure speculation. The commenter's solution was to require that petitioners allege in the petition which contaminant is the cause of the pollution or diminution. This proposed solution is problematic on many levels. Many lay persons, and even their attorneys if they hire counsel, would be unable before testing to articulate, or even hazard a guess as to, the exact contaminant responsible for pollution. Subsection (a)(2) of the rule requires a detailed description identifying the affected water source, a description of the alleged source of the contamination, observations of the petitioner, and other evidence designed to put the alleged polluting party on notice as to the basis for the claim. Those allegations would be sufficient to state a claim for a lawsuit and more than suffice to commence an administrative action. A water quality test is not required, as such tests are to be performed later by IEPA.[3] Requiring the petitioner to conduct a test beforehand would deprive many potential affected persons of the protection of the HFRA, due to the expense. The burden placed on the HVHHF permittees by the statute serves the statutory purpose, and the rule reflects the statute in that regard.

Department Action: None.

- *The 180 calendar day deadline for a pollution investigation decision is too long.*

Response: The Department understands the sentiment behind such comments, and will use its best efforts in conducting pollution and diminution hearings. The rule is not a hard and fast rule, as it requires that the Department merely use reasonable efforts to make a decision in 180 days. Yet the Act recognizes the reality that pollution investigation actions may be complex and may require significant expert witness investigation and scientific evidence. Defenses may be complex and rely on further expert witnesses and scientific evidence. The Department needs time to evaluate all the evidence, to reach a fair and scientifically supported decision, and to ensure that any prosecution is well-supported. Moreover, the Department may have competing demands for its resources. The Department needs flexibility, and 180 days is not a novel time period in the field of administrative investigation.

Department Action: None.

- *The term "statistically significantly higher" should be defined, and may not properly describe all useful measurements, such as alkalinity and pH.*

Response: The crafting of Rule 245.610 was a joint effort between the Department and IEPA. The Department shares the responsibility for pollution investigations under the Act with

IEPA. The term “statistically significant increase” is a term of art used by IEPA in its groundwater quality standards.[4] IEPA has a current proposed definition for the term "statistically significant" in the context of coal combustion waste regulation, 35 Ill. Admin. Code 841. In that context, the term “statistically significant” means the application of a statistical method, pursuant to section 841.225 of the rule, to determine whether consecutive groundwater sampling data (showing greater or lesser concentrations of chemical constituents) represents a pattern rather than chance occurrence. Water pollution investigations will be conducted as a joint effort between IEPA and IDNR. It is appropriate for the Department to adopt standards of the agency with the requisite expertise and mission to protect water resources from pollution and conduct pollution investigations.

Department Action: None.

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[1] HFRA § 1-102.
[2] Rule 245.110.
[3] Rule 245.610(c), IDNR/IEPA Intergovernmental Agreement on administration of HFRA (September 2013).
[4] For example, see 35 Ill. Admin. Cd. 620.310(a)(3)(A)(ii).

245.615 Procedures

Comments: The Department received a number of comments on Rule 245.615 about procedures for pollution or diminution investigations. Commenters included the environmental coalition's group submission, IPHA, SAFE, and a number of individuals. The comments were generally positive about this rule, and only suggested minor changes.

In preparing the first draft of the rules, the Department considered the public health benefits of sharing all pollution information as widely as possible, while weighing that important goal against the logistical challenges in doing so. The Department also considered the burden on operators who have allegations against them, as well as getting as speedy and accurate of a resolution to cases as is practicable.

Commenters raised the following issues, which will be analyzed in turn:

- *IDNR should provide local health agencies the results of pollution investigations conducted pursuant to the Act.*

Response: The suggestion that the Department share the results of pollution/diminution investigations with local health agencies is consistent with the statutory purpose to protect public health. Rule 245.600(b)(4) requires that baseline testing results be posted to IDNR's website and 245.615(b) then requires that the results of pollution investigations be posted on IDNR's website. The results should be readily available to interested individuals and organizations. This is not only something that other jurisdictions do, but also is consistent with best management practices.[1] Section 245.615 of the first draft of the rules and HFRA contemplate that the Department will act in conjunction with local agencies when fulfilling its obligation to notify residents of water contamination. Since this is an issue that is directly within the jurisdiction of the local health departments, those departments should be notified too.

Department Action: Section 245.615(b) shall be modified as follows:

b) *Within 15 calendar days after a determination of pollution or diminution, the Department* shall, with assistance from other State and local agencies, *provide notice of its* Notice of Violation <u>and determination</u> on the Department's website and *to all persons that use the water source for domestic, agricultural, industrial, or any other legitimate beneficial uses* <u>as well as any certified local public health departments that serve the above persons.</u> (Section 1-83(e) of the Act)~~.~~

- *The results of pollution investigations should be posted on the Department's website.*

Response: The results of pollution investigations will be posted on the Department's website pursuant to section (c) of this Rule.

Department Action: None.

- *Strict adherence to rules 245.600, 245.610, and 245.615 might lead IDNR to find that operators had polluted water sources when no pollutants had actually been released into the water, but IDNR might miss other cases of actual pollution because sampling is not a perfect solution due to a lack of historical sample data.*

Response: While it is most certainly true that a narrow reading of just Rule 245.600 or 245.610 might mean that pollution investigations under 245.615 may lead to false positives or false negatives, the rules must be read holistically. Rule 245.620 creates a rebuttable presumption of pollution or diminution. IDNR maintains prosecutorial discretion by choosing which cases are worthy of pursuit. By using these two tools, IDNR has the flexibility to deal fairly and accurately with marginal or incorrect initial determinations. Operators and landowners may also do more than the minimum required sampling and testing, and best practices would suggest that.

Department Action: None.

- *Local governments should have the authority to pursue pollution investigations.*

Response: Section 245.610 of the rules and 1-83 of HFRA empower the Department to act in conjunction with IEPA when investigating pollution/diminution investigations under the HFRA. Local government agencies do not have jurisdiction over pollution investigations.

Department Action: None.

- *The phrase "confirmed determinations" means IDNR is admitting that fracking will inevitably lead to pollution.*

Response: This is a misreading of the rule. The entirety of this section is a contingency.

Department Action: None.

- *IDNR should have operators permanently replace water supplies.*

Response: IDNR must maintain its flexibility when determining whether or not a suitable temporary water source replacement is necessary. Permanently replacing the water supply simply may not be the best or most feasible resolution in each case.

Department Action: None.

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[1] See Intermountain Oil and Gas Project Best Management Practices: Hydraulic Fracturing. (2014). Available at http://www.oilandgasbmps.org/laws/index.php; as well as the Colorado Oil and Gas Conservation Commission Hydraulic Fracturing Rules.

245.620 Rebuttable Presumption of Pollution or Diminution and Insufficient List of Indicator Chemicals

Comments: The Department received over 4,000 comments concerning Rule 245.620 as it relates to the rebuttable presumption of pollution or diminution set forth in subsection (b) and the insufficient list of indicator chemicals contained therein. Commenters included Fair Economy Illinois, the Illinois Attorney General's Office, Environmental Organizations Group Submission, Nature Conservancy, Faith in Place, Illinois Alerts, and thousands of individuals. The essence of the bulk of the comments was that, because of the numerous and varied chemicals that may be used in fracking, subsection (b)(4) inappropriately limits the types of pollution or diminution that trigger the rebuttable presumption of liability against the operator. Additionally, one comment indicated the rules do not protect persons conducting fracking operations from obtaining baseline testing when the landowner refuses access. This would affect the operator's ability to rebut the presumption under this section.

Response: Upon further consideration, the Department agrees that the first draft of Rule 245.620(b)(4) unnecessarily restricts the Department's ability to make a finding of pollution or diminution, and the rule will be changed. In the first draft of the rules, the Department added section (b)(4) to attempt to connect the "baseline testing" required in section 1-80(e) with the rebuttable presumption provided in section 1-85(b)(2). Connecting the two sections has the obvious benefit for the Department of delineating what "indicator chemicals" the Department will routinely look for when conducting pollution investigations.

However, a rule created for "ease of enforcement" could turn into a poor rule if operators simply chose to use additives that did not show up on the routine baseline and follow-up testing. Section 1-85(b)(2) of the Act creates a rebuttable presumption when "water quality data showed no pollution or diminution prior to the start [of HVHHF]" and "the pollution or diminution occurred during [HVHHF] operations or no more than 30 months after the completion . . .". Pollution and diminution are defined much more broadly in the Act than merely what baseline testing and the required follow up testing detect. Thus, the Department's attempt to make enforcement easier could result in making enforcement more difficult.

As to lack of baseline testing due to landowner refusal to provide access, and how this could affect the ability of a person conducting fracking to rebut a presumption of liability, section 1-80(a)(6) requires that the applicant show proof of right to access the sites for water quality monitoring when it submits its water quality monitoring plan with the application. Without access, there can be no rebuttable presumption because there can be no HVHHF. Access is a condition of the permit, so there should not be situations where the applicant cannot have the water quality monitoring company access the sites.

Department Action: Rule 245.620 is modified as follows:

Section 245.620 Rebuttable Presumption of Pollution or Diminution

a) *This Section establishes a rebuttable presumption for use regarding pollution or diminution* under Subpart K (Section 1-85(a) of the Act).

b) *Unless rebutted by a defense established in subsection (c), it shall be presumed that any person conducting or who has conducted high volume horizontal hydraulic fracturing operations shall be liable for pollution or diminution of a water supply if* (Section 1-85(b) of the Act):

1) *the water source is within 1,500 feet of the well site* (Section 1-85(b)(1) of the Act) where the high volume horizontal hydraulic fracturing operations occurred;

2) the ~~baseline~~ *water quality data showed no pollution or diminution* before *the start of high volume horizontal hydraulic fracturing operations* (Section 1-85(b)(2) of the Act); and

3) *the pollution or diminution occurred during high volume horizontal hydraulic fracturing operations or no more than 30 months after the completion of the high volume horizontal hydraulic fracturing operations* (Section 1-85(b)(3) of the Act);

~~4) the laboratory results from the follow-up monitoring indicate pollution or diminution from at least one of the following:~~

~~A) pH;~~

~~B) total dissolved solids, dissolved methane, dissolved propane, dissolved ethane, alkalinity and specific conductance;~~

~~C) chloride, sulfate, arsenic, barium, calcium, chromium, iron, magnesium, selenium, cadmium, lead, manganese, mercury and silver;~~

~~D) BTEX; or~~

~~E) gross alpha and beta particles to determine the presence of any naturally occurring radioactive materials.~~

c) *To rebut the presumption established under this Section, a person presumed responsible must affirmatively prove by clear and convincing evidence any of the following* (Section 1-85(c) of the Act):

1) *the water source is not within 1,500 feet of the well site* (Section 1-85(c)(1) of the Act);

2) *the pollution or diminution occurred* before the *high volume horizontal hydraulic fracturing operations or more than 30 months after the completion of the high volume horizontal hydraulic fracturing operations* (Section 1-85(c)(2) of the Act); and

3) *the pollution or diminution occurred as the result of an identifiable cause other than the high volume horizontal hydraulic fracturing operations*. (Section 1-85(c)(3) of the Act)~~; or~~

~~4) the laboratory results from the follow-up monitoring do not indicate pollution or diminution from any of the following:~~

~~A) pH;~~

~~B) total dissolved solids, dissolved methane, dissolved propane, dissolved ethane, alkalinity and specific conductance;~~

~~C) chloride, sulfate, arsenic, barium, calcium, chromium, iron, magnesium, selenium, cadmium, lead, manganese, mercury and silver;~~

~~D) BTEX; or~~

~~E) gross alpha and beta particles to determine the presence of any naturally occurring radioactive materials.~~

245.630 Prohibitions

Comments: IDNR received eight comments from individuals concerning Rule 245.630, which prohibits injecting BTEX, hydraulic fracturing fluid, produced water, diesel, or petroleum distillates into fresh water. The general theme of the comments was that the Department should expand the list of chemicals prohibited.

Response: While the Department understands the general sentiment behind these comments, the rules already prohibit the types of pollution about which the commenters are concerned. Looking beyond this specific rule section, and to the definition of terms, clarifies that. Rule 245.630 directly mirrors the language contained in Section 1-25(c) of HFRA. Every term in Rule 245.630 except petroleum distillates, which has a commonly understood meaning and needs no further explanation, is defined in Section 1-5 of the HFRA. The definitions of hydraulic fracturing fluid and produced water cover every conceivable combination of fluid that comes up or goes down a well during the production process. There is no need to expand these categories, because they are already covered through these two definitions. Drilling fluids are likewise already covered by Rule 245.510. The Act and the rules thus effectively prohibit the discharge of chemicals that concern the commenters.

Department Action: None.

245.700 Chemical Disclosure by Permittee

Comments: The Department received over 300 comments on Rule 245.700 regarding HFRA's requirement of chemical disclosure by the permittee. Commenters included the environmental coalition's group submission, IHPA, GROW-IL, NRDC/ELPC, SAFE, Fair Economy Illinois, Frack Free Illinois, Illinois Peoples Action, Peoria Families Against Toxic Waste, Roosevelt University's RISE Organization, and over 250 individuals, including several medical doctors.

The comments made, essentially, five different points. Bullet-pointed below are the specific comments which will be analyzed in turn:

- *All chemicals used in the fracking process should be disclosed by the entity conducting the HVHHF operations.*

Response: Unless unable to do so at the time of filing, every applicant is required to file with the application a "a chemical disclosure report identifying each chemical and proppant anticipated to be used in hydraulic fracturing fluid for each stage of the hydraulic fracturing operations . . ." HFRA § 1-35(b)(8). If filing later, the applicant is held to the same standard. *Id.* § 1-77. All persons conducting fracking operations on behalf of the applicant are also held to the same standard. *Id.*

Commenters also reiterated the point made in other areas, that *all* chemicals should be disclosed, i.e., not exempting those for which claims of trade secret are made. The trade secret aspect is discussed in the Department's response to the comments on Rule 245.720, and the imposition of a high threshold for such claim, to prevent abuse.

Department Action: None specifically with respect to this Rule, but see changes made with respect to 245.720.

- *The Department should test the hydraulic fracturing fluid before anyone commences HVHHF operations to ensure that all the chemicals were disclosed.*

  Response: See the Department's response to this concern in its response to the comments on Rule 245.710.

- *Disclosure should occur as soon as is possible.*

Response: Section 1-77(a) of the Act allows for disclosure of an up-to-date master chemical disclosure list to the Department no less than 21 days after the commencement of HVHHF operations. The Department anticipates that it, and potentially impacted neighboring persons, will be able to review and react to this list in 21 days.

Department Action: None.

- *The list of chemicals should be posted on the Department's website*

Response: Section 1-77(e) of HFRA mandates that the Department shall post the up-to-date master lists of chemicals on its website.

Department Action: None.

- *IDNR should review and approve of any changes to the chemicals used before the changes are made, not afterward.*

Response: In general, HFRA requires disclosure rather than Department approval of specific chemicals, other than those for which there are blanket prohibitions. A change to this basic concept is a subject for legislation. To be sure, a form of approval or disapproval will occur during permitting. Also, if the Department becomes aware of dangerous conditions, it can issue a cease and desist order.

The fact that IDNR does not specifically give approvals or disapprovals does not give the permittee carte blanche to use chemicals not on the updated master chemical list. Only the addition or omission of previously disclosed chemicals can occur.

Department Action: None.

- *Disclosure is unworkable because operators rarely know what chemicals they will use more than a few days prior to the beginning of operations*

Response: The Department has considered and investigated this assertion. The disclosure required is, in general, of the master list of chemicals. Operators might not know the exact mix, but they will know the range of chemicals that they might use, given their past experience and their knowledge of the formations through which they will be drilling.

Department Action: None.

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245.710 Chemical Disclosure by Contractor

Comments: The Department received approximately 2,000 comments about Rule 245.710 and chemical disclosure by contractors. Commenters included ILOGA, the environmental coalition's group submission, the Frack Free Illinois petitioners, as well as numerous individuals. The comments pertained to four specific issues, bullet-pointed below and responded to in turn:

- *HFRA does not recognize the distinction between "permitee" and "contractor," and neither should the rules.*

Response: The Act does not recognize a distinction between a permittee and a contractor, but it does take into consideration that someone other than the permittee might conduct the HVHHF operations. See HFRA § 1-77(a). While the Act does not specifically define a contractor, it does delineate between a permittee and an operator. HFRA § 1-5. The operator is the person or entity with the drilling rights. The permittee obtains, via application, the right to conduct the HVHHF operations. In practice, IDNR expects these will most likely be the same person, because otherwise the different responsibilities placed on each by the HFRA will open the possibility of significant confusion.

The Department chose to specify who a contractor is because the Department needs to know who is on site. If the Department is going to give the contractor the power to act on behalf of the permittee and submit information on behalf of the permittee, then the Department needs to know how to contact the contractor and the contractor needs to know what the contractor is authorized or required to do.

Department Action: None.

- *The permittee should only be responsible for filing a master chemical disclosure report if the permittee is conducting the HVHHF operations.*

Response: Section 1-77(a) of the Act is clear that the permittee, applicant, operator, or contractor may submit the chemical disclosure report. Using a contractor cannot relieve the operator/permittee of this obligation. Requiring the person or entity with ultimate responsibility to file the report serves statutory purposes of accountability. The Act is also clear in the same section that the permittee will ensure that HVHHF stimulation will not occur until the disclosure is submitted. While the Act may have passed on the ability to submit reports to others, the permittee is ultimately responsible for compliance.

Department Action: None.

- *The rules do not allow contractors to make alterations or adjustments to the hydraulic fracturing fluid in the same manner as a permittee.*

Response: HFRA § 1-77(a) allows for anyone performing HVHHF operations to alter or

adjust the chemical composition of the hydraulic fracturing fluid, so long as the proper disclosures are submitted in a timely manner. The rules allow for such a disclosure by a permittee, but do not contain a similar provision for the contractor. The Department agrees with the commenter's suggestion.

Department Action: The following language shall be inserted in Rule 245.710:

c) Nothing in this Section shall prohibit the contractor performing high volume horizontal hydraulic fracturing operations on behalf of the permittee from adjusting or altering the contents of the fluid during the treatment process to respond to unexpected conditions, as long as all other requirements of the Act and the Rules are met and the contractor notifies the Department by electronic mail within 24 hours of the specific details of departure from the initial treatment design and includes a brief explanation detailing the reason for the departure (Section 1-77(a) of the Act).

- *The Department should test the hydraulic fracturing fluid before anyone commences HVHHF operations to ensure that all the chemicals were disclosed.*

Response: Many comments for both Sections 245.700 and 245.710 indicated that the Department should conduct comprehensive testing on all base fluids, additives, and proppants to be used in the hydraulic fracturing fluid before the HVHHF operations commence. The underlying concern is that permittees and contractors will only disclose certain chemicals and not others. However, the addition of such a testing regime would require significant resources that the Department does not have, would mainly result in burden on good actors, and would not alleviate the problem of unscrupulous permittees and operators who could easily circumvent such a pre-test. The Department at this time feels that the incremental value would be outweighed by expense to the Department and to the permittees and operators. The HFRA and rules do have increasingly harsh penalties for intentional misconduct that should deter permittees and operators from such conduct.

Department Action: None.

- *Part (b) of the rule should be modified to require disclosure of the mass by volume of each chemical in the hydraulic fracturing fluid.*

Response: There is no need for an additional rule to this effect because disclosure of concentrations is already required by Rule 245.210(a)(8)(D), and variance from this would need to be reported under the "contractor flexibility" provision of 245.710(c), above.

Department Action: None.

245.720 Department Publication of Chemical Disclosures and Claims of Trade Secret

Comments: IDNR received approximately 4,000 comments on Rule 245.720 about the Department's obligation to publish chemical disclosures and on the rule's treatment of claims of trade secret. Commenters included the Illinois Attorney General, the environmental coalition's group submission, ELPC, Fair Economy Illinois, IPHA, Peoria Department of Public Health, and thousands of individual commenters from throughout Illinois. In all but a few instances, commenters desired more disclosure, in one form or another, and objected to a broad application of the "trade secret" exception. However, these comments took about half a dozen different approaches to the issues.

When crafting the first draft of the rules, the Department anticipated that the master chemical disclosure lists would function to limit claims of trade secret to exceptional circumstances. Master lists are just that; comprehensive lists of all chemicals that companies will or might use in, sometimes, multiple operations throughout the state. The Department did not envision a scenario where companies would have to compile a new list for each well. Instead, operators would simply send the Department, for each HVHHF site, a short explanation of what chemicals from the master list were used, and why.

In the same spirit, the trade secret exception was only to be used sparingly, in limited circumstances of a truly novel and proprietary method or invention. The Department's intent was never to allow permittees to invoke the trade secret exception for every chemical used. Most of the chemicals commonly used in HVHHF operations are not proprietary.[1]

The specific issues raised, and the Department's response, are as follows:

- *The Department should require full disclosure, no exceptions.*

Response: The vast majority of the commenters shared the sentiment that permittees should not be afforded a trade secret exception under any circumstances, as their profits should not trump the interest of the public in safe drinking water. As stated above, the Department has no intention of exercising its discretion under the trade secret exception so as to grant blanket exemptions of the chemicals to be used during HVHHF.

The trade secret exception is statutory, and unique to the Act. In no other activity the Department regulates is a claim of trade secret regularly asserted.[2] The Department's rules are designed to implement the HFRA in a manner consistent with its purposes and with the Department's multiple statutory roles and duties. The legislature has deemed that there may be certain instances where trade secrets are valuable enough to trump the interest of the public in full disclosure. Elimination of that exception would need to occur legislatively, and not through administrative fiat.

Department Action: none.

- *The Department should strengthen the requirements of proof for a claim under the trade secret exception.*

- *Permittees have high economic interest in trade secrets, so the trade secret exception should be broadened.*

- *The term "competitive value" should be defined.*

Response: Although the Department refuses to attempt to nullify the trade secret exception administratively, it can and should set parameters of the exception's application to meet the goals of the Act consistent with the duties of the Department to protect the health and safety of the public and protect the environment. Implementation must also occur in a way that does not incentivize the proliferation of claims that would result in administrative burden for the Department, administrative delay for applicants, and/or opacity of public process. This entails both further refining what constitutes a trade secret sufficient to warrant concealing information from the public, and incentivizing permittees to disclose as much as possible. Logic, common sense, public policy, and the realities of HVHHF economics all support this.

The average investment in an HVHHF well site has risen from a reported $2.3 million several years ago to approximately $5 million or more at the time of this rulemaking. The cost of the chemicals used in HVHHF is a fraction of that. The principal determinants of whether hydrocarbons are recoverable from a potential site in a sufficient quantity and at a sufficient rate to justify the investment are the geological challenges, the maturity and richness of the resource, the tightness of the shale, the availability of water resources, the costs of waste product disposal options, and the like, along with the overarching volatilities of the market for the resources extracted. Moreover, what combination of chemicals a permittee decides to deploy may be unique to each site. Even if the chemicals used were known, that information would be of little use to a competitor without also knowing the reasons for the choices made, such as the conditions encountered while drilling, setting cement, perforating, or performing a previous stage of HVHHF. An operator has complete freedom to safeguard the secrecy of that decision-making process and business decision while still providing the disclosure necessary for the public to know what is being transported throughout the community and injected into the land where people live.

In considering how to define key terms of this section, the Department looked first at existing Illinois policy and law. The Illinois legislature and its courts have developed a clear and solid doctrine of "trade secret" via the Illinois Trade Secret Act.[3] Illinois is one of 47 states and the District of Columbia that have adopted the Uniform Trade Secrets Act, which has a well-developed body of case law regarding what types of information are trade secrets.[4] By harmonizing the HFRA trade secret exception with other Illinois law and a nationally understood body of doctrine, IDNR can give permittees and members of the public greater certainty and assurance as to what claims will or will not be allowed.

The strong overall intent and presumption of the Act is that chemicals be disclosed, and such disclosure is a serious matter, critical to public acceptance of HFRA operations within communities, and critical to public health protection. Thus, the undefined "certification" required

by the statute should be part of a broader affidavit that the statements contained therein are true and correct. Permittees who knowingly misinform or exaggerate claims for trade secret protection would face harsh consequences.

One group commenter suggested that the state look to USEPA law when regulating trade secrets. USEPA regulations on trade secret claim substantiation are very similar to the trade secret justification required by Section 1-77 of HFRA.[5] The federal regulations also contain two sections that the Department finds would be of use in administering this section of the rules. These changes are reflected in Sections 245.720(c)(4) below.

The Department anticipates that some will object to the trade secret substantiation requirements as onerous. The Department reiterates that the exception is, in fact, meant to be an exception, not routine, that discouragement of non-genuine trade secret claims is a legitimate regulatory goal consistent with the statute, that secrecy inherently breeds public distrust and opposition, and that it is in the overall economic interest of industry if less time and energy is expended on this aspect of HVHHF operations in Illinois.

Finally, the Department notes that the USEPA on May 18, 2014 published an Advanced Notice of Proposed Rulemaking on the types of hydraulic fracturing chemicals and mixtures that could be reported and disclosed under the Toxic Substances Control Act, and possible approaches to obtaining this information for the chemicals.[6]

Department Action: Section 245.720(c) will be modified as follows:

c) *Upon submission or within 5 calendar days* after *submission of* the master list of chemicals with *chemical disclosure information to the Department under* Section 245.210, 245.700, 245.710 or 245.860 *under a claim of trade secret, the person that claimed trade secret protection* "claimant" *shall provide a justification of the claim containing* an affidavit swearing or affirming under penalty of perjury that the information is a bona fide trade secret, which affidavit shall include: ~~*the following:*~~

1) *a detailed description of the procedures used by the person to safeguard* that portion of *the information* on the master list of chemicals for which trade secret is claimed *from becoming available to persons other than those selected by the person to have access to the information for limited purposes*;

~~2) *a detailed statement identifying the persons or class of persons to whom* that portion of *the information* on the master list of chemicals for which trade secret is claimed *has been disclosed*;~~

~~3~~2) *a certification that the person has no knowledge that* the portion of *the information* on the master list of chemicals for which trade secret is claimed *has ever been published or disseminated or has otherwise become a matter of general public knowledge*;

~~4~~3) identification of the claimant's specific use of the chemical claimed as trade secret and explanation of why it is a secret of interest to competitors, including the following:

(i) Description of the specific use of the chemicals claimed as trade secret, identifying the product or process in which it is used. If the claimant uses the chemicals other than as a component of a product or in a manufacturing process, this description must identify the activity where the chemical is used.

(ii) Whether the claimant's company or facility identity has been linked to the specific identity claimed as trade secret in a patent, or in publications or other information sources available to the public or the claimant's competitors. If so, explanation of why this knowledge does not eliminate the justification for trade secrecy.

4) *a detailed discussion of why the person believes that the portion of the information on the master list of chemicals for which trade secret is claimed is of competitive value*, and an explanation of why the information has general competitive value, not just competitive value at the permittee's specific work site;

5) that the information being sought to be exempted is a "trade secret" as defined in the Illinois Trade Secrets Act, 765 ILCS 1065/1 *et seq.*;

6) *the identity of each individual or entity to whom that portion of the information on the master list of chemicals for which trade secret is claimed has been disclosed, including* all local, State, and Federal government entities to which the claimant has disclosed the information. For each such individual or entity, the claimant shall indicate what confidentiality claim was made and whether the individual or entity denied that claim; and

~~5~~7) *any other information that shall support the claim* of trade secret. (Section 1-77(g) of the Act)

- *Illinois should "dump" its chemical disclosure report regime and instead adopt disclosure through the web application Fracfocus for its mandated reporting requirement.*

Response: Fracfocus is a private website used by at least 11 states for voluntary disclosure of chemicals used in HVHHF operations.[7] There are numerous documented instances where the Fracfocus website has been inadequate to fully and accurately comply with various state laws regarding the disclosure of chemicals used in HVHHF.[8] Use of a third-party intermediary, no matter how well-intentioned, creates another set of opportunities for human error, misinterpretation, and lack of accountability. The Illinois legislature made an intentional policy choice not to rely on a private reporting regime and to instead protect the citizens of Illinois through a disclosure system that makes chemical reports available to Illinoisans through a State of Illinois website.

Department Action: None.

- *If the trade secret exception is invoked, then the public should get some type of identifying information such as the class of chemical.*

Response: The comment is well-taken. Section 1-77 of the Act affords limited, narrow protection to specific chemicals whose disclosure is furnished to the Department under a claim of trade secret. The Act does not provide for protection of generic or basic scientific information concerning a chemical, such as its class and function (e.g., a carboxylic acid used as a corrosion inhibitor, or a quaternary ammonium salt used as a clay stabilizer). The provision and posting of such information would not economically disadvantage any permittee, while possibly providing time-critical general information to a first responder in event of an emergency.

Department Action: Subsection (b) will be modified as follows:

b) When *an applicant, permittee, or person performing high volume horizontal hydraulic fracturing operations furnishes chemical disclosure information to the Department under* Section 245.210, 245.700, 245.710 or 245.860 *under a claim of trade secret, the applicant, permittee, or person performing high volume horizontal hydraulic fracturing operations shall submit redacted and un-redacted copies of the documents* identifying the specific information on the master list of chemicals claimed to be protected as trade secret. The redacted copy shall substitute a description of the chemical class and function of the chemical. *The Department shall use the redacted copies when posting* the master list of chemicals *on its website*. (Section 1-77(f) of the Act)

- *The Department should put the master list of chemicals on its website sooner than 21 days after receipt.*

Response: The timeframe in which IDNR must post a received master chemical list is not specified in the Act.[9] The intent of the Act is to give members of the public access to essential information about the HVHHF operations around them. While the Department's technological capabilities are limited, there is no reason why the Department needs 21 days to post up-to-date master chemical lists online. After consulting with the Oil and Gas Division regarding the length of time required, the Department has determined that it has the current capability to post such lists within 14 days after receipt. However, nothing in the Statute or

Rules will prevent the Department from posting the lists sooner should its technological capabilities improve in the future.

Department Action: Section 245.720(a) will be modified as follows:

a) *The Department shall assemble and post up-to-date copies of the master lists* of chemicals *it receives under Sections* 245.700 and 245.710 *on its website* within ~~21 business~~ 14 calendar days after receipt (Section 1-77(e) of the Act).

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[1] U.S. House, Committee on Energy and Commerce, *Chemicals Used in Hydraulic Fracturing*, (April 18, 2011).
[2] HFRA § 1-77
[3] Illinois Trade Secrets Act, 765 ILCS 1065/1 *et seq.*
[4] Konschnik, Heather; Holden, Margaret; and Shasteen, Alexa, *Legal Fractures in Chemical Disclosure Laws*, Harvard Law School Environmental Law Program (2013).
[5] 40 CFR § 350.7. Accessed on July 24, 2014. Available at http://www.ecfr.gov/cgi-bin/text-idx?SID=5bac084ec39c99a4d74a1b740534acd2&node=40:28.0.1.1.10&rgn=div5#40:28.0.1.1.10.1.9.3.
[6] Docket EPA-HQ-OPPT-2011-1019, www2.epa.gov/hydraulicfracturing#outreach
[7] Konschnik.
[8] *Id.*
[9] HFRA § 1-77(e), 1-110.

245.730 Trade Secret Disclosure to Health Professional

Comments: The Department received over 8,000 comments on Rule 245.730 regarding trade secret disclosures to health professionals. Commenters included the Illinois Attorney General, Food and Water Watch, IIRON, the Nature Conservancy, IOGA, the environmental coalitions' group submission, Fair Economy Illinois, Frack Free Illinois, FIP, IPHA, the Sierra Club, IPC, ELPC, and thousands of businesses and individuals.

As stated in the Department's response to the comments on section 245.720, the Department expects that the trade secret exception will be applied for, and granted, sparingly. The general rule of thumb is disclosure. Additionally, the Department will do everything within its capabilities to enforce the rules and statutory guidelines in a manner that ensures as much safety at HVHHF operations as is possible. The Department hopes for little need for trade secret disclosure to health professionals, because there will be fewer accidents and exposures if the rules are properly adhered to.

The specific issues raised in this Section will be responded to individually as follows:

- *The Department should create a hotline available 24/7 for health professionals to call and get information about chemicals protected under the trade secret exception.*

- *Disclosure "during regular business hours" is unworkable because accidents don't always happen during regular business hours.*

Response: Thousands of commenters suggested that the Department set up a 24/7 hotline for health professionals to call for disclosure of chemicals protected by the trade secret exception. They indicated that accidents do not happen only during regular business hours. The Department agrees. However, the most common occupational hazard in HVHHF operations is being struck by an object.[1] Vehicle accidents have also become a top occupational hazard for HVHHF workers. In 2003, there were no chemical exposures that resulted in lost work time from the oil and gas industry reported to OSHA.[2] Nonetheless, the Department is taking seriously the risk of chemical exposure to both workers and members of the public. The National Institute for Occupational Safety and Health recently reported that at least four workers have died since 2010 from apparent acute chemical exposures during HVHHF flowback operations, although it is not clear that the chemicals used in the fracking itself were to blame or simply the hydrocarbons and sulfides that can be released during any drilling operation.[3] The Act and the rules, as well as existing law, provide multiple channels by which a health provider can ascertain the type of chemicals used at a HVHHF well site.

The first place is the work site itself. OSHA's Hazard Communication Standard has long required Right-To-Know labeling of hazardous chemicals. Chemicals are classified and their hazards are communicated on labels that are on the chemical containers themselves, and on safety data sheets that the employer is required to maintain at the work site. This is true throughout industry today, including manufacturing, agriculture, and other economic sectors with which Illinois has long experience. Employers with hazardous chemicals in their workplaces are required to have labels and safety data sheets for their workers who might be

exposed to chemicals, and must train the workers to handle the chemicals appropriately. In most cases it will be a worker, not a member of the public, who is exposed, and he or she will have access to the needed information that way. Similarly, trucks carrying hazardous substances are required to label them.

The second resource would be on the Internet.[4] The Department is required to maintain a database accessible on its website containing the chemical disclosure reports. The Department will do so and will also list 24/7 contact numbers for the trade secret claimants. This is clarified in the rule.

The next best solution is for the health provider to call the Department during normal business hours.[5] Should a certain chemical be protected by the trade secret exemption, Department personnel will have an unredacted list and will be able to make the necessary disclosures so the health professional can treat the patient.

A fourth option is for the health professional to contact the trade secret holder.[6] Trade secret holders are required to disclose what chemicals they are using, even if protected by the trade secret exemption, to health professionals when asked. The trade secret holder also has a large interest in making the necessary disclosures, because failure to disclose could result in a finding of liability or negligence.

Thus, there are multiple avenues that health professionals will have in order to get the information they need to treat patients who have been exposed. The Department would incur great expense hiring someone just to staff a phone that likely will seldom ring. The expense will likely not exceed the incremental value of such a step, because there are already multiple channels through which health professionals can obtain the information they need in order to treat patients.

Department Action: None except to clarify communications channels. See the modified rule at end of this subsection of this response.

- *The Illinois Department of Public Health duty officer should have an unredacted list of chemicals protected by the trade secret exception.*

Response: See response to comment above. The Department has no authority to draft a rule requiring IDPH to do or maintain anything. However, the Department will explore the possibility of an intergovernmental agreement with IDPH.

Department Action: None.

- *Lists of chemicals should be posted at all worksites.*

Response: Both the OSHA Hazard Communication rules and common sense dictate that the operator should maintain a list of chemicals to which workers or the public might be exposed at the well site.

Department Action: See changes below.

- *The definition of "affected patient" requires a diagnosis from a doctor, which would be impossible before the doctor knows what chemicals the patient was exposed to.*

Response: The rules and the Act contain no such definition of "affected patient." The common meaning of the term "affect" is "to act on" or "produce an effect in."[7] The phrase "affected patient" only means that health professionals must identify that they are treating a person who was exposed to chemicals at a HVHHF site.

The Department has no interest in concealing what chemicals a person was exposed to at a HVHHF site. The HFRA specifically charges the Department with administering the provisions of the Act in a manner that is consistent with the health and safety of the public.[8] The Department, on review, agrees that "affected patient" creates confusion, and clarifies the rule to eliminate that.

Department Action: See changes below.

- *Use of "may" instead of "shall" in Rule 245.730.*

Response: The introductory paragraph of Section 245.730 states that the Department "may" disclose to a health professional information covered by the trade secret exemption. The disclosure is limited by the circumstances defined in the Act and in the rules. This discretionary "may" was inserted because the Department would have to make a judgment upon receiving a request. Again, the Department has no interest in withholding vital information which might save someone's life. So long as the health professional can articulate a basis, exposure and resulting injury, the Department would have no reason to withhold the information.

Department Action: See the change below.

- *The Department should abide by same two hour time limit as trade secret holders when disclosing trade secret information during a health emergency.*

Response: This issue relates to the discussion of the 24/7 hotline above. The Department will only be available to respond during regular business hours. Disclosure after hours must come from the trade secret holder or work site.

Department Action: None.

- *How will people know how to contact trade secret holder?*

Response: Contact information for the trade secret holder will be placed on the Department's website database. This is clarified in the modified rule. See below.

Department Action: None.

- *The Department has no authority to require health providers to do anything.*

Response: In multiple locations, Rule 245.730 requires that the "health professional shall" do something. The Department agrees that it cannot order a health professional to do any act. That was not the intent of this rule subsection.[9]

Department Action: Rule 245.730 will be modified as follows:

Section 245.730 Trade Secret Disclosure to Health Professional

a) Information ~~about high volume horizontal hydraulic fracturing treatment chemicals~~ *furnished under a claim of trade secret* ~~may~~ will be ~~disclosed~~ provided by the Department to a health professional: ~~for the limited purpose of determining what health care services are necessary for the treatment of an affected patient pursuant to the requirements of this Section.~~

~~a) A health professional shall complete and submit a request to obtain trade secret chemical information. In the request, the health professional shall:~~

1) who *states a need for the information and articulate why the information is needed*;

2) ~~identify~~ states whether the affected patient requires *emergency or non-emergency* health care services; and

3) ~~identify~~ identifies the name and profession of the health professional and the name and location of the facility where the affected patient is being treated.

b) A person furnishing information to the Department under a claim of trade secret shall:

1) provide the Department with a telephone number and e-mail where the trade secret holder may be reached at any time (24 hours/7 days a week), and the Department shall post on its website, by county, a list of operators and well sites, showing or linking to the telephone and e-mail information of the trade secret claimant, and

2) maintain or cause to be maintained at the well site, accessible at any time (24 hours/7 days a week), a list of all chemicals used in HVHHF at the well site or in any well drilled from the well site.

~~b~~c) In an emergency health care situation, a health professional ~~shall~~ may:

1) call the Department's Office of Oil and Gas Resource Management ~~during normal business hours and, as soon as circumstances permit without impeding the treatment of the affected patient, submit a completed request for information to the Department online or by fax. The~~ and the Department shall ~~respond~~ provide

any properly requested information to the health professional as quickly as possible by telephone, fax or other means of communication requested or agreed upon ~~methods determined by the Department to be a secure means of disclosure~~; or the health professional may

2) call the trade secret holder at any time (24 hours/7 days a week) and~~, as soon as circumstances permit without impeding the treatment of the affected patient, submit a completed~~ request ~~for~~ the information from the trade secret holder directly ~~by fax or email~~. The trade secret holder shall ~~respond~~ provide any properly-requested information to the health professional as quickly as possible, but in no case more than 2 hours, by telephone, fax or other ~~methods determined by the trade secret holder to be a secure means of disclosure~~ means of communication requested or agreed upon.

~~c~~d) In a non-emergency health care situation, a health professional ~~shall~~ may:

1) call or e-mail the Department's Office of Oil and Gas Resource Management ~~during normal business hours and submit a completed request for information to the Department online or by fax.~~ The Department shall provide any properly-requested information ~~respond~~ to the health professional within ~~2~~ 1 business day~~s~~ by telephone, fax or other means of communication requested or agreed upon ~~methods determined by the Department to be a secure means of disclosure~~; or

2) call the trade secret holder at any time (24 hours/7 days a week) and submit a completed request for information to the trade secret holder directly by fax or email. The trade secret holder shall respond to the health professional within the same business day by fax or other methods determined by the trade secret holder to be a secure means of disclosure.

~~D~~e) *The health professional may share information* disclosed pursuant to this Section *with other persons as may be professionally necessary*, in accordance (and only in accordance) with the provisions of Section 1-77(l) of the Act). ~~*including, but not limited to, the affected patient, other health professionals involved in the treatment of the affected patient, the affected patient's family members if the affected patient is unconscious, unable to make medical decisions, or is a minor, the Centers for Disease Control and Prevention, and other government public health agencies.*~~

~~e) As soon as circumstances permit, the health professional who submitted the request for information shall inform the holder of the trade secret the names of all other health professionals to whom the information was disclosed.~~

~~f) *As soon as circumstances permit* without impeding the treatment of the affected patient, *the holder of the trade secret may request a confidentiality agreement consistent with the requirements of this Section from all health professionals to whom the information is disclosed.*~~

~~g) *Any recipient of the information* disclosed pursuant to this Section *shall not use the information for purposes other than the health needs asserted in the request and shall otherwise maintain the information as confidential. Information so disclosed to a health professional shall in no way be construed as publicly available*. (Section 1-77(l) of the Act)~~

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[1] OSHA. (2014). Profile: Oil and Gas Well Drilling and Servicing. Retrieved from <https://www.osha.gov/dep/industry_profiles/p_profile-138.html#section8> on July 28, 2014. NOTE that the data contained on the Profile is from 2003. There were no chemical exposures recorded in 2003.
[2] *Id.*
[3] John Snawder, et al., *Reports of Worker Fatalities during Flowback Operations*, NIOSH Science Blog (Centers for Disease Control, May 19, 2014), http://blogs.cdc.gov/niosh-science-blog/2014/05/19/flowback/
[4] Rule 245.730(a).
[5] Rule 245.730.
[6] *Id.*
[7] http://dictionary.reference.com/browse/affect
[8] HFRA § 1-53(a)(4).
[9] See HFRA § 1-77(l).

245.805 Hydraulic Fracturing String Requirements and Pressure Testing

Comments: The Department received a few comments concerning Section 245.805 as it relates to Hydraulic Fracturing String Requirements and Pressure Testing. Commenters included the IPHA and a couple individuals. The substance of the comments is set out below and considered in turn:

- *Pressure testing results should posted on the Department's website in a database that can be searched by county.*

- *The permittee should make its pressure testing records available to the local health department upon request.*

Response: The proposed rules require the records of the pressure tests to be maintained by the permittee in the well file at the well site, and made available to IDNR upon request. See Rule 245.805(e). Also, a copy of the hydraulic fracturing string pressure test is required to be in the completion report. Rule 245.860(d)(10). Since the completion report must be filed with IDNR 60 calendar days after the conclusion of HVHHF operations, and must be made available on the website no later than 30 days after receipt by the Department, IDNR believes that the administrative cost of collecting the tests and posting to the website before completion would outweigh the benefits. The same reasoning applies to local health departments. These entities will be able to see the pressure testing when it is posted to the website.

- *One commenter contended that Rule 245.805 conflicts with Rule 245.540 and should be corrected to state the proper language of maximum casing and fracture string pressure requirements.*

Response: IDNR incorporated the language from the HFRA directly into Rule 245.805. The Act sets out specific requirements for well casing internal mechanical integrity tests (1-70(d)(16)) and hydraulic fracturing string pressure tests, if required (1-70(d)(17)). These sections do not conflict.

- *The commenter also stated subsection (a) requires packer depth 100' below the deepest cement, and if cemented to the surface, the production casing would now be exposed to full fracture treatment pressure if the packer for some reason is set high in the hole. Generally this would not happen but would be allowed under the current language.*

Response: IDNR incorporated the language directly from the statute, which states that hydraulic fracturing strings "must be either strung into a production liner or run with a packer set at least 100 feet below the deepest cement top." HFRA § 1-70(d)(17). The Department agrees that the situation the commenter lays out would likely not happen. If for some reason cement was run to the surface, it is also unlikely that an operator would purposely expose lower depth production casing to full fracture treatment pressure. The language of the Act is designed to ensure the packer is set at a sufficient depth. "At least" does not mean "only."

Department Action: None.

245.810 Surface Equipment Pressure

Comments: The Department received several comments concerning Rule 245.810 as it relates to surface equipment pressure. Commenters included IPHA and the environmental coalition's group submission. The comments raised the following points:

- *The Department should specify that the wellhead components or connections not previously tested must be tested with fresh water, mud, or brine to 110% of the maximum anticipated surface treatment pressure.*

Response: IDNR drafted this rule section based on the exact language in the HFRA, which sets out the following (Section 1-75(b)(2)):

> (2) Prior to commencing high volume horizontal hydraulic fracturing operations and pumping of hydraulic fracturing fluid, the injection lines and manifold, associated valves, fracture head or tree and any other wellhead component or connection not previously tested must be tested with fresh water, mud, or brine to at least the maximum anticipated treatment pressure for at least 30 minutes with less than a 5% pressure loss… The actual high volume horizontal hydraulic fracturing treatment pressure must not exceed the test pressure at any time during high volume horizontal hydraulic fracturing operations.

The request for a specific figure is understandable, but that figure would be based only on an estimate. In the rule proposed, which tracks the Act, the permittee is limited to the pressure actually tested. The commenters' implicit suggestion that a tougher test would assure greater integrity is offset by the fact that the Act regulates the working pressure while also incentivizing testing at higher levels.

Department Action: None.

- *Results of surface equipment pressure testing reported to the Department should be posted on the Department's website in a database that can be searched by county.*

- *IDNR should modify proposed rule (e) by adding a requirement that the permittee make its surface equipment pressure testing records available to the local health department (as well as the Department) upon request.*

Response: The rule already addresses this issue. The rule requires that "*[a] record of the pressure test must be* made on a form prescribed by the Department, *maintained by the* permittee in the well file at the well site, and made *available to the Department upon request."* (Section 1-75(b)(2) of the Act). Similar to IDNR's response to comments on Rule 245.560, the comments here did not specify why local health departments need notice of testing records. Pressure test results, by themselves, would provide little information. In the event that contamination does occur, local health departments will be notified of the pollution pursuant to Rule 245.615.

Department Action: None.

245.815 Notice and Approval before Commencement of High Volume Horizontal Hydraulic Fracturing Operations

Comments: The Department received approximately 2,722 comments concerning Rule 245.815 on the last prerequisites before a permittee may commence HVHHF operations. Commenters included the environmental coalition's group submission, Food and Water Watch, IPHA, as well as over 2,700individuals. The comments had several suggestions for different parts of the rule which will be addressed below:

- *The Department should spell out more specifically the requirements for properly plugging abandoned wells.*

Response: Rule 245.815(b) incorporates the requirements of Rule 245.1010, which provides direction on plugging nearby wells prior to HVHHF operations and incorporates the technical plugging requirements of the applicable OGA rule, 62 Ill. Admin. Code 240.1110. The OGA rule provides sufficient specificity for properly plugging abandoned wells, and the Department has experience in enforcing these technical requirements. Therefore, no change is made to the rule to address this issue.

Department Action: None.

- *The Department's final approval before commencement of HVHHF operations should be posted on the Department's website database.*

Response: The Act requires the Department to post a great deal of information relative to HVHHF operations on its website, but not Department approvals before commencement of HVHHF operations. Once a HVHHF permit is issued and posted on the Department's website, it is reasonably anticipated that HVHHF operations will commence at some point thereafter, barring the permittee's failure to follow the Act and rules. Presumably, commenters desire notice, if only to know when they can expect HVHHF to begin. The public health community in particular, as well as any person or entity attempting to assess impact of HVHHF, might desire this information so as to be better able to place in time the baseline versus the post-HVHHF universe. The Department will take these comments under advisement, and may incorporate an "active" status update on the Department's website at some point in the future when the Department is technologically capable of doing so.

Department Action: None at this time.

- *The requirement to only plug previously abandoned or insufficiently plugged wells located within 750 feet of the proposed HVHHF well and 400 feet of the target formation provides inadequate protection for nearby land owners.*

Response: The requirement to plug only previously abandoned or insufficiently plugged wells that are within 750 feet of the proposed HVHHF well and 400 vertical feet of the target formation is statutory. The language of the first draft of the rule tracked, exactly, the HFRA at Section 1-95. Commenters feel, presumably, that the coverage in Section 1-95 provides

inadequate protection against nearby well connectivity during HVHHF operations. If the commenters believe that this provision will not apply to most abandoned wells, they are correct. By most accounts, although nothing in the Act limits operators from trying other areas or depths, most HVHHF operations will take place using horizontal bores drilled into the New Albany shale formation in southern Illinois at depths of 3000-5000 feet. The New Albany is much shallower in some places, even outcropping at surface in some counties, but the most promising areas for hydrocarbon production are not near the surface. Under section 1-95 of the Act, a permittee planning a horizontal well bore in a formation that starts at 4,000 feet deep would only have to plug existing wells whose bores are 3,600 or more feet deep. Most existing water, oil, and gas wells in southern Illinois are not at anywhere near such depths. The water wells in particular tap far shallower groundwater. Most likely, section 1-95, if the minimum requirements set forth are also treated as maximums, will result in very few existing abandoned wells being plugged.

Generally, the existence of multiple layers of heavy rock inhibits both upward migration of hydrocarbons and the growth of vertical fractures much beyond the intended target formation. Most HVHHF stimulations produce vertical fractures with height of only tens to hundreds of feet, according to industry studies. Those studies have found no instances of vertical fractures from deep horizontal wellbores extending high enough above target formations to reach the water table.[1] Nevertheless, the concern of section 1-95 of the Act and this rule is not migration *directly* into the water table, but the possibility of a fracture extending to and into an *abandoned, unplugged well*, and thereby providing a pathway either to the surface or to fresh water. The same industry studies do show many vertical fractures extending more than 400 feet upward from a horizontal bore, and many in excess of 1,000 feet. Moreover, the presence of pre-existing faults is documented and widely accepted as a factor that may increase the growth of vertical fractures.

Among the U.S. shale plays, the height of vertical fractures appears to be greatest in the shallower Marcellus formation and less so in formations at 8,000 feet or deeper, where the greater overlayment might be expected to be more of an inhibiting factor. The New Albany, however, is more like the Marcellus in depth. As such, the Department finds that the statutory minimum buffer of 400 feet will often, but not always, be sufficient to protect against unintended vertical migration. The Department also finds that because the greatest fracturing is considered to occur perpendicular to the weakest opposing stresses, excess horizontal fracturing is not as great a concern, and especially not at depths anticipated for HVHHF operations.[2] Therefore, the 750 horizontal foot buffer from the wellbore is likely sufficient in almost all cases.

The question remains as to whether it is appropriate to build in a larger vertical buffer within this rule, because in some cases 400 feet will in fact be sufficient. The Department declines to set a new number. Even without the first draft rule, the Department had authority and discretion to require plugging of wells beyond the minimum specified, as a condition of a permit, if well-specific geology, nearby wells, higher-than-average risks, or particularly sensitive neighboring properties warranted. Applicants must understand that best practices, for multiple reasons, dictate plugging all abandoned wells within 750 feet of the vertical plane above the horizontal wellbore regardless of depth. In many, perhaps most cases, the Department will require such wells to be plugged as a condition of a permit.

Based on the foregoing, no substantive change is made to this rule. Text is added as guidance for applicants, permittees, and OOGRM staff. The rule subsections on mapping and permit conditions are also adjusted accordingly.

Department Action. Section 245.815(b) is changed as follows:

b) *Prior to conducting high volume horizontal hydraulic fracturing operations at a well site, the permittee shall cause to be plugged all previously* abandoned *unplugged* or insufficiently plugged *well bores within 750 feet of any part of the horizontal well bore that penetrated within 400 vertical feet of the* geologic *formation that will be stimulated as part of the high volume horizontal hydraulic fracturing operations* as well as any other previously abandoned unplugged or insufficiently plugged well bores that the Department requires to be plugged as a condition of the permit, pursuant to the requirements of Section 245.1010 (Section 1-95(b) of the Act).

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[1] Norm Warpinski, *Measurements and Observations of Fracture Height Growth*, Halliburton, (2011) http://www2.epa.gov/sites/production/files/documents/measurementandobservationsoffractureheightgrowth.pdf); Kevin Fisher and Norm Warpinski, *SPE 145949; Hydraulic Fracture-Height Growth: Real Data* (2011) 3-5, http://www.energy4me.org/hydraulicfracturing/wp-content/uploads/2013/06/Hydraulic-Fracture-Height-Growth-Real-Data-SPE-145949.pdf.

[2] See, e.g., Maurice Dusseault & Richard Jackson, *Seepage pathway assessment for natural gas to shallow groundwater during well stimulation, production and after abandonment*, GEO Montreal, (2013), http://shale.palwv.org/wp-content/uploads/2014/02/Dusseault-Jackson-2013-Paper-250_GeoMontreal-Leaking-wells5.pdf ("because the horizontal section is drilled parallel to the minimum principal stress in situ . . . induced fractures should be propagating dominantly at 90° to the horizontal section").

245.820 Secondary Containment Inspections

Comments: The Department received over a dozen comments from public health departments and the IPHA concerning Rule 245.820 and secondary containment inspections. The comments suggested that the Department make available to local public health departments the results of secondary containment inspections.

Response: The rule requires that "*the results of this inspection must be recorded and documented by the* permittee or the contractor performing the high volume horizontal hydraulic fracturing operations on behalf of the permittee on a form prescribed by the Department, maintained in the well file at the well site, *and available to the Department upon request*. (Section 1-75(c)(13) of the Act)."

Similar to IDNR's response to the comments from health departments on Rule 245.560, the comments here did not specify why local health departments need to receive the results of this inspection. The intent of these comments appears to be to make the public health community aware of possible water pollution. However, the inspections here by themselves will tell a public health department little. In the event that contamination does occur, local health departments will be notified of the pollution pursuant to Rule 245.615.

If it turns out that local public health departments have a recurring need or desire to see these inspection reports, the Department can consider entering into an intergovernmental agreement with the Department of Public Health to regularly collect and disseminate these reports.

Department Action: None.

245.825 General Fluid Storage

Comments: The Department received over 100 comments on Rule 245.825 as it relates to general fluid storage. The commenters included ILOGA, IPC, the environmental coalition's group submission, the Illinois Attorney General, and numerous individuals. The comments raised the following issues which are considered in turn:

- *The Department should define what is "compatible" in subsections (a)(2) and (c)(1)*

Response: IDNR's first draft directly incorporated the statutory language, which used the term "compatible" in HFRA §§ 1-70 and 1-75. Commenters such as the environmental coalition and other individuals suggested that the Department further define what is meant by "compatible." IDNR agrees that it would further the purpose of the statute to define this term, since the clear intent was that the materials of the tanks must have the appropriate properties to store hydraulic fracturing fluid, flowback, and produced water.

Department Action: Rule 245.825 is amended as follows below the discussion of routine inspections.

- *The Department should specify a time interval and require documentation for corrosion inspections in (a)(5).*

Response: This comment was raised by the Attorney General's Office and the environmental coalition's group submission, in addition to individual commenters. The purpose of the corrosion inspection clause in the HFRA and the rules is to ensure that tanks are maintained in such a manner so that corrosion does not cause a leak. IDNR believes that specifying a time interval will provide clarity for the operator as to what is "routine," and will help IDNR maintain accountability.

Department Action: Rule 245.825(a) is amended as follows:

a) *Above-ground tanks* must be:

1) *closed, watertight,* vented in compliance with Section 245.910*, and corrosion-*resistant (Section 1-75(c)(4) of the Act);

2) *constructed of materials compatible with the composition of the hydraulic fracturing fluid, hydraulic fracturing flowback, and produced water* (Section 1-70(b)(3) of the Act);

3) *of sufficient pressure rating* (Section 1-75(c)(6) of the Act);

4) *maintained in a leak-free condition* (Section 1-75(c)(6) of the Act); ~~and~~

5) *routinely inspected for corrosion*, at least semi-annually. Permittees shall maintain records of these periodic inspections (Section 1-75(c)(4) of the Act); and

6) For purposes of this Section 245.825, for the materials of a containing mechanism or device to be "compatible" means that the materials are resistant to corrosion, erosion, swelling, deterioration, or other damage as a result of normal exposure to whatever substances it is intended to contain, as well as exposure to weather and natural hazards, and that it poses no significant potential impact to the flora, wildlife, or aquatic life in the vicinity of the container.

- *Commenters also suggested adding language that the secondary containment be designed and constructed in accordance with good engineering practices, including: (a) using coated or lined materials that are chemically compatible with the environment and the substances to be contained; (b) providing adequate freeboard; and (c) protecting the containers from heavy vehicle or equipment traffic.*

Response: IDNR reviewed these proposed measures and determined that the secondary containment should be environmentally compatible and protected from heavy vehicle or equipment traffic. However, although the freeboard issue was not fully explained in the comments, IDNR believes that is covered by the requirement that "any secondary containment must be sufficient to contain 150% of the total capacity of the single largest container or tank within a common containment area." (Section 1-75(c)(13) of the Act).

Department Action: Section 245.825(b)(2) is amended as follows:

2) *Any secondary containment must be sufficient to contain* 150% *of the total capacity of the single largest container or tank within a common containment area*, be compatible with the environment and the substances to be contained, and be protected from heavy vehicle or equipment traffic. (Section 1-75(c)(13) of the Act)

245.835 Mechanical Integrity Monitoring

Comments: The Department received approximately one dozen comments concerning Rule 245.835 as it relates to mechanical integrity monitoring. Commenters included the environmental coalition's group submission, IPHA, and several individuals. The essential points of the comments are listed below and considered in turn:

- *245.835(a) should require the continuous monitoring and recording of the pressures in each well annulus, surface injection pressure, slurry rate, proppant concentration, fluid identity and flow rates, and concentrations of all additives (including proppant).*

Response: Rule 245.835(a) requires "all sealed annulus pressures, the injection pressure, and the rate of injection . . . continuously. . ." and that the permittee keep the information available in the well file for five years after the well is plugged or abandoned. Specifying that the annulus pressure comes from the annuli and inserting the term surface injection pressure is redundant and unnecessary. As to the requests that the Department require continuous monitoring of the proppant concentration, identity of the fluid, rates and concentrations of all additives (including proppant), the Department has addressed this issue in its response to the comments for Rule 245.710. The Department does not need to know the slurry or fluid rate if it knows the injection pressure.

Department Action: None.

- *IDNR should clarify that the "corrective action" required in such circumstances under this subsection must include an evaluation of whether contamination may occur.*

Response: The "corrective action" in subsection (b)(1) is the action the operator must take to repair whatever mechanical equipment is necessary to maintain the correct pressure. Should the pressure decline more than 5%, the MIT pressure be exceeded, or any other event that indicates that mechanical integrity is compromised, operations must cease and the Department must be notified pursuant to subsection (c). Before operations may resume, the Department must intervene several times, meaning that the Department will have several opportunities to inspect the well site. Should the Department find any potential pollution or diminution, it will initiate pollution investigation proceedings under Rule 245.615. Corrective action may be required as a consequence. As a result of these requirements and specified procedures, the Department finds no need to require an additional evaluation of future likelihood of contamination.

Department Action: None.

- *The language in Rule 245.835(b)(1) is confusing and needs to explain how an operator will know there is a leak.*

Response: There are multiple ways in which an operator can discover or should have reason to suspect a leak. The Department deliberately chose the broad language "or if there are other indications of a leak" because the Department wants operators to report if they suspect a leak, regardless of the indicator. By defining an indicator of a leak, the Department would

unnecessarily narrow the requirement and potentially not require operators to report a leak if their indicator is not on that specific list. The Department will modify (b)(l) to create a non-exhaustive list of example indicators.

Department Action: Rule 245.835(b)(1) is modified as follows:

1) *The* pressure test values established for the internal mechanical integrities of the cemented casings pursuant to Section 245.540 and of the hydraulic fracturing string pursuant to Section 245.805 shall not be exceeded. If any of these *pressures decline more than 5% or if there are other indications of a leak,* <u>including but not limited to an increase in pressure in the annulus, exceeding the minimum internal yield in the casing string, or a visible leak at the surface,</u> *corrective action shall be taken before conducting further high volume horizontal hydraulic fracturing operations.* (Section 1-70(d)(16) of the Act)

- *Modify Rule Subsection (b) to include notification of local health departments when there is migration of hydraulic fracturing fluid or hydraulic fracturing flow back into a freshwater zone or to the surface.*

Response: In the event that the Department makes a finding of pollution or diminution, local health departments will be notified pursuant to Section 245.615 of the rules.

Department Action: None.

245.840 Hydraulic Fracturing Fluid and Flowback Confinement

Comments: IDNR received approximately two dozen comments on Rule 245.840 relating to hydraulic fracturing fluid and flowback confinement. The commenters included the IPHA, Fair Economy Illinois, and numerous individuals.

- *The Illinois Public Health Association asked to be notified when the Department becomes aware that fluid has migrated into a fresh water zone.*

Response: The IPHA commented that local public health departments should be notified when the Department becomes aware that fracking fluids have migrated into a freshwater zone. The HFRA vests the Department with jurisdiction over the operation of high volume horizontal fracturing operations. The intent of these comments appears to be to make the public health community aware of possible water pollution and ground contamination. It is very likely that a finding that fracking fluid has escaped the confining zone would lead to a later finding of pollution or diminution. However, the process of a "finding" is different than the need of local health agencies to be alerted in event of a chemical spill or migration, because their interest is in being able to alert and advise treaters, in having information that would be of use in diagnosis if people began showing up sick at a facility, and of generally adding to the knowledgebase on factors that might affect public health in their area of jurisdiction.

While, in the event of pollution, the health departments would be notified pursuant to Rule 245.615, the Department finds that it would serve the purposes of the Act to protect public health to also require such notification in the event of migration of hydraulic fracturing fluids or flowback into a fresh water zone. Because these events should be rare, the additional burden on permittees should be minimal and outweighed by the public interest in knowing what is in local fresh water.

Department Action: Rule 245.840(b) is modified as follows:

b) *If the hydraulic fracturing fluid or hydraulic fracturing flowback migrate into a fresh water zone or to the surface from the well in question or from other wells, the permittee shall immediately notify the Department* <u>and the county and certified local public health department (if any)</u> *and shut in the well until remedial action that prevents the fluid migration is completed. The permittee shall obtain the approval of the Department prior to resuming operations.* (Section 1-75(d) of the Act)

- *The Department must have strict rules requiring that fracking fluids and flowback be contained in a manner that will not pollute the environment, and in a manner that is safe against threats such as natural disasters.*

Response: The Department is in complete agreement with this sentiment. The rules have been drafted with the intent to prevent fluid from escaping the well and confining zone, through proper mapping and examination of the underlying geology and other factors enumerated in the permit application (Rule 245.210), through following of best practices during the cementing and construction of the casing (Section 500 of the rules), through the requirements of adequate and

affective containment tanks and secondary devices, and through proper monitoring of water quality (Section 600 of the rules). Additionally, the Department in this second notice draft has added more safeguards against risks that would be aggravated by natural disasters.

Department Action: None.

245.845 Management of Gas and Produced Hydrocarbons During Flowback
245.900 Managing Natural Gas and Hydrocarbon Fluids During Production

Comments: The Department received over 130 comments concerning the management of gas and produced hydrocarbons during flowback (section .845) and production (section .900). Many of the comments on these two rule sections overlapped, as do the Department's responses, so the comments on the two related sections will be considered together.

Commenters included ILOGA, the Illinois Attorney General, the environmental coalition's group submission, the Nuclear Energy Information Service, the GROW-IL coalition, the Nature Conservancy, Frack Free Illinois, and a number of individuals. The commenters raised multiple concerns, but the essence of the comments came down to the following points:

- *The proposed rules require both IDNR and the IEPA approval for flaring. To streamline the process for operators, only IDNR should be required to approve.*

Response: A number of commenters argued that only IDNR should have to approve the use of a completion combustion device ("CCD") (in 245.845) and a flare (in 245.900). These commenters believe that approval by both IDNR and IEPA would be redundant, and may lead to delays that could negatively affect the economics and schedules of the operators.

The rules do not require IEPA *approval* of this particular decision. Rather, the rules provide that IDNR will *consult* with the IEPA to take advantage of its expertise through its responsibility to enforce air quality regulations. IDNR's rationale for including IEPA in this process is that pursuant to the Illinois Environmental Protection Act, IEPA is designated as the air pollution agency for the state for all purposes of the Clean Air Act. 415 ILCS 5/4(l). In this capacity, IEPA has valuable expertise to assist IDNR with respect to airborne emissions or other impacts associated with the burning or venting of gas during the flowback period. IDNR does not find that consultation with the IEPA will significantly delay any decision on CCDs, flares, or venting.

Department Action: None.

- *Flaring is dangerous and environmentally unsound.*

- *Flaring releases radon into the air in large quantities, which can be a very serious public health concern; radon is not mentioned at all in this section.*

- *Combustion, whether via a combustion device or flaring, presents a host of toxic Volatile Organic Compounds ("VOCs") air emissions into the environment.*

- *IDNR does not address the proximity of flared gas sites to human habitation and/or places of business; testing should be required at nearby structures.*

- *Leaking and venting of methane is a major source of climate pollution in the U.S. and it is wasteful.*

- *Without a limit on the total number of wells in Illinois, the cumulative effect on air quality will be significant.*

- *Flaring should not be allowed under any circumstances until the health and environmental consequences are known.*

Response: IDNR recognizes the gravity of the concerns regarding the potential impact of hydraulic fracturing operations on air quality, and especially impacts from the practices of flaring and venting. The USEPA acknowledges well-documented air quality impacts in areas with active natural gas development, with increases in emissions of methane, volatile organic compounds ("VOCs") and hazardous air pollutants ("HAPs").[1]

In August of 2012, the USEPA issued regulations to reduce harmful air pollution from the oil and natural gas industry, including for wells that are hydraulically fractured.[2] These regulations (NSPS OOOO, for the control of VOC and SO2 emissions and NESHAP HH/HHH, for the control of hazardous air pollutant emissions) address many of the emission sources found at oil and gas production, processing and transmission operations. IEPA is responsible for enforcing air quality standards. IEPA has the authority to enforce NSPS and NESHAPS pursuant to 415 ILCS 5/9.1. HVHHF permittees will be required to obtain a permit from IEPA in addition to the permit from IDNR, not as a function of IDNR rules, but as a function of federal law.

The USEPA explained that its rules will yield significant reductions in air pollution by reducing emissions of VOCs and air toxics, which will improve outdoor air quality, protect against cancer risk, and reduce health effects associated with exposure to ground-level ozone. The rules will also yield significant reductions in methane. An overview of the other ways that the rules reduce pollution can be found on the USEPA website.[3]

For fractured and refractured gas wells, the USEPA rules generally require operators to use reduced emissions completions, also known as "RECs" or "green completions," to reduce VOC emissions from well completions. To achieve these VOC reductions, owners and/or operators may use RECs or CCDs, such as flaring, until January 1, 2015. As of January 1, 2015, owners and/or operators must use RECs and a CCD. The rule does not require RECs where their use is not feasible, as specified in the rule. 77 C.F.R. § 49490-01. USEPA rules also establish standards with respect to flares that operators in Illinois must follow. See 40 C.F.R. § 60.18. IDNR incorporates these standards into the administrative rules at section 245.900(h).

Along with its review of the public comments, IDNR has researched and reviewed many other studies, reports, and best practices that the state should consider going forward, with respect to air emissions. This area of regulation has been rapidly evolving, including in the period just before and since the passage of the HFRA. Although the HFRA sets out emission control methods in Section 1-75(e), IDNR would support strengthening the standards with respect to air emissions at HVHHF operations.

Along with the USEPA, other states are currently working on this issue and strengthening regulations. Earlier this year in February, 2014, Colorado enacted the first of its kind, statewide operating procedures and air quality standards and air emission standards.[4] In July of 2014,

North Dakota's chief energy regulator said that that state would enforce new restrictions on the amount of natural gas burned off at oil wells.[5] The rules allow an operator to flare gas for a one-year period from the date of first production from the well, and then prescribe a number of capture methods that must be employed, such as capping, connecting to a gas line, or using the gas to fuel an electrical generator, among other options. *See* N.D. Century Cd. § 38-08-06.4.[6] For a well operated in violation of these rules, the producer must pay royalties to the royalty owners based upon the value of the flared gas and a gross production tax on the flared gas. *See* N.D. Century Cd §38-08-06.4(4). The North Dakota Oil and Gas Division has set targets for statewide flaring levels[7] with the goal of reducing flaring from an estimated 30% today to 10% by 9/1/2020.

The General Assembly, the HFRA task force, and the public can also draw upon the other studies and reports IDNR has considered when reviewing the comments; a full list of which is included as an appendix to these rules, and which, with respect to these two sections, includes the following:

- The NRDC issued a report in March of 2012 that identifies technologies that have the potential to reduce methane emissions while also producing profits for oil and gas companies.[8]

- The State Review of Oil & Natural Gas Environmental Regulations (a non-profit, multi-stakeholder organization) established an Air Workgroup to develop guidelines for state air quality programs related to oil and gas exploration and production. These draft guidelines provide best practices that Illinois should consider. http://www.strongerinc.org/sites/all/themes/stronger02/downloads/STRONGER-Air-Guidelines-to-Board-for-Public-Comment-1-7-2014.pdf

- A recent paper published in the Proceedings of the National Academy of Sciences suggests that leaks of methane could be a problem for drilling across the nation. The leaks that continue undetected or inadequately remedied may lead to the accumulation of explosive gases within and around residences and other structures, and emission of methane and other associated gases to the atmosphere. http://www.pnas.org/content/early/2014/06/25/1323422111

- Studies have shown that regulations in other states may not be effective in controlling methane emissions from abandoned oil and gas wells, which can serve as leakage pathways for emissions such as CO_2 and methane. http://dataspace.princeton.edu/jspui/bitstream/88435/dsp019s1616326/1/Kang_princeton_0181D_10969.pdf

The Department underscores that the HFRA seeks to minimize flaring, and to drastically reduce venting. The HFRA, as its default, expects permittees neither to vent nor to flare. Many commenters' comments were placed in this section of the rulemaking response because the comments were generally directed to emissions or flaring issues, without reference to, and perhaps unaware of, the measures that the HFRA and the Department's draft rules already contain.

Department Action: See modifications to rules 245.845(d) and 245.900(e), below.

- *The proposed rules provide no additional guidance on what operators need to provide to establish technical infeasibility, economic unreasonableness, or cost effectiveness, and these terms need to be more clearly defined.*

Response: Many commenters contended that the terms "technically infeasible," "economically unreasonable," and "cost-effective" need to be more clearly defined in both rules 245.845 and 245.900. Moreover, commenters such as the environmental coalition claimed that a vague, subjective standard will be hard to enforce, and will function as an all-purpose loophole from methane capture requirements. Commenters argued that the ambiguity would allow companies to define the terms for themselves, in their own best interest. Additionally, many commenters requested that the cost-effectiveness analysis in 245.845(d) and 245.900(e) include not only the cost to the applicant, but also the societal or externalized costs, such as long-term environmental and public health effects. The environmental coalition specifically recommended clarifying "cost effective" to refer to cost efficiency (cost/ton of emission reduction), or to require evaluation of the cost of emissions (*i.e.*, costs to the environment), not just the cost of capture equipment. Many commenters requested that IDNR utilize independent scientific studies to make this evaluation.

Other commenters, such as the Illinois Attorney General, suggested the rules include a section setting forth the types of information that operators must provide to IDNR to demonstrate technical infeasibility. For example, an operator would need to provide vendor affidavits explaining why existing technologies are infeasible. The Attorney General pointed to North Dakota's regulations, which specifically define what it means for gas collection to be "economically infeasible," and requires an applicant for a flaring exemption to present evidence, such as the basis for the gas price used, the current daily rate of the amount of gas flared, and other documentation. *See* N.D. Admin. Code §43-02-03-60.2.

IDNR's original reasoning for not defining the terms more specifically was that, with the terms also undefined in the Act, IDNR would have flexibility to make a decision on a case-by-case basis, based on information provided by the applicant, IDNR's own analysis, and consultation with IEPA. After review and consideration of the comments, and of literature on the issues of "green" reuse, flaring, and venting, IDNR agrees that additional guidance will assist both the applicant and IDNR and will further the statutory purposes of both the HFRA generally and these subsections specifically.

It is easy to get lost in detail on this technical subject. It is important to first step back and look at the purpose of the Act. The clear, unmistakable intent of Section 1-75(e) is twofold: (1) first and foremost, to minimize the venting of natural gas and emissions associated with hydrocarbon fluids directly into the atmosphere, and (2) to require operators to look to "green completion" recovery or reuse methods first, before resorting to a CCD or a flare. Use of CCDs and flares must be justified. They are intended to be an exception. Venting is meant to be rarer still.

The HFRA, and the first draft of the rules, allow relief from this duty not to waste in either the flowback or production stage, only upon a showing of technical infeasibility or economic unreasonableness. HFRA §§ 1-75(e)(5), 1-75(e)(7). The "Plan B" then becomes, for combustible gas resulting from flowback, a CCD, and for combustible gas resulting from production, a flare. The two terms are used somewhat loosely and interchangeably in popular parlance. The primary technical differences are mobility (CCDs can be moved from site to site whereas flares stay in place), containment of the combustion (CCDs can be contained whereas flares are typically flame, open to the air), and function. The HFRA does not define either the term "technically infeasible" or "economically unreasonable."

The HFRA places a further obligation on permittees to minimize venting and flaring by requiring, in HFRA § 1-75(e)(4)(b), that the permittee employ "sand traps, surge vessels, separators, and tanks as soon as practicable during cleanout operations to safely maximize resource recovery and minimize releases to the environment." No relief is allowed from this requirement within that paragraph.

Flowback is a phase of unconventional oil and gas extraction that by nature is briefer and more unpredictable than production after completion of a well. Production is more predictable. Accordingly, the Act in § 1-75(e)(5) adds an additional requirement before a permittee may claim "technical infeasibility" or "economic unreasonableness" of capturing or reusing gases during production. Namely, the permittee must demonstrate that using the sustainable methods listed in § 1-75(e)(4) are not "cost effective," and that demonstration must be "based on a site-specific analysis," made for each well site on an annual basis. HFRA § 1-75(e)(5).

By contrast, no such analysis is referred to with respect to the HFRA § 1-75(e)(3) demonstration of technical infeasibility or economic unreasonableness of using green completion with respect to flowback gases. "Annual basis" would make no sense in that context, nor would an entire well site analysis, since it is unlikely that flowback would be occurring for more than one year, or on more than one well per site at a time.

The Act, as with technical infeasibility and economic unreasonableness, does not define "cost effective." Consequently, clarifying “cost effective” is the key to implementing the Act with respect to § 1-75(e)(5) and addressing the comments with respect to flaring. “Cost effective” is different than a “cost benefit” analysis. A cost benefit analysis compares, as the phrase suggests, costs and benefits of a course of action, in order to determine whether the course of action produces net value, typically to the actor making the decision. Thus cost benefit analysis translates easily to an inquiry into whether a course of action will be profitable or will cost money.

Cost effectiveness, by contrast, tends to examine alternatives for a program, looking at different options to see which delivers the most “bang for the buck.” The options need not necessarily be profitable. For example, a health care system might look at different ways to most effectively lower the rate of a certain infection within a county. None of the options might be profitable to the network, since the design of the system is not to make money but to deliver health care services and achieve public health. Similarly, a highway commission might examine the cost effectiveness of three different road alternatives, knowing that any option will represent

a net expenditure. In the private sector, a securities brokerage faced with a new sale reporting requirement might examine four different software-and-training approaches for cost-effectiveness, knowing that none of them, unto itself, produces profit, but that adopting one is necessary for the good of the enterprise (and required by law).

For this reason, the use of "cost effective" in 1-75(e)(5) is challenging. The purpose of this section of the Act is to reduce flaring and venting. It is hard to see how flaring could be a more "cost effective" way of reducing flaring than green completion; it would be ineffective. Yet "cost effective" cannot equate to "unprofitable" with respect to only the gas captured, because by that standard, compliance with nearly any environmental regulation would never be "cost effective."[9] Conversely, if green completion were inherently more profitable than flaring, no regulation would be necessary because permittees would adopt it in their own economic self-interest. Thus, the calculus of what is "cost effective," and by extension "economically unreasonable," must comprehend more than the isolated marginal cost-benefit analysis result of comparing green completion to flaring. That calculus requires both the permittee and the Department to look at a larger universe of costs and revenues. Therefore, the Department will add some standards to this rule section.

The environmental commenters urge that the calculus include some or all of the costs typically externalized by for-profit enterprise, namely the environmental consequences, and in particular the greenhouse gas emissions of venting or flaring. Some argue that the ideal policy would capture all externalized environmental costs and that perfect economics would require the prime beneficiary of an activity (the owner of the rights) and the indirect beneficiaries (the customers of the product) to pay for those costs, so that the price of the ultimate product reflects the true costs of production. By failing to require that, so the argument goes, society subsidizes economic activity at the expense of persons with far smaller share in the profit, and also at expense of the flora and fauna who have no voice.

However, the Department does not view the legislature as having attempted to require such global capture of externalities in HFRA § 1-75. Few aspects of Illinois or national policy have yet gone so far. Notwithstanding commenters' opinion that analyses such as the above ought to be more frequently undertaken, to mandate that in the rule would amount to an amendment of the statute exceeding the Department's rulemaking role. The "larger" universe of cost, then, that the legislature intended must be smaller than the planet, the nation, the state, or even the total activities of a permittee within the state. By pointing to a well-site specific analysis, the Act indicates that the economics of the "well site" are the appropriate arena of inquiry. This conclusion guides the Department in its revision of the draft rule.

The North Dakota model suggested by the Attorney General provides a useful starting point for a cost-effectiveness analysis. North Dakota, scrutinized for the extraordinary amount of flaring resulting from development of the Bakken play, wants permittees to tell the state the price of gas, the price of implementing alternative methods, the amount of gas that would flow to the completion methods, some information on the larger market, and why any method deemed technically infeasible is so deemed. These are all useful data points. Another important aspect is the timing of when the information is provided. The most efficient and sensible way to approach the question of flaring or venting is to require the applicant to include the request for waiver as

part of the application for permit. This will serve multiple statutory and practical purposes. First, it will avoid both delay and the possible arbitrary nature of a decision made in a hurry after a well is already partly developed. Second, it will create greater public transparency with respect to any project proposed.

Department Action: 245.845(d) is amended as follows:

d) *In order to establish technical infeasibility* ~~*or economic unreasonableness*~~ *under* subsection (c), *the permittee must demonstrate* to the Department's satisfaction~~*, for each well site on an annual basis,*~~ *that* the technology ~~*taking the actions*~~ *listed in* subsections (a) and (b) ~~*are not cost effective based on a* well *site-specific analysis.*~~ does not exist, cannot be installed at the well site, will not achieve the result intended, or is otherwise unavailable or ineffective. In order to establish economic unreasonableness under subsection (c), the permittee must demonstrate to the Department's satisfaction that the use of the actions listed in subsections (a) and (b) will result in an arbitrary or unreasonable taking of property, or the practical closing and elimination of the permittee's business, or the reduction of margin of profit to a level that will cause the loss of investment, an inability to retain investor capital, or comparable business injury. The permittee claiming economic unreasonableness shall provide the Department with the following ~~The Department, in consultation with the Agency as the Department deems appropriate, shall provide the permittee with a written decision~~:

1) The method the applicant used to determine it is economically unreasonable to implement the methods specified in subsections (a) or (b);

2) Applicant's experience in implementing the methods specified in subsections (a) or (b);

3) Estimated costs of implementing the methods specified in subsections (a) or (b), and sources for those estimates;

4) Anticipated rates (by day) and amounts (total for well) of fluids and/or gas to be directed to the completion combustion device; and

5) Any other information requested by the Department or that documents the economic unreasonableness claimed.

Department Action: 245.900(e) is amended as follows:

e) *In order to establish technical infeasibility* ~~*or economic unreasonableness*~~ *under* subsection (d), *the permittee must demonstrate* to the Department's satisfaction, *for each well site on an annual basis, that taking the actions listed in* subsections (b) and (c) *are not cost effective based on a* well *site-specific analysis*, and that the technology listed in subsections (b) and (c) does not exist, cannot be installed at the well site, will not achieve the result intended, or is otherwise unavailable or ineffective. In order to establish economic unreasonableness under subsection (d), the permittee must demonstrate to the

Department's satisfaction that the use of the actions listed in subsections (b) and (c) will result in an arbitrary or unreasonable taking of property, or the practical closing and elimination of the permittee's business, or the reduction of margin of profit to a level that will cause the loss of investment, an inability to retain investor capital, or comparable business calamity. The permittee claiming economic unreasonableness shall provide the Department with the following ~~The Department, in consultation with the Agency as the Department deems appropriate, shall provide the permittee with a written decision.~~:

1) The method the applicant used to determine it is economically unreasonable to implement the methods specified in subsections (b) or (c);

2) Applicant's experience in implementing the methods specified in subsections (b) or (c);

3) Estimated costs of implementing the methods specified in subsections (b) or (c), and sources for those estimates;

4) Anticipated rates (by day) and amounts (total for well) of fluids and/or gas to be directed to the flare; and

5) Any other information requested by the Department or that documents the economic unreasonableness claimed.

- *IDNR should mandate specific monitoring and reporting measures for completion combustion devices and flares.*

- *IDNR should require that manufacturer specifications be provided to the Department and posted to the IDNR website.*

Response: Commenters suggested several ideas to improve the monitoring of flares and reporting of emissions. Among the suggestions was to institute baseline testing for air pollutants or including visible and audible alarms in the event of loss of combustion. The environmental coalition suggested that IDNR should direct permittees to:

- *visually inspect the flares to ensure they are operating, including that the pilot light is lit;*
- *visually inspect the auto-igniter and valves for piping of gas to the pilot light, to ensure they are functioning properly; and*
- *report the date and duration of any period where the flare is not operating properly, and, when that occurs, the timing of an efforts made to restore the operation of the flare.*

As mentioned above, the IEPA is responsible for enforcing air quality standards. The USEPA rules described above have specific provisions that set out the monitoring, reporting, and testing requirements (See 40 C.F.R. § 63: National Emission Standards for Hazardous Air Pollutants for Source Categories, including Subparts HH and HHH; 40 C.F.R. § 60 Subpart OOOO: Standards of Performance for Crude Oil and Natural Gas Production). The clear intent of the HFRA is that CCDs and flares operate properly in accordance with manufacturer

specifications. Thus, IDNR believes that basic monitoring and reporting should be included. In addition, since all flares must be maintained in accordance with manufacturer specifications, IDNR agrees these would be important for IDNR to have these on file.

These changes also enable IDNR to fulfill the requirement set out in Section 1-75(e)(11) of the Act that IDNR, three years after the effective date of the first high-volume horizontal hydraulic fracturing well permit issued by the Department and every 3 years thereafter, prepare a report that analyzes the amount of gas that has been flared or vented and make recommendations to the General Assembly on whether steps should be taken to reduce the amount of gas that is being flared or vented in this State. IDNR will use any data provided by the operators to make this recommendation to the General Assembly. See IDNR's response to the comments on Rule 245.930.

Department Action: Rule 245.900 is amended as follows (the addition of "auto-igniter" is discussed below):

f) *Any flare used pursuant to this* Section *shall be equipped with* an auto ignited and *a reliable continuous ignition source over the duration of production.* The manufacturer specifications for all flares must be provided to the Department before operation of the flare begins and the Department shall post the specifications to its website.

g) *Permittees that use a flare during the production phase for operations other than emergency conditions* shall visually inspect or monitor the flare on a regular basis to ensure it is operating properly. The permittee *shall file an updated* well *site-specific analysis annually with the Department* on a form prescribed by the Department in consultation with the Agency. *The analysis shall*:

1) *be due one year from the date of the previous submission;* ~~*and*~~

2) report the dates and duration of any period where the flare is not operating properly; and

~~2~~3) *detail whether any changes have occurred that alter the technical infeasibility or economic unreasonableness of the permittee to reduce emissions in accordance with* subsections (b) and (c). (Section 1-75(e)(5) of the Act)

- *245.845(c)(1) and (2): Standards for granting an exemption from using a completion combustion device should be further defined.*

Response: The language used in subsections (c)(1) and (c)(2) comes directly from the USEPA rules on this topic. *See* 40 CFR §60.5375(f)(1)(2). The provisions, as drafted, give IDNR adequate discretion to evaluate each well on a case-by-case basis. IDNR does not believe that any modification to the rule is needed. IDNR consulted with IEPA, and any further clarification must come from the USEPA.

Department Action: None.

- *IDNR should require that all CCDs and flares to contain auto-igniters.*

Response: IDNR consulted with IEPA on this issue and reviewed the USEPA's response to public comments for "New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews," 40 C.F.R. §§ 60 and 63. Auto-igniters are not required by the USEPA rules.[10] However, Colorado recently passed regulations that requires auto-igniters. Combustion devices installed on or after May 1, 2014, must utilize an auto-igniter upon installation. Combustion devices installed before May 1, 2014, must utilize auto-igniters beginning May 1, 2016.[11] Along the same lines, the environmental coalition's comment suggested that all CCDs should contain auto-igniters. IDNR agrees that this will further the statutory purpose to ensure that each CCD or flare shall be equipped with a reliable continuous ingnition source.

Department Action: Rules 245.845 and 245.900 are modified as follows:

Rule 245.845:

e) *Completion combustion devices must be equipped with* <u>an auto igniter and</u> *a reliable continuous ignition source over the duration of the flowback period.* (Section 1-75(e)(3) of the Act)

Rule 245.900:

f) *Any flare used pursuant to this* Section *shall be equipped with* <u>an auto ignited and</u> *a reliable continuous ignition source over the duration of production.* <u>The manufacturer specifications for all flares must be provided to the Department before operation of the flare begins and the Department shall post the specifications to its website.</u>

- *245.845(f) should also include "low volume" wells and wells that produce gas at uneconomic volumes*

Response: IDNR does not find that any change is needed to address this comment. The language of Rule 245.845(f) was taken directly from HFRA § 1-75(e)(8). In addition, the HFRA does not apply to "low volume" wells, as set out in Section 1-20 of the Act. For low volume wells, the provisions of the OGA still apply, 225 ILCS 725/1 *et seq*.

- *Typographical error: Subsections 245.845(a) and 245.845(b) should reference subsection (f), not (e)*

Department Action: IDNR will fix the error so that Rule 245.845(a) and (b) properly references subsection (f).

a) Except for wells covered by subsection (~~e~~<u>f</u>), *recovered hydrocarbon fluids* shall be:

1) Routed *to one or more storage vessels*; or

2) *Injected into* a permitted Class II UIC *well* as described in Section 245.300(c)(7); or

3) Used for another lawful and useful purpose that a purchased fuel or raw material would serve, with no direct release to the environment.

b) Except for wells covered by subsection (~~e~~f), *recovered natural gas* shall be:

1) Routed *into a flow line or collection system;* or

2) *Injected into* a permitted Class II UIC *well* as described in Section 245.300(c)(7); or

3) *Used as an on-site fuel source; or*

4) *Used for another* lawful and *useful purpose that a purchased fuel or raw material would serve, with no direct release to the atmosphere.* (Section 1-75(e)(2) of the Act)

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[1] USEPA, *Natural Gas Extraction- Hydraulic Fracturing* (Aug. 18, 2014), http://www2.epa.gov/hydraulicfracturing#air.

[2] Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews; Final Rule, 77 Fed. Reg. 49490- 49600 (Aug. 16, 2012) (amending 40 C.F.R. pts. 60 and 63).

[3]United States Environmental Protection Agency, *Overview of Final Amendment to Air Regulation for the Oil and Naturla Gas Industry Fact Sheet* (Aug. 8, 2014), http://www.epa.gov/airquality/oilandgas/pdfs/20120417fs.pdf.

[4] Colorado Department of Public Health and Envirnment, *Revisions to Colorado Air Quality Control Commission's Regulation Numbers 3, 6, and 7 Fact Sheet*, https://www.colorado.gov/pacific/sites/default/files/T1_AQCC_030614-729AM-R3-6-7-fact-sheet-003.pdf

[5] Chester Dawson, North Dakort Regulator Sets New Gas-Flaring Producers Have to Abide by Production Allowances That Limi Burn-offs, The Wall Street Journal (July 1, 2014), http://online.wsj.com/articles/north-dakota-regulator-sets-tough-gas-flaring-rules-1404257684.

[6] North Dakota Century Code, 38-08-06.4., avaliable at https://www.dmr.nd.gov/oilgas/rules/rulebook.pdf.

[7] Todd L. Holweger, *Letter to operator regarding gas capture plans required to be submitted with all application for a permit to drill*, North Dakota Oil and Gas Division (Aug. 18, 2014), https://www.dmr.nd.gov/oilgas/Gas%20Capture%20Plans %20Required%20on%20All%20APD's%20050814.pdf.

[8] Susan Harvey, *Leaking Profits: The U.S. Oil and Gas Industry Can Reduce Pollution, Conserve Resources, and Make Money by Preventing Methane Waste*, Natural Resources Defense Council (2012), available at http://www.nrdc.org/energy/files/Leaking-Profits-Report.pdf.

[9] See generally *American Coatings Ass'n, Inc. v. South Coast Air Quality Dist.*, Cal. S. Court, No. S177823 (June 25, 2012) ("the principle of technology-forcing is based on the premise that because pollution is a negative externality, industry generally has insufficient incentive to develop or adopt new pollution control technology in the absence of regulation")

[10] USEPA, *Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews 40 CFR Parts 60 and 63: Response to Public Comments on Proposed Rule* (Aug. 23, 2011), http://www.epa.gov/airquality/oilandgas/pdfs/20120418 rtc.pdf.

[11] Colorado Department of Public Health and Environment, Revisions to Colorado Air Quality Control Commission's Regulation Numbers 3,6, and 7, *Fact Sheet* (March 5, 2014), https://www.colorado.gov/pacific/sites/default/files/T1_AQCC_030614-729AM-R3-6-7-fact-sheet-003.pdf.

245.850 Hydraulic Fracturing Fluid and Hydraulic Fracturing Flowback Storage, Disposal or Recycling, Transportation and Reporting Requirements

Comments: The Department received over a hundred comments regarding the storage of hydraulic fracturing fluid, reporting of spills, and general concern for the storage, disposal, recycling and transportation of hydraulic fracturing fluids and hydraulic fracturing flowback. The commenters included the IPHA, Fair Economy Illinois, Illinois Attorney General, ILOGA, the Nature Conservancy, the environmental coalition's group submission, Faith in Place, and numerous individuals. The following issues were identified:

- *Where does hydraulic fracturing flowback and hydraulic fracturing fluid go for disposal?*

Response: The hydraulic fracturing flowback and hydraulic fracturing fluids must be removed from the site within 60 days of the cessation of fracking operations, except for hydraulic fracturing flowback captured in the open air reserve pits which must be removed within 7 days of being deposited in the pits.[1] The hydraulic fracturing fluids can be recycled for future fracking operations or disposed of in an approved class II injection disposal well that does not drain into a productive or fresh water zone.[2]

Department Action: None.

- *The rules should provide for radioactivity testing and proper disposal of radioactive material*

Response: See the Department's Response to comments on radioactivity and radioactivity testing.

Department Action: None.

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[1] See the Department's response to the comments on Rule 245.850(c).
[2] Rule 245.850(g).

245.850(c) Hydraulic Fracturing Fluid and Hydraulic Fracturing Fluid Flowback Storage (Reserve Pits)

Comments: The Department received thousands of comments (including comments that were addressed to and initially filed with Section 245.830, Reserve Pits) regarding the length of time hydraulic fracturing flowback fluid may be stored in emergency open air reserve pits. Commenters included the Illinois Attorney General, the Nature Conservancy, the environmental coalition's group submission, Faith in Place, Fair Economy Illinois, IIRON, CREDO commenters, as well as several hundred individual commenters. The dominant objection of the comments was that the rules might allow fracking operators to leave untested flowback fluid in open air reserve pits for extended periods of time, thus exposing wildlife and the environment to potentially harmful chemicals, allowing evaporation or fumes from the pits to escape into the environment, and rendering the contents susceptible to natural disasters. This issue came in for some of the harshest and most repeated criticism of any rule section, in part because many commenters believed that the HFRA had been represented as bringing to Illinois a program whereby, unlike what has been seen in some other states, all fluids would be enclosed in tanks.

Response: The Department never intended to allow extended time for flowback fluids to remain in reserve pits. The controversy over this section is another example of how semantics make important differences and how a slight improvement in drafting can avoid misunderstanding. The revision to this rule subsection will so clarify.

Section 1-75(c)(5) of the Act reads as follows:

> Hydraulic fracturing fluids and hydraulic fracturing flowback must be removed from the well site within 60 days after completion of high volume horizontal fracturing operations, except that any excess hydraulic fracturing flowback captured for temporary storage in a reserve pit as provided in paragraph (2) of this subsection must be removed from the well site within 7 days.

The entire controversy over this rule originates from the fact that the phrase "within 7 days" that concludes the statutory subsection above does not state from what point the "7 days" begins to run. One interpretation might be that the fluids can be stored for no longer than 7 days from when they are "captured." However, because the entire last clause is phrased as an exception to the first clause, another reading is that the "7 days" refers to an exception to the "60 days" and thus, like the 60 days, refers to the period "after completion" of HVHHF operations. The Department's drafters for the first notice version of these rules interpreted 1-75(c) using that second interpretation.

That interpretation was then complicated by another problem, missing definitions. The phrase "high volume horizontal fracturing operations" used in Section 1-75(c) is not defined in the Act. The Department presumed that "hydraulic" was inadvertently omitted from that phrase in 1-75(c) and that the drafters meant HVHHF. The phrase "high volume horizontal hydraulic fracturing operations" was used in Rule 850(c), and *is* defined, and refers to "all stages of a stimulation treatment of a horizontal well." HFRA § 1-5.

This leads to another problem, because although these terms have understood meaning within industry, neither "stage" nor "stimulation treatment" was defined in the Act. The common English meaning of "all stages" suggests all aspects or steps of an operation. That is not what is meant by "stage" in HVHHF, where a well is divided into as many as 100 segments, or stages, to more efficiently and effectively inject fluid to "stimulate" the rock. But if the common, plain-English meaning of "all stages" is combined with how the ambiguity in § 1-75(c) was handled in the first draft of the rules, one might conclude, as did thousands of Illinoisans, that the Department intended to allow fluid to remain in open reserve pits for much longer.

The key to "fixing" this lies in looking at the Act as a whole. Section 1-75(c)(1) of the HFRA specifies that all "hydraulic fracturing additives, hydraulic fracturing fluid, hydraulic fracturing flowback, and produced water **shall be stored in above-ground tanks** during all phases" of drilling, HVHHF, and production (emphasis added). The clear intent of the law is that closed tanks be the primary method of containment for flowback material. The reserve pits are only to be used in emergency situations to contain potential spills when the operators encounter unexpected pressure or fluid in the ground. This should not be too frequently, because the HFRA requires applicants to undergo testing of proposed well sites so that they will anticipate the conditions in the geological formations into which they will be drilling. HFRA § 1-35. However, unexpected conditions can and do occur in any drilling, and in gas and oil extraction.

The other practical consideration that the first draft of the rules contemplated was that only one laboratory in southern Illinois is currently capable of testing fracking fluids. The drafters were concerned that if operators were required to remove the fluids too quickly, they might not be able to obtain the necessary tests to meet a faster removal deadline. Fluids in pits would either have to sit until the results came back, or be removed before the tests were completed. Both were undesirable outcomes.

After review of the comments, the Act, and continued advancements in technology, IDNR believes that it can and should amend the proposed rule to require, unambiguously, that the excess fluids in the reserve pits be removed within seven days after they are deposited in them. The Department will also clarify that the operators have another option; move the fluids into an enclosed tank. This second modification alleviates the remove-or-test dilemma. Since the reserve pits are intended as an emergency measure for unanticipated events, they should not be too frequently used. Therefore, this modification, which in any event reflects the statutory intent, will not be too onerous of a requirement for the occasional overflow.

Department Action: Rule 245.850(c) will be modified as follows:

c) *Any excess hydraulic fracturing flowback captured for temporary storage in a reserve pit as provided in* Section 245.825 *must be* <u>either</u> *removed from the well site* or transferred to storage in above-ground tanks for later disposal or recycling *within 7 days* ~~after completion of high volume horizontal hydraulic fracturing operations~~ <u>after the fluid is first deposited into the reserve pit</u>. Excess hydraulic fracturing flowback cannot be removed from the well site until the hydraulic fracturing flowback is tested and the analytical results are provided pursuant to subsection (d) (Sections 1-75(c)(5) and (c)(8) of the Act)

245.855 Spills and Remediation

Comments: The Department received over 60 comments concerning Rule 245.855 as it relates to spills and remediation. Commenters included the Public Health Peoria City/County Health Department, the IPHA, and over two dozen individuals. The essential points made by the commenters were as follows:

- *The Department should modify proposed rules (b) and (d) by requiring reporting of spills to local health departments.*

Response: The Department finds that it would serve the purposes of the Act to protect public health to require such notification in event of a spill of hydraulic fracturing fluids or flowback. Because these events should be rare, the additional burden on permittees should be minimal, and outweighed by the public interest in knowing early of possible risks to worker or public health.

Department Action: Rule 245.855 Spills and Remediation shall be modified as follows:

b) *Any release of hydraulic fracturing fluid or hydraulic fracturing flowback in excess of one barrel, shall be reported to the Department* <u>and to the county and certified local public health department (if any)</u>.

- *The rule should be changed from "any release of produced water in excess of 5 barrels" shall be cleaned to "any release of produced water" whatsoever.*

Response: The Act specifically sets out the minimum threshold that IDNR incorporated into the rules. HFRA § 1-75(c)(12).

Department Action: None.

245.860 High Volume Horizontal Hydraulic Fracturing Operations Completion Report

Comments: The Department received a couple of comments concerning Rule 245.860 as it relates to high volume horizontal hydraulic fracturing operations completion reports. Commenters included the IPC and an individual testifying at the Carbondale public hearing. The concerns raised were the following:

- *Permittees should be allowed to post the chemical disclosure report on the "FracFocus" website rather than reporting to the Department for posting on the Department's website*.

  Response: See IDNR's response to comments on Rule 245.720.

  Department Action: None.

- *The definition of "completion" should limit oil and natural gas extraction operations to only a reasonable amount of time and then turn the land back to the surface owner and nature.*

Response: The completion report referred to in Rule 245.860 concerns completion of the well for the production of oil or gas, not when the production of oil and gas by the well is finally complete. Therefore, Rule 245.860 does not address the issue raised by this comment. While the pre-drilling, drilling, fracturing, and completion periods of well development typically last less than a year in total, production from a well can last many years, sometimes decades. Illinois is one of the top ten states in the country in numbers of "stripper wells" that continue to produce small amounts long after being drilled. Owners of land should consult the oil and gas laws and an attorney before entering into leases, and prospective buyers should similarly review their mineral rights in context of the law and with legal advice, to understand how oil and gas may affect their surface rights and activities.

The Department notes that the timing for plugging and restoring wells after production is addressed in the Act (Section 1-95(a)) and Rule 245.1000(a) by incorporating the requirements of the OGA and the pertinent OGA rule (62 Ill. Adm. Code 240.Subpart K). The existing oil and gas laws generally provide for plugging and restoration within 30 days for a well which is a dry hole, or within 24 months for a producing well that no longer has commercial production. Based on the foregoing, no change is made to the Rule to address this issue.

Department Action: None.

245.870 Use of Diesel in High Volume Horizontal Hydraulic Fracturing Operations Prohibited

Comments: IDNR received one comment from the IPC regarding the prohibition against using diesel in HVHHF operations. The IPC recommended that the term "recklessly" should be deleted from this rule because the term is not defined and is subject to broad and inconsistent interpretation. The IPC stated that a simple statement prohibiting the injection of diesel is sufficient.

Response: IDNR drafted Rule 245.870 based on the exact language in the HFRA, which states that "it is unlawful to perform any high volume horizontal hydraulic fracturing operations by knowingly or recklessly injecting diesel" (Section 1-25(d) of the Act)(underlining added). The legislature specifically incorporated the word "recklessly" into this provision. In addition, IDNR agrees that reckless is an appropriate standard to leave in this rule. Black's Law Dictionary defines reckless as "characterized by the creation of a substantial and unjustifiable risk of harm to others and by a conscious (and sometimes deliberate) disregard for or indifference to that risk." Black's Law Dictionary (9th ed. 2009).

If "recklessly" were deleted, any agency attempting to enforce this provision would face the burden of proving *scienter*, A stronger argument could be made for deleting *both* "knowingly" and "recklessly." However, the legislature chose this standard, and both words have established legal meaning. There is enough of a consensus on the ills of injecting diesel that virtually any injection of diesel would be considered reckless. The Department expects that operators will have protocols and rules in place on site, and train their workers accordingly, to prevent such occurrences.

Department Action: None.

245.910 Uncontrolled Emissions from Storage Tanks Containing Natural Gas and Hydrocarbon Fluids

Comments: The Department received approximately two dozen comments concerning rule subsection 245.910, as it relates to uncontrolled emissions from storage tanks containing natural gas and hydrocarbon fluids. Commenters included the environmental organizations' group submission, Food & Water Watch, and a number of individuals. The commenters raised multiple concerns[1]:

- *How will the 6 ton/year standard be measured? Self-reporting by companies will be inadequate.*

Response: The HFRA does not indicate how this will be measured, nor does it indicate which entity is responsible for taking the measurement. Moreover, "uncontrolled" is not defined in the Act, so it is unclear what the General Assembly intended. However, in analyzing these comments, IDNR consulted with IEPA, and the USEPA rules in 40 C.F.R. § 60 Subpart OOOO do address this issue. Specifically, 40 C.F.R. § 60.5365(e) sets out that:

> (e) Each storage vessel affected facility, which is a single storage vessel located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment, and has the potential for VOC emissions equal to or greater than 6 tpy as determined according to this section by October 15, 2013 for Group 1 storage vessels and by April 15, 2014, or 30 days after startup (whichever is later) for Group 2 storage vessels.

The same subsection also specifies, to a certain extent, how it must be calculated. The potential for VOC emissions must be calculated using a generally accepted model or calculation methodology based on the maximum average daily throughput determined for a 30–day period of production prior to the applicable emission determination deadline specified in this section. The determination may take into account requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal, state, local, or tribal authority.

In light of the similar language between the USEPA rule and the HFRA, IDNR will require applicants to calculate the "potential to emit" consistent with the USEPA rules by requiring generally accepted methods. It should be noted that for purposes of NSPS permits, IEPA will need to make this assessment as well. As a result, IDNR will work with IEPA in making this determination.

Department Action: Rule 245.910(a) will be modified as follows:

a) In addition to the requirements of Section 245.900, *uncontrolled emissions exceeding 6 tons per year from storage tanks* containing natural gas or hydrocarbon fluids *shall be recovered and routed to a flare that is designed in accordance with 40 CFR 60.18 and is certified by the manufacturer of the device.* <u>Permittees shall calculate whether or not uncontrolled emissions exceed 6 tons per year from storage tanks by using a generally</u>

accepted model or calculation methodology, based on the maximum average daily throughput determined for a 30-day period of production prior to the applicable emission determination deadline, pursuant to 40 C.F.R. § 60.5365(e).

- *IDNR should require that all permittees submit the flare manufacture specifications to the Department, and those specifications should be posted the IDNR website.*

Response: See IDNR's response to the comments on rules 245.845 and 245.900.

Department Action: None.

- *IDNR should require that all flares be equipped with auto-igniters.*

Response: See IDNR's response to the comments on rules 245.845 and 245.900.

Department Action: Section 245.910(c) is amended as follows:

c) *Any flare used under this* Section *must be equipped with* an auto igniter and *a reliable continuous ignition source over the duration of production* pursuant to the requirements of Section 245.900(h). The manufacturer specifications for all flares must be provided to the Department before operation of the flare begins and the Department shall post the specifications to its website. (Section 1-75(e)(6) of the Act)

- *General comments regarding the negative effects of methane/VOC emissions, such as public health and environmental concerns.*

- *Flaring should not be allowed under any circumstances.*

Response: Similar to sections 245.845 and 245.900, commenters raised general concerns that emissions will have negative impacts on public health and the environment. For instance, one commenter raised the concern that people living near these storage tanks will be affected by toxic fumes.

For a full response, see IDNR's response to Sections 245.845 and 245.900. In short, the HFRA contemplates that flaring will take place under certain circumstances. It should be noted, however, that federal regulations do apply to storage tanks and these will be covered by an IEPA permit (See 40 CFR 60, Subpart OOOO; 40 CFR 63, Subpart HH).

Department Action: None.

[1] Note: many commenters raised concerns about "uncontrolled emissions" with respect to reserve pits. That issue is addressed in IDNR's response to the comments on Rule 245.830 reserve pits.

245.920 Flaring Waiver

Comments: The Department received approximately a dozen comments concerning Rule 245.920, as it relates to the "flaring waiver." Commenters included the IPHA, Frack Free Illinois, and a number of individuals. The commenters raised multiple issues, which are listed below and considered in turn:

- *Typographical error in (a), if IDNR intended that a waiver be granted if the permittee demonstrates to IDNR's satisfaction that the use of a flare will not pose a significant risk of injury or property damage.*

- *Flaring waivers should only be allowed in situations where an alternate means of methane capture is in place.*

Response: The first comment is understandable, because normally one would expect waivers to be granted only if something *will not* present a risk. A waiver may be granted under Rule 245.920 only if a flare *will* pose a significant risk of injury or property damage *and* the alternative method of collection proposed will not threaten harm to the environment. The rule addresses the concern raised in the second comment.

Department Action: None.

- *Flaring and venting is dangerous, environmentally unsound, and should be prohibited.*

Response: The waiver allows "*alternative methods of collection that are not harmful to the environment.*" The HFRA contemplates that flaring, and flaring waivers (alternative collection methods) may occur under certain circumstances.

Department Action: See IDNR responses to 245.845 and 245.900 for a full explanation of the flaring requirements.

- *One commenter suggested that IDNR require an "emissions plan" as part of the application.*

Response: In reviewing and analyzing the comments to rules 245.845, 245.900, 245.910 and 245.920, IDNR found that since May, 2014, the North Dakota Oil and Gas Division requires all applicants for a permit to drill to submit a "Gas Capture Plan."[1] The Gas Capture Plan must contain, among other things, the amount of gas the applicant is currently flaring and an explanation of the alternatives to flaring the applicant considered. In North Dakota, the industry target goals are to reduce flaring to10% by 9/1/20 from the present estimated 30%.

IDNR finds that it will also assist the Department if it had a basic emissions plan from the applicant, particularly the intent to flare or the intent to request a flaring waiver, as part of the permit application. The fact that Illinois does not yet have significant flaring activity from HVHHF provides an enviable opportunity to foster a far more sustainable version of the industry. Notice of this information on the application will serve multiple purposes.

First, pursuant to Rule 245.845, an exemption from using a CCD may be allowed if conditions may result in a fire hazard or explosion, or where high heat emissions from a completion combustion device may negatively impact waterways. Rule 245.845(c). Second, in order to decide whether to approve a waiver under Rule 245.920, IDNR, in consultation with IEPA, must consider many factors, including "the quantity of casing head gas produced, the topographical and climatological features at the well site, and the proximity of agricultural structures, crops, inhabited structures, public buildings, and public roads and railways." Rule 245.920(b).

Exemptions are also granted for showings of technical feasibility or economic unreasonableness. Those showings will also require information that is most efficiently provided to the Department at the time of application. See the response to the comments concerning rules 245.845 and 245.900.

If information about the plan for gas capture is included in the permit application, it will enable the public to comment on these aspects of hydraulic fracturing operations, which in turn will assist IDNR in making these determinations later in the permitting process. It will also help the applicant because IDNR will be able to communicate with the applicant earlier about what the expectations will be when it comes to flaring exemptions or waivers. Advance notice will help the permittee plan for that stage of operations. This information will assist IDNR in making the determination that the proposed hydraulic fracturing operations "will be conducted in a manner that will protect the public health and safety," as required by Section 1-53(a)(4) of the HFRA. It will also provide data for IDNR to support its report required to be prepared for the General Assembly every three years that analyzes the amount of gas that has been flared or vented, and assist the Department in determining whether steps should be taken to reduce the amount of gas that is being flared or vented in Illinois. HFRA § 1-75(e)(11).

Department Action: Section 245.210(a)(29) added as follows:

29) Emissions Management Statement
A statement of which of the methods for managing natural gas and hydrocarbon fluids produced during the flowback period and production period the applicant will use, as required by Sections 245.845(a), 245.845(b), 245.900(a) through 245.900(c). If the applicant must indicate in this statement whether it intends to request an exemption or waiver pursuant to 245.845(c), 245.845(f), 245.900(d), 245.900(i), or 245.920, it must indicate that fact in the Emissions Management Statement and if so should attach the substantiation for the request that is required by Section 245.845, 245.900, or 245.920, as applicable.

[1] Holweger, Todd L., *Letter to operator regarding gas capture plans required to be submitted with all application for a permit to drill*, North Dakota Oil and Gas Division (Aug. 18, 2014), https://www.dmr.nd.gov/oilgas/Gas%20Capture%20Plans%20Required%20on%20All%20APD's%20050814.pdf.

245.930 Annual Flaring Reports

Comments: The Department received approximately a dozen comments concerning Rule 245.930 as it relates to the "Annual Flaring Reports." Commenters included the environmental organization's group submission, the Illinois Attorney General, IPHA, the Peoria City/County Health Department and a number of individuals. The commenters raised the following issues, which are considered in turn:

- *Local certified public health departments should be notified of the Annual Flaring Reports.*

Response: The commenters' desire for certified public health departments to receive the annual flaring reports makes sense, insofar as the report may inform these health departments of potential public health risks associated with emissions from hydraulic fracturing operations. Some commenters also requested that the annual flaring reports be made available on IDNR's website in a database that can be searched by county, so that the public can easily access the reports.

IDNR finds that it would be feasible and in the public interest to post the annual flaring reports on the IDNR website. First, the HFRA directly states that the annual flaring reports should be submitted to IDNR. HFRA § 1-75(e)(11). In addition, the Act sets out that all information submitted to the Department is deemed public information. HFRA § 1-110(a). IDNR is required to provide a centralized depository of information in the form of a comprehensive website and a searchable database. HFRA § 1-110(b). Considering the website will already be established for many other records, it would not be difficult to include a section that contains the annual flaring reports.

Since the website is currently under development, IDNR has not determined how the annual flaring reports will be organized. IDNR will attempt to organize the reports in a manner that will make them readily accessible for interested persons. However, IDNR's commitment to post flaring reports on the website need not and should not be reduced to a rule. The fiscal volatilities of the state unfortunately argue too strongly against undertaking more tasks than necessary. With the annual reports made available on the website, IDNR finds that it will be unnecessary to proactively notify public health departments of the receipt of such reports. The health departments will be able to visit IDNR's website to see any submissions IDNR has received.

Department Action: None.

- *Continuous monitoring is necessary to provide the information for the annual report.*

Response: Commenters pointed out that this rule, as proposed, is ambiguous with respect to what it means to "record on an annual basis" the amount of gas flared or vented from each well. The commenters suggested that the rules should make explicit that operators are required to continuously monitor flaring and venting, not only to record the amount one time a year. Put

another way, operators must keep track of how much gas they are flaring or venting on an ongoing basis so that the total annual amounts can be calculated accurately.

As the proposed rule sets out, the recording of the amount of gas flared or vented must be pursuant to rules 245.900 and 245.910. In IDNR's response to the comments on Rule 245.900, IDNR explained that IEPA is the agency responsible for enforcing air quality standards, and the applicable rules set out monitoring and reporting measures for emissions. However, IDNR also noted that the rules contemplate ongoing monitoring, not only a record made at one point in time. Otherwise, the annual reports would be inaccurate. IDNR made changes to Rule 245.900 so that an operator must inspect or monitor the flare on a regular basis and report periods when the flare was not working properly.

Department Action: To eliminate any confusion, IDNR will clarify that the recording should be done continuously. Rule 245.930 is modified as follows:

Section 245.930 Annual Flaring Reports

Pursuant to Sections 245.900 and 245.910, *permittees shall record* ~~on an annual basis *and report to the Department on an annual basis*~~ *the amount of gas flared or vented from each high volume horizontal hydraulic fracturing well* <u>or storage tank on a daily or at least weekly basis. Every 12 months from the date of permit issuance under this Part, permittees shall report the total amount of gas flared or vented from each well during the previous 12 months, by week, to the Department.</u> (Section 1-75(e)(11) of the Act). <u>The Department shall post the reports on the Department's website.</u>

- *Independent monitoring should be required.*

Response: Commenters suggested that independent monitoring of flaring and venting should be required under the rules. The rationale was that if the operator is self-monitoring, there would be an incentive to underreport. While that possibility exists, the HFRA specifically sets out that *permittees* shall record the amount of gas flared or vented from each hydraulic fracturing well. See HFRA § 1-75(e)(11). A regulatory regime cannot assume bad actors are the norm. The rules adopt the Act's self-monitoring system as to flaring and venting.

Department Action: None.

- *General comments that flaring is dangerous and environmentally unsound; flaring should not be allowed under any circumstances.*

Response: See IDNR's response to the comments on rules 245.845/245.900 and 245.920.

Department Action: None.

245.940 Produced Water Disposal or Recycling, Transportation and Reporting Requirements

Comments: The Department received over a hundred comments from the Illinois Public Health Association, Fair Economy Illinois, Illinois Attorney General, Illinois Oil and Gas Association, the Nature Conservancy, the environmental coalition's group submission (IEC/NRDC/ELPC/FIP/RHA), and numerous individuals regarding produced water disposal. The following comments and questions distill to the following:

- *Where does produced water go for disposal?*
- *Radioactivity testing and proper disposal of radioactive material should be required.*
- *Fluids should not sit in pits more than 7 days.*
- *Flowback and produced water should not be treated differently.*

Response: The Act defines produced water as "water, regardless of chloride and total dissolved solids content, that is produced in conjunction with oil or natural gas production or natural gas storage operations, but does not include hydraulic fracturing flowback."[1] Hydraulic fracturing flowback is "all hydraulic fracturing fluid and other fluids that return to the surface after a stage of high volume horizontal hydraulic fracturing operations has been completed and prior to the well being placed in production."[2] In turn, hydraulic fracturing fluid is defined as "the mixture of the base fluid and all the hydraulic fracturing additives, used to perform high volume horizontal hydraulic fracturing."[3] Flowback storage and disposal is discussed in the response to the comments on Rule 245.850. Although the fluids are defined differently, the issues raised about treatment and disposal of produced water are similar to those raised about flowback. For the first three issues above, the Department refers to its 245.850 response.

As to the fourth issue, flowback and produced water are not treated differently in substance. However, the statute treats them differently in time, based on when they come out of the well, and that differentiation has a rational basis. Flowback contains all the chemicals used in HVHHF, whereas produced water may not, depending on how much consists of fluid injected. A much higher component of produced water is water that was already in the ground. Unless produced water comes from a freshwater zone, it is generally not potable, but contains brine and, potentially, some naturally occurring hazardous elements. Much like flowback, surface water discharge or drainage of produced water is forbidden by both the Act and rules.[4] Both hydraulic fracturing flowback and produced water may be recycled, disposed of down a properly permitted class II injection well, or held in tank and disposed of off premises.[5] Transportation of both requires a certified liquid oilfield waste hauler under the Oil and Gas Act.[6]

Department Action: None.

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[1] HFRA § 1-5.
[2] *Id.*
[3] *Id.*
[4] HFRA § 1-25(c), 75(c)(9) and Rule 245.940(a).
[5] Rule 245.850, .940.
[6] *Id.*

245.1000 Plugging and Restoration Requirements

Comments: The Department received several comments concerning Rule 245.1000 as it relates to well plugging and restoration requirements, including online commenters and speakers at public hearings. The basic concern raised by the commenters was that operators would not be willing or able to pay the costs associated with plugging and restoration.

Response: The rules already address these issues. HFRA § 1-95 and Rule 245.1000(a) require the permittee to "bear all costs related to plugging of the well and reclamation of the well site." The plugging and restoration also has to be completed in accordance with the OGA and the rules adopted under the OGA. The Department has experience in enforcing those provisions. As protection against insolvency or irresponsibility, the HFRA and rules require proof of insurance and other financial assurance instruments in the permitting process (*i.e.*, HFRA § 1-35 (a), (b) & (d) of the Act, and Rule 245.220 Permit Bonds or Other Collateral Securities). These financial assurance instruments are a mandatory condition of permit issuance and remain in force until a well is plugged, abandoned and restored, or transferred.

Department Action: None.

245.1010 Plugging Previously Abandoned Unplugged or Insufficiently Plugged Wells

Comments: The Department received numerous comments concerning Rule 245.1010 as it relates to plugging previously abandoned unplugged or insufficiently plugged wells. Commenters included ILOGA, GROW-IL Coalition, Food & Water Watch, several local public health organizations, and a dozen individuals. The essential points raised by the commenters were the following:

- *Written approval from the Department regarding plugging of wells within 750 feet of any part of horizontal well bore is unnecessary and impedes an efficient permitting process.*

Response: An important part of the HFRA is protection of groundwater. Under the Illinois Environmental Protection Act, any injection well or abandoned well is a "potential route" for contamination. 415 ILCS 5/3.350. Due to the importance of plugging and restoring wells that could potentially become pathways from HVHHF wells to groundwater or the atmosphere, IDNR has made plugging nearby wells a condition of approval before commencement of HVHHF operations in Rule 245.815. That section refers to the more detailed plugging requirements and specifications of Rule 245.1010.

On review, the Department sees that the introductory language of Rule 245.1010, the text of subsection (d) and the text of subsection (b) are somewhat redundant. To reduce superfluous text and eliminate possible confusion, the Department will delete text from Rule 245.1010. However, the Department has concluded that that written notice is an important regulatory tool to ensure compliance with these requirements. The written notice will be part of the applicant's broader notice under Rule 245.815. Thus, the writing requirement of this section adds no burden, nor delays to the process.

Department Action: None.

- *Local certified public health entities should be notified regarding confirmation that abandoned well(s) have been plugged, immediately when leakage from an abandoned, unpermitted or previously plugged well is discovered, and should receive copy of the Department's certification of plugging.*

Response: The HFRA vests the Department with jurisdiction over the operation of high volume horizontal fracturing operations. Unlike spills or leaks, the existence of an abandoned well, or the fact that it has been plugged, is not a significant data point for health agencies. IDNR finds that it will be unnecessary to proactively notify public health departments of every such plugging. The health departments will be able to visit IDNR's website or make periodic request of IDNR to see the inventory of plugged wells.

Department Action: None.

- *The term "diligent effort" in subsection (c) (relating to locating the abandoned unplugged well, or insufficiently plugged well identified by the Department) is "not measurable" and a regulatory loophole.*

Response: IDNR finds the rule is sufficient to carry out the intent of the HFRA. IDNR's original rationale was that there may be abandoned unplugged or insufficiently plugged wells that the Department identifies through its records. However, if the permittee is unable to locate the identified well (after demonstrating it made a diligent effort to find it), then it is unreasonable to require plugging a well that cannot be located (and might not exist). The diligent effort standard is adequate because it gives IDNR flexibility to evaluate the steps taken on a case by case basis. Plus, IDNR must provide written approval that the plugging has occurred, and IDNR may withhold approval if the search conducted by the permittee was not diligent.

Department Action: None.

- *Distance of 750 feet and 450 feet depth is arbitrary and "grossly inadequate" criteria (245.1010(d)) to prevent "frack hits," and should be replaced with distance criteria of 1 mile radius*

Response: See IDNR's response to the comments on Rule 245.815. To be consistent, Rule 245.1010 is amended as follows:

~~*Prior to conducting high volume horizontal hydraulic fracturing operations at a well site, the permittee shall cause to be plugged all previously* abandoned *unplugged* or insufficiently plugged *well bores within 750 feet of any part of the horizontal well bore that penetrated within 400 vertical feet of the* geologic *formation that will be stimulated as part of the high volume horizontal hydraulic fracturing operations* pursuant to the requirements of this Section (Section 1-95(b) of the Act).~~

a) As a condition of the permit, the permittee shall plug any ~~Any~~ abandoned *unplugged*, or insufficiently plugged, *well bores within 750 feet of any part of the horizontal well bore that penetrated within 400 vertical feet of the* geologic *formation that will be stimulated as part of the* permittee's proposed *high volume horizontal hydraulic fracturing operations* (Section 1-95 of the Act), as well as any other previously abandoned unplugged or insufficiently plugged well bores that the Department requires to be plugged based on the specific geological formation or other circumstances or field conditions (Sections 1-53(a), 1-130 of the Act) ~~shall be designated for plugging by the Department as a condition of the permit that shall be completed~~ and the permittee shall complete this plugging before the permittee ~~conducting~~ conducts any high volume horizontal hydraulic fracturing operations.

b) This pre-high volume horizontal hydraulic fracturing operations plugging obligation shall be performed in accordance with 62 Ill. Adm. Code 240.1110 ~~and shall be completed before any high volume horizontal hydraulic fracturing operations may begin~~.

1) If the permittee does not have authority to plug an abandoned well within the Plugging and Restoration Fund Program, the Department will give the permittee authority to enter upon the land, plug the well, and restore the well site consistent with 62 Ill. Adm. Code 240.1610(e).

2) If the permittee does not have authority to plug an abandoned well that is not within the Plugging and Restoration Fund Program, either:

A) the Department will initiate abandoned well proceedings pursuant to Section 19.1 of the Illinois Oil and Gas Act and 62 Ill. Adm. Code 240.1610, in order to grant the permittee authority to plug the abandoned well; or

B) the permittee will work with the landowner and the person responsible for the abandoned well to arrange for plugging and restoration.

c) If the permittee is unable to locate an abandoned unplugged well or insufficiently plugged well identified by the Department for plugging before high volume horizontal hydraulic fracturing operations begin, the permittee may receive a waiver of the plugging requirement from the Department after demonstrating a diligent effort to locate the abandoned unplugged well or insufficiently plugged well in the field.

d) Before proceeding with any high volume horizontal hydraulic fracturing operations, the permittee shall receive written approval from the Department that all wells under the permit within 750 feet of any part of the horizontal well bore that appear to penetrate within 400 vertical feet of the formation that the permittee intends to stimulate have been plugged, or that the plugging requirements have been met.

e) If, during or after performing high volume horizontal hydraulic fracturing operations, there is any evidence of fluids leaking at the surface from abandoned wells, unpermitted wells, or previously plugged wells within 750 feet of any part of the horizontal well bore:

1) the permittee shall immediately stop hydraulic fracturing operations, notify the Department, and shut in the well;

2) the permittee shall plug those wells and restore the well sites in accordance with 62 Ill. Adm. Code 240.870, 240.875 and 240.1110; and

3) the permittee shall obtain the approval of the Department prior to resuming operations.

f) If, during or after performing high volume horizontal hydraulic fracturing operations, there is any evidence of damage from the permittee's high volume horizontal hydraulic fracturing operations to a producing well within 750 feet of any part of the horizontal well bore, the permittee shall be responsible for all repairs to the well construction or the costs of plugging the damaged well.

- *The term "shut in" is ambiguous.*

Response: IDNR agrees that clarification would be beneficial, but the term "shut in" has meaning to industry and "stopping hydraulic fracturing operations" has no possible application to evidence of leaking discovered "after performing" HVHHF.

Department Action: See above Subsection (e).

- *Additional description is needed for phrase "insufficiently plugged well" (245.1010(d)).*

Response: The administrative rules require, in Rule 245.1000, that the permittee shall perform and complete plugging of the well and restoration of the well site in accordance with the OGA and any and all rules adopted under that Act (62 Ill. Adm. Code 240.Subpart K). The OGA and its rules are existing law. Thus, IDNR's intent was that "insufficiently plugged wells" are those that do not meet those requirements.

Department Action: None.

- *Responsibility for plugging existing/abandoned wells rests with the Department, not the operator.*

Response: The HFRA specifically sets out that the permittee "shall cause to be plugged all previously unplugged well bores" in HFRA § 1-95(b). The permittee is being granted the permission to undertake an activity with acknowledged risks and hazards, which potentially impacts to the property of others, and may be opposed by neighbors. The HFRA requires that no permit be granted except under assurances that the activities will not cause pollution. Requiring the plugging of potential pathways for migration of the fracking fluids that the permittee will inject into the earth or hydrocarbons that may be forced upward by the pressure of HVHHF furthers multiple statutory purposes and is a reasonable condition to place upon the permittee.

Department Action: None.

- *Eliminate operator responsibility for damage to existing well within 750 feet, and related repairs costs (Section 245.1010(f)).*

Response: One of the purposes of the HFRA is that all wells within a certain distance of the wellbore should be plugged according to requirements in the OGA. HFRA § 1-95. A corollary of this statutory purpose is that if HVHHF operations damage one of those plugged wells, the permittee should fix the well so that it is in compliance. It is not unique to the oil and gas industry that those who undertake profitable but potentially hazardous activities on or near

others' land are responsible for avoiding, mitigating, and/or ameliorating damage caused, even if they did not expect to cause such damage. Construction projects come to a halt when excavation unearths burial grounds. Loggers and miners must mitigate incidental takes of threatened or endangered species.

Department Action: None.

- *Thousands of vertical shallow wells exist within the State that have been plowed over and are only located by aerial radar imaging equipment.*

- *Additional investigation and inventory needed to locate abandoned oil/gas well that are "not registered with State of Illinois."*

Response: The Department agrees with both concerns, but the problem is beyond the scope of the HFRA or the rulemaking. Wells were being drilled in Illinois for water, oil, and gas long before there was a Department of Natural Resources, and admittedly there are tens of thousands of wells which are unmapped. IDNR maintains a database of known existing and abandoned oil and gas wells, as does the ISGS. IDNR is in the process of improving its database to attempt to see that all oil and gas wells are accounted for, but that effort is subject to the availability of funding and other resources.

Department Action: None.

245.1020 Restoration of Lands Other than Well Site and Production Facility

Comments: The Department received a number of substantive comments concerning Rule 245.1020, which addresses the restoration of lands used for well sites and production facilities. Commenters included the IPC, the Illinois Farm Bureau, the environmental coalition's group submission, Respiratory Health Association, the Illinois Attorney General, two county farm bureau groups, and several individuals. The essential points made by the commenters are explained below and responded to by the Department as follows:

- *The term "restoration" should change to the traditionally used term "reclamation"*

Response: The Department recognizes and agrees that in the context of consumptive extraction industries, the term "reclamation" is often used. See, for example, the Surface Coal Mining Land Conservation and Reclamation Act, 225 ILCS 720, the Surface-Mined Land Conservation and Reclamation Act, 225 ILCS 715, or the federal Surface Mining Control and Reclamation Act of 1977 (SMCRA), 30 U.S.C. § 1201 *et seq.*

However, among the laws IDNR is charged with administering, many also use the term (and mandate that IDNR undertake it) "restoration." See, for example, the Wildlife Code, 520 ILCS 5/1.10 (IDNR shall take all measures necessary for the "conservation, distribution, introduction and restoration" of birds and mammals); the Fish and Aquatic Life Code, 520 ILCS 5/1-150 (IDNR shall take all measures necessary for the "conservation, distribution, introduction and restoration" of fish, reptiles, and amphibians); and the Wildlife Restoration Cooperation Act, 520 ILCS 15/1 (IDNR is directed to perform such acts as may be necessary for the conduct and establishment of cooperative wildlife restoration projects). A significant Department project is the Great Lakes Restoration Initiative (GLRI), by which $475 million in federal funding has been secured for a comprehensive plan to target serious concerns facing the Great Lakes region, including invasive species, nonpoint source pollution, and toxic sediments.[1]

The terms are similar, and many definitions of "reclamation" in fact use the word "restore" or "restoration" but have an admittedly nuanced difference. Reclamation in the mining and conservation context is generally meant to be the return of land from a less-useful state to some economically useful purpose, but not necessarily the same state. The Department funds numerous projects to convert abandoned coal mining sites to useable recreational or other land, but frequently the state of the land is not as it was prior to the mining. By contrast, the HFRA directs the return of the land to very near the condition it was prior to the HVHHF activities. The HFRA specifically uses the terms "restore" and "restoration." HFRA § 1-95(c). Since the HFRA and other rules set out what "restoration" shall include, IDNR believes that both its direction and the rule it has drafted are clear.

Department Action: None.

- *Restoration should begin immediately and be completed within one month.*
- *There is not enough leeway for delays or restrictions on restoration activities.*

Response: Restoration of the land is an important component of the HFRA and the rules, and one of the purposes was that it should be done expeditiously. The HFRA explicitly sets out a timeframe. "Restoration shall be commenced within 6 months after completion of the well site and shall be completed within 12 months." HFRA § 1-95(c). The maximum allowance operates as a clear legislative direction. Potentially, the Department could by rule require a quicker effort, but the Department takes into consideration that operators may have economic reasons to allocate crew and resources elsewhere. The Department also takes into account weather, and its long experience in oversight of construction activities and projects through many, many grants. The number of human and uncontrollable factors that may prevent a project from timely starting as scheduled is myriad. Finally, the closure of a well or shutdown of a site may not be entirely predictable, but will likely turn on the interplay between price of the resource and decline in production. The Department believes that the Act does in fact give sufficient allowance for these factors. Thus, the Department finds the schedule reasonable and declines to tinker with it.

Department Action: None.

- *Rule 245.1020 provision for contractual waiver is not stated in Section 1-95 (c) of the Act.*

Response: The Illinois Attorney General and the environmental coalition's group submission pointed out that Section 1-95(d) of the HFRA allows a landowner to contractually waive the requirement for an operator to restore the well site and production facility. However, for lands other than the well site and production facility, there is no contractual waiver ability contained in the HFRA. Section 1-95(c) of the Act requires that they be restored. IDNR agrees that the statutory purpose behind this distinction is that many of the required restoration activities affect neighboring properties, and that the rule text should be corrected to reflect this.

Department Action: See the end of this response.

- *Specific standards are needed for repairing tile lines, soil fertility, soil compaction mitigation measures, fence/barrier repair, and soil conservation practices.*

Response: Commenters such as the Illinois Farm Bureau and other local county farming organizations (Edwards County Farm Bureau and the Cook County Farm Bureau) stressed the need for minimum restoration specifications concerning the components of Rule 245.1020(b). The commenters cited many specific standards that should apply, such as the Illinois Drainage Code, Circular 1226 – drainage tile installations; GIS technology and laser transit for location, alignment, and gradient; local U of I Agriculture Extension Office specifications for fertilizer application rates; and, local County Soil & Water Conservation District specifications for soil restoration and conservation methods. The comments also described specific techniques for tile relocation, land and soil restoration, onsite markers, interim measures during repairs to damaged tiles, and soil "ripping."

IDNR agrees that there are ways to clarify the required restoration activities in Section 245.1020(b), and has added some of the suggestions from the commenters. In the long term,

these standards should be developed in conjunction with the University of Illinois Extension and the Illinois Department of Agriculture.

Department Action: Rule 245.1020 is amended as follows:

Section 245.1020 Restoration of Lands Other than the Well Site and Production Facility

~~Unless contractually agreed to the contrary by the permittee and the surface landowner, *the*~~ The permittee *shall restore any lands used by the* permittee *other than the well site and production facility to a condition as closely approximating the pre-drilling conditions that existed before the land was disturbed* ~~*for any stage of*~~ by *site preparation activities, drilling,* ~~*and*~~ or *high volume horizontal hydraulic fracturing operations.*

a) *Restoration shall be commenced within 6 months* after *completion of the well* site *and* shall be *completed within 12 months.*

b) *Restoration shall include, but is not limited to:*

1) *repair of tile lines* in accordance with the standards in the Illinois Drainage Code, Circular 1226 – drainage tile installations,

2) *repair of fences and barriers,*

3) *mitigation of soil compaction and rutting,*

4) *application of fertilizer or lime to restore the fertility of disturbed soil,* ~~*and*~~

5) *repair of soil conservation practices such as terraces and grassed waterways,* after consultation with any local County Soil and Water Conservation District specifications for soil restoration and conservation methods, (Section 1-95(c) of the Act)

6) restoration of pre-existing gradient, and

7) replacement of vegetation.

c) The Department shall consult with the University of Illinois Extension and Illinois Department of Agriculture to develop a list of best management practices that provide technical guidance for the restoration of items specified in this section

[1] Ill. Dept. Nat. Resources, *Great Lakes Restoration Initiative*, available at http://www.dnr.illinois.gov/conservation/GLRI/Pages/default.aspx (last visited July 18, 2014).

245.1100 Suspension, Revocation, Remediation and Administrative Penalties

Comments: The Department received approximately 1,000 comments on Rule 245.1100 as it relates to permit suspension, revocation, remediation, and administrative penalties. Commenters included ONE Northside, RISE/Chicagoland Against Fracking, Peoria Families Against Toxic Waste, Illinois People's Action, Fair Economy Illinois, SAFE, Let's Go Chicago, IIRON Student Network, Central Illinois Global Warming Solutions Group, Friends of Bell Smith Springs, Sierra Club North VOF, ECCO, the Izaak Walton League, Peoria Families Against Toxic Waste, and hundreds of individuals. The comments generally expressed a desire that the Department impose penalties against violators that are strong enough to deter others from similar conduct. A specific suggestion was that the Department should impose mandatory permit revocation for violations of Section 1-70 of the Act.

Response: The Department's detailed discussion on the amount and appropriateness of the penalties provided for in the rules is contained in its response to comments on Rule 245.1120(c). As for requiring mandatory permit revocation for well preparation, construction and drilling violations, the HFRA vests the Department with discretion when determining whether or not to revoke or suspend a permit for a construction violation.[1] This is because well construction violations can take many shapes and forms. Some violations can be remediated by as simple a fix as tightening a nut or replacing a faulty valve. Others, such as poor cementing, may require that the well site be abandoned. A one-size-fits-all approach ties the Department's hands in a way that the Department does not desire and that the Act did not contemplate. The Department is vested with flexibility in determining whether or not revocation is an appropriate remedy for a violation. Different circumstances call for a different response by the Department.

Department Action: None.

[1] HFRA § 1-60(a).

245.1110 Notice of Violation

Comments: The Department received approximately 130 comments concerning Rule 245.1110 as it relates to the process of issuing a Notice of Violation ("NOV") for regulatory enforcement under the Act. Commenters included the environmental coalition's group submission, the NRDC/ELPC preliminary comment submitted at public hearing, IPHA, as well as individuals. The comments touched on several different issues, individually identified and responded to as follows:

- *Immediate suspension is improperly limited to only "emergency conditions posing a significant hazard to the public health, aquatic life, wildlife or the environment."*

Response: Upon further review, IDNR has determined that the first draft of Rule 245.1110 unintentionally had the effect of restricting the grounds upon which the Department may issue an immediate suspension of a permit. Section 1-60 of the HFRA grants to the Department the ability to suspend, revoke or refuse to issue a HVHHF permit for several reasons. The Act makes no reference as to the timing of how a suspension or revocation may occur. The Department also has the discretion under Section 1-83 of the Act to issue an immediate cessation order, with or without a NOV, under Section 8a of the OGA, which is more robust than the first draft of Rule 245.1100(3).

The Department chose in its first draft of the rules to adopt a penalty regime similar to the OGA, meaning the issuance of NOVs and Director's Decisions ("DDs"). The reason behind this was twofold: it is a system already familiar to industry, and there is a body of administrative decisions for OGA DDs. The DD regulatory framework provides violators with notice of the violation, a remediation period in which to correct the violation, and a DD which represents the Department's final determination that the violation persists after the end of the remediation period. The violator then has an opportunity to pay the fine and file an appeal within 30 days of the issuance of the DD. Without an appeal, the DD becomes a final administrative order.

The limitation of the DD framework is that the HFRA grants the Department administrative powers which are broader or different than in a conventional oil or gas production operation, due to the nature of HVHHF operations. The biggest difference between conventional oil wells and HVHHF operations is that HVHHF stimulation, which is the focus of much of the HFRA, is much shorter in duration than a conventional well. HVVHF stimulation might only take a few weeks. Furthermore, due to the much larger volumes of fluid and higher pressures in HVHHF operations, more damage can occur more quickly than at conventional well sites. The Department needs, and was given, a more flexible, speedier approach for regulating HVHHF operations, because if the notice requirements are too long, the HVHHF operations may be complete before a suspension or revocation can occur.

The original draft of the rules inserted a self-imposed restriction suggesting that the only way that the Department could issue an immediate suspension or revocation was by proving that there is a threat to the "public health, aquatic life, wildlife or the environment." Such a restriction is not warranted by the HFRA, which grants the Department the discretion to revoke or suspend a permit for a much larger list of factors, a threat to the public health, aquatic life, wildlife or the

environment being only one. Pursuant to the Act, the Department's only burden is to set forth the factual basis for the violation, the penalty, and any remedial action that can be taken to cure. Accordingly, the entirety of subsection (b)(3) of the rule can be eliminated.

Department Action: 245.1110(b) The Notice of Violation shall be modified as follows:

(1) The name and permit number for the well at issue;

(2) The provision of Section 245.1100 that applies, a statement specifying the factual nature of the violation, the action the Department will be taking, and, as applicable, a citation to the specific permit condition alleged to have been violated or to the specific Section of this Part, the Act, the Illinois Oil and Gas Act or the administrative rules promulgated under that Act alleged to have been violated;

~~(3) A statement as to whether the permit is immediately suspended by the Notice of Violation and, if so:~~

~~(A) A factual explanation indicating an emergency condition posing a significant threat to the public health, aquatic life, wildlife or the environment if the permit operation is allowed to continue; and~~

~~(B) The terms of the suspension, including but not limited to whether the suspension is pending a Director's Decision to revoke the permit;~~

(3)~~(4)~~ A statement as to whether a remedial action is needed to address the violation and, if so, identification of the remedial action and the time within which the remedial action is required to be completed;

(4)~~(5)~~ A statement as to whether probationary or permanent modification or conditions on the permit will be recommended and, if so, the substance of the recommended probationary or permanent modification or conditions; and

(5)~~(6)~~ Any factors known to the person completing the Notice of Violation in aggravation or mitigation of the violation and the existence of any factors indicating that the permit should be conditioned or modified.

- *NOVs should be posted on a searchable Department website database.*
- *Local public health departments should be notified of all issued NOVs.*

Response: The Department intends on posting all available information about permits, including NOVs, on its website as soon as it has the capabilities to do so.

Department Action: None.

245.1120 Director's Decision

Comments: The Department received approximately 11,300 comments, one of the top areas of commentary in the entire rulemaking, concerning Rule 245.1120 as it relates to the process of issuing Director's Decisions for regulatory enforcement under the Act. Commenters included the Illinois Attorney General, the environmental coalition's group submission, the NRDC/ELPC joint submission at public hearing, the Illinois Chapter of the Sierra Club, IPHA, IEC, Respiratory Health Association, SAFE, Frack Free Illinois, and thousands of individual commenters. Most of the comments the Department received indicated that the fines were too low, and not sufficient to deter oil and gas operators from committing violations. Others suggested that certain violations should result in criminal charges.

Some representative comments are as follows:

"The draft regulations … actually weaken key parts of the Hydraulic Fracturing Regulatory Act by …imposing only paltry fines on companies that violate the rules." (submitted by over 5,000 people via the CREDO website)

"Fines this low do not even amount to a slap on the wrist for corporations with such sizable power and money. How can fines this low possibly provide any incentive for the industry to behave in a responsible manner?"

"The penalties for failure to comply with the fracking rules are a joke. A fine of $50 or $100 is no fine at all to a large oil company. Make them pay for ALL THE DAMAGE to soil, air, water, humans and animals that they have caused…Oil companies will have no need to follow the rules if the fines are so ridiculously small"

"Who can take such fines seriously? Certainly not a major corporation. Such fines would be simply brushed off as insignificant business expenses. Regulations which take seriously the dangers of fracking, and seek to protect the public from them, must have real deterrence built into their fines."

"As fraking also can cause earthquakes, one would think that the penalties would be very stiff, but the fines are ridiculously low."

"For regulations to work, levied fines must exceed the financial benefit a company gains by violating the rules. None of the rulemaking sanctions meet this criterion. This results in the other 150 pages of rules being essentially meaningless because they will be ignored. The draft rule sanctions place the Hydraulic Fracturing Regulatory Act on the road to failure before the first permit is issued."

Hundreds of commenters pointed to the Pennsylvania law on HVHHF as a guide the Department should follow when crafting a fine and penalty regime. Penn. Cons. Stat. § 3256 provides for civil penalties not to exceed $25,000 plus $1,000 a day for violations, with a limit of $75,000 plus $5,000 a day for construction violations. Pennsylvania also created a criminal cause of action for willful violations.

Response: As was stated in IDNR's response to the comments on Rule 245.1110, the Department used the Director's Decision ("DD") system it has implemented for oil and gas well violations. As was also acknowledged in that response, the DD system needs to be modified for the peculiarities of HVHHF. The Department adopted the same fine regime as was contained in 62 Ill. Admin. Cd. § 240.160 for the Oil and Gas Act. Under the Department's DD regime, financial penalties do not begin and end with the levying of a fine. The Department has the right to suspend, revoke, or deny an application for infractions. This is a significant deterrent as well. When a permittee cannot operate, it is losing money.

Nonetheless, upon consideration of the comments received, and further research into other jurisdictions' enforcement regimes, the Department agrees that it would be more consistent with the statutory purpose and stated goals of the HFRA to increase the financial penalties to reflect the magnitude of the violation. IDNR will retain its DD enforcement scheme in the second draft, but the fine amounts will better match the infractions they are intended to deter. The Department wishes to convey to operators that failure to comply with the rules will result in stiff penalties. When dealing with operations that are so short in duration, the threat of punishment for non-compliance must be greater than the benefit of not following the rules.

In determining what the penalties should be in the second draft of the rules, the Department has compared its fine amounts with those of Arkansas, California, Colorado, Maryland, New York, Michigan, North Dakota, Ohio, Pennsylvania, Texas, and Wyoming. What the Department found was that the fine schedule in the first draft of the rules is lower than that of any of the above-mentioned states. For example, Ohio allows for fines of up to $10,000 and $5,000 each day that the violation goes unabated.[1] Wyoming allows for penalties up to $10,000 per day or $25,000 per day for willful violations.[2] Maryland fines a minimum $1,000 a day but cannot exceed $50,000 total.[3] The lowest, Arkansas, has a minimum fine of $250 for first offenders with administrative violations.[4] Many of the states created a criminal cause of action for knowing violation of the rules.

Fines in Illinois under the first draft rules could be as low as $50 for administrative violations.[5] Illinois does create a similar criminal cause of action for a knowing violation of HFRA and the rules.[6] The HFRA also allows for larger fines, but only in the event of a civil lawsuit, rare in the regulatory context and often ineffective to prevent an ongoing harm.

Also, Illinois has built in time for abatement without a fine. Issuance of a NOV does not include assessment of a fine. In fact, it specifies a time for remediation.[7] Most states listed above do not appear to have a formal system where violators automatically have time to remediate before a violation and penalty will be assessed.[8] In Illinois, the penalty does not come until the issuance of a DD. If the violation is remedied between the time the NOV is sent out and the remediation period lapses, no DD will be issued.

While the Department hopes and expects that most, if not all, companies will follow the law, some will be tempted to cut corners, and at the expense of the environment. The law has long recognized the value of fines as deterrents, and the Department is specifically authorized to make rules necessary to carry out the purposes of the HFRA § 1-130.The Department will raise

the fine amounts to make our rules more in line with those of other states and a more effective deterrent.

Department Action: Section 245.1120 Director's Decision is modified as follows:

a) Upon receipt of a Notice of Violation, the Director or Director's designee shall conduct an investigation and may affirm, vacate or modify the Notice of Violation. In determining whether to affirm, vacate or modify the Notice of Violation, the Director shall consider:

1) whether the facts support the violation set forth in the Notice of Violation;

2) the seriousness of the violation, including any harm to public health, public safety, aquatic life, wildlife, the environment or damage to property;

3) the permittee's history of previous violations, including violations at other locations and under other permits.

A) A violation shall not be counted if the Notice of Violation or Director's Decision is the subject of pending administrative review by the Department under Section 245.1130, or judicial review under the Administrative Review Law and the rules adopted under that Law, or if the time to request a review has not expired, and thereafter it shall be counted for only ~~two~~ ten years after the date of the Department's final administrative decision or a final judicial decision affirming the Department's decision.

B) No violation for which the Notice of Violation or Director's Decision has been vacated shall be counted;

4) the degree of culpability of the permittee;

5) whether the remedial action to address the violation set forth in the Notice of Violation is completed within the time set forth in the Notice of Violation; and

6) the existence of any additional conditions or factors in aggravation or mitigation of the violation, including information provided by any person or by the permittee.

b) Modification to the Notice of Violation may include:

1) any different or additional remedial actions required to address the violation and the time within which the remedial actions must be completed;

2) assessment of administrative penalties not to exceed ~~$1,000~~ $5,000 a day for each and every act of violation, not to exceed $50,000;

3) probationary or permanent modification or conditions on the permit, which may include special monitoring or reporting requirements;

4) suspension of the permit; and

5) revocation of the permit.

c) The Director shall determine whether to assess administrative penalties based on the factors set forth in subsection (a). Administrative penalties shall not be assessed for a violation of Section 245.1100(g). If an administrative penalty is assessed by the Department, the administrative penalty shall be computed as follows, but shall not exceed ~~$1,000~~ $5,000 per day for each and every act of violation:

1) Administrative violations are violations of any submission, reporting or notification requirements of this Part, including, but not limited to, providing incorrect, misleading, incomplete or materially untrue information regarding permittee registration, permit application, permit modification, permit transfer, or permit bonding, and failing to properly comply with the reporting and Department notification requirements set forth in the construction, operation, monitoring, disclosure or production requirements of this Part or of the permit, and shall be assessed on a permittee-specific basis. The Department may assess a penalty for an administrative violation as follows:

A) No previous violation of the same rule: ~~$50~~ $500.

B) One previous violation of the same rule: ~~$100~~ $1,000.

C) Two previous violations of the same rule: ~~$150~~ $1,500.

D) Three previous violations of the same rule: ~~$200~~ $2,000.

E) Four or more previous violations of the same rule: ~~$500~~ $5,000.

2) Operating violations are violations of all other requirements of this Part not covered by subsection (c)(1), including, but not limited to, operating a well required to be permitted under the Act without first obtaining a proper permit from the Department, constructing or operating a well in violation of the construction, operation, monitoring, disclosure or production requirements of this Part or of the permit. The Department may assess a penalty for an operating violation by considering elements of subsections (c)(2)(A), (B) and (C) as follows:

A) History of Violations:

i) No previous violation of the same rule: ~~$100~~ $1,000.

ii) One previous violation of the same rule: ~~$250~~ $2,500.

iii) Two previous violations of the same rule: ~~$500~~ $5,000.

iv) Three previous violations of the same rule: ~~$750~~ $7,500.

v) Four previous violations of the same rule: ~~$1,000~~ $10,000.

vi) Five or more previous violations of the same rule: ~~$2,500~~ $25,000.

B) Seriousness:

i) If ~~the violation had a low degree of probability to cause environmental damage to soil and/or land surface, vegetation or crops, surface water, groundwater, livestock or wildlife: add $100; or, if~~ the violation had a high degree of probability to cause environmental damage to soil and/or land surface, vegetation or crops, surface water, groundwater, livestock or wildlife: add ~~$250~~ $2,500; or, if the violation caused environmental damage to soil and/or land surface, vegetation or crops, surface water, groundwater, livestock or wildlife: add ~~$1,000~~ $10,000.

ii) If the violation created a hazard to the safety of any person: add ~~$2,000~~ $20,000.

C) Permittee's Actions:

i) If the permittee was previously notified of the violation using a routine inspection report (Form OG-22) in accordance with Section 245.1110 or correspondence from the Department and failed to comply: add ~~$500~~ $5,000.

ii) If ~~the violation occurred as a result of the permittee's lack of reasonable care: add $250; or, if~~ the violation occurred as a result of the permittee's deliberate conduct, including lack of reasonable maintenance of equipment: add ~~$500~~ $5,000.

d) The Director or Director's designee shall serve the permittee with his or her decision at the conclusion of the investigation. The Director's Decision shall be served either *personally or by certified mail, receipt return requested, to the permittee* (Section 1-60(b) of the Act). The Director's Decision shall provide that the permittee has the right to request a hearing to contest the Director's Decision in accordance with Section 245.1130.

e) The Director's Decision shall take effect upon issuance.

f) The permittee may contest the Director's Decision by submitting *a request, in writing, within 30 days after the date of receiving* the Director's Decision, for *a hearing* in accordance *with Section* 245.1130. *Except as provided under* Section 245.1130(d)(2), *in the event a hearing is requested,* the Director's Decision *shall remain in effect until a final order is entered pursuant to the hearing.* (Section 1-60(c) of the Act)

g) Failure of the permittee to timely request a hearing, or if a civil penalty has been assessed, to timely tender the assessed civil penalty, shall constitute a failure to exhaust all administrative remedies and a waiver of all legal rights to contest the Director's Decision, including the amount of the civil penalty.

h) The permittee may, within 30 days from the date of receiving the Director's Decision, submit to the Department, in writing, any mitigating factors that permittee believes to be relevant to the violation cited in the Director's Decision.

i) Upon further investigation, the Director may enter into a settlement agreement, issue an amended Director's Decision, or issue a replacement Director's Decision.

1) A settlement agreement shall be issued to:

A) extend the amount of time provided to complete remedial action necessary to address a violation set forth in the Director's Decision; or

B) <u>increase or</u> reduce the civil penalty assessed in the Director's Decision; or

C) allow new permits or the transfer of existing permits to be issued during the term of the settlement agreement.

2) An amended Director's Decision shall be issued to:

A) extend the amount of time provided to complete remedial action necessary to address a violation set forth in the Director's Decision; or

B) reduce the civil penalty assessed in the Director's Decision.

3) A replacement Director's Decision shall be issued to correct an administrative error contained in the Director's Decision or the Notice of Violation.

4) The permittee shall have no right to administrative hearing associated with the issuance of a settlement agreement or an amended Director's Decision.

j) If the Director's Decision includes the assessment of an administrative penalty and the permittee named in the Director's Decision does not request a hearing in accordance with Section 245.1130, the administrative penalty assessed shall be paid to the Department in full within 30 days after receiving the Director's Decision.

k) *All* administrative penalties assessed and paid to the Department *shall be deposited in the Mines and Minerals Regulatory Fund* (Section 1-35(e) of the Act).

- *The Rule should allow the Department to increase or decrease fine amounts during settlement negotiations.*

Response: This is a valid concern. The first draft inadvertently allowed for only a reduction of the penalties in a settlement agreement.

Department Action: See the change above in Section (i)(1)(B).

- *Director's Decisions should be posted on the Department's website.*

Response: The Department is required to post violations on its website pursuant to HFRA § 1-105.

Department Action: None.

- *Local public health departments should be notified of all Director's Decisions.*

Response: Local health departments will be notified of all Director's Decisions.

Department Action: None.

- *The 2-year period mentioned in 245.1120(a)(3)(A) should be removed.*

Response: As was stated above, the Department looked to the Illinois OGA when crafting the first draft of the rules, and the OGA has such a look back period. Also, as have been explained, the rules must be tailored to meet the peculiarities of HVHHF. In the context of HVHHF, two years is not a long enough period for considering violations. Extra deterrence is required in this situation, due to the factors described above. The two year time frame will be modified to ten years.

Department Action: Rule 245.1120(a)(3)(A) will be modified in the Department's response to the first comment above.

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[1] E.g., John Caniglia, *Youngstown Contractor Sentenced to 28 Months for Dumping Fracking Waste*, Cleveland Plain Dealer, http://www.cleveland.com/courtjustice/index.ssf/2014/08/youngstown_contractor_sentence.html (Aug. 5, 2014).
[2] Wyoming Environmental Quality Act § 35-11-300 et seq.
[3] Maryland COMAR 26.19.01.15
[4] Arkansas AOGC RULE A-5.
[5] Rule 245.1120.
[6] HFRA § 1-100
[7] Rule 245.1110(b)(4).
[8] Nevertheless, other states also come in for criticism on grounds of low enforcement or penalty rates. *See* Mike Soraghan, *Oil and Gas Spills: Many mishaps among drillers, but few fines*, EnergyWire, http://www.eenews.net/stories/1059984342 (July 15, 2013).

245.1130 Director's Decision Hearings

Comments: The Department received 3 comments concerning Rule 245.1130 on hearings to contest Director's Decisions for regulatory enforcement under the Act. Commenters included the environmental coalition's group submission, the NRDC/ELPC, and the IPHA. The concerns raised by the commenters were as follows:

- *Immediate suspension is improperly limited to only "emergency conditions posing a significant hazard to the public health, aquatic life, wildlife or the environment."*

Response: See generally the Department's response to the comments on Rule 245.1110. However, in reviewing subsection 245.1130(d)(2), a typo is noted that requires correction. The subsection cites to "The order of suspension or revocation of a permit based on Section 245.1000(f) may be stayed…" The rules do not contain a section 245.1000(f). The intended reference is to section 245.1100(f).

Department Action: 245.1130(d)(2) is modified as follows:

2) Stays of Suspension or Revocation. *The order of suspension or revocation of a permit* based on Section 245.1000(f) *may be stayed*, at any time, by the Hearing Officer, *if requested by the permittee by appropriate motion and evidence is submitted demonstrating that there is no significant threat to the public health,* public safety, property, *aquatic life, wildlife, or the environment if the operation is allowed to continue* (Section 1-60(d) of the Act). The Hearing Officer shall issue an order granting or denying a motion to stay within 5 business days after it is heard.

- *The hearing record and related materials from hearings on Director's Decisions should be posted on a searchable Department website database.*

Response: The Department has interpreted this statutory requirement broadly to post not only Director's Decisions (new Rule 245.1135(a)) but also Notices of Violation (new Rule 245.110(e)). The posting of Notices of Violations and Director's Decisions should provide sufficient information to interested persons/entities regarding specific regulatory enforcement. Requiring the posting of enforcement process documentation similarly to the posting of permit process documentation would add additional burden to the Department's already tight resources. The enforcement process is different than the permitting process in that the former does not provide for the public participation of the latter. Further, Rule 245.2235(b) already requires substantial public notification of final Director's Decisions where the result is a regulatory violation. Finally, if additional information is necessary, such information can be provided by the Department in response to inquiry. Based on the foregoing, no change is made to the rule to address this issue.

Department Action: None.

- *Typographical error.*

Response: Rule 245.1130(f) adds in unnecessary language.

Department Action: Rule 245.1130(f) is modified as follows:

The costs associated with *the administrative hearing shall be borne by the permittee* (Section 1-60(f) of the Act). ~~Foreseeable costs are the costs of transcription services:~~, ~~court reporters attendance at the hearings~~, ~~and transcribing the hearing record into paper and electronic format for all parties as required. All parties shall be responsible for their own attorneys' fees, and the Department shall provide the Hearing Officer and the Hearing room at IDNR Headquarters. The Hearing Officer shall have the discretion to order the permittee to pay additional costs as appropriate.~~

245.1140 Alternative Enforcement

Comments: The Department received a comment from the Sierra Club (Illinois Chapter) concerning Rule 245.1140, which generally addresses potential alternative enforcement, in addition to the rule's regulatory enforcement set forth in Subpart K. The essence of the comment was that subsection 245.1140(f) improperly changes the intent of the Act by stating that operators who violate the rule may be liable for civil penalties (instead of "shall be liable for civil penalties").

Response: The Department, in the first notice draft of Rule 245.1140, attempted to clarify that regulatory enforcement by the Department under the rule does not preclude additional alternative enforcement of HVHHF violations. Such alternative enforcement could be Department enforcement for violations of the Oil and Gas Act or the Oil and Gas Act rule (See subsections 245.1140(a), (b), (c) and (d)), State's Attorney/Attorney General enforcement for criminal violations under Section 1-100 of the Act (see also Rule 245.1140(e)) or State's Attorney/Attorney General enforcement for civil penalties under Section 1-101 of the Act (See subsection 245.1140(f)).

The "shall be liable" clause to which the commenter refers to is relevant only to civil lawsuits brought in the county where the well is located or in Sangamon County. The rule with the "may" clause in subsection 245.1140(f) was intended to broaden, not limit, enforcement by acknowledging that Department enforcement of regulatory violations under the rule does not preclude other enforcement activities provided for in the Act or the OGA and its accompanying administrative rule. However, since the commenter has pointed out an alternate interpretation and the Department would not want the clause misused in a hypothetical lawsuit, the potential for misinterpretation can be addressed. The rule is modified to clarify Rule 245.1140(f).

Department Action: 245.1140(f) is modified as follows:

f) ~~Any person who violates this Part may also be liable for a civil penalty as defined in~~ Regulatory enforcement under this Part does not preclude the recovery of civil penalties by civil action before a circuit court pursuant to Section 1-101 of the Act, which will be in addition to any administrative action taken by the Department.

245.1200 Medium Volume Horizontal Hydraulic Fracturing Completion Reports

Comments: The Department received 8 comments concerning Rule 245.1200 and Medium Volume Horizontal Hydraulic Fracturing Completion Reports. The commenters included the IPHA, Frack Free Illinois, and a few individuals. The essence of the comments was as follows:

- *The completion report should be on IDNR's website in a database that can be searched by county.*

Response: The concern is already addressed by the HFRA. Section 1-110 of the Act authorizes IDNR to "create and maintain a comprehensive website dedicated to providing information concerning high volume horizontal hydraulic fracturing operations," which includes "completion reports by well name and location, dates of fracturing and drilling operation, operators, and by chemical additives."

Department Action: None.

- *The definition for "high volume horizontal hydraulic fracturing operation" does not define "stage as to length or time of flow" for stimulation treatment of a horizontal well.*

Response: The concern is addressed in the Department's response to comments on Rule 245.110 Definitions.

Department Action: None.

- *There is no testing requirement for radioactivity in waste and/or debris generated from Medium Volume Horizontal Hydraulic Fracturing.*

Response: The concern is being addressed in the response to comments regarding Radioactivity.

- *Subpart L regulations concerning medium volume hydraulic fracturing operations created a "separate category of operations that are not subject to regulations applicable to HVHHF and creates ambiguity as to requirements for HVHHF operations and medium-volume hydraulic horizontal fracturing operations.*

Response: The second category was created by statute. The definition for medium volume horizontal hydraulic fracturing operations comes directly from Section 1-98 of HFRA. Except for the completion reporting requirements described in HFRA § 1-98 and the rule, such operations are regulated by the OGA. HFRA § 1-20, Rule 245.100(c).

Department Action: None.

Environmental Impact – Climate Change

Comments: The Department received dozens of comments that did not so much address a particular section of the rules so much as they centered on the issue of climate change. Commenters included Illinois People's Action, Central Illinois Global Warming Solutions Group, Food and Water Watch, Fair Economy Illinois, Frack Free Illinois, and dozens of individuals.

The comments were universally concerned with hydraulic fracturing's impact on climate change. All comments expressed the belief that hydraulic fracturing would exacerbate climate change, either through the extraction and production process, or by increasing supply of fossil fuels, or both. As such, many commenters wanted a ban on HVHHF, or at least a moratorium. Failing that, many urged IDNR to take climate change seriously and promulgate appropriate (but unspecified) rules.

Many comments made scientific arguments, focusing on the increased emission of methane that has been linked to HVHHF sites, and on methane's status as a greenhouse gas. Multiple comments noted that methane is far more potent than carbon dioxide. A few comments specifically cited the work of Anthony Ingraffea, an Engineering Professor at Cornell University and noted HVHHF critic. Some commenters noted the rules' requirements for emission storage and flaring, but found them inadequate, saying that flaring would have its own negative effects on climate change.

A few other comments took a different tack, not identifying HVHHF as a contributor to climate change but mentioning the threat that climate change-induced, increasingly volatile weather might damage HVHHF wells. Others noted that as climate change makes fresh water scarcer, the water used in HVHHF will become harder to come by, and may put an unsustainable strain on communities around fracking sites.

Response: The Department takes climate change as a serious threat, as it may impact everything from the wildlife the Department manages to the rivers the Department supervises, to invasive species it battles. The Department's response to this issue overlaps with, and the Department refers to, its responses to "Strengthen the rules," to comments that generally oppose HVHHF, to comments about energy policy, and to comments about environmental protection generally. This rulemaking is not a suitable forum for a climate change debate. But because climate change does indeed threaten things that the HFRA and other statutes direct the Department to protect, namely, human health and safety, property, wildlife, aquatic life, and the environment, and because the comments were from Illinois citizens commenting on the rules, albeit at a conceptually high level, the comments require a response.

The Department acknowledges that natural gas is viewed by many as a bridge fuel to a lower-emissions future. The Department also acknowledges that natural gas systems are now a significant source of greenhouse gases,[1] and that methane is a very potent greenhouse gas, classified as such under Illinois law. Methane has also been linked to HVHHF activities by multiple studies of methane emissions in the Marcellus shale.[2] A well-documented study prepared for the European Parliament concluded, "fugitive Methane emissions from hydraulic

fracturing processes can have a huge impact on the greenhouse gas balance."[3] The state of New York has concluded that fugitive emissions are dwarfed by the combustion and related emissions, but estimated the first-year CO_2 equivalent for a single horizontal well as 14,761 metric tons, then dropping to 12,300 metric tons per year, with half of the GHG emissions from methane. A recent study at Princeton found that "[b]ecause CH_4 initially has a much higher effect on radiative forcing than CO_2, maintaining low rates of CH_4 leakage is critical to maximizing the climate benefits of natural gas fuel-technology pathways," and cited another study concluding that "coal-to-gas switching on a global scale would result in increased warming on a global scale in the short term."[4]

The HFRA specifically tasks the Department with ensuring that all HVHHF operations are carried out in a way that protects the public and the environment. Both the HFRA and the administrative rules address emissions and environmental issues. However, climate change is not mentioned in the HFRA. Nor is carbon dioxide, airborne methane, or greenhouse gases, although the Act deals with these collectively and implicitly through controls on emissions.

Specifically, the HFRA has clear intent not simply to reduce but to minimize emissions during flowback, during production, and during storage of fluids. See, e.g., HFRA § 1-75(e). This is a best practice urged by those who advocate that "[p]ermit requirements should incorporate cost-effective investments that can reduce all of these pollutants through greater energy efficiency, by minimizing product losses (from leaking tanks or process units), and by reducing reliance on flaring."[5] In the HFRA, green completion methods are encouraged over flaring, and venting is allowed to occur only under extraordinary circumstances. The rules have followed that framework and will be refined to give meaning to the Act's intent in that regard.

However, whether or not HVHHF in Illinois results in greater or fewer greenhouse gases than are emitted on the planet at present, the basic approach of the HFRA limits the Department's options in controlling greenhouse emissions programmatically through HFRA, let alone through the rules. The principal limit is that the HFRA is a permitting scheme that addresses wells one by one, whereas climate change occurs through the cumulative result of many contributions.

Department Action: None.

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[1] United States Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2012*, available at http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html#fullreport (April 2014).

[2] In 2011, Howarth, Santoro, and Ingraffea noted as much as a 60% increase in methane emissions around hydraulic fracturing sites in Pennsylvania. In 2013, followup research quantified emissions 2 to 3 orders of magnitude greater than EPA estimates at HVHHF sites. The authors noted that further research was necessary, particularly in impact on climate change. Caulton, Shepson, & Santoro, et al., *Toward a Better Understanding and Quantification of Methane Emissions From Shale Gas Development*, http://www.pnas.org/content/early/2014/04/10/1316546111 (2014). See also Anirban A. Roy, Peter J. Adams and Allen L. Robinson, *Air pollutant emissions from the development, production and processing of Marcellus Shale natural gas*, J. AIR & WASTE MGMT. ASSN., DOI: 10.1080/10962247.2013.826151, http://dx.doi.org/10.1080/10962247.2013.826151; Stephen G. Osborna, Avner Vengoshb, Nathaniel R. Warnerb, and Robert B. Jackson, *Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing* (2011); Santoro, Howarth and Ingraffea, *Indirect Emissions of Carbon Dioxide from Marcellus Shale Gas Development* (Cornell U., 2011).
Cathles, Brown, Taam, and Hunter criticized Howarth, Santoro, and Ingraffea's original work. See *A Commentary on "The Greenhouse Gas Footprint of Natural Gas in Shale Formations,"* arguing that previous researchers

overestimated the amount of fugitive emissions, understated the effect of green technologies, focused too much on heat generation rather than electricity, and assumed too long of a time interval, given methane's shorter lifespan. But see Howarth's recent response to modeling criticisms, Howarth, R., *A Bridge to Nowhere: Methane Emissions and the Greenhouse Gas Footprint of Natural Gas*, Energy Science & Engineering, available at http://www.eeb.cornell.edu/howarth/publications/Howarth_2014_ESE_methane_emissions.pdf (Apr. 22, 2014).

[3] Lechtenböhmer, L. et al., *Impacts of Shale Gas and Shale Oil Extraction on the Environment and on Human Health*, European Parliament Report, available at http://www.europarl.europa.eu/RegData/etudes/etudes/join/2011/464425/IPOL-ENVI_ET(2011)464425_EN.pdf (June 2011).

[4] Alvarez, Ramon, Stephen W. Pacalab, James J. Winebrakec, William L. Chameidesd, and Steven P. Hamburge, *Greater focus Needed on Methane Leakage from Natural Gas Infrastructure*, Proceedings of the National Academy of the Sciences, vol. 109, no. 17, available at www.pnas.org/cgi/doi/10.1073/pnas.1202407109 (Feb. 13, 2012),

[5] Environmental Integrity Project, *GAS RUSH: Increasing Greenhouse Gas Emissions from New Oil, Gas, and Chemical Plants*, available at http://www.environmentalintegrity.org/news_reports/documents/FINALGHGReport20131205.pdf (Dec. 5, 2013).

Environment and Ecosystems

Comments: The Department received thousands of comments, including general assertions within more specific comments, about the impact of HVHHF on the environment, with the great majority urging that the rules should do more to protect the environment. The Department also received many comments on the impacts of HVHHF on "natural resources." All of the more-than-2,500 comments from Food & Water Watch expressed the thought that the rules did not do enough for our "natural resources." While many comments also had thoughts or concerns on specific environmental issues, such as air pollution or water pollution, others did not differentiate. In addition, many comments identified "wildlife" or "forests" or "ecological values" as a concern without specifying a particular rule subsection. The Nature Conservancy submitted a detailed comment which singled out the omission of specific protections for wildlife in the rules.

The essence of the comments described above was that impacts to the environment (not just air and water), to ecological values, to natural resources, and in particular to wildlife, are under-considered in the public policy concerning HVHHF and have been under-considered in the rules, notwithstanding that the Act in several places directs that the Department take such factors into account. In the process of review, the Department decided that it made more sense, both to avoid repetition and because the categories blur, to treat all these comments as variants on one general concern.

The Department is mandated by the HFRA to protect wildlife, aquatic life, and the environment, as well as by numerous other statutes to protect and preserve natural resources (*see* response to comments on IDNR's Role and Mission). The Department seriously considered the comments, as well as available literature on natural resources impacts of HVHHF. Articles and studies reviewed included those footnoted below. The Department also reviewed statutes and rules of other states, and at the federal level.

The concern is legitimate and the Department has statutory authority and some regulatory tools to address the concern. This Response will address the individual parts below:

Impact on Environment, Ecology, and Wildlife. HVHHF may impact the environment in numerous ways. Some of these, and in particular water pollution and air pollution, are specifically addressed by sections of the Act and the rules. The requirement of a water management plan, the many requirements as to casing and cementing especially when fresh water is encountered while drilling, containment of fluids, setbacks from streams, and other provisions are specifically designed to protect water resources. The restrictions on flaring and venting, the requirement of getting IEPA permits, and the restrictions on emissions from storage tanks are all designed to improve air quality.

While, like people, ecosystems may also be impacted by air pollution or water pollution,[1] HVHHF may impact the environment in many more ways than those two. As with public health, it is inefficient for IDNR to here re-invent the wheel when there is a large and ever-developing literature on such possible impacts. The State of New York undertook a comprehensive environmental impact study[2] in anticipation of a rulemaking on HVHHF. That EIS, after public

comment and amendment, is nearly 300 pages long and a necessary read for anyone who desires to learn more about the possible environmental impacts of HVHHF. At about the same time, a consortium of universities and colleges in New York, led by Stony Brook University, reviewed environmental impacts of HVHHF and issued their own report.[3] This spring, a government-convened Canadian task force released a weighty and cautious report on HVHHF.[4]

Non-governmental organizations have weighed in. While they have a point of view, the reports serve as clearinghouses and successfully collect concerns. Many are careful in their presentations and also serve as useful compendia of other sources. Some useful overviews have been assembled by the National Parks Conservation Association's Center for Parks Research,[5] the Wildlife Society[6] (collecting results from over 200 studies), and the Union of Concerned Scientists,[7] among others.

The following are the most salient possible environmental and ecological impacts identified in all of the above:

Direct habitat loss. Well sites have footprints of two to 10 acres. Site and road preparation in forest claims hundreds or thousands of trees and, outside forest, other cover, farmland, and sometimes wetlands, substituting gravel and industrial structures.

Fragmentation. Wildlife habitats (especially forests), interdependent ecosystems, and migration patterns become cut up with construction, roads, and pipelines.[8] New York called fragmentation "one of the greatest threats to biological diversity" and warned of "serious cascading ecological consequences."

Erosion and land disturbance. Construction removes cover.

Sedimentation. Clouds water, damages habitats, reduces photosynthesis.

Aquatic habitat reduction. Surface waters may decrease from water withdrawals.[9]

Hydrologic capture. Some areas become wetter; others drier.

Homogenization of bird or wildlife communities[10] as more sensitive species are displaced.

Increased pathways for predator and invasive species. Roads, clearings.

Increased opportunities for invasive species to "hitchhike." Vehicles, pipelines, tanks, workers' shoes, increase in transient camping.

Increased noise. Trucks (up to 1,000 or more trips per well), generators, heavy equipment for preparation.

Increased light. Rig lights, all-hours shifts, trucks, flaring.

Interference with viewshed.[11] Drilling rigs, clearcut spots in landscape.

The literature demonstrates that pipelines, roads, traffic, noise, emissions, and light can inhibit wildlife movement, lead to increased roadkill, and inhibit biodiversity. Species must expend energy to avoid the newly-industrialized sites, or may leave the area altogether. In the Pinedale Mesa area of Wyoming, opened to HVHHF in 2000, the mule deer population in the area dropped by 56 percent between 2001 and 2010, and a study suggested that natural gas development in the area was shifting mule deer from higher quality to lower quality habitat. A study by the Wildlife Conservation Society documented an 82 percent reduction in high-quality pronghorn habitat in Wyoming's natural gas fields, which had historically been key wintering grounds. A joint study by partners including the Pennsylvania Game Commission found potential threats of large potential declines in populations of migratory birds, including the scarlet tanager and the black-throated warbler. Aquatic life, including game fish, is at risk of changes to the acidity, salinity, or other pollution of streams or other bodies of water. Already-threatened species such as bats are at greater peril from water withdrawal and contamination, habitat loss and degradation.

Unfortunately, as a federal GAO study concluded, the extent of the "inherent environmental … risks" associated with shale oil and gas development is unknown, largely because studies do not generally take into account the potential long-term, cumulative effects.[12] The likelihood and magnitude of impacts will depend in part on the siting and density of HVHHF wells, the rate of development, and the rates and longevity of production. That some variables largely have impact in the aggregate is problematic because the HFRA addresses wells on an individual basis, not ideal for protecting against ecological impacts that are often only manifest on a cumulative basis.

The science is still evolving and many studies and sources caution that we do not yet know all the effects and impacts, especially on the environment, and most particularly on the non-human environment. Technology and regulation may mitigate some of these impacts. However, regardless of technology, large-scale onset of HVHHF operations in Illinois, concentrated in the areas most likely to yield oil and/or gas, if it occurred at the rate and density seen in other jurisdictions, would have large and possibly transformative impact on resources within Illinois.

Departmental Authority. The Department already has, under both the Act and Rule 245.310 (Permit Denial), the authority to deny an application for a HVHHF permit if the application fails to meet the requirements of Rule 245.300(c)(3) (requiring a showing that the plans submitted will be adequate and effective) or if the application fails to meet the requirements of Rule 245.300(c)(4) (requiring a showing that the operations will be conducted in a manner that will not cause pollution). No change to the rule is necessary for the Department to be able to do that. As discussed below, the Department is also empowered in numerous places in the Act to protect wildlife, aquatic life, and the environment.

The Department also has authority under both 1-15 and 1-130 of HFRA to make rules that will enable the Department to serve the statutory purposes. Underlying and complementing this HFRA authority is the Department's general charge under existing law to take "all necessary

measures" to protect, preserve, and conserve the flora and fauna of the State. See generally the Response to comments on IDNR role and mission.

Measures. Because the science is evolving, and there are so many unknowns, application of the precautionary principle, discussed elsewhere in these responses, would dictate an extremely cautious approach. However, the Department finds that while the HFRA operated, overall, as a regulatory and constricting statute, the legislature did not intend to halt, ban, or reduce possible HVHHF activity to a trickle. The Department sees two ways that it can improve the sensitivity of its draft rules to the legitimate ecological concerns of the commenters while remaining true to the multiple aims of the Act.

The first is to harmonize the multiple characterizations of what the Department is supposed to protect. The HFRA makes extremely clear, in multiple places, that the Department is to protect public health, public safety, property, wildlife, aquatic life, and the environment. The Department is unaware of any intent by the legislature to short-shrift any of these values in any aspect of administration of the program. However, because of the attempt by drafters to assemble pieces from many different sources, these characterizations were inserted in different formats and formulations at different places in the Act, leading to possible confusion. Therefore, the Department will utilize in the rules one, consistent formulation, ensuring that it is clear that ecological values are protected.

The second is to make clear, as with public health, that consideration of these factors is part of the decision-making process for the permit itself. Again, the Department can better perform its mission, inform its decision, and assure the public, if it sets forth in any permit decision the ecological factors that it considered, and makes findings as to those. Requiring the Department to do this will impose no additional burden on the applicant but will ensure that these matters are at least considered.

Department Action:

245.310(d) is modified as follows:

…an emergency condition exists under which conduct of the high volume horizontal hydraulic fracturing operations would pose a significant hazard to public health, <u>public safety, property,</u> aquatic life, wildlife, or the environment (Section 1-60(a)(6) of the Act).

245.320(e) is modified as follows:

The permittee shall also be responsible for adjusting to field conditions a necessary during well drilling and construction (see Subpart F), high volume horizontal hydraulic fracturing operations, and hydraulic fracturing flowback periods (see Subpart H), to ensure ~~the~~ <u>public health, public</u> safety ~~of people~~, property, wildlife, <u>aquatic life,</u> and the environment as long as the actions are adequate and effective to comply with the Act, this Part, the Illinois Oil and Gas Act, and the administrative rules promulgated under that Act. The actions shall be reported to the Department's District Office within 72 hours for the Department's determination whether the actions require the filing of an application for permit modification pursuant to Section 245.330.

245.330(d) is modified as follows: See the response to the comments on Rule 245.330.

245.615(a) is modified as follows:

Upon a determination of pollution or diminution by the Department, the Department shall issue a Notice of Violation and proceed with appropriate enforcement pursuant to Subpart K. The enforcement shall, in addition to any other penalty available under the law, require the permittee to complete remedial action to temporarily or permanently restore or replace the affected water supply with an alternative source of water adequate in quantity and quality for the purposes served by the water source. The quality of a restored or replaced water source shall meet or exceed the quality of the original water source based upon the results of the baseline test results under Section 245.600(b) for that water source, or other available information. Further, as appropriate, the Department may require the permittee to take immediate action, including, but not limited to, repair, replacement, alteration, or prohibition of operation of equipment permitted by the Department. The Department, in consultation with the Agency and/or the Illinois Department of Public Health, may also issue conditions and orders to protect the public health, public safety, property, ~~or welfare~~ wildlife, aquatic life, or the environment. (Section 1-83(d) of the Act).

245.800(b) is modified as follows:

All phases of high volume horizontal hydraulic fracturing operations shall be conducted in a manner that shall not pose a significant risk to public health, ~~life,~~ public safety, property, aquatic life, ~~or~~ wildlife, or the environment (Section 1-75(a)(2) of the Act).

245.835(c) is modified as follows:

High volume horizontal hydraulic fracturing operations must be immediately suspended if the permittee or Department inspector determines that any anomalous pressure or flow condition or any other anticipated pressure or flow condition is occurring in a way that indicates the mechanical integrity of the well has been compromised and continued operations pose a risk to public health, public safety, property, wildlife, aquatic life, or the environment. Remedial action shall be immediately undertaken. (Section 1-75(b)(5) of the Act)

245.835 (d) is modified as follows:

The permittee shall notify the Department inspector and the Department's District Office by phone and electronic mail within 1 hour after suspending operations for any matters relating to the mechanical integrity of the well or risk to public health, public safety, property, wildlife, aquatic life, or the environment. (Section 1-75(b)(5) of the Act)

245.920(a) is modified as follows:

The Department, in consultation with the Agency as the Department deems appropriate, may approve an exemption request made in writing that waives the flaring requirements of Sections

245.900 and 245.910 only if the permittee demonstrates to the Department's satisfaction that the use of the flare will pose a significant risk of injury or property damage and that alternative methods of collection will not threaten harm to public health, public safety, property, wildlife, aquatic life, or the environment (Section 1-75(e)(7) of the Act).

245.1100(f) is modified as follows:

the existence the existence of an emergency condition under which the conduct of high volume horizontal hydraulic fracturing operations would pose a significant hazard to public health, public safety, property, aquatic life, wildlife, or the environment (Section 1-60(a)(6) of the Act); or

245.1120(a)(2) is modified as follows:

the seriousness of the violation, including any harm to public health, public safety, aquatic life, wildlife, the environment or damage to property;

245.1130(d)(2) is modified as follows:

Stays of Suspension or Revocation. The order of suspension or revocation of a permit based on Section 245.1000(f) may be stayed, at any time, by the Hearing Officer, if requested by the permittee by appropriate motion and evidence is submitted demonstrating that there is no significant threat to the public health, public safety, property, aquatic life, wildlife, or the environment if the operation is allowed to continue (Section 1-60(d) of the Act). The Hearing Officer shall issue an order granting or denying a motion to stay within 5 business days after it is heard.

245.300(c)(4) is modified as follows:

4) *the* high volume horizontal *hydraulic fracturing operations,* ~~as proposed, are reasonably expected to~~ will *be conducted in a manner that will protect the public health*, public safety, property, wildlife, aquatic life, and the environment, ~~*and safety*~~ *and prevent pollution or diminution of any water source* (Section 1-53(a)(4) of the Act). For purposes of determining whether the conduct of high volume horizontal hydraulic fracturing operations will protect public health, public safety, property, wildlife, aquatic life, and the environment, the Department shall consider and make specific findings on the following:~~;~~

(i) any input received during the permitting process from local, regional, or state governments, or members of the environmental community;

(ii) any specific facts or opinions received bearing on environmental or ecological impacts of the proposed permit, including but not limited to information on habitat, food supply, migration, breeding or nesting, invasive species, noise, viewshed, light, and hunting or angling opportunities;

(iii) any relevant baseline knowledge of ecosystems in the area likely to be impacted by the HVHHF operations;

(iv) the incremental environmental impact of the HVHHF operations that would be allowed by the permit when added to other past and present HVHHF operations and reasonably foreseeable future HVHHF operations in the vicinity or county, and the cumulative effect of all such operations; and whether allowance of the permit would have a positive, negative, neutral, or undetermined effect on public health, public safety, property, wildlife, aquatic life, or the environment.

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[1] D. Papoulias and A. Velasco, *Histopathological Analysis of Fish from Acorn Fork Creek, Kentucky, Exposed to Hydraulic Fracturing Fluid Releases*, 12 Southeastern Naturalist Special Issue 4 (2013), http://www.eaglehill.us/SENAonline/sena-v7-n1-2008.shtml: 92–111

[2] N.Y. Dept. of Environmental Control, *Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program: Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing in the Marcellus Shale and Other Low-Permeability Gas Reservoirs* (Sept. 2011), available at http://www.dec.ny.gov/energy/75370.html, ch. 6.

[3] New York Marine Sciences Consortium, *An Assessment of Some of the Environmental and Public Health Issues Surrounding Hydraulic Fracturing in New York State* (December 20, 2011), http://www.somas.stonybrook.edu/~awp/downloads/NYMSC-FrackingWhitePaper.pdf (quoting and citing Science and Environmental Health Network, 2011).

[4] Council of Canadian Academies, *Environmental Impacts of Shale Gas Extraction in Canada: The Expert Panel on Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction* (2014), http://www.scienceadvice.ca/uploads/eng/assessments/and/publications/and/news/releases/shale/gas/shalegas_fullreporten.pdf

[5] NPCA, *National Parks and Hydraulic Fracturing: Balancing Energy Needs, Nature, and America's Natural Heritage*, http://www.npca.org/assets/pdf/Fracking_Report.pdf

[6] Wildlife Society (T. Bookhout, ed.), *Impacts of Crude Oil and Natural Gas Development on Wildlife and Wildlife Habitat in the Rocky Mountain Region*, Tech. Rev. 12-02 (Aug. 2012), http://wildlife.org/documents/technical-reviews/docs/Oil /and /Gas /Technical /Review_2012.pdf

[7] . Goldman, D. Bailin, et al., *Toward An Evidence-Based Fracking Debate: Science, Democracy, and Community Right to Know in Unconventional Oil and Gas Development* (Union of Concerned Scientists, Oct. 2013), http://www.ucsusa.org/assets/documents/center-for-science-and-democracy/fracking-report-full.pdf

[8] USDA Forest Service, *Understanding Effects of Oil and Natural Gas Development on Appalachian Forests*, http://www.nrs.fs.fed.us/disturbance/pollution/oil_gas/; Drohan, P.J.; Finley, J.C.; Roth, P.; Schuler, T.M; Stout, S.L.; Brittingham, M.C.; Johnson, N.C.. *Oil and Gas Impacts on Forest Ecosystems: Findings Gleaned from the 2012 Goddard Forum at Penn State University*. doi:10.10170S1466046612000300 (2012), http://www.nrs.fs.fed.us/pubs/42368; E.T. Slonecker, et al., *Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004–2010* (U.S. Geological Survey, Reston, Virginia: 2012), http://pubs.usgs.gov/of/2012/1154/of2012-1154.pdf

[9] Maya Weltman-Fahs, Jason M. Taylor, *Hydraulic Fracturing and Brook Trout Habitat in the Marcellus Shale Region: Potential Impacts and Research Needs*, 38 Fisheries 1 (2013), http://www.tandfonline.com/doi/abs/10.1080/03632415.2013.750112; Licata, Anthony, *Natural Gas Drilling Threatens Trout in Pennsylvania (and Other Appalachian States)*, Field and Stream (July 24, 2009), http://www.fieldandstream.com/articles/fishing/trout-fishing/where-fish-trout/2009/07/natural-gas-extraction-threatens-appalachian

[10] E. Kiviat and K. Schneller-McDonald, *Fracking And Biodiversity: Unaddressed Issues in the New York Debate*, 25 News from Hudsonia 1, 2 (Hudsonia, Fall 2011), http://www.hudsonia.org/wp-content/uploads/2012/01/nfh-Fracking-biodiversity-best.pdf

[11] S. Upadhyay & M. Bu, *Visual Impacts of Natural Gas Drilling in the Marcellus Shale Region* (Cornell U., 2010), http://cce.cornell.edu/EnergyClimateChange/NaturalGasDev/Documents/City%20and%20Regional%20Planning%20Student%20Papers/CRP5072_Visual%20Impact_Final%20Report.pdf; Columbia University Urban Design Research Seminar, *Hancock and the Marcellus Shale: Visioning the Impacts of Natural Gas Extraction Along the Upper Delaware* (2009), http://www.urbandesignlab.columbia.edu/sitefiles/file/HancockAndTheMarcellusShale.pdf
[12] United States Government Accountability Office, GAO-12-732, *OIL AND GAS: Information on Shale Resources, Development, and Environmental and Public Health Risks* (September 2012)

Natural Disasters (Earthquakes, Floods, and Tornadoes)

Comments: IDNR received thousands of comments regarding the potential for earthquakes, tornados, and floods to disrupt HVHHF operations. This subject was one of the most frequent comments at public hearings downstate. Not all commenters commented on all possible disasters. The common theme was that a natural disaster could destroy or disperse the open-air apparatus, pits, tanks, or other features of a well site, and that the rules did not adequately (or at all) address the resultant hazards, primarily pollution, posed. Because the issues vary somewhat by disaster they are broken down individually.

Storms/Tornadoes. IDNR received over 100 comments regarding the potential effect of storms or tornadoes on HVHHF operations. Commenters included speakers at the public hearings, online commenters, Frack Free Illinois member submissions, and many individual commenters. Representative comments:

> *"There are no safety regulations proposed to address risks associated with tornado activity/weather related natural disasters, despite the fact that Illinois has experienced 674 tornadoes in the past 10 years…this raises concerns about stored flowback water and tanks."*
>
> *"Every single county has at some point been struck by tornadoes. What if a highly destructive tornado hit an area covered in fracking sites? What would happen if there were containers filled with frack fluid or produced water at the site? Or even contaminated water temporarily stored in an open pit? The safety of Illinois residents depends on a quick response for disaster relief in the event of a tornado, but there are no rules or regulations for dealing with harmful debris spread from fracking sites."*
>
> *"Just imagine the tornado that hit Washington, IL last Sunday, November 17, 2013 had hit instead a county with multiple fracking sites in southern Illinois. 'Temporarily' stored flow-back water, tanks filled with frack fluid or produced water could be spread for many miles over private property, people, and animals."*
>
> *"…living in the Peoria area, working in East Peoria, a community hit by these tornadoes, and having a number of co-workers that lost their homes from these storms really raises my concern on this issue!"*

The essential points commenters made were the following:

- *The regulations for HVHHF operations need to address tornado or storm risks*
- *Operators should be held responsible for the damage caused by stored fracking fluids that spill during a storm event*
- *IDNR should study tornado safety as it applies to fracking sites, equipment, emergency procedures, and other such issues*
- *Commenters also submitted links to maps of Illinois tornado occurrences*

Response: Much of Illinois is dotted with industrial, agricultural, and other activity that includes structures, including containers of potentially dangerous materials, that conceivably could be hit by a tornado or an object blown in a storm wind. The Department is aware of no risks particular to HVHHF as a result of tornadoes, and is not aware of – nor did commenters point out – HVHHF materials being disrupted by a tornado so as to endanger public health or safety. A 1,000-gallon tank of fluid weighs 4 tons, and a loaded tanker truck will exceed 60,000 lb., unlikely to be blown about even by a tornado.

Large-scale emergency preparedness issues are a fair policy question but beyond the scope of this rulemaking. The Illinois Emergency Management Authority is the more appropriate state entity to coordinate responses to storms and tornadoes.

Department Action: None.

Earthquakes. Over 5,000 comments were received, almost all from individuals, including online commenters, the approximately 1,800 Frack Free Illinois petition signers, several hundred using the Fair Economy Illinois website, approximately 2,567 Food & Water Watch responders, some Sierra Club member submissions, a few CREDO responders who added to the template comment, and written submissions to IDNR. Although Regional Ass'n of Concerned Environmentalists [RACE] submitted an organizational comment, these comments were notable for their individual variety, for the high percentage originating from southern Illinois, and for the grassroots aspect. Many attached academic studies and newspaper articles. Representative comments include:

> *"There are … risks of substantial injuries and damages created when the toxic fracking fluid left in the ground, in pipelines, and in wells (injection and otherwise) is let loose as a result of a major earthquake. There are NO rules establishing guidelines for stopping fracking wells in the event of earthquakes, and NO considerations for siting any wells specifically in active seismic zones. That omission is a reckless disregard for the saftey of Southern Illinois residents, their property, and the ecology of the region."*
>
> *"One of the things I grew up with, everybody in Southern Illinois knows we are on this massive fault line. There is no preparation for it. We don't have the political clout the people in Chicago do, so there is not adequate funding for disaster relief. There is no – I don't think any large scale preparedness plan."*
>
> *"We don't know what happens when you frack in major seismic zones like the Wabash and New Madrid fault lines. That means Illinois is being subjected to a massive science experiment with hundreds of thousands of area residents being used as human subjects."*
>
> *"IDNR's proposed rules for seismicity include NO recognition of the risks of injuries, property damage, and ecological damage that would result from a major earthquake at or near injection/disposal wells or fracking wells. Burst pipes,*

cracked or broken casings, cracked storage tanks, up-heaved pit liners, broken well structures, and migrating toxic fluids would cause untold human suffering and ecological degradation that could never be compensated or repaired."

"Earthquakes of these magnitudes can easily damage injection wells, fracking wells, open air pits causing toxic and radioactive fluids to pour into the ground and contaminate the soil and the hundreds of thousands of Illinoisans. IDNR would not only be responsible for the damages directly caused by the earthquake itself, but a toxic chemical disaster, ruptured pipelines and wells."

"A naturally occurring earthquake – which has happened in the past and is likely to happen again at some point, would easily damage fracking wells, open air pits, pipelines, injection wells."

"the only possible way to protect public safety and health with respect to the earthquake danger is to not allow fracking in earthquake prone zones. Meaning where there's active earthquake faults like the two that we have down here in Southern Illinois."

The essential points raised by the commenters were the following:

- *Earthquakes are not mentioned or addressed in the rules.*

- ***Readiness/risk:*** *There is no large scale preparedness plan to deal with earthquakes in Illinois; an earthquake would damage infrastructure, including oil and gas infrastructure (cemented wells, pits, pipelines, etc.) and release toxic and radioactive fracking fluids in addition to jeopardizing and disrupting health and lives of Illinoisans. How will emergency responders handle an earthquake in a fracking zone?*

- ***Siting:*** *Do not allow fracking in earthquake-prone zones; southern Illinois, situated between the Wabash and New Madrid earthquake zones, is in the highest category of earthquake danger; the oil and gas industry's "best practice" guidelines say there should be no fracking in seismically sensitive areas.*

- ***Warning:*** *The rules allow for up to four fracking-induced earthquakes of at least a magnitude of 4.9 before a company has to shut down an injection well; the traffic light system is too simplified and lax; the traffic light system thresholds should be lowered based on national case histories.*

- ***Seismicity:*** *More studies should be done on the potential for earthquakes before fracking is allowed; the rules on seismicity only apply to Class II injection wells, but should also apply to fracking operations.*

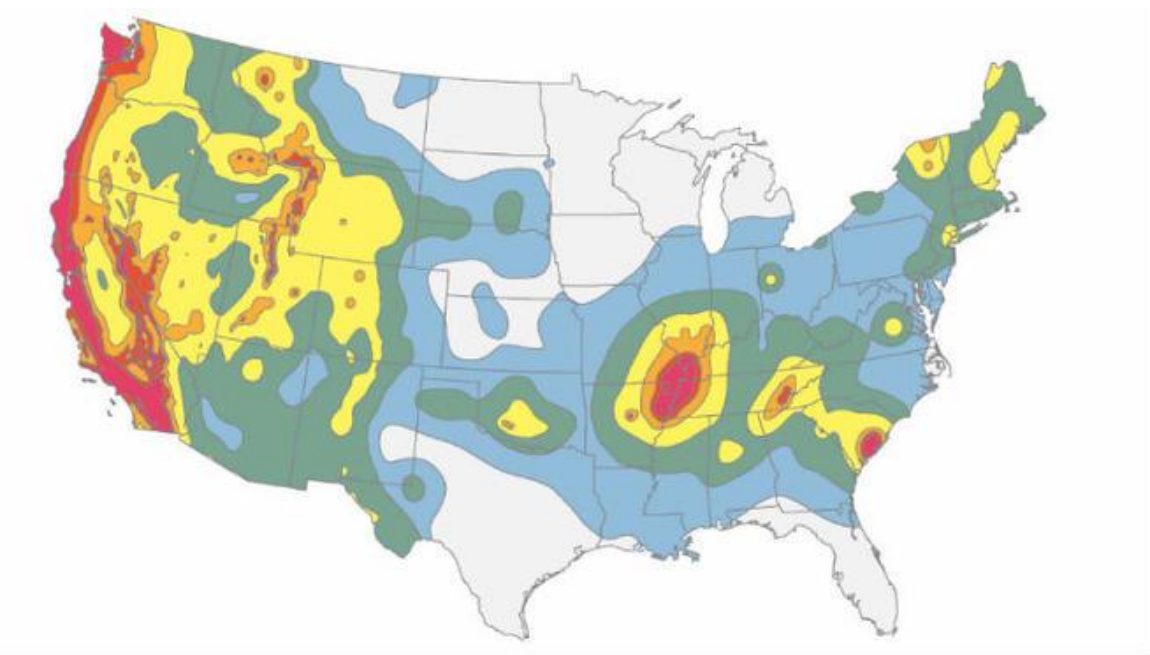
- ***Liability:*** *Does homeowner and renter insurance cover man-made earthquakes? Operators should be held responsible for the damage caused by earthquakes; Fines for continuing to frack after an earthquake are too low.*

Response: IDNR has addressed some of these issues in the Department's responses to other comment groups. In response to comments on *causing* earthquakes ("induced seismicity"), IDNR amended the Oil and Gas rules by lowering the threshold for the traffic light system and increasing the distance for notification. *See* Response to comments on 240.796 Seismicity. Commenters are correct that the induced seismicity section of the rules applies only to earthquakes induced by injection wells.

In response to fines, see the Department's response to the comments on Sec. 1120(c). With respect to civil liability, the Department refers commenters to the HFRA section on alternative enforcement and civil lawsuits, which the Act does not supplant. With respect to insurance, the Department cannot answer that question in the abstract and suggests that insurance against almost any eventuality is available, but agrees that existing policies may have exceptions and that coverage against HVHHF-earthquake risk might entail additional premiums.

The other comments, however, the bulk of those in this section, relate specifically to how an earthquake would *affect* HVHHF operations and sites rather than HVHHF being the cause (although some commenters suggested that a small HVHHF-induced quake could set off "the big one"), and accordingly, to the risk of siting HVHHF in an earthquake hazard zone.

A major earthquake in southern Illinois could have severe consequences.[1] The New Madrid fault is still considered active,[2] the less-well-understood Wabash Valley seismic zone is considered a threat,[3] and Illinois was recently rated by the USGS as at high risk of suffering damaging earthquakes over the next 50 years, with southernmost Illinois in particular at above-average risk.[4] As the USGS map below of earthquake risk zones shows, this risk distinguishes southern Illinois from the Pennsylvania and Ohio shale plays, from the North Dakota-Montana Bakken play, and from the Barrett and Eagle Ford plays (notably, small spots in Oklahoma and Ohio now show as risks that did not before HVHHF).



For that reason, it is understandable that most other jurisdictions have not considered this issue, and, since the HFRA borrowed from other states, that this issue was not covered in the statute. IDNR's first notice draft of the rules used the statute as its exclusive starting point, and so did not address this risk, except in the broadest sense.

However, the risk is too great to ignore. As recently reported, "Earthquakes are occurring more frequently in parts of the U.S. where they have historically been rare, and quake hazard is rising for people not used to thinking about or preparing for it…. Among the highest risk states: Missouri and Illinois.

"According to the USGS, the frequency of earthquakes in the central and eastern U.S. has quintupled, to an average of 100 a year during the 2011-2013 period, up from only 20 per year during the 30-year period to 2000."[5]

Some commenters asserted that IDNR needed authority to shut wells in in case of an earthquake. The Department already has that authority, Sec. 1-60, and so needs no additional rule for that. However, admittedly, earthquakes typically come without warning and do not last long enough for any cessation order to be generated let alone implemented during any earthquake. Thus, any such order would be closing the barn door after the horses had left.

Southern Illinois is already home to scores of thousands of old abandoned and plugged wells as well as over 30,000 existing, producing oil and gas wells, many of which have exposure to the same risk of earthquake as any new HVHHF wells would have. Illinois has been living with these risks for a long time. However, the Department also recognizes that HVHHF is different in kind and scope than conventional oil and gas extraction. In particular, because of the need for large storage of chemicals onsite, in tanks or sometimes pits, and because a large portion, sometimes as much as 90%, of the injected fluids remain deep in the earth, under pressure, HVHHF creates conditions that simply do not exist at conventional well sites. If large temporary above-ground pipeline networks are created to support a field (as opposed to individual wells), that creates an additional vulnerability point.

Although accounts of earthquake damage to wells are not common, the commenters' concerns have historic and scientific basis. Slips and shears in formations demonstrably can pinch or interrupt casings and damage wells[6] or cause renewed flow of hydrocarbons.[7] Vibratory movements and ground displacements may also collapse well casings or damage pumps or power supply.[8] In 1925, an earthquake caused a Wyoming oil well that had been unproductive for years to begin spouting a tall column of oil and water for a few days, creating fire hazard.[9] In 1941, the first of two relatively small (4.8) earthquakes damaged oil wells near Torrance, California, and the second ruptured a 55,000-gallon oil tank, sending oil down the streets, and halting production at numerous wells where casings and other equipment suffered damage.[10] In 1944, two California quakes of M 4.5 and M 4.4 damaged oil wells at reported depths of 3,000-6,000 feet.[11] In the oil fields near Coalinga, California in the 1983 earthquake, "surface facilities such as pumping units, storage tanks, pipelines, and support buildings were all damaged to some degree" and "subsurface damage, including collapsed or parted well casing," was observed on 14 wells (although that amounted to fewer than 1%).[12] Last year, a British HVHHF operation was

halted after tests showed that there had been casing deformation from a small earthquake caused by its own well activities.[13]

It is unclear to IDNR at this point what steps an operator or applicant could take to further earthquake-proof its below-ground operations. Normal steps used to increase integrity of a well, such as increasing rigidity of casing or thickness of cement, might actually make the well more susceptible to stresses. Also, because nothing in the HFRA limits HVHHF only to southernmost Illinois, a blanket rule requiring earthquake-proofing would impose unnecessary cost on applicants and operators intending activities outside seismic zones. Finally, evidence suggests damage is greater in earthquakes to surface facilities than to underground components.

A siting-based rule suggests itself (and was suggested by many commenters) as an easier and more obvious regulatory tool. The Department looked at California's Alquist-Priolo Special Studies Zone Act, which prohibits permits for residential development within certain zones designated by the State Geologist until geologic investigations demonstrate a lack of risk to surface facilities from future faulting. The Department also takes note that the City of Los Angeles, famously at risk from the San Andreas fault, has banned HVHHF. Yet a location-based rule poses challenges. The Department would have difficulty, at this time, in delineating a strict boundary of any area, because seismic zones do not lend themselves easily to such mapping. The Department strongly recommends that the HFRA-mandated task force do so.

Natural disasters fall under that category of events for which the likelihood is relatively small but the consequences extremely high should the event occur. Risk allocation need not be entirely the province of government. In the private sector, contracts and insurance are two common means of allocating risk, and reliance on such private systems frees a regulator from having to make calculations which are not typically within its role, and lets the market assume the actuarial tasks.

Because of all of the above, the Department will decline at this time to ban HVHHF in "seismic zones," but in order to protect public health and safety will take earthquake risk into consideration in its permitting, and will require proof of both earthquake-contingency measures and adequate insurance in areas rated as above-average earthquake risks on the best available USGS maps, and will require as a condition of any permit granted in such areas that the permittee comply with any emergency preparedness rules of FEMA or IEMA.

Department Action: See rule changes below.

Floods. IDNR received over 250 individual comments regarding the potential effect of flooding on HVHHF operations, plus the approximately 1,800 signers of the Frack Free Illinois petition, and numerous statements were given personally at public hearings. Commenters also submitted maps of the floodplain areas. Representative comments:

> *"Allowing any sort of fracking operations to occur within the Illinois 100-year floodplain zone is asking for disaster."*

"The environmental devastation caused by the recent floods in Colorado is a case in point. Inundated oil pads, flooded wells, overturned tanks, and ruptured well lines were just a few of the problems experienced in Colorado as a result of wide-scale flooding."

"What safety precautions are in place for protection against a tornado hitting one of those open containers or floods causing leakage? IDNR must close this loophole."

"If an earthquake happens, if some floods happen, can you guarantee that these wells will be secure and that they won't leak all over our precious farmland and destroy our environment for our children and for our grandchildren?"

"Currently, the Big Muddy is at flood stage and a week ago, torrential rain fall happened with flash flooding…You need the voice of downstate residents who have homes and health directly affected by fracking."

The essence of the comments was as follows:

- *Much of southern Illinois is flood-prone*
- *Having tanks or pits with chemicals in them, or oil and gas operations, poses an environmental and/or health risk in a floodplain*
- *Open-air pits are particularly vulnerable in a flood, and can expose everything downstream to the chemicals in the pit*
- *HVHHF operations should be prohibited in the 100-year floodplain*

Response: IDNR is well aware of the risks of floods. The Department's own regulations state, "Man's activities on flood plains are subject to periodoc inundation which result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general wefare." 17 Ill. Adm. Code 3706.120.

The Department is also aware of potential impact of flooding on oil and gas operations in a floodplain. Flooding in Colorado in September 2013, shortly before the release of the first notice draft rules, with well-publicized photographs of rigs and fluid tanks surrounded by water or floating, no doubt accounted for some of the vocal concern on this topic. The Department has no current inventory of how many oil and gas wells exist in Illinois within the 100-year floodplain as delineated by FEMA but assumes it is numerous. At the present, some past wells in Illinois are actually permanently underwater due to the meandering of the Wabash River.

Obviously, the bond between cement and soil may be compromised in inundated soil, and the compaction after floodwaters recede may cause stress on a cement column or casing, and

conceivably could create pathways for gas or fluid migration to the surface or to freshwater zones. Compaction in areas prone to inundation, combined with the withdrawal of fluid or gas from deep below, can also cause subsidence at the surface.[14]

The Department is also aware that heavy rainfall can render normally adequate berms or impoundments useless, and may lead to contamination of fresh water, beyond the setbacks set forth in the statute. An open reserve pit of flowback or produced water would be extremely vulnerable in a flood.

Insurance industry experts consider that "an overlay of proximity to rivers and flood zones should be incorporated into environmental engineering reviews that form the basis for an environmental underwriter's exposure evaluation" with respect to oil and gas development.[15] The Department, charged by HFRA with protecting public health and safety and envirnoment, and by other law with protecting generally the flora and fauna, rivers, streams, and wetlands of Illinois, should do no less in permitting HVHHF activities.

The Department already regulates construction in floodways, through Part 3700 of the natural resources administrative code, and in floodplains, through Part 3706. Unlike conventional wells with a small footprint, an HVHHF well site or activities on that site might constitute construction within the meaning of 17 Ill. Adm. Code 3700.20 and would require a permit from the Department if within the floodway of any stream serving a tributary area of 640 acres (in an urban area) or 6,400 acres or more in a rural area. 17 Ill. Adm. Code 3700.30(a).

The Department is also aware of the pollution potential of hazardous substances being stored or used in a floodplain. 17 Ill. Adm. Code 3706.420 addresses construction which causes pollution, hazards, or nuisances within the regulatory floodway, and 3706.520(b), in the flood fringe. The Department also has standards for floodproofing structural storage facilities for "chemicals … or other toxic chemicals which could be hazardous to public health, safety, and welfare." 17 Ill. Adm. Code 3706.530(c)(12). Many of the chemicals used in HVHHF qualify.

The Department also notes that advances in drilling technology allow access to targeted formations from multiple angles. Siting a well site on higher elevation may still give access to the same hydrocarbons, but from a safer and drier vantage point.

Some states have already implemented or recommended (in advance of adopting an HVHHF program) straightforward bans, with or without additional setbacks, on HVHHF activities within the 100-year floodplain. Setbacks are a simpler tool than are well-by-well determinations for giving clear guidance to an applicant of what locations might or might not be suitable for an HVHHF operation. However, as discussed in the response to comments on 245.400, the Department did not find legislative intent. Thus, the Department will clarify that certain HVHHF activities are to be treated as construction and as storage of hazardous substances for purposes of siting in floodways or floodplains.

Department Action: Section 245.210 Permit Application is modified as follows:

c) If any part of the well or well site identified in 245.210(a)(2) is in an area identified by the U.S. Geological Service as having a two-percent or more probability of exceedance (in 50 years) of peak ground acceleration of 0.4 standard gravity (g) or more, then the plans submitted per subsections 11 (Hydraulic Fracturing Fluids and Flowback Plan), 12 (Well Site Safety Plan), 13 (Containment Plan), and 14 (Casing and Cementing Plan) shall identify measures the applicant will take to protect the components in those plans against an earthquake of M 4.5 or more, and the Insurance Policy identified in subsection 19 above shall have a rider providing coverage against loss or claims resulting from earthquakes of M 4.5 or more.

d) If any part of the well or well site identified in 245.210(a)(2) is in an area identified as a floodplain under 17 Ill. Adm. Code 3700 or 17 Ill. Adm. Code 3706, it shall be considered a construction under either or both of those parts and the applicant shall be responsible for obtaining all permits under the applicable Part or Parts above, and the Insurance Policy identified in subsection 19 above shall have a rider providing coverage against loss or claims resulting from flood.

Section 245.300(b)(3) Permit Decision shall be modified as follows:

3) *all* supplemental *information provided by the applicant in response to*:

A) *any public comments* (Section 1-53(b)(3) of the Act);

B) recommended findings of hearing officer if a public hearing was held ~~the hearing decision~~;

C) the requirements of this Part; and

D) Department requests for information, including any information required or requested to demonstrate preparation against the risk of earthquake, flood, or other natural disaster ~~Department requests for information~~;

Section 245.825(f) General Fluid Storage shall be modified as follows:

f) Any tank, structure, measure, or device intended or used for storage of hydraulic fracturing fluid, hydraulic fracturing flowback, or produced water, unless demonstrated to be outside the regulatory floodplain, shall be considered a construction subject to 17 Ill. Adm. Code 3706.240 and 3706.630 and constructed to the standards set forth in 17 Ill. Adm. Code 3706.530(b) or (c), as applicable. No above-ground tanks or secondary containment structure, measure, or device containing or intended to contain hydraulic fracturing fluid, hydraulic fracturing flowback, or produced water, whether for storage or otherwise, may be located in the regulatory floodway (17 Ill. Adm. Code 3706.420), unless the applicant first secures the necessary permits and completes any mitigation measures required by any permitting agency.

Section 245.830(b)(6) Reserve Pits shall be modified as follows:

6) If located in the regulatory floodway, the reserve pit shall be considered a construction subject to 17 Ill. Adm. Code 3706.240 and 3706.630 and, in addition to the requirements of 1-5 above, shall be constructed to the standards set forth in 17 Ill. Adm. Code 3706.530(b) or (c), or a successor rule, as applicable. No reserve pits may be located in the regulatory floodway or the flood fringe (17 Ill. Adm. Code 3706.420; 17 Ill. Adm. Code 3706.520(b)), unless the applicant first secures the necessary permits and completes any mitigation measures required by any permitting agency.

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[1] *Earthquake Risk Rising in Central U.S., Where Many People Are Unprepared*, WALL STREET J., (July 18, 2014), accessed at http://blogs.wsj.com/riskandcompliance/2014/07/18/earthquake-risk-rising-in-central-u-s-with-many-unprepared/

[2] M.T. Page and S.E. Hough, *The New Madrid Seismic Zone: Not Dead Yet*, 343 SCIENCE No. 6172 (Feb. 14, 2014) at 762-764, DOI: 10.1126/science.1248215, available at http://www.sciencemag.org/content/343/6172/762

[3] D. Rogers & D. Karadeniz, *Overview of the Seismic Threat in the Central United States*, presented at 5th Intl. Conf. on Recent Advances in Geotechnical Earthquake Eng. and Soil Dynamics (May 24-29, 2010), acessed at http://web.mst.edu/~rogersda/nmsz/Sesimic%20zones%20-Midwestern%20US-11-20-2009.pdf

[4] *16 U.S. states at high risk of damaging earthquakes –USGS*, reuters.com (July 18, 2014)

[5] *Earthquake Risk Rising in Central U.S., supra* n.1

[6] M. Dusseault, M. Bruno, & J. Barrera, *Casing Shear: Causes, Cases, Cures*, SOC. PETROLEUM ENG. DRILLING & COMPLETION (June 2001), www.geomechanicstechnologies.com/article/spe72060.pdf

[7] D.F. Hewett, *Geology and Oil and Coal Resources of the Oregon Basin, Meeteetse, and Grass Creek Basin Quadrangles Wyoming* (USGS, 1926) (noting oil wells that had been unproductive for years "'blew' considerable gas and oil for a few days" after the June 27, 1925 Montana earthquake)

[8] Nat. Research Council Comm. on Earthquake Research, *Earthquake Engineering Research* (1969) at 275 (discussing water supply wells and citing loss of wells in 1964 Anchorage quake).

[9] Hewett, supra n.5.

[10] Southern Cal. Earthquake Data Center, *Significant Earthquakes and Faults | Torrance-Gardena Earthquakes*, www.data.scec.org/significant/torrance1941.html

[11] T. Toppozado, et al., *Earthquake Planning Scenario for a Major Earthquake on the Newport-Inglewood Fault Zone*, 42 Cal. Geology No. 4 (Apr. 1989), accessed at www.johnmartin.com/earthquakes/eqpapers/00000077.htm

[12] USGS, *Historic Earthquakes – Near Coalinga, California*, http://earthquake.usgs.gov/earthquakes/states/events/1983_05_02.php

[13] F. Harvey, D. Carrington, & T. Macalister, *Fracking Company Cuadrilla halts operations at Lancashire drilling site*, The Guardian (Mar. 13, 2013), accessed at www.theguardian.com/environment/2013/mar/13/fracking-cuadrilla-halts-operations-lancashire

[14] D. Doornhof, et al., *Compaction and Subsidence*, Oilfield Review (Autumn 2006) at 50-68.

[15] K. Cornell, *Environmental Exposure: Flood Risk in the Oil and Gas Industry*, Insurance Journal (Apr. 7, 2014).

Public Health (Generally)

Comments: The Department received thousands of comments concerning the general topic of the impacts of HVHHF on public health. Commenters included the Illinois Public Health Association, the Jackson County Health Department, the Peoria Country Board of Health, the RACE, as well as over 400 individuals, including the head of Environmental and Occupational Health Sciences at University of Illinois at Chicago, and 18 others who spoke at public hearings.

Representative comments:

"[fracking] poses inherent dangers to public health and safety"

"Please study what has happened to people where fracking has already been done and the effects it has on their health."

"Fracking threatens drinking water and public health"

"[P]arents are worried about their children's health. Research on fracking has found that it causes air, water, and soil problems. For instance, studies show that fracking leads to an increase in birth defects, cancer, and neurological disorders near drilling sites."

"The Department must quantify the cost of various kinds of emissions … included in the quantification must be the health and environmental costs of emissions relative to the costs of capturing/reducing emissions." Once quantified, the Department must enact rules that carry out the legislative intent [to] protect the public health."

"I am very concerned about the long-term effects on the health of residents"

"IDNR should mandate health monitoring of the public and of workers in affected counties. It should also mandate monitoring of public health impacts – motor vehicle crashes, STIs, drug trafficking, prostitution, and other known outcomes that have occurred in North Dakota, Colorado, and other states."

In addition, numerous commenters cited to articles and studies or simply submitted copies of articles and studies that discussed the topic in more depth. Articles considered in this Response are listed in the reference endnotes.

The public health comments received broke down into two general types. One type of comment asserted detrimental public health effects from HVHHF either generally, or in reference to specific risks. Another type of comment raised process concerns that fall into four categories: that public health concerns are under-considered in hydraulic fracturing public policy and have been under-considered in the rules, notwithstanding that the Act directs that the Department protect public health in its permit decisions; that the public health community has been insufficiently involved in the process of HVHHF policy development; that we lack the

knowledgebase for decision-making and/or are not taking sufficient steps to assess impact on public health; and that we need to apply the precautionary principle.

Response: Protecting public health is one of the principal statutory purposes of the HFRA. The phrase "public health" appears no fewer than 15 times in the legislation, plus an additional two references to the Department of Public Health. The Department is specifically mandated not to issue a permit unless satisfied that public health will be protected. However, "public health" is not defined in the statute. Thus IDNR not only seriously considered the comments, many of which came from the public health community, but reviewed in depth much of the topical literature on public health aspects of HVHHF.

The concerns as to public health are valid, yet challenging to address via rulemaking. A federal GAO study concluded that the extent of the "inherent environmental and public health risks" associated with shale oil and gas development is unknown, largely because studies do not generally take into account the potential long-term, cumulative effects. The following addresses first the public health risks generally, then the other areas of concern.

Public health risks generally

Illinois had not, prior to the passage of the HFRA, done a study of the potential public health impacts of HVHHF. However, following on the heels of the shale gas and oil boom in North America, a number of research studies and surveys by both governments and the public health community itself have tackled this topic.[1]

The findings are relatively consistent. Increased economic activity from increased gas and oil exploration and production tends to bring greater employment into communities, resulting in economic growth and some increase in well-being for some. However, negative public health impacts and risks are more numerous, yet largely unquantified.

Some of the principal impacts and risks frequently identified are as follows:

- **Water quality implications:** possible water pollution, either directly from above-ground spills or underground through migration of gases or fluids, from hydraulic fracturing chemicals and flowback water.

- **Air quality implications:** respiratory, neurological, or long-term toxic effects from exposure to generator and truck emissions, hydrocarbons, volatile organic compounds released into the air through venting, leaks, or inadvertence; particulate matter (especially silica dust from frac sand, or particulates in combination with ozone to produce smog, aggravating asthma, and causing chronic obstructive pulmonary diseases)

- **Occupational hazards for workers:** Workplace fatalities; traffic accidents; compounds absorbed by workers through the skin.

The challenges listed above could be better addressed with greater integration of the public health community into the public debate. So could other challenges mentioned in the literature, including more intangible public impacts such as those addressed in the response to comments

on Public Health (Sociological), or comments on Environment and Ecosystems. The process challenges to this integration include:

Underinvolvement of public health community

A common refrain of the literature is that, with respect to HVHHF policy decisions, the public health community by design, choice, or accident has been less than optimal.[2] No one doubts the commitment of Illinois local and state public health agencies, and many such agencies were able to communicate their concerns in the first notice period. Still, the refrain for being informed of developments, that permeates the written comments on this section, conveys a concern from a sector that would like to be more engaged.

Baseline Data Gaps

Another refrain in the public health discussions of HVHHF is the lack of long term data. "The health impacts related to unconventional natural gas development may not be evident for years," as one study put it.[3] Another stated, "Knowledge of the health risks associated with hydraulic fracturing is sparse."[4] One reason for that is that "many chemicals used during the fracturing and drilling stages of gas operations may have long-term health effects that are not immediately expressed."[5] Another is that the public health impacts are often not the product of one well but must be deduced from the impact, over a wider region, of many cumulative impacts.[6]

The Department does not dispute that a lack of long term data may present a challenge for public health agencies engaged in efforts to protect public health in in the context of HVHHF in Illinois. The Department, for example, is unaware of any comprehensive study of the public health impacts of conventional oil and gas development in the state, even though we have had an industry here for many decades. The literature is consistent in affirming that earlier is better with regard to such study.[7] That has not yet occurred in Illinois.

The Department in this iteration of the rules has attempted to address some of the most likely threats to individuals' health, but admittedly more in terms of aspects that might cause immediate impact, rather than the often much more invisible and pernicious factors that degrade public wellness.

Conclusion

Public health is best protected through broad, large-scale policies that take into account long-term effects and cumulative impacts. That paradigm is ill-fitted to a permitting process that determines on a well-by-well basis whether or not an HVHHF operation should be allowed.

It should be noted that the Department already has under both the HFRA and 245.320 of this draft of the rules the authority to "include any additional terms or conditions on the permit that, based on its review of the permit application, the Department determines to be necessary to ensure the goals and requirements of the Act and this Part." The Department can attach public-health-related conditions to the permit, ranging from specific preventive measures to requiring the applicant to perform assessments and metrics. No change to the rule is necessary for the Department to be able to do that.

The Department also already has, under both the Statute and Part 310 (Permit Denial) of this draft of the rules, the authority to deny an application for a HVHHF permit if the application fails to meet the requirements of Section 245.300(c)(3)(requiring a showing that the plans submitted will be adequate and effective to, e.g., protect public health) or if the application fails to meet the requirements of Section 245.300(c)(4) (requiring a showing that the operations will be conducted in a manner that will protect the public health). No change to the rule is necessary for the Department to be able to do that.

However, the Department can better inform its decision, and assure the public, if it sets forth in any permit decision the public health factors that it considered, and makes findings as to those. Requiring the Department to do this will impose no additional burden on the applicant but will ensure that these matters are at least considered. The Department can also ensure that it receives input from the relevant local public health community if notice of any particular action is required to be sent to one or more public health agencies.

Recommendations: The public health community should be added to the list of stakeholders to serve on the HFRA task force.

Department Action: Section 300(c)(4) of the rules is changed as follows:

4) *the* high volume horizontal *hydraulic fracturing operations,* ~~as proposed,~~ ~~are reasonably expected to~~ will *be conducted in a manner that will protect the public health*, public safety, property, wildlife, aquatic life, and the environment, ~~*and safety*~~ *and prevent pollution or diminution of any water source* (Section 1-53(a)(4) of the Act). For purposes of determining whether the conduct of high volume horizontal hydraulic fracturing operations will protect public health, public safety, property, wildlife, aquatic life, and the environment, the Department shall consider and make specific findings on the following:~~;~~

(ix) any input received during the permitting process from local, regional, or state governments, or members of the environmental community;

(x) any input received during the permitting process from local, regional, or state public health agencies, officials, or representatives, or members of the public health community;

(xi) any relevant baseline knowledge of ecosystems in the area likely to be impacted by the HVHHF operations;

(xii) any specific facts or opinions received bearing on environmental or ecological impacts of the proposed permit, including but not limited to information on habitat, food supply, migration, breeding or nesting, invasive species, noise, viewshed, light, and hunting or angling opportunities;

(xiii) any relevant baseline knowledge of public health in the population area likely to be impacted by the HVHHF operations;

(xiv) any specific facts or opinions received bearing on public health impacts of the proposed permit, including but not limited to information on air quality, water quality, public safety, traffic and transportation, recreation, and ecosystems;

(xv) the incremental environmental impact of the HVHHF operations that would be allowed by the permit when added to other past and present HVHHF operations and reasonably foreseeable future HVHHF operations in the vicinity or county, and the cumulative effect of all such operations; and

(xvi) whether allowance of the permit would have a positive, negative, neutral, or undetermined effect on public health, public safety, property, wildlife, aquatic life, or the environment.

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[1] See, e.g., New York Marine Sciences Consortium, *An Assessment of Some of the Environmental and Public Health Issues Surrounding Hydraulic Fracturing in New York State* (December 20, 2011), http://www.somas.stonybrook.edu/~awp/downloads/NYMSC-FrackingWhitePaper.pdf; Council of Canadian Academies, *Environmental Impacts of Shale Gas Extraction in Canada: The Expert Panel on Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction* (2014), http://www.scienceadvice.ca/uploads/eng/assessments/and/publications/and/news/releases/shale/gas/shalegas_fullreporten.pdf; N.Y. Dept. of Environmental Control, *Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program: Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing in the Marcellus Shale and Other Low-Permeability Gas Reservoirs* (Sept. 2011), available at http://www.dec.ny.gov/energy/75370.html; A. Down, *Shale Gas Extraction in North Carolina: Public Health Implications | Recommendations from the Research Triangle Environmental Health Collaborative* (Oct 2012), http://environmentalhealthcollaborative.org/images/2012SummitWorkProduct.pdf; T. Colborn, C. Kwiatkowski, K. Schultz, and M. Bachran, *Natural gas operations from a public health perspective*, 17 Hum. Ecol. Risk Assessment (5) (2011), http://cce.cornell.edu/EnergyClimateChange/NaturalGasDev/Documents/PDFs/fracking/chemicals/from/a/public/health/perspective.pdf. A list of more studies can be found in an appendix the end of this document.

[2] B. Goldstein, J. Kriesky, and B. Pavliakova, *Missing from the Table: Role of the Environmental Public Health Community in Governmental Advisory Commissions Related to Marcellus Shale Drilling*, 120 ENVIRO. HEALTH PERSPECTIVES 483-86 (April 2012);

[3] M. Finkel, J. Hays, and A. Law, *Modern Natural Gas Development and Harm to Health: The Need for Proactive Public Health Policies*, 2013 ISRN PUBLIC HEALTH Article ID 408658, http://dx.doi.org/10.1155/2013/408658

[4] A. Down, M. Armes, and R. Jackson, *Shale Gas Extraction in North Carolina: Research Recommendations and Public Health Implications*, 121 ENVIRO. HEALTH PERSPECTIVES A492 (Oct 2013), http://dx.doi.org/10.1289/ehp.1307402

[5] T. Colborn, C. Kwiatkowski, K. Schultz, and M. Bachran, *Natural gas operations from a public health perspective*, 17 HUM. ECOL. RISK ASSESSMENT (5), at 1039-56 (2011)

[6] M. Finkel, J. Hays, and A. Law, *The Shale Gas Boom and the Need for Rational Policy*, 103 AM. J. PUB. HEALTH No. 7, 1161-1163 (Jul 2013), http://dx.doi.org/10.2105/AJPH.2013.301285

[7] Down, A., *Shale Gas Extraction in North Carolina: Public Health Implications: Recommendations from the Research Triangle Environmental Health Collaborative*, Environ Health Perspectives, vol. 121, issue 10, at 1, 6, 20-22 (Oct 2013).

Public Health (Sociological)

Comments: In addition to the thousands of comments the Department received concerning the general topic of the impacts of HVHHF on public health, numerous comments specifically centered on sociological public health impacts. The Department did not identify this as a specific concern until later in the extensive comment-sorting process, so the number of comments is imprecise; however the Department is confident that it reviewed the concerns and understands the points made. Commenters included the Illinois Coalition Against Domestic Violence, Frack Free Illinois commenters, SAFE, online commenters, and other individuals.

In essence, the commenters pointed to many social problems that have been reported in other states where HVHHF is occurring. The commenters cited multiple news articles that covered these issues.[1] To give examples, the commenters were concerned about the following, among others:

- *Increased crime rates, including crimes against women*
- *Increased drug trafficking*
- *Financial impacts to property values, such as rising rents*
- *Social dysfunction from boom-bust economies*
- *Noise, traffic, and congestion problems*
- *Increased mental health problems*

Response: Neither the Department nor the State of Illinois has any recent experience with any form of economic "boom" let alone an oil-or-gas-related influx; it has been well over half a century since that economic sector was at its peak in this state. Thus, any analysis of this concern with respect to Illinois involves some speculation, and recourse to the experience and findings of other states. The Department also notes in this regard that this rulemaking, and the response to comments, cannot in the timeframe and with the resources allotted compile anything like the sociological impacts section of a federal environmental impact statement. These responses are limited to an inquiry into the legitimacy of the concerns expressed and, if investigation or research indicates some validity, a comparison of alternatives to what the rules currently do.

The "what ifs" as to sociological impacts if HVHHF activity begins in earnest in Illinois, especially as concerns public health, are far too complex to address in any depth in a response to comments on a rulemaking. Other states in the position of Illinois, such as New York[2], Maryland[3], and North Carolina[4], where HVHHF is contemplated but has not yet begun, have looked to other states' experiences and have concluded that some citizens will enjoy the health benefits of increased material happiness and well-being as a result, while others will experience negative outcomes, whether physically or mentally or both. Likely that would occur in Illinois as well. Meanwhile, adding to the experience of residents would be an entire new wave largely composed of workers from outside the state and from areas with oil and gas experience, such as Texas or Oklahoma, coming to Illinois on a temporary or permanent basis. Some of the factors attendant to these phenomena will interact in ways that the Department cannot model in this timeframe.

What study has been done tends to corroborate the fears of the commenters, as well as the forward-looking statements of a few others. If an HVHHF boom comes to Illinois, its effects will be unpredictable. The greatest immediate problem may be housing for newcomers.

Yet, while the issues the commenters raise are important, most answers are largely outside the realm of this IDNR rulemaking. IDNR includes these comments and this response in this second notice document both to acknowledge receipt and review, and so that the General Assembly and other actors engaged in policy are aware of the issues raised and can take any measures as appropriate to address them. As for action, the Department has inserted into the permit decision process, as set forth in the response to comments on "public health" generally, an exercise in some factors and findings that the Department should engage in prior to issuing or denying a permit.

Department Action: See IDNR's response to Public Health.

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[1] E.g., Abrams, L., *Is Fracking also to Blame for Rape, Drug Use and STDs? Rural Boom Towns around Natural Gas Wells are Plagued by Social Ills*, Salon, available at http://www.salon.com/2013/10/21/is_fracking_also_to_blame_for_rape_drug_use_and_stds/ (Oct. 21, 2013); Farnham, A., *North Dakota Oil Boom: The Dark Side*, ABC News, available at http://abcnews.go.com/Business/north-dakotas-oil-boom-dark-side/story?id=15458362 (Feb. 2, 2012); and Ellis, B., *Crime Turns Oil Boomtown into Wild West*, CNN Money, available at http://money.cnn.com/2011/10/26/pf/America_boomtown_crime/ (Oct. 26, 2011).

[2] The environmental impact statement that the State of New York undertook has a 56-page Social Impacts section. N.Y. Dept. of Environmental Control, *Revised Draft SGEIS on the Oil, Gas and Solution Mining Regulatory Program: Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing in the Marcellus Shale and Other Low-Permeability Gas Reservoirs* (Sept. 2011), at 6-207 through 6-263, available at http://www.dec.ny.gov/energy/75370.html.

[3] Maryland Institute for Applied Environmental Health, *Potential Public Health Impacts of Natural Gas Development and Production in the Marcellus Shale in Western Maryland* (July 2014), at xvii, xxiii, xxviii, 9-13, 62-75, accessible at http://www.marcellushealth.org/final-report.html. The study found that HVHHF operations expose residents to greater risk of serious motor vehicle crashes and that communities experience increases in violent crime, sexually transmitted diseases, mental health problems and substance abuse, although there are probably solutions available to these problems.

[4] See A. Down, *Shale Gas Extraction in North Carolina: Public Health Implications | Recommendations from the Research Triangle Environmental Health Collaborative* (Oct 2012), at pp. 15-20, http://environmentalhealthcollaborative.org/images/2012SummitWorkProduct.pdf.

Radioactivity and Radioactivity Testing

Comments: The Department received approximately 3,600 comments concerning the proposed rules as they relate to radioactivity. Commenters included CREDO, Fair Economy Illinois, Food and Water Watch, Frack Free Illinois, Friends of Bell Smith Springs, Grassroots Environmental Education, Heartwood Forest Council, Homer Glen Environment Committee, Illinois Environmental Council, Illinois Green Party, Illinois Nuclear Power Watchdog Group, IPA, NRDC, ONE Northside, Peoria Families Against Toxic Waste, RACE, SAFE, the GAN Project, Vineyard Indian Settlement, and thousands of individuals.

There were two main concerns regarding the treatment of radioactivity in the rules. First, most of the commenters said that neither the Act nor the rules specify any requirements for the handling of naturally occurring radioactive material ("NORM") and radon gas that is produced from drill cuttings or in flowback or produced water. Several people wanted the Department to set up a protocol for disposal of low level radioactive waste ("LLRW"), including limiting the type of wells such waste can be disposed of in, prohibiting LLRW from being disposed of in a landfill, and requiring compliance with the Illinois Radiation Protection Act, 420 ILCS 40, and the Illinois Low-Level Radioactive Waste Management Act, 420 ILCS 20.

The other broad concern was that the Act and rules lack any meaningful testing protocol for radioactivity. Specifically, it was suggested that the Department require testing at intervals, include baseline testing, define what "adjacent to" means when testing near pits and tanks, mandate testing of flowback and produced water, bar the use and test for depleted uranium, and set forth radioactivity testing parameters.

Response: The Department, in the First notice draft of the proposed rules, did not fully address testing, monitoring, and managing of radioactive materials (*i.e.*, on-site exposure, storage, transport, treatment, and disposal) in wastewaters, solid wastes, and air contaminants generated or derived from HVHF operations. The Act addressed the issues of radioactivity primarily in terms its impact to water quality.

Section 1-5 of the Act defines "Water pollution" as follows:

> ..any alteration of the physical, thermal, chemical, biological **or radioactive properties** of any waters of the State, or the discharge of any contaminant into any water of the State, as will likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, safety, or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate uses, or to livestock, wild animals, birds, or fish or to other aquatic life. (emphasis added).

The Act does not further define the term "radioactive properties."

The Department's first notice draft, which closely tracked the statute, only addressed radioactivity in select instances. Section 245.600(d)(1) requires sampling and analysis of gross

alpha and beta particles to determine the presence of any NORM. See also Sections 1-75(c)(7) and 1-80(e)(5) of the Act. The draft did not provide any description of the isotopes to be tested.

The risk of exposure to radioactive materials as a result of the HVHHF process is not insignificant. The New Albany shale formation consists of black shale, which commonly contains high concentrations of radioactive materials.[1] The United States Geological Survey found that oilfield produced water in Southern Illinois has radium levels that average more than 1,000 pC/L, which is 67 times the maximum contamination level of 5 pC/L the allowed by the EPA under the Safe Drinking Water Act. NORM contains radium 226, which is water soluble. Pockets of naturally occurring water containing radium 226 are produced during the drilling and production process.[2] Oilfield worker exposure and improper handling of radioactive material in the oilfield industry has led to numerous civil actions.[3]

In order for the Department to fulfill its mandate of protecting public health and water quality, the rules must provide guidance as to how radioactive materials generated or derived from HVHHF operations must be tested for and handled.

Section 1-80(e) of the Act requires Permit Application data regarding "water quality monitoring" work plan that includes, at a minimum, samples collected concerning baseline water quality and identified water sources, as defined, for various parameters include "gross alpha and beta particles to determine the presence of any naturally occurring radioactive materials (i.e. NORM)," as further detailed by regulation at 245.210(a)(24) Water Source Management Plan and 245.600 (a) and (d)(1)(D) Water Quality Monitoring.

However, the proposed regulations do not sufficiently address the concepts of Radioactivity or NORM or TENORM in terms of testing, QAQC protocols for sampling and analysis, testing parameters, threshold concentrations, or onsite/offsite management practices for radioactive materials generated or derived from hydraulic fracturing operations. This regulatory element is necessary to achieve ALARA levels and to minimize radioactivity impacts to water quality (surface and groundwater), as well as other indirect exposure impacts to aquatic life, wildlife, livestock, their sustaining habitat, and to public health in general. These management and planning issues are also needed to address onsite worker exposure to low level radiation, NORM contamination, onsite worksite conditions and operations, offsite transport and manifest records, appropriate treatment and disposal options at permitted facilities, emergency planning and response, onsite and offsite protocols for containment, spills and releases, as well as response, remediation and restoration plans.

Based on the consultation with the Illinois Emergency Management Agency ("IEMA"), public comments provided in public hearings, written testimony and statements, technical reports provided during the public comment period, and other independently identified technical documents, the Department will add supplemental permit application requirements in a new subsection, 240.210(a)(30) – Radioactive Materials Management Plan.

As provided in Section 1-35(b) of the Act, every applicant for a HVHHF permit is required to provide to the Department certain prescribed information in subsections (b-1) through (b-19). Additionally the applicant shall provide "any other relevant information which the

Department may, by rule require." Section 1-35(b)(20). The Department notes that the proposed regulations for permit application at 245.210 already include additional information, such as containment plan, casing and cement plan, public notice drafts, plugging and restoration plans, access roads, topsoil restoration, fugitive dust control plant, contractor information, violations reports, etc. See 245.210 (a)(1) through (29). The new section will be similar to the requirements listed above, and have a similar purpose, to notify the Department what the applicant's site-specific plan is for testing and handling NORM.

The Department also notes that Section 1-120 of the Act requires compliance with all applicable federal, state and local laws. With respect to radioactivity, that includes but is not limited to:

- Illinois Emergency Planning and Community Right to Know Act, 430 ILCS 100
- Illinois Hazardous Materials Emergency Act (PA 79-1442, 430 ILCS 50
- Illinois Low-Level Radioactive Waste Management Act, 420 ILCS 20
- Illinois Radiation Protection Act, 420 ILCS 40
- Illinois Radioactive Waste Tracking and Permitting Act, 420 ILCS 37
- Illinois Chemical Safety Act, 430 ILCS 45
- Illinois Community Right to Know Laws, 415 ILCS 55/9.1, 415 ILCS 5/22.2d, 415 ILCS 5/18.1 and 415 ILCS 5/25(d)
- Illinois Environmental Protection Act, 415 ILCS 5
- Illinois Environmental Toxicology Act, 415 ILCS 75
- Illinois Hazardous Materials Transportation Act, 430 ILCS 30
- Illinois Solid Waste Management Act, 415 ILCS 5/20
- Illinois Toxic Substances Disclosure to Employees Act, 820 ILCS 255
- Illinois Waste Management Act, 420 ILCS 20
- Illinois Water Pollution Discharge Act (P.A. 77-1605, 415 ILCS 25

The only way for these statutes to have any force is if NORM is tested for and identified at HVHHF sites. The second draft of the rules will require applicants to set forth a testing plan, keeping in mind that radioactive pollution within the 1500' radius will be presumed to have come from the HVHHF operation.

In developing this rule, the Department worked extensively with and took guidance from in its rule the recommendations of the Illinois Environmental Protection Agency and Illinois Emergency Management Agency, the two state agencies primarily responsible for regulating the management of radioactive materials. The Department recognizes that any meaningful radioactive material regulations in the context of HVHHF must occur in cooperation with these two agencies.

Department Action: Rule 240.210 (a)(30) will be added as follows:

<u>(30) The applicant shall submit a Radioactive Materials Management Plan to identify,</u>

manage, transport, and dispose of any radioactive materials utilized or generated during the course of hydraulic fracturing operations. The proposed plan shall ensure that any wastes generated that are low-level radioactive waste comply with the waste management requirements specified therein. The radioactive materials management plan shall include, at a minimum:

(A) Background Site Characterization and Baseline Monitoring as follows:

(i) An initial site sampling plan that will determine the soil, groundwater, private wells, and surface water concentrations of total dissolved solids, gross alpha, gross beta, radium-226, radium-228, and potassium-40; and

(ii) Reporting and verification of radiological analyses. Baseline water quality results for radium-226, radium-228, and gross alpha/beta shall be compared to the water quality standards in Title 35, Sections 302.207, 302.307, and 620.410. Baseline samples exceeding the applicable referenced concentrations shall be resampled and all results reported to IEMA within 7 days of receipt. Baseline soil results for radium-226 and radium-228 shall be compared to the decontamination guidelines listed in 32 Ill. Adm. Code 340, Appendix A. Baseline samples exceeding the applicable referenced concentrations shall be resampled and reported to IEMA within 7 days of receipt.

(B) Operational Phase Information as follows:

(i) A worker training program that, at minimum, covers the principles of radiation exposure and contamination, and fundamentals on radiation protection in accordance with state and federal law and guidelines, and industry standards;

(ii) A plan for routine radiation surveys of the site, any hydraulic fracturing equipment brought onto the site, including all above-ground tanks used for the storage of hydraulic fracturing fluid, produced water, and flowback, access roads, and adjacent off-site areas, including any nearby streams and rivers. The plan shall include surveys, of a specified frequency, of equipment and waste streams prior to disposal, maintenance, or recycling;

(iii) A program to monitor, detect, and mitigate worker exposure to radon gas and radiation which details how radioactively contaminated equipment, filters, production and waste streams will be handled and tested so as not to contaminate workers or contribute to worker exposures in excess of OSHA standards;

(iv) A program to monitor and mitigate any radiation exposure to the general public;

(v) A plan to identify and quantify LLRW in accordance with 32 Ill. Adm. Code 620 and 609;

(vi) A plan for storage or recycling of LLRW generated or derived from hydraulic fracturing activities;

(vii) A plan to manage water treatment residuals in accordance with 32 Ill. Adm. Code 330.40(d);

(viii) A prohibition on blending or dilution of any hydraulic fracturing waste streams with unadulterated water to meet compliance with disposal criteria;

(ix) A plan to comply with the Hazardous Materials regulations administered by the Illinois Department of Transportation; and

(x) A plan for emergency response action and/or decontamination activities for spills, releases, or unauthorized discharge of radioactive materials or radioactive waste materials onto the site, or offsite during transport to or from the site.

(C) Site Release Information as follows:

(i) A plan to verify that no activities conducted under the permit have increased the radiological concentrations in soil, groundwater, or surface water beyond those concentrations documented in the baseline site characterization, or as otherwise allowed under 32 Ill. Admin. Code 330 and 340;

(ii) A plan to show how the permittee will demonstrate that their operations caused no radiological impacts, unless covered by a radioactive materials license as authorized by IEMA;

(iii) A plan to ensure that piping, conveyances, valves, and tanks in contact with hydraulic fracturing fluid, hydraulic fracturing flowback, or produced water will be surveyed for radiation contamination. The plan should include provisions to ensure equipment utilized in the recovery or re-injection of natural gas shall be assessed for polonium-210 and lead-210 contamination. Any decontamination activities required be pursnuant to a decontamination protocol approved by IEMA and conducted by persons specifically licensed by IEMA;

(iv) An assessment of no radiological impact shall be verified by IEMA prior to site release by IEMA and the Department. Until such time when the site is verified to have no radiological impact, or is covered by a radioactive

materials license, the well will not be considered plugged and abandoned by IEMA or by the Department.

In addition, the following definitions will be added to Section 245.110:

"By-product materials" has the same meaning as in the Illinois Radiation Protection Act of 1990. [420 ILCS 40]

"Class II UIC Well" shall have the same meaning as in 62 Ill. Adm. Code 240.

"Hazardous material" has the same meaning as in the Illinois Hazardous Material Transportation Act. [430 ILCS 30]

"IEMA" means the Illinois Emergency Management Agency.

"Low-level radioactive waste" or "LLRW" shall have the same meaning as in the Illinois Low-Level Radioactive Waste Management Act. [420 ILCS 20.3]

"Naturally Occurring Radioactive Materials" or "NORM" means materials which may contain any of the primordial radionuclides or radioactive elements as they occur in nature, such as radium, uranium, thorium, potassium, and their radioactive decay products such as radium and radon that are undisturbed as a result of human activities. (See USEPA/Office of Radiation and Air, Radiation Protection Division – Technical Report on TENORM from Uranium Mining, vol. 1 and 2. 2006)

"Radiation" has the same meaning as in the Illinois Radiation Protection Act of 1990. [420 ILCS 40/4(f)]

"Radioactive material" has the same meaning as in the Illinois Radiation Protection Act of 1990. [420 ILCS 40/4(i)]

"Technically Enhanced Naturally Occurring Radioactive Materials" or "TENORM" means naturally occurring radioactive materials that have been concentrated or exposed to the accessible environment as a result of human activities such as manufacturing, mineral extraction, or water processing. (See USEPA/Office of Radiation and Air, Radiation Protection Division – 2006 Technical Report on TENORM from Uranium Mining, vol. 1 and 2)

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[1] U.S. Geological Survey, *Naturally Occurring Radioactive Materials (NORM) in Produced Water and Oil-Field Equipment: An issue for the Energy Industry*, USGS Fact Sheet FS-142-99, available at http://pubs.usgs.gov/fs/fs-0142-99/fs-0142-99.pdf (Sept. 1999).

[2] U.S. Environmental Protection Agency, *Technologically Enhanced Naturally Occurring Radioactive Materials from Uranium Mining*, EPA 402-R-08-005 (2008); Gundersen, L.C.S., and Szabo, Z., in, Carter, L.M.H., ed., *Natural Radionuclides In Earth, Air, And Water, And The Effect On Human Health*, Energy and the Environmental Application of Geosciences to Decision making: U.S. Geological Survey, Circular 1108, p. 22-24, available at http://pubs.er.usgs.gov/pubs/cir/cir1108 (1995); Smith, K., Blunt, D., Williams, G., and Tebes, C., *Radiological Dose Assessment Related to Management of Naturally Occurring Radioactive Materials Generated by the Petroleum Industry*, Argonne National Laboratory Environmental Assessment Division, available at http://www.netl.doe.gov/kmd/cds/disk23/G-Soil%20Projects/NORM%5CANL-EAD-2.pdf (1996); and Vine, J.D.,

and E. B. Tourtelot, *Geochemistry of Black Shale Deposits: a Summary Report*, U.S. Geological Survey, Economic Geology, vol. 65, pp. 253-272 (1970).

[3] Foley, J., *Radioactive Fracking Wastewater Discharged in Pennsylvania Creek*, Nature World News, available at http://www.natureworldnews.com/articles/4276/20131002/radioactive-fracking-wastewater-discharged-Pennsylvania-creek.htm (Oct. 2, 2013); Rosenbaum, L., *Frack Brine on Montgomery County Roads?* BrynMawr-Gladwyne Patch, available at http://patch.com/pennsylvania/brynmawr/bp--frack-brine-on-montgomery-county-roads#.U_Il4V0o7Vg (Oct. 13, 2012); and Lustgarten, A., *Are Fracking Wastewater Wells Poisoning the Ground beneath Our Feet?* Scientific American, available at http://www.scientificamerican.com/article/are-fracking-wastewater-wells-poisoning-ground-beneath-our-feeth/ (June 21, 2012).

Economic Impact

Comments: The Department received at least 140 comments regarding the general impact of fracking on one or more aspects of the Illinois economy. Commenters included ILOGA, Americans for Prosperity, and numerous individuals both through submissions and testimony at the hearings the Department held throughout the state. The number is imprecise because the comments did not address particular rule sections and the subject matter was not identified as a separate concern until partway through the sorting of comments. Many comments made on other aspects of HVHHF contained remarks echoing the themes of this issue area. The comments generally discussed the relative costs and benefits of HVHHF, with the most common theme being that the costs were not being sufficiently quantified, or that the economic benefits were overstated. Another separate theme was the inequality or asymmetry of who would benefit. Supporters of HVHHF also weighed in. Comments specifically relating to economic impact on small business are discussed in a separate section. Below is a sampling of the comments, representative of the concerns expressed:

- *I know when times are hard people look at fracking and say it will mean good paying jobs, but will it be worth it when we have no safe drinking water, tainted farmland, food is scarce, and cancer rates rise?*
- *The benefits of fracking inure only to the oil companies, who will export 99% of the wealth and jobs outside of Illinois.*
- *If Illinois does not allow fracking and neighboring states do, they will benefit from increased employment and wealth and not us.*
- *Taxpayers will bear the burden of the healthcare and cleanup cost of fracking contamination.*
- *Illinois is competing with other states around the country for development capital for natural resources, and should create a regulatory scheme that induces investors to come to Illinois to invest.*
- *No matter how much money fracking can earn for you, you cannot buy a new environment or clean water.*

Response: The concerns are a legitimate subject for public and even policy debate but only indirectly translate into anything that the rulemaking can or should address. The HFRA, it should be realized, did not allow or enable HVHHF in Illinois. HVHHF was already permissible prior to the passage of the Act, although it was not being done with any frequency. Thus, neither the HFRA nor the rules are doing anything to foster HVHHF, but only to regulate it to a greater degree than the OGA would have done. To the extent that the Act or the rules have economic impact, it is only as a moderating influence on whatever HVHHF does.

Moreover, the HFRA is not, primarily, an economic statute. Other than as a detail in a few subsections, such as trade secret claims or the feasibility of green completion devices,

economics does not figure much in the statute. Unlike public health, public safety, and environmental concerns, the Department is nowhere generally directed to take profits, losses, economic justice, investment capital or the like into consideration when permitting, except to the extent that bonds need to be posted. In that instance, the Department will look at an applicant's track record. Whether an applicant for a permit will create one job or 100 has no effect on permitting.

The larger issues of cost and benefit have been covered in the response to comments on the impact on small business, and the required rulemaking statement. The Department has need to budget and recognizes the assumption that HVHHF results in an influx of dollars from sales while externalizing some costs onto the environment and the taxpayers. One economic issue that concerns the Department as a regulator is the ability of the operator to stay in business and be engaged throughout the life of the well, and fulfill its responsibly to the closure and proper plugging of the well and the restoration of the land. The bond might not be sufficient, or even in force, if the owner is not viable when the time comes to conduct the activities described above.

Economic impact of HVHHF does at least indirectly impact public health. Both the positive and negative economic impacts of HVHHF operations in a community have the potential to impact the well-being of that community. However, as discussed in the response to comments on public health, the Department's difficulty is in addressing, on a well-by-well basis, impacts that are cumulative and/or indirect.

The concern of boom-and-bust, or a bubble, was raised by commenters and has had some attention of the Department, as well, because the Department needs to plan and budget in part based on anticipated future developments. Numerous articles in media, including financial media, have questioned the long-term sustainability of unconventional oil and gas production.[1] The Department is not constituted to opine on this matter but may consider revisiting the economic qualifications of an applicant as part assurance that expectations will be met and agreements honored, and expects that this subject will be part of the task force's study and report.

Department Action: None**.**

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[1] Nafeez Ahmed, *Write-down of two-thirds of US shale oil explodes fracking myth: Industry's over-inflated reserve estimates are unravelling, and with it the 'American dream' of oil independence,* May 22, 2014, http://www.theguardian.com/environment/earth-insight/2014/may/22/two-thirds-write-down-us-shale-oil-gas-explodes-fracking-myth; Loren Steffy, *How Long will the Fracking Boom Last?* Forbes, December 11, 2013, http://www.forbes.com/sites/lorensteffy/2013/12/11/how-long-will-the-fracking-boom-last/; Tom Whipple, *When will the Shale Bubble Burst?* Oilprice.com, October 31, 2013, http://oilprice.com/Energy/Natural-Gas/When-will-the-Shale-Bubble-Burst.html

Small Business Impact

Comments: Approximately 40 public comments in one way or another addressed the impact fracking would have on small businesses, including ILOGA. The comments took two general positions: (1) that fracking would impair small business, especially tourism and smaller agricultural ventures that rely heavily on the quality of the land (such as wineries, or organic farming), or (2) that fracking would be a boon to the Southern Illinois economy. Some of the comments describing a negative impact on small business also indicated that the boom and bust nature of the oil industry would continue a "cycle of poverty" in southern Illinois, giving no long term benefits and many long term negative impacts to small business. "Pro-fracking" commenters indicated that many of the businesses that supply fracking operations are local, small businesses that would experience high demand if fracking took hold in southern Illinois.

Response: The Department considered these comments in conjunction with its many statutory duties, as well as its experience as regulator, rule maker, and steward of the resources possibly impacted by HVHHF, when thinking about the impact on small business. The impact HVHHF will have on small business is likely to have both positive and negative components. As has been stated before in these comments, vertical fracking has been around for a long time in Illinois. What sets HVHHF apart from prior practices is the sheer size of the operations and the volume of fluids necessary. This means industrial supply stores, commercial hauling, disposal centers, and other oil industry supply services. One study commissioned by the Illinois Chamber of Commerce indicates that HVHHF might generate between 1,000 and 47,000 jobs depending on the viability of extraction.[1]

Prof. Loomis, the author of the Chamber report, has expertise in indirect or induced employment effects, meaning not just the direct jobs attributable to HVHHF (such as working on a drilling rig team), but also the secondary employment that is created when the direct workers spend their paychecks in a community on, for example, pizzas or haircuts, creating jobs for cooks, pizza delivery persons, barbers and stylists. The pizza shop owner then has more money to spend on the business as well as his or her own household, and so more tomatoes and slipcovers are purchased, and so on. The likely outcome in Illinois would be less than the high end of 47,000 jobs often cited, but also more than the 1,000 at the low end. The Loomis report also explicitly acknowledges in the introduction that it does not take into account various attendant costs that will or may occur as a result of HVHHF. Some of those costs will be absorbed by the HVHHF operator, and some will be absorbed by the community.

Growth has different impacts on businesses. Increased traffic on some roads may bring additional customers to one; congestion on a small town main street may hurt another.

Southern Illinois has a thriving tourism industry and agricultural economy, sectors that have had to develop alongside oil operations for many years, albeit smaller oil operations. Agriculture and HVHHF in particular could compete for resources or infrastructure.[2] While HVHHF will require more supplies and resources, it will occur in a region with an infrastructure already in place. Both the positive and negative impacts may not be so harsh. The Department cautions that it is not the Department of Commerce and Economic Opportunity, and that it does not employ economists, and that in any event it does not have the resources necessary to engage

in the intensive study required to make a better prediction at this juncture. As to the regulated industry itself, the size of the typical HVHHF operation will likely prevent the participation of the traditional "small business."

Department Action: The small business impact statement will be modified as follows:

The greatest impact of these rules will occur as a direct result of concluding the HFRA legislative process that regulates HVHHF. The rules' adoption will have a net benefit on small businesses that supply or service the operating companies who conduct HVHHF activities, and on the service sector that will benefit from an increase in population, especially transient population. The size of that impact will depend largely on the wealth of the resource and the choices of the operators as to how much they rely on existing or out-of-state supply chain as opposed to sourcing within Illinois. The adoption of the rules and the advent of HVHHF may have some negative impact on local tourism and agricultural industries who may suffer due to the high traffic and large scale of fracking operations. However, all of these possible impacts, and the net effect, are highly speculative at this point, are subject to a wide range of variables, and will be unknown until the region is explored and the extent of the HVHHF economics is known.

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[1] Loomis, D., *Potential Economic Impact of New Albany Gas on the Illinois Economy*, prepared for the Illinois Chamber of Commerce, available at http://heartland.org/policy-documents/potential-economic-impact-new-albany-gas-illinois-economy (December 13, 2012).

[2] R. Nixon, *Grain Piles Up, Waiting for a Ride, as Trains Move North Dakota Oil*, N.Y. Times (Aug. 25, 2014), http://www.nytimes.com/2014/08/26/us/grain-piles-up-waiting-for-a-ride-as-trains-move-north-dakota-oil.html

Energy Policy Choices

Comments: IDNR received recurrent comments that addressed, not so much a specific aspect of the rules, but HVHHF generally as it relates to the State of Illinois's energy policy and alternative energy sources. Commenters included Fair Economy Illinois, Better Building Institute, BirthLink Network, Food and Water Watch, numerous individuals who submitted letters and electronic messages, as well as those who spoke at the various public hearings held throughout the State. The essence of the comments was that IDNR should concentrate more on renewable, alternative energy sources, such as wind or solar, rather than on fossil fuels, for reasons of sustainability in both the environmental and economic viability. Frequently, the commenters requested that HVHHF for oil and gas be banned in Illinois to protect the State's residents, or that there should be a moratorium on hydraulic fracturing in Illinois. (See IDNR's Response to Moratorium).

Response: The Department has considered in this second notice draft the comments, the HFRA, studies, reports and other materials received on this topic. The Department also consulted the Illinois Department of Commerce and Economic Opportunity (DCEO) concerning renewable energy sources and the laws, regulations and programs covering these sources.

The Department cannot in this rulemaking address or promote renewable or alternative energy sources, such as wind and solar energy, in any comprehensive way. The Department directs the commenters to the responses concerning the Department's role and mission, a requested moratorium, a ban on HVHHF, and the meta-procedural issues for explanation of why the Department cannot do so here.

The State of Illinois actively promotes renewable and alternative energy sources. Numerous Illinois laws, regulations and programs provide a financial incentive to individuals, organizations and corporations in the area of renewable or alternative energy. For instance, DCEO enforces the Renewable Energy, Energy Efficiency and Coal Resources Development Act of 1997, 20 ILCS 687/15 *et seq*. and the Illinois Renewable Fuels Development Program Act, 20 ILCS 689/1 *et seq*.

Additionally, the State of Illinois and its partners have a number of laws, regulations and programs dealing with renewable or alternative energy sources. A few of these are as follows:

FINANCIAL INCENTIVES:

Non-Profit Grant Program: Illinois Clean Energy Community Foundation Grants
Performance-Based Incentive:
Solar Renewable Energy Credits
Property Tax Incentive: Commercial Wind Energy Property Valuation; Special Assessment for Solar Energy Systems
Sales Tax Incentive: Sales Tax Exemption for Wind Energy Business Designated High Impact Business
State Bond Program: Renewable Energy and Energy Efficiency Project Financing
State Grant Programs:
Biogas and Biomass to Energy Grant Program

Community Solar and Wind Grant Program
Efficient Living Construction Grant
Efficient Living Energy Grant
Public Sector Energy Efficiency Aggregation Program
Public Sector New Construction and Retrofit Program
Retro-Commissioning (RCx) Program
School Energy Efficiency Grant Program

State Loan Program

Energy Impact Illinois Loans
Green Energy Loans

State Rebate Program

Energy Impact Illinois Rebates
Public Sector Energy Efficiency Programs
Solar and Wind Energy Rebate Program

Rules, Regulations & Policies:

Building Energy Code

Building Energy Code

Energy Efficiency Resource Standard

Energy Efficiency Standard

Energy Standards for Public Buildings

Energy Efficiency in State Government

Generation Disclosure

Fuel Mix and Emissions Disclosure

Net Metering

Net Metering

Public Benefits Fund

Energy Efficiency Public Benefits Funds
Renewable Energy Resources Trust Fund

Renewables Portfolio Standard

Renewable Portfolio Standard

Solar/Wind Access Policy

Solar and Wind Rights

Solar/Wind Permitting Standards

Statewide Renewable Energy Setback Standards

The State, it should be remembered, passed the HFRA in order to oversee what would otherwise be an activity regulated only by the Oil and Gas Act, a law drafted and amended over the years without anticipation of the issues unique to HVHHF. With the HFRA enacted, the Department in this rulemaking is tasked with regulating and implementing the statute. From an environmental standpoint, there is no question that renewable energy sources pose far less risk to the flora, fauna, air, and water of the State than do fossil fuel resources, both in the short-term and in the larger sense of contribution to climate change and impacts that extend beyond Illinois. However, the Department is also charged by law with regulating the extraction of non-renewable resources that lie beneath the surface of the State, and the State has not made a policy decision to abandon all such extraction, but on the contrary has made a policy decision to continue with it.

Until and unless that policy changes, the Department is bound to attempt to regulate those programs as responsibly as possible. Such responsible regulation does not extend to attempting, via that regulation, to overhaul the state's energy policy.

Department Action: None.

Public Hearing Process (Rulemaking)

Comments: The Department during the rulemaking process received hundreds of comments regarding the scheduling and format of public hearings on the rulemaking itself. Commenters included Food and Water Watch, Fair Economy Illinois, IIRON Student Network, Frack Free Illinois, SAFE, Abbott, Peoria Families Against Toxic Waste, Central Illinois Global Warming Solutions Group, Illinois People's Action, IEC, Southsiders Organized for Unity and Liberation, Sierra Club, UIS community members, and hundreds of individuals, including 31 public hearing attendees.

The comments were universally concerned that there were not enough public hearings to discuss the First notice administrative rules. Many of these comments were drafted when the initial public hearings were first announced, and requested a hearing in central Illinois and an additional hearing in Chicago. Many stated that scheduling the hearings during the holiday season was inconvenient. Most comments requested more hearings, and a longer comment period.

Several comments claimed that the public hearings violated administrative rules on public hearings, specifically the requirement for 20 days of public notice, or because no IDNR employees actually answered questions. Many commenters said that the public hearings were useless, because IDNR was unengaged and unresponsive.

One commenter also contended that the very nature of a public hearing process caters to people who are already highly engaged and informed, while people who pay less attention – but may be no less affected – do not participate.

Response: IDNR held five public hearings across the state on the draft rules – in Chicago, Ina, Effingham, Decatur, and Carbondale – an unprecedented number of hearings compared to prior administrative rules proposed by the Department. Over 1,000 people attended those hearings, at which approximately 160 persons presented 171 oral comments (some spoke more than once). IDNR also received and accepted a significant number of written comments at the hearings, ranging from lengthy white papers and studies to handwritten notes, single-page flyers, and holiday cards.

With respect to the rules on rulemaking, IDNR was guided by both the Illinois APA and the Department's own rules. IDNR's administrative rules on rulemaking state that a hearing shall be held on proposed rules when required by criteria set forth in the Illinois APA. 2 Ill. Adm. Code 825.130. The Illinois APA requires an agency to hold a public hearing under two circumstances:

> "The agency shall hold a public hearing on the proposed rulemaking during the first notice period if (i) during the first notice period, the agency finds that a public hearing would facilitate the submission of views and comments that might not otherwise be submitted or (ii) the agency receives a request for a public hearing, within the first 14 days after publication of the notice of proposed rulemaking in the Illinois Register, from 25 interested persons, an association

representing at least 100 interested persons, the Governor, the Joint Committee on Administrative Rules, or a unit of local government that may be affected."

As for the timing of the hearing, however, IDNR's rules are more specific than the Illinois APA. First, the IAPA sets out that "[a] public hearing in response to a request for a hearing may not be held less than 20 days after the publication of the notice of proposed rulemaking in the Illinois Register unless notice of the public hearing is included in the notice of proposed rulemaking." 5 ILCS 100/5-40(a). IDNR included the information regarding the first two hearings (Chicago and Ina) in the First notice filing, published on November 15th, i.e., not in response to a request received during First Notice but on its own initiative; as a result, 5 ILCS 100/5-40(a) and the 20 day notice requirement was not applicable to those hearings.

After IDNR received feedback that more public hearings were needed, IDNR scheduled three additional hearings, which were then held, respectively, on December 16, 17, and 19. IDNR provided notice by general press release and published the information on the Department's website on November 20, 2013. IDNR's administrative rules on rulemaking set out the following with respect to notice of a hearing:

> The Hearing Officer shall set a time and place for hearing and shall give notice as follows, at least 20 days prior to the date of the hearing;
>
> a) to the proponent, by mail;
>
> b) to members of the general public, by means of a general news release and notice in the Illinois Register.

The press release and website posting provided actual notice 27 days before the Decatur hearing and 29 days before the Carbondale hearing (the Effingham hearing had been rescheduled due to an exceptional snowstorm). Notice of all three IDNR's subsequent three hearings were then published in the Illinois Register on Dec. 6, 2013, in advance of the hearings. As noted, over 1,000 persons attended, testimony to the high degree of awareness IDNR generated. Few legislative, let alone rulemaking processes in the state, accommodate so many attendees and speakers.

As to IDNR answering questions, the Department directs attention to the more frequent complaint that not enough people got to speak. The purpose of the public hearings was to hear from the public. Any time devoted to IDNR speaking would have taken away from public time and allowed fewer citizens to be heard.

Finally, as to the comment that only the engaged public attends hearings, few civic processes can escape that circularity. However, the Department takes note that one or more persons videotaped the hearings and posted them online. Also, the number of public comments IDNR received indicate that many persons who did not or could not attend public hearings nevertheless found a means to communicate to the Department.

Possibly, future rulemakings by agencies will see similarly high degrees of public participation. This was IDNR's first experience with interest levels so elevated. The high volume

of public participation created a knowledgebase and generated ideas for improved processes in the future. However, the overall participation convinces the Department that it did the right thing in making available multiple means for citizens to communicate. No rule change is needed as a result of these procedural comments.

Department Action: None.

Inclusiveness

Comments: The Department received dozens of comments not directed to a specific provision of the draft rules, but raising the issue of inclusiveness of the public hearings on the rulemaking itself. Commenters included Fair Economy Illinois, Illinois People's Action, Prairie Rivers Network, the Illinois Oil and Gas Association, and at least two public hearing attendees.

Most of the comments wanted the public hearing and comment process to be more inclusive, with more citizens having a chance to speak. Others noted that the schedule of hearings during the holidays effectively excluded students with academic semester finals or travel conflicts, and families with pre-existing or typical holiday commitments. Finally, one commenter noted that the public comment structure really only serves those that are already engaged, and asked that IDNR take affirmative steps to bring in people who might not know about the Act, the rulemaking process, or the public hearings. That commenter did not suggest specific methods to accomplish this.

On the other hand, IOGA addressed an entirely different aspect of "inclusiveness"- that of what the administrative rules actually include. IOGA urged IDNR to limit the rules to solely the issues raised in the HFRA, and to construe narrowly to the language in the statute. IOGA asserted that issues that were not raised in the statute were effectively rejected by the General Assembly, and that it is not IDNR's role to address such issues without statutory authority. IOGA also stated that the legislative language was the result of careful negotiation, and that deviating from it could render those negotiations useless. IOGA specifically cited 245.210(a)(28) - Consultation as a provision that was not addressed by the legislature, and should not be included.

Response: As to the commenters who wanted more persons to be included, see generally the Department's response to the comments on the Public Hearing Process. Illinois is a populous state. The time and resources of agencies are finite. It is conceivable, even likely, that on controversial or newsworthy topics, more persons may want to speak at the public forums an agency holds than the time allotted for those forums can accommodate.

The Department did afford multiple channels for communication. Thousands of Illinoisans communicated. Although imperfections in execution especially when experiencing a novel volume of public engagement, can and will occur, the Department is confident that through these channels, citizens were able to and did express nearly every concern about the draft rules that could be expressed. The Department will consider, once this rulemaking is concluded, lessons learned from the experience and how to continue to improve the connection between citizens and government.

As to the concern that too many issues were being included, either in the draft rules or in the hearings, that were not contemplated within a negotiating group of stakeholders, the Department is appreciative of all who give of their time and energy to the legislative process. As an executive agency, the Department is well familiar with the duties and role of an agency of the executive branch, and of the Department's roles and duties in particular. See generally the Department's response to "IDNR Role and Mission."

Even the best-crafted legislation typically requires administrative interpretation, to harmonize unintended inconsistencies, to address realities of administration not fully contemplated in the goals of a bill, to address areas not covered by the statutory scheme in detail but dictated by more general provisions, or to harmonize multiple laws and duties so that conflicts do not get in the way of implementation. Illinois courts over and over again state that an agency has the inherent authority and is given wide latitude and discretion to adopt regulations that are reasonably necessary to perform its statutory duties. *E,g,. Julie Q. v. Department of Children & Family Services*, 2011 IL App (2d) 100643, ¶ 36; aff'd, 2013 IL 113783. However, the agency may not directly contravene the statute nor make rules that would undermine the statutory purpose. *Id.* The Illinois Supreme Court has stated that agencies "make informed judgments on issues based upon their experience and expertise and serve as an informed source for ascertaining the legislature's intent." *Provena Covenant Medical Center v. Department of Revenue*, 236 Ill. 2d 368, 387 n.9 (2010).

Here, no examination of "inherent" authority is necessary because the HFRA itself gave the Department authority under numerous provisions of the statute to adopt rules. Secs. 1-15(e), 1-50(c), 1-55(c), 1-77(l), 1-96(b), and 1-130. Sec. 1-130 states, "The Department shall have the authority to adopt rules ***as may be necessary to accomplish the purposes of this Act***" (emphasis supplied). That section goes on to give the Department more flexibility than under the Oil and Gas Act, providing that rules adopted under the HFRA are not subject to the review, consultation, or advisement of the Oil and Gas Board. Sec. 1-15(e) also gives the Department power "to adopt administrative rules; and to take any action as may be reasonably necessary to enforce this Act."

Unlike many statutes, the HFRA contains no preamble, no list of "Whereas" clauses, no legislative findings. The Department in the first instance, and for the basis for its first draft, looked to the statutory language itself. The Department has also reviewed the floor speeches on both the House and Senate floor, as well as contemporaneous news accounts and interviews – the same sources a court might look to if (but only if) statutory intent were not clear from the statute itself. That said, the Department has given due weight to comments such as that of IOGA as to the intent of the statute.

The reasoning in response to this comment similarly applies to many other comments where the Department declined to make a change because the concern of the commenters is directed more at the statute, and the suggested remedy would conflict with what the statute intended. The Department has studied the Hydraulic Fracturing Regulatory Act with as fine a microscope as has any entity in the State of Illinois. Each and every rule set forth herein is designed to make the Act work on a practical level consistent with the goals expressed in Illinois law of which the HFRA is now part.

Department Action: None specific to these comments.

Rulemaking Bias

Comments: The Department received dozens of comments not directed to a specific provision of the draft rules, but asserting what can be termed “rulemaking bias,” or the lack thereof. Commenters were primarily individuals, including 23 who spoke at public hearings, but also included IOGA, Community for Well Being of Illinois Families, Blackridge LLC, Illinois People’s Action, Food and Water Watch, Fair Economy Illinois, Frack Free Illinois, and CREDO.

The vast majority of comments in this vein expressed concern (or made a direct accusation) that IDNR had been too generous to the Illinois oil and gas industry in drafting the administrative rules. As evidence of this, commenters cited several “loopholes” (though the loopholes themselves were not always identified) and the nature of the public comment period, which they claimed was anti-democratic. Commenters also noted a general weakness in the rules. Some commenters directly accused IDNR of accepting bribes, "selling out," or otherwise colluding with the regulated industry.

One commenter, by contrast, asserted that the rules were biased toward extreme environmentalists, and that the rules would hamper economic development.

Response: The Department recognizes that many if not most of the commenters asserting bias in the rulemaking process are opposed to HVHHF generally. The HFRA, while not "opening up" Illinois to HVHHF (since, as many have correctly noted, nothing in Illinois law before the enactment prevented operators from applying for permits and using the technology), made official that under certain conditions, HVHHF would be allowed. Thus the ire of many if not most of these comments is at the legislation itself.

As to a bias toward "extreme environmentalists," the Department observes that Illinois has in fact passed an HFRA; that the first notice draft of the rules, like the HFRA, would allow HVHHF to begin in Illinois; and that the Department has been hiring and continues to hire in expectation that there will be such activity. After careful review of many thousands of comments from many thousands of Illinois citizens and organizations, the Department is convinced that nearly every comment received, regardless of perspective, falls within a normal and expected range of American viewpoints, none of which can be considered extreme given the environmental and economic challenges facing the state.

The Department's first notice draft of rules clearly used the statute as the starting place and attempted to address the realities of how the administration of a program based on that statute would have to function. Before publishing the first draft in the Illinois Register, the Department circulated drafts to stakeholders from both industry and a number of environmental organizations, and had opportunity to consider their input.

What those who made accusations of bias hoped the Department to do as a result of such accusation, other than perhaps to bend the rules in the other direction, is unclear. Some commenters did suggest, variously, that Department members resign their positions either in shame or as protest. Obviously, that would not advance a rulemaking.

The overwhelming majority of Department and OOGRM personnel are civil servants who not only have no need of anything from outside industry or organizations to keep their jobs, but who are also bound by ethical considerations forbidding accepting anything of value from interested persons, or from accepting employment with a regulated entity after leaving state employment. The ethical principles adopted during the current administration are the strongest in the history of Illinois. The Department takes most seriously its multiple roles, and has done, and will continue to do, its best to implement and regulate the HFRA according to that law's statutory purpose, while honoring the many other responsibilities and stewardships with which the Department has been entrusted. The Department hopes that its awareness of the challenge of these roles, and of responsible administration of the HVHHF program, has become evident through this Response.

Department Action: No specific action was taken in response to these comments.

Studies and Reports

Comments: IDNR received over 800 comments regarding the lack of published studies and reports listed in IDNR's Notice of Proposed Rule. Commenters included Frack Free Illinois, Fair Economy Illinois, Food & Water Watch member submissions, speakers at public hearings and many online commenters.

To give the context for these comments, the notice page filed by IDNR with the proposed rules in November contained the following paragraph and response:

> **"6) Published studies or reports, and sources of underlying data, used to compose this rulemaking:** None"

The essence of the comments was that IDNR did not consider enough scientific studies or reports on hydraulic fracturing when drafting the rules. The commenters often provided a link to a study or report for IDNR's consideration. Commenters contended that the State of Illinois should conduct more studies on HVHHF operations before it is allowed in Illinois. Along the same lines, others suggested that IDNR establish a procedure for considering studies or reports from other states or countries as they are released. Representative comments:

> *"Simply put, the State of Illinois cannot have sound regulation without good data. There is significant need for further study of horizontal hydraulic fracturing technology prior to its use in the State of Illinois."*
>
> *"I find it absolutely appalling that this entire set of rules was written without any consideration of scientific studies on hydraulic fracturing…This simply cannot be done without consulting experts in each of these areas."*
>
> *"As a response we call for an immediate convening of an independent, university-based, hydraulic fracturing science research task force to evaluate the dangers of fracking and to inform the IDNR going forward."*
>
> *"These standards should be based on scientific research of what is proven safe. If such research does not yet exist, the state needs to fund this research before allowing fracking in Illinois."*
>
> *"IDNR [should] require of itself constant and regular monitoring of government reports, peer-reviewed studies, and media reports regarding issues related to hydraulic fracturing in Illinois, other states, and other countries."*
>
> *"When no scientific data is used it becomes apparent IDNR rulemaking is attempting to conform a set of highly contested scientific issues into a political framework."*
>
> *"The people of Illinois deserve and demand that this research be done to protect not only the public safety, but also the quality of life of all its inhabitants."*

Response: The Secretary of State's rules for proposed regulations require an agency to list "any published studies or reports, along with the sources of underlying data, that were used when composing this rulemaking, in accordance with 1 Ill. Adm. Code 100.355." See 1 Ill. Adm. Code 100.410(a)(6). "Underlying data" is defined as follows:

> For the purpose of this Part, underlying data is defined as any data, including written information or material, statistics, measurements, calculations or other information used as the basis for reasoning, recommendation or conclusions, including any information provided to the promulgating agency by a consultant, vendor or other third party under contract with the agency that was used as the basis for a published study or report used in the development of the rule. 1 Ill. Adm. Code 100.355(a).

IDNR's rationale for answering "None" in response to paragraph 6 was that IDNR did not base any of the rules on a particular study or report. The HFRA passed by the General Assembly contained many specific provisions with respect to many technical aspects of the HVHHF permitting process. The language of the statute, rather than independent research, was the starting point for virtually the entire first draft of the rules.

For instance, the statute contains many technical requirements for well preparation, construction, and drilling (Section 1-70). These statutory provisions incorporate the American Petroleum Institute industry standards and specific pressures for the required tests on cement and strings. Section 1-70(d)(16). Likewise, the statute sets out specific requirements for HVHHF operations (Section 1-75) and water quality monitoring (Section 1-80). As a result, IDNR did not independently study other standards but followed the statutory language.

Beyond the statutory framework, IDNR reviewed the Illinois Oil and Gas Act and regulations, the Illinois Environmental Protection Act and regulations, and other related Illinois laws for guidance. IDNR also coordinated extensively with other agencies regarding various components of the statute and program implementation, including the IEPA, the Illinois Department of Public Health, the Illinois Department of Financial and Professional Regulation, the Illinois Emergency Management Agency, and the Illinois State Geological Survey. IDNR also consulted with the American Petroleum Institute, staff from the Department of Engineering and Public Policy at Carnegie Mellon, and Berkeley Research Group, on a draft version of the proposed rules before they were filed. However, those consultations did not produce any studies or reports.

Since the statute references the American Petroleum Institute Standards, IDNR also reviewed those manuals on issues ranging from cement to water management to better understand the impact on the permitting program. Similarly, IDNR prior to the first draft consulted a number of other reports and studies, not as a basis for a rule, but to further the Department's understanding of the statute and to look for gaps in the proposed rules.

However, IDNR agrees with the concern raised by the commenters that the rules should be based on reliable data, to the fullest extent possible. To help address this concern, in

reviewing the comments and developing the final version of the rules, IDNR reviewed as many studies and reports as possible to see if the rules could be improved in line with the statutory intent. See IDNR's Bibliography. These include many of the studies and reports submitted by commenters during the public comment period.

In addition, the HFRA contemplates that IDNR will continue to monitor HVHHF activities in the state, including additional research. Section 1-97 requires IDNR to monitor HVHHF operations in the state and issue a report to the General Assembly by June 17, 2015 (and every three years thereafter) that examines the number of permits, maps, and any confirmed environmental or public health impacts, among other things. It also requires IDNR to include the following:

> (3) identification of the latest scientific research, best practices, and technological improvements related to high volume horizontal hydraulic fracturing operations and methods to protect the environment and public health;

It was not necessary to incorporate this statutory provision into the administrative rules, but IDNR fully intends to comply with this requirement, as it is crucial to fulfilling the intent of the statute. Moreover, in the second draft of the rules, IDNR considered this reporting requirement and made sure that the Department obtains the necessary information from permittees in order to provide an accurate and comprehensive report to the General Assembly.

Department Action: The Department reviewed many additional studies and reports, but did not change any specific language in the proposed rules directly in response to these comments. The Department provides for this second notice draft a bibliography of many of the materials reviewed during the course of analyzing and responding to the comments on the rules.

Website

Comments: IDNR received a couple comments regarding the website that IDNR must create and maintain for the HVHHF permitting system. The commenters included the environmental coalition's group submission and an individual commenter.

The main concern was that IDNR should specify in the rules that all information posted on IDNR's website must be user-friendly and easily searchable to facilitate transparency and utility of that information to the public. For instance, one commenter noted that the disclosure of chemicals to be used in fracking fluids be easily accessible on the internet.

Response: IDNR intends to fully comply with the HFRA, which requires the Department to create and maintain a comprehensive website dedicated to providing information concerning high volume horizontal hydraulic fracturing operations. Section 1-110. IDNR did not provide rules to implement this statutory provision because the HFRA is fairly specific as to what is required, and because rules are primarily intended to guide applicants and the public. The development of the website is primarily an internal process that does not require administrative rules to carry out.

Yet, IDNR agrees with the important point made by the commenters that the website should be user-friendly so that the information is useful to both applicants and the public. IDNR is still in the process of developing the website, so at this time the Department cannot explain in detail how the search function be carried out. However, as the statute requires, the website shall include an online searchable database that includes for each well, at a minimum: the identity of its operators, its waste disposal, its chemical disclosure information, and any complaints or violations under this Act. Users will also be able to search for completion reports by well name and location, dates of fracturing and drilling operations, operator, and by chemical additives. Section 1-110.

Department Action: IDNR will make every effort, when developing the website required by the HFRA, to make it user-friendly, in furtherance of transparency and accountability.

240.796 Seismicity

Comments: The Department received over 2,400 comments on the issue of induced seismicity. Commenters included the Illinois Attorney General, East Peoria Green, Frack Free Illinois, SAFE, Illinois People's Action, Unitarian Universalist Church, Central Illinois Global Warming Solutions Group, Illinois State University, FEI, Clay Lick Creek Pottery, Peoria Families Against Toxic Waste, Common Action Free School, Chicagoland Against Fracking, The People's Lobby, IIRON, Groundwater Research and Education Foundation, Food and Water Watch, Shawnee Group of the Sierra Club, Community Energy Systems, Heart of Illinois Group Sierra Club, IPC, the GROW Coalition, Roosevelt University's RISE Organization, and hundreds of individuals, including many who spoke at public hearings.

General background and rationale for first draft rule: The broad statutory provisions pertaining to seismicity (Section 1-96 of the Hydraulic Fracturing Regulatory Act) necessitated thorough rulemaking. The statutory definition of "induced seismicity" makes it attributable only to Class II injection wells used for disposal of HVHHF fluids, so the Department did not formulate rules for seismicity induced by HVHHF itself. The Act requires the Department to consult ISGS and to establish a protocol for controlling operational activity of Class II injection wells in the instance of induced seismicity. Additionally, the statute requires the rules to employ a "traffic light" system. The system places fewer requirements for "low levels" of seismicity and includes additional monitoring and mitigation requirements when seismic events are of "sufficient intensity" to result in a concern for public health and safety. The mitigation requirements must provide for either 1) the scaling back of injection operations with monitoring for establishment of potentially safe operation level, or 2) immediate cessation of injection operations. The Act did not define terms such as "low levels" or "sufficient intensity," leaving that determination to IDNR and ISGS.

With this in mind, to prepare its first draft of the rules on seismicity, IDNR consulted with ISGS extensively regarding the various options for setting up a "traffic light" system. The original rationale was to develop a workable traffic light system that would be able to monitor and mitigate seismic events according to the statute. The traffic light system has been used in other parts of the world and promoted by the National Research Council in their 2013 publication on: *Induced Seismicity Potential in Energy Technologies* and additionally for protocol for addressing induced seismicity associated with geothermal energy production wells.[1]

Another issue IDNR contemplated when considering these rules is that the HFRA established a task force that must prepare a report on the scope of hydraulic fracturing activity in the state and provide recommendations as to whether further legislation is needed to regulate the activity by September 15, 2016. HFRA § 1-99. Many of the issues raised by the commenters will need to be considered by the task force as HVHHF operations commence under HVHHF regulations and expand in Illinois. Ensuring the task force is fully apprised of the issues involved with seismicity will require ongoing cooperation, communication, and consultation between IDNR, ISGS, and USGS, and, as HFRA states, "any persons or entities it deems necessary to carry out its mandate." *Id*. Such cooperation could include findings or recommendations from study groups such as the Induced Seismicity Working Group or the partnered Interstate Oil & Gas Compact Commission and Ground Water Protection Council, of which ISGS and USGS are members.

After reviewing the public comments, the Department consulted again with ISGS to see if the system could be improved.

The commenters raised the following issues, which are considered in turn:

- *Hydraulic fracturing would be allowed in areas which are subject to earthquakes; in particular, there are no provisions to prohibit the activity near the New Madrid and Wabash Valley seismic zones.*

- *Along the same lines, one commenter recommended that no fracking should be allowed within a 10 mile radius of epicenter of tremor within last 20 years.*

Response: IDNR recognizes the growing evidence of triggered seismicity in response to injection of waste fluids,[2] and agrees that the Wabash Valley and New Madrid seismic zones in southern Illinois are areas of known seismic activity.[3] IDNR is also aware of the few instances where HVHHF activities are considered a possible or likely cause of seismic activity. IDNR stresses that to date the consensus is that injection of wastewater, rather than the process of hydraulic fracturing itself, has been responsible for the overwhelming majority of tremors, usually minor, associated with HVHHF.

The Act is silent as to any possible seismicity induced by HVHHF itself, and is silent as to IDNR's authority to limit the location of HVHHF operations or Class II injection wells to certain areas on these grounds. Yet, the statute does require the applicant to demonstrate that HVHHF will be conducted in a way that will protect public health and safety, and authorizes IDNR to adopt regulations necessary to achieve statutory purposes. The section of the HFRA that addresses seismicity, which only addresses injection wells accepting HVHHF fluids, and not HVHHF operations, does not include any standards for either allowing or limiting well locations in seismic areas. HFRA § 1-90.

There are practical difficulties involved with establishing precise seismic zones where Class II injection wells might be prohibited. The USGS defines a seismic zone as "an area of seismicity probably sharing a common cause." There are two seismic zones in or near Illinois: the New Madrid and the Wabash Valley seismic zones. The faults of the New Madrid seismic zone are defined by the many detected natural earthquakes each year and some near surface mapping of faults. Both indicate that the northernmost extent of the New Madrid faults may be near or under parts of one or two southeastern most counties of Illinois. This northern extent of the faults is located outside the layers of sedimentary rocks that contain oil resources and the New Albany Shale in Illinois. However, the area likely to be first explored for HVHHF potential does overlap with the areas that could be affected by a New Madrid Fault-based quake.

The Wabash Valley seismic zone, sometimes called the Wabash Valley Fault Complex, does not have specific published boundaries but has a generally accepted locus. No causative faults that have been found to be the source for the seismic activity of the Wabash Valley seismic zone that is deep (7 to 10 miles below the ground surface) in the granite type crystalline basement rock.[4] That does not mean that the zone does not exist. However, the lack of published boundaries makes any hard-and-fast rule based on a "seismic zone" difficult.

The HVHHF process increases water pressure in the area around the borehole along several hundred feet of the borehole where the well casing is open to the oil/gas formation. After one section (stage) of the horizontal borehole is hydraulically fractured, another section can be exposed to the oil/gas formation and that stage fractured. Depending on the length of the horizontal run, one or many individual stages can be completed in a period of several days.

Because the increase of water pressure in the formation is brief (part of a day), the pressure increase does not penetrate far into surrounding rock before the injection pressure is released at the end of the hydraulic fracturing stage. Seismicity theoretically may be induced when pressures are increased in the water in a critically stressed pre-existing natural fault plane. A critically stressed fault is one oriented in a direction where the natural (such as tectonic) stresses in the earth are tending to slide one side of the fault past the other, and the level of the stresses and pressure level of water within the fault plane are near the conditions to make it slide. HVHHF pressure increase could theoretically cause a decrease in the sliding resistance in the pre-existing fault plane, allowing slippage to occur. However, the volume of rock subjected to increased pressure during hydraulic fracturing is relatively small, and the pressured zone does not typically extend to the deeper depths at which natural earthquakes occur, where large, highly stressed natural fault planes slip, producing felt and damaging earthquakes.

The USGS's National Network of seismograph stations shows that earthquakes in Southern Illinois occur about 7 to 14 miles below the ground surface in that granite type basement rock. Illinois oil & gas reservoirs, by contrast, are about 500 to 5,000 feet deep and the target deposits of oil or gas in an organic rich sub-layer of the New Albany Shale are about 2,000 to 5,000 feet deep in Southeastern Illinois. All of these resources are located in the upper part of the thick layer of sedimentary rocks that rests on top of granite type "basement" rock that underlies all of Illinois.

The mapped faults near the surface are known from drilling records and encounters with the faults in underground mines. These mapped faults are not active earthquake faults, as they do not currently, nor have they recently, produced earthquakes. The near surface mapped faults in Illinois are old inactive features in the upper layers of sedimentary rocks, and no historic earthquakes have been directly tied to any of the near surface mapped faults anywhere in the state. The Department considers these old mapped inactive faults more of a risk for unintended migration of HVHHF fluids to the surface than a risk for causing earthquakes.

The 2013 National Research Council report on "Induced seismicity potential in energy technologies" found that "the process of hydraulic fracturing a well as presently implemented for shale gas recovery does not pose a high risk for inducing felt seismic events." Hydraulic fracturing in an estimated 2.5 million stages (sections) of horizontal boreholes worldwide[5] has produced less than a handful of felt seismic events (now three with 2014 events in Ohio). In a 2011 event in Blackpool, England,[6] hydraulic fracturing increased water pressures along a bedding plane and in a critically stressed fault plane that was not known, inducing a magnitude 2.3 earthquake, just near the threshold of being felt. Another felt event during hydraulic fracturing in a horizontal borehole occurred in northeast British Columbia, Canada, in 2011 where some drilling was being performed in a known fault zone at a point where the boreholes crossed the fault zone.[7] A number of seismic events were triggered and detected by the Canadian National Seismograph Network. These seismic events ranged from magnitude 2.2 to 3.8 and only

one event was reported felt. The commission report states that more than 8,000 HVHHF completions were performed in the area without associated anomalous seismicity. In March of 2014, five seismic events were recorded in Ohio that occurred within 1.5 miles of several hydraulic fracturing operations. These events had magnitudes ranging from 1.6 to 3.2 and only two of the five were felt.

Hydraulic fracturing in conventional resources (oil and gas in limestones or sandstones) in vertical boreholes have induced felt seismic events in several wells in Oklahoma in the 1970s[8]and in 2011[9] and possibly in Canada from 1984-1993[10].The Department is unaware of felt seismic events induced in Illinois during the tens of thousands of vertical hydraulic fracturing operations that have been completed over the past 60 years in boreholes in conventional oil and gas resources.

For these reasons, the Department, although it has the authority to do so, is not prepared at this time to propound rules delineating areas as *per se* too seismically active to permit any HVHHF or injection well. Currently, citizens have the opportunity to raise these issues either in written comment or at public hearing with respect to any given HVHHF permit per the regulatory guidelines, and to present facts relating to potential induced seismicity of an area proposed for HVHHF. Municipal and county governments retain their powers under state law to enact zoning or business regulation ordinances designating certain areas as appropriate or inappropriate for various enterprises or activities, or to otherwise apply their police power to activities within their jurisdiction.

Department Action: No rule change is made in response to these comments. However, IDNR recommends that this issue be considered by the task force established pursuant to Section 1-99 in order to determine if legislation is appropriate to address these concerns.

- *The penalties prescribed for rule violation/violations of order of cessation are too light*.

Response: IDNR recognizes that penalties should be sufficiently high so as to deter the activity the rule attempts to prohibit. However, this rule on seismicity is contained within the administrative rules implementing the Oil and Gas Act. Section 1-60(c) of those rules sets out how penalties are assessed by the Department, including the amount of fines. If IDNR desires to increase those penalties, it must pursue a separate rulemaking, which would enable further public input regarding the amounts.

Department Action: No change made to the administrative rules based on this comment.

- *The requirements under the green/yellow/red traffic light system are too high (i.e., the magnitude of the seismic event was too severe before triggering mitigation steps)*

Response: IDNR agrees that the thresholds set in the traffic light system should be lowered. According to the "Did You Feel It?" reports submitted by citizens in Illinois for natural deep earthquakes, people start to feel seismic events starting with magnitudes of 2.1 and slightly higher (depending on time of day and nearby surface activity). Tracking of recorded earthquakes in rural Central Arkansas for June & July 2014 for earthquakes that are much shallower than natural earthquakes and probably induced by fluid injection, demonstrates people report felt

events starting at a magnitude of 2.4. Shallower earthquakes can produce more shaking at the ground surface than deeper earthquakes.

Damage to structures, such as bricks falling out of chimneys or off of parapet walls found around the edge of flat roof buildings, starts to occur when natural earthquakes have magnitudes in the upper 4s and lower 5s, based on experience of past events.

Within the State of Illinois, there is good coverage by the USGS's national seismic network, which had about 10 seismograph stations and recently added 7 more stations between the previous stations to improve the 3 dimensional locations for detected magnitude 2.0 events and higher. Over the past 3 years, 12 natural earthquakes, with magnitudes ranging from 1.8 to 2.7, have been detected in the southern part of the state. Fourteen earthquakes, with magnitudes ranging from 2.0 to 3.9, within about 10 miles outside the Illinois border within neighboring states, were detected by Illinois seismic stations.

In Central Arkansas and Eastern Ohio, roughly similar geologic settings to Illinois, Class II wastewater disposal wells induced multiple seismic events in the low to middle magnitude 2s many months before inducing the largest magnitudes of 4.0 and 3.9 respectively. The low magnitude events were detected in Central Arkansas events about 1 year before the higher magnitudes of 4.0, 3.8 and 3.9 were detected. The eight events leading up to the larger events ranged in magnitude from 2.4 to 3.0 and occurred within 3 miles of the injection well.[11] Several months after the magnitude 4.0, 3.8 and 3.9, the area experienced a seismic event with a magnitude 4.7. The Eastern Ohio events started 9 months before the large magnitude 3.9 event. These events, recorded by the USGS's network, had magnitudes of 2.28, 2.0, 2.15, 2.16, 2.33, 2.77, 2.18, 2.02 and 2.66 and occurred within a mile of the disposal well[12] and also presented in the preliminary report by Ohio Department of Natural Resources (2012).

Based on these case histories, the threshold for Yellow light alert should be multiple events in a similar area starting with the magnitude 2.0 and above. These Class II injection wells as well as other type of injection well case histories such as the Rocky Mountain arsenal in the 1960s[13]and Paradox, Colorado in the 1990s (Appendix J in USEPA, 2013) show smaller earthquakes were induced months to years before larger felt or near damaging or damaging magnitudes.

Department Action: IDNR proposes the following rule changes:

"Green Light Alert" means the Department received the USGS earthquake notification from either USGS or ISGS that there was an earthquake in Illinois with a magnitude less than ~~3~~2.0.

"Red Light Alert" means the Department received the USGS earthquake notification from either USGS or ISGS that there was an earthquake in Illinois or within 10 miles of the Illinois border in a bordering state with a magnitude of ~~5~~ 4.0 or greater.

"Yellow Light Alert" means the Department received the USGS earthquake notification from either USGS or ISGS that there was an earthquake in Illinois or within 6 miles of the Illinois border in a bordering state with a magnitude of at least ~~3~~2.0, but less than ~~5~~ 4.0.

- *Only Class II injection wells are subject to the proposed rule provisions (there are no rules for stopping fracking wells in an emergency)*

Response: The first part of the comment is accurate, but the second part is incorrect. As mentioned above, the definition of "induced seismicity" in Section 1-96 of the statute applies only to the Class II injection wells used for disposal of HVHHF fluids. Under section 245.1100(f), the Department may suspend or revoke an HVHHF permit if there is an emergency condition under which HVHHF operations would pose a significant hazard to public health, aquatic life, wildlife, or the environment.

Department Action: No change made to the administrative rules based on this comment.

- *Companies need to be held responsible for damages as a result of induced seismic activity.*

- *There are no penalties for causing an earthquake.*

- *There is no provision for public notice of the potential settlement or publication of settlement.*

Response: The HFRA explicitly sets out that the regulations on seismicity, stating: "this Section shall provide for either the scaling back of injection operations with monitoring for establishment of a potentially safe operation level or the immediate cessation of injection operations." 225 ILCS 732/1-96(d). Consequently, the proposed rules apply both of these mechanisms to deal with induced seismicity. With respect to liability to others, section 1-102(g) of the HFRA states, "No existing civil or criminal remedy for any wrongful action shall be excluded or impaired by this Act."

Department Action: No change made to the administrative rules based on this comment.

- *Need to have scientific community input and further study (several studies were submitted by commenters).*

Response: As mentioned above, IDNR believes many of the issues raised by the commenters will need to be considered by the task force on Hydraulic Fracturing Regulation, referenced in HFRA section 1-99. In addition, two recent national publications cover seismicity associated with energy technologies, the National Research Council (2013)[14] and the 2013 USEPA final draft concerning Class II injection wells.[15] Both cover many case histories showing studies for induced seismicity going back to the 1960s. Also, older studies covering similar issues can be found in Nicholson and Wesson (1990).[16] These publications should certainly be considered by the task force.

Department Action: No change made to the administrative rules based on this comment.

- *3-6 mile limits for induced seismicity reporting are arbitrary and insufficient.*

Response: Early criteria for rational assessment to evaluate if an injection well(s) caused earthquakes used a 5 km (3.1 miles) distance as the other reaches of induced seismic events from an injection well. [17] While more recent case histories of Class II wastewater disposal wells suspected of inducing seismicity add to the knowledge base, not all case histories are applicable to Illinois. The 2011 Youngstown, Ohio Class II wastewater deep disposal well had seismic events documented 1 km (0.62 miles) from the well. [18]The Class II wells at Dallas-Fort Worth induced seismicity out to less than 1.5 km (0.9 miles) from the wells.[19] In East Texas, the Timpson earthquakes which are possibly induced seismic events are about 6 km (3.7 miles) for the farthest event from the multiple Class II wells in the area.[20] In north-central Texas, Frohlich (2012) found that virtually all well-located epicenters were situated within 3 km (1.8 miles) of high-volume Class II injection wells, but one of his diagrams shows events may be as far as 10 km (6.2 miles) away from an injection well.

The 10-mile limit proposed exceed distances presented in case histories for all types of waste injection wells going back to the first recognized induced events in the 1960s. Ohio's 1986 seismic events may have been related to Class I hazardous and nonhazardous waste injection wells. Seismicity occurred 12 km (7.4 miles) from these wells.[21] The Paradox, Colorado Class V injection well has 95% of seismic activity within 3 km (1.8 miles) of the well and a separate cluster that was 2.5 km across centered 8 km from the well, with the farthest events 9.25 km (5.7 miles) from the well.[22] The deep hazardous waste disposal well at Rocky Mountain Arsenal induced seismicity up to about 10 km (6.2 miles) from the well.[23] The Rangely Oil Field experiments used injection wells near a fault to induce seismicity. Seismic events were produced up to about 3.5 km (2.2 miles) from the wells.[24] Several of these case histories have had wells operating for nearly a decade or more.

The U.S. Geological Survey's first notification report of an earthquake is through an automated system. This is then reviewed by a seismologist. For relatively large events in the world, this is handled by the USGS's National Earthquake Information Center in Colorado which is staffed 24 hours a day. Small earthquakes in the 2s and below are handled by the local area networks at Universities or Agencies who are supported by and report to the USGS. These small events may be reported the next morning if they occur at night. Also the first location in 3 dimensions (the hypocenter) for these events is refined through time with seismologists adding more and more information from seismograph stations that detected the event. Each of the reported events shows a horizontal location with a plus and minus horizontal accuracy and also a depth with plus or minus vertical accuracy or error. Typically, smaller events and events farther away from seismograph stations have a larger margin of error. An example is the magnitude 1.8 event on 10 July 2013, near Mt. Carmel, Illinois. Its horizontal location error was plus/minus 0.74 miles and its vertical location error was plus/minus 0.93 miles. This is a relatively small error since this event was 7 km (4.3 miles) from the nearest seismic station. Horizontal errors are always smaller than the vertical error which is more difficult to ascertain.

Based on this information, IDNR finds that increasing the distances set out in the rules is justified.

Department Action: The following subsections are amended:

240.796(d)
1) The Department will report any Yellow Light Alert to all Class II UIC well permittees with wells located within a ~~3~~6 mile radius of the earthquake event's epicenter measured from the surface above the hypocenter.
***
4) The Department will report any Red Light Alert to all Class II UIC well permittees with wells located within a ~~6~~10 mile radius of the earthquake event's epicenter measured from the surface above the hypocenter.

240.796(e)
4) If a particular well regulated by this Section receives a Red Light Alert and is within 6~~3~~ miles of the epicenter of the earthquake event measured from the surface above the hypocenter.

240.796(f)
f) The Department has discretion to issue cessation orders to permittees with wells regulated by this Section within 10~~6~~ miles of any earthquake epicenter, when necessary, if, after consultation with ISGS, induced seismicity conditions warrant cessation.

- *Insufficient earthquake monitoring in southern Illinois; the density and analysis capability of the current monitoring network should be enhanced, specifically focusing on low-magnitude events in Southern Illinois (near the faults).*

Response: There is a seismic monitoring network in Illinois supported by the USGS. It is part of the national seismic network with about 10 seismograph stations throughout the state reporting on magnitude 2.0 and slightly lower magnitudes of seismic events in Southern Illinois. Recently, 7 more stations were added between these previous stations in Illinois. Various stations in the Illinois area are maintained by St. Louis University and the University of Memphis. For decades staff at these stations have been installating and maintaining stations, analyzing seismic signals, and developing and using earth models to determine the seismic events location and magnitude. Therefore, there is a many-decades-long background of seismic events in this magnitude range for the state.

The USGS's National Network of seismograph stations shows that earthquakes in southern Illinois,ranging from being felt and higher to damaging levels in 1968, 1987 and 2008, occur about 7 to 14 miles below the ground surface in the granite type basement rock. USGS's installing of a much denser array of seismic stations in order to detect microseismic events (events less than magnitude 2.0), highlights the issue of not having years of background monitoring to show what natural occurring microseismic events exist in an area or what potential induced microseismic events occur in the area. A large part of the state has over a century of active oil and gas production, including Class II wells used for reinjection of saline waters into the oil formations (for Enhanced Oil Recovery), various deep waste disposal wells, underground coal mines, surface coal mines, and rock quarries. This history presents a challenge in determining the 3-dimensional location of microseismic events and attributing a specific cause to recorded events.

Eagar et al., (2006) performed such a study in the mid-1990s placing ten temporary seismographs, spaced on average 20 km (12.4 miles) apart, for 211 days from roughly

Vincennes, Indiana down to New Harmony, Indiana on both sides of the Illinois-Indiana border. The study detected 534 microseismic events ranging from magnitude 0.6 to 1.8. Their analysis used events detected at night when the surface areas were quiet. It took years of analysis to try and produce the best 3-dimensional locations, and they made no hard connection between microseismicity and specific sources, and could only speculate on various possible sources. A majority of the events were centered over or near an underground coal mine and the rest of the events were scattered in two general lines NW-SE, which is exactly perpendicular to the trend of the oil fields and their Class II reinjection wells into the oil bearing formations and perpendicular to all the near surface mapped faults.

This pattern also does not match possible seismicity associated with oil field production.[25] Where induced seismic events in California are located over and along the length of the oil fields, which in this area of Illinois and Indiana, the oil fields are elongate NE-SW. Seismic activity, documented by McGarr in California, related to oil production has not been seen in Illinois probably because of dissimilar tectonic settings and oil field practices.

The Department notes that the Induced Seismicity Working Group of the partnered Interstate Oil & Gas Compact Commission and Ground Water Protection Council has a subgroup starting to review monitoring issues.

Department Action: No change made to the administrative rules based on this comment.

- *No requirement for well owners to maintain insurance to compensate if there are damages.*

Response: It was suggested that permittees be required to have insurance to cover damages caused by an induced seismic event. There are a few issues pertaining to this suggestion that prevent it from being implemented in the proposed rule. The HFRA (Section 1-35) requires the applicant to submit proof of insurance in the registration form to cover "injuries, damages, or loss related pollution or diminution in the amount of at least $5,000,000…" The Act specifically defines "pollution or diminution" (Section 1-5). Accordingly, to obtain a permit, the applicant is required to show proof of insurance to cover injuries, damages, or loss related to *pollution* in the amount of at least $5,000,000.

However, the HFRA is not the basis of Rule 240. The Oil and Gas Act is the authority for that rule. The issue is thus whether the Oil and Gas Act allows a rule that would require the permittee to have earthquake insurance. The Oil and Gas Act (225 ILCS 725) covers activities of Class II injection wells accepting HVHHF fluids, which are the wells more likely to trigger seismic activity and are the ones specified as being covered in the Hydraulic Fracturing Act. The Oil and Gas Act and Rule 245.240 are silent as to requiring insurance in oil and gas operations. There are bonding requirements in 225 ILCS 725/6 but they are limited to $100,000 and have other restrictions and do not apply to these kinds of damages/causation. The Department is allowed to request "such other relevant information as the Department may deem necessary or convenient to effectuate purposes" of the Act. The Department declines at this juncture to utilize this section to require the applicant to have insurance against causing earthquakes as a pre-requisite for obtaining an HVHHF permit.

Sections 240.300 and 240.320 pertain to the content of the applications for Class II UIC wells. Neither section requires the applicant to show any type of insurance for their operation.

Section 19.5 of the Oil and Gas Act creates a cause of action regarding plugging of wells and allows liens for fees and funds due to the Department, but the Act does not create any other specific causes of action, especially in regard to causing earthquakes. This does not rule out any existing remedies for damages from induced seismic activity under tort or other law. It simply recognizes that the Department is not the agency to adjudicate such claims.

Department Action: No change made to the administrative rules based on this comment.

- *Measure of magnitude relied upon to determine "traffic light" should be specified (Mercalli, Richter, Moment Magnitude, etc.) so there is consistency.*

There are many different magnitude types reported by the USGS, which depends on the magnitude range and range of distance of earthquakes to the seismic stations. Most of the events less than magnitude 4 are Md, which is based on duration of shaking. Moment magnitude is used for events greater than magnitude 3.5. Local magnitude, the original magnitude relationship defined by Richter and Gutenberg, was defined by a specific seismograph and now is calculated using modern instruments with adjustments. The specific type of magnitude type used by USGS on their individual earthquake notification is shown on their scientific page of the notification. The consistency is that the regulations be based on one agency's calculation of a magnitude for the events and utilize a standardized method for calculation of location, as there are a number of simple to more complex methods for these calculations.[26]

Mercalli is an intensity scale and not a magnitude scale system. It is subjective and based on peoples' experience during shaking and how objects or structures behave in an area. It defines local experiences and assigns a Mercalli Intensity value at that location. Therefore, for a single earthquake event, there are a range of Mercalli Intensity values radiating out away from the earthquake to match the changes in experiences as the shaking generally decreases with distance from the seismic event.

- *Yellow and red alerts should trigger more intensive monitoring activities/increase in monitoring stations.*

Multiple-yellow and individual red alerts trigger consultation with the Department and ISGS to develop a plan which may include additional company sponsored monitoring along with adjustments in operating parameters. Some case histories have shown control over numbers and magnitude of seismic events through reduction in rate or pressures and periodic cessation of injection.[27]

Department Action: IDNR proposes the following rule changes to section 240.796:

c) Class II UIC Well Operations

1) All Class II UIC wells regulated by this Section shall be equipped with a flow meter capable of monitoring the rate of flow of fluids injected down into the well on a per day basis

consistent with the Class II UIC permit issued by the Department.

2) All permittees shall record and maintain pressure and flow data for each Class II UIC well on a monthly basis. The report shall include the average and maximum monthly injection rates and pressures. The records shall be submitted to the Department in accordance with Section 240.780(e). The records shall be maintained for at least 5 years and shall be available to the Department for inspection upon request.

3) When a well is suspected of triggering induced seismic activity, the permittee shall consult with the Department and ISGS to develop a plan for seismic monitoring, including the possibility of installing monitoring stations in the vicinity of the well and reduction in rate or pressures of fluid injected.

d) Induced Seismicity Reporting

1) The Department will report any Yellow Light Alert to all Class II UIC well permittees with wells located within a ~~3~~6 mile radius of the earthquake event's epicenter measured from the surface above the hypocenter.

2) After receiving a Yellow Light Alert, a Class II UIC well permittee has the discretion to operate the permitted well according to the terms of the permit, adjust the operation of the permitted well reducing the volume, rate or pressures of fluids injected into the well, and consult with the Department and ISGS about the implications of the Yellow Light Alert as it relates to the operation of the well.

~~1)~~3) After receiving a third Yellow Light Alert within one year, a Class II UIC well permittee must immediately reduce injection volume and consult with the Department and the ISGS.

~~2)~~4) The Department will report any Red Light Alert to all Class II UIC well permittees with wells located within a ~~6~~10 mile radius of the earthquake event's epicenter measured from the surface above the hypocenter.

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