

**STATE OF ILLINOIS
CMS BUREAU OF ADMINISTRATIVE HEARINGS FOR
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF MINES AND MINERALS**

IN THE MATTER OF THE APPLICATION OF) HVVHHF-2017-01
WOOLSEY OPERATING COMPANY, LLC)

RECOMMENDED FINDINGS

THIS MATTER pertains to the application (the “Application”) of Woolsey Operating Company, LLC (“Woolsey”) for a permit to conduct High Volume Hydraulic Horizontal Fracturing at a location in White County, Illinois pursuant to the Hydraulic Fracturing Regulatory Act, 225 ILCS 732/1-1, *et. seq.* (the “Act”). Subsequent to passage of the Act, the Illinois Department of Natural Resources (the “Department”) adopted regulations for the implementation of the Act (62 Ill.Adm.Code 245.100, *et. seq.*, the “Regulations”). During the rulemaking process, the Department received in excess of 30,000 comments on its proposed regulations. The Application was the subject of a Public Hearing pursuant to 62 Ill. Adm. Code 245.270, hereinafter the “Public Hearing Section,” requiring such a hearing upon receipt by the Illinois Department of Natural Resources of a “Request for Hearing” which complies with Subsection (a)(3) of the Public Hearing Section. 62 Ill. Adm. Code 245.270(a)(3).

I. Hearing Participants

The Public Hearing Section permits any person “having an interest that is or may be adversely affected” to file a Request for Hearing. (245.270(a)(3)(B)(i)). Any Request for Hearing which is filed with the Department is reviewed by the Hearing Officer pursuant to the method set forth in Subsection (a)(5) (*See, also*, 245.275(g)(7)). The Standard of Review set forth therein requires only that such a request contain an “adequate factual statement” for finding that the person “is or may be adversely affected” and that the request is not “frivolous by presenting grounds that are devoid in merit.” (245.270(a)(5)(B)). This initial determination does not require a review of such a request to determine if it contains all the elements enumerated in Subsection (a)(3); rather, the Hearing Officer’s determination is confined to whether the Request for Hearing meets the minimum standard.

As required by the Act and the Public Hearing Section, the Department received and reviewed both public comments concerning the Application and Requests for Hearing. Separate email addresses were provided for public comments and requests for hearing¹. Over 5,000 messages were received by the Department, each being reviewed to determine if the message contained a Request for Hearing. The Department referred a total of eight messages from both addresses for a determination that each such message qualified as a Request for Hearing.

Of the eight messages, two were received via the United States Postal Service, four were received at the Public Hearing E-mail Address and two were received at the Public Comments E-mail Address. Written determinations concerning these eight messages were issued on July 26, 2017 and July 31, 2017. Three of the messages were determined to be Public Comments which did not qualify as a Request for a Public Hearing; one message asked a scheduling question regarding a public hearing; one Request for Hearing contained insufficient detail to determine the existence of an “adverse affect;” and, three messages contained a Request for Hearing which met the minimum standard. The approved requests were sequenced based on the date of receipt by the Department. This sequencing resulted in Ms. Karen Fiorino being identified as the “Requestor” of the Public Hearing with Ms. Barbara McKasson and Mr. James M. Walker, respectively, identified as “Participants.”

On July 28, 2017, Mr. Vito Mastrangelo, of Mt. Vernon, Illinois, entered his appearance on behalf of Ms. Fiorino and Mr. Walker; on July 29, 2017, Mr. Jacob Smallhorn, of Charleston, Illinois, entered his appearance as co-counsel.

II. Notice of Hearing

On May 26, 2017, the Department published a Public Notice and a High Volume Horizontal Hydraulic Fracturing Application Notice, both being required by the Act. The Notices, in part, scheduled the Public Hearing location and date. (IDNR Ex. 2.) Following a supplementation of the Application by Woolsey, the Department issued a supplemental notice

¹ DNR.HFPublicComments@illinois.gov (the “Public Comments E-mail Address”) and DNR.HFHearingRequest@illinois.gov (the “Hearing Request E-mail Address”).

dated June 26, 2017. (IDNR Ex. 4.) The supplemental notice rescheduled the Public Hearing for August 2, 2017.² *Id.*

Following a final in-person Pre-Hearing Conference, at which all parties were in attendance, the Public Hearing was convened at 10:20 AM on August 2, 2017. At the outset of the Public Hearing, Mr. Andrew Suthard, Counsel for the Department, introduced IDNR Exhibits 1 through 7 into the record without objection.³ (Hearing Transcript, pp. 7-11).

III. Public Hearing

Following introductory procedural matters, including those set forth above, and Entries of Appearance by the attorneys present and their respective clients, Transcript, pp. 1-11, testimony in the public hearing commenced.

A. Mona and Harl Weaver

Mr. & Mrs. Weaver submitted a Request for Hearing to the Department which was previously determined not to be a valid request. This determination was reached because the location of the farmland referred to in the Weavers' Request for Hearing could not be accurately located using the provided information. However, by agreement of the parties during the Pre-Hearing Conference, Mrs. Mona Weaver was permitted to testify on behalf of herself and Mr. Weaver.

Mr. and Mrs. Weaver are the owners of 603 acres of located in Hamilton County, Illinois. Their farmland is located approximately 7 miles west of the hearing venue "the way the crow flies." (Transcript, p. 15:13 – 16). The written request provided by Mr. and Mrs. Weaver indicated two concerns. First, they state "[we] do not want [our farmland] contaminated." Second, they object to, or are concerned about, the Applicant "using to[sic] much water" while engaging in High Volume Hydraulic Horizontal Fracturing. (Second Determination on Hearing Req., Ex. B).

² IDNR Exs. 5-7 demonstrate compliance with 225 ILCS 732/1-50(d) through proof of publication of the Notice of Public Hearing in a newspaper of general circulation published in White County, Illinois, as required by the Act.

³ IDNR Exs. 1 and 3 are the Original Application of Woolsey and the Supplemental Application of Woolsey on file with the Department.

In her testimony at the hearing, Mrs. Weaver repeated her concern regarding contamination related to the surface water located on their property and the “mineral rights” resulting from “chemicals and things leaking into the ground.” (Transcript, p. 14:5 – 6). Mrs. Weaver offered no specific evidence in support of her concerns and submitted no documents or other written materials during her testimony. Attorneys for the Department and the Applicant declined the opportunity to question Mrs. Weaver. Mr. Mastrangelo briefly questioned Mrs. Weaver to more precisely locate the Weaver property but asked no questions regarding the substance of Mrs. Weaver’s testimony.

B. Karen Fiorino

Ms. Karen Fiorino mailed a letter requesting a Public Hearing to the Department on June 16, 2017. Her letter was received by the Department on June 19, 2017. Her letter focuses on “induced earthquakes” in connection with “wastewater disposal wells associated with hydraulic fracturing operations.” (Determination on Hearing Requests, Ex. A.). Ms. Fiorino states in her request that “as a Southern Illinois resident and property owner, induced earthquakes would adversely affect my family and my property.” (*Id.*).

Ms. Fiorino testified from a written statement, a copy of which was provided and is included in the Transcript as Requestor’s Exhibit Number 2.⁴

The testimony of Ms. Fiorino elaborates on and expands upon her concern expressed in her Request for Hearing. Her written statement contains references to various sources consulted by her in preparing her testimony.⁵ Of the sources, several represent news reports following earthquakes in Arkansas, Ohio, and Oklahoma. She also refers to scientific and scholarly publications which have observed and analyzed seismic activity and the possible origins of that activity. Except for her testimony in the materials cited therein, Ms. Fiorino offered no other witnesses or evidence in support of her Request for Hearing.

Her testimony acknowledges that many of the sources consulted do not conclude that Hydraulic Fracturing Operations are the cause of induced seismic activity. Rather, many

⁴ The Requestor and the Participants, along with Mr. and Mrs. Weaver, all submitted additional material after the Hearing. The admissibility of those materials as a part of the record is addressed by separate Order. Unless otherwise indicated here, these materials have no effect on this recommendation.

⁵ A bibliography of the sources identified in her statement is attached hereto as Exhibit 1.

scientific commentators have concluded that Class II Injection Wells are more likely to be one of many industrial factors causing induced seismic activity. Two of these cited sources warrant additional comment and discussion.

Dr. Mark Zoback, Ph. D.⁶, is cited by Ms. Fiorino for his five recommendations to reduce the probability of “induced seismicity” delivered in testimony to the United States Senate Committee on Energy and Natural Resources in June, 2012. Those recommendations are discussed below; however, his comments in the same testimony on the effect of Hydraulic Fracturing on seismic events and the risk posed by injection of wastewater are equally important to the discussion of Hydraulic Fracturing and the Application.

It is important to note that the extremely small microseismic events occur during hydraulic fracturing operations. These microseismic events affect a very small volume of rock and release, on average, about *the same amount of energy as a gallon of milk falling off a kitchen counter.*

It is important for the public to recognize that the risks posed by injection of wastewater are extremely low. In addition, the risks can be minimized further through proper study and planning prior to injection, careful monitoring in areas where there is a possibility that seismicity might be triggered, and operators and regulators taking a proactive response if triggered seismicity was to occur. (United States. Cong. Senate. Committee on Energy and Natural Resources. Induced Seismicity Potential in Energy Technologies, June 19, 2012. 109th Cong. 1st sess. Washington. (statement of Dr. Mark D. Zoback, Ph. D., Stanford University.) Emphasis Added.)

Ms. Fiorino also approvingly cites the June, 2013 article of Dr. William L. Ellsworth, Ph. D., entitled “*Injection-Induced Earthquakes,*” which was published in the journal *Science*.⁷ Therein, Dr. Ellsworth comments on the risk of both Hydraulic Fracturing and injection wells (341 *Science* 1225942-1, July, 2013).

Earthquakes induced during hydraulic fracturing have lower risk because of their much smaller magnitudes. The largest fracking-

⁶ Dr. Zoback is the Benjamin M. Page Professor in Earth Sciences and Senior Fellow at the Precourt Institute for Energy at Stanford University, Stanford, California.

⁷ Dr. Ellsworth is a Professor (Research) of Geophysics at Stanford University, Stanford, California. Prior to his appointment, Dr. Ellsworth was a geophysicist of the United States Geological Survey (USGS) and served as the Branch Chief of Seismology, Chief Scientist of the Earthquake Hazards Team and Senior Research Geophysicist of USGS.

induced earthquakes have all been below the damage threshold for modern building codes. One approach for managing the risk of injection-induced earthquakes involves setting seismic activity thresholds that prompt a reduction in injection rate or pressure or, if seismic activity increases, further suspension of injection. Such “traffic-light” systems have been used selectively, going back to at least the RMA well pump tests in 1966–1967. Lowering the magnitude-detection threshold in regions where injection wells are concentrated to below Mw 2 would certainly help (Id. at 1225942-7, Internal citations omitted.)

Ms. Fiorino recommends that the Application be denied because of the potential for induced seismicity. However, prior to that recommendation, she endorses a proposal of Dr. Zoback in his testimony before the United States Senate. The proposal consists of five steps:

1. Avoid injection into active faults and faults in brittle rock;
2. Formations should be selected for injection to minimize pore pressure changes;
3. Local seismic monitoring arrays should be installed when there is a potential for injection to trigger seismicity;
4. Protocols should be established in advance to define how operations would be modified if seismicity were to be triggered; and,
5. Operators need to be prepared to reduce injection rates or abandon injection wells if triggered seismicity poses any hazard.

Items 1 and 2 of Dr. Zoback’s proposal are addressed by Part 245, Subpart F of the Regulations. (*See* 62 Ill. Adm. Code 245.500 - 580 Addressing formation integrity requirements, related design features, and required testing prior to fracturing and injection operations.)

Items 3, 4 and 5 are the same proposal endorsed by Dr. Ellsworth in his writing. In fact, the “traffic light” system of monitoring for increased seismic activity was again endorsed by Dr. Ellsworth and co-author scientists from the USGS Earthquake Science Center, USGS National Water Quality Assessment Program, USGS Powell Center, USGS Geologic Hazards Center, The University of Colorado at Boulder, Oklahoma Geological Survey and the Lawrence Berkeley National Laboratory in a February 2015 article in *Science*.⁸

It is this “traffic light” system of control that is included in the Act as a requirement when “seismic events are of sufficient intensity to result in a concern for public health and

⁸ McGarr, Bekins, Burkhardt, Dewey, Earle, Ellsworth, Ge, Hickman, Holland, Majer, Rubinstein and Sheehan, *Coping with earthquakes induced by fluid injections*, *Science*, February, 2015, p. 830.

safety.” (225 ILCS 732/1-96(c)). The increased seismicity regulations required by the Act have been incorporated in the regulations pertaining to operating and reporting requirements in Section 240.796 of the Regulations. This regulation provides for an independent monitor of seismic activity, affirmative steps to be taken during seismic activity, and permanent changes to operations in the event of repeated significant seismic activity. Any seismic activity triggers an initial Green Light Alert; a Yellow Light Alert is triggered when seismic activity of 2.0 - 4.0 intensity is detected. The regulations adopt the lower intensity standard recommended by Dr. Ellsworth in his 2013 article. (341 *Science* 1225942-7).

In sum, Ms. Fiorino’s concern regarding the lack of research and scholarly writing on the subject of induced seismicity is misplaced. As indicated in the writings, Class II Injection Wells have been in use throughout the country for many years with an apparently minimal effect on seismicity. In addition, the recommendations she adopts through her testimony has been addressed by the General Assembly and the Department in the Act and the Regulations, respectively. The literature strongly suggests that a regulatory scheme similar to that employed by the State of Illinois operates to minimize the potential for induced seismicity.

C. Barbara McKasson

Barbara McKasson submitted her Request for Hearing on July 17, 2017, by e-mail (Determination on Hearing Requests, Ex. E.). Her two-page Request for Hearing provides comments on specific aspects of the Application. In her testimony, from a written statement, she testified concerning general subjects, seismicity and water quality. In questioning by Mr. Smallhorn, she refers to a statement of the Natural Resources Defense Council (“NRDC”) public comments submitted to the Department and offered into evidence by Mr. Smallhorn on behalf of Ms. Fiorino and Ms. McKasson⁹.

The Testimony of Ms. McKesson concerning seismicity parallels the testimony of Ms. Fiorino. However, as the discussion above demonstrates, geophysicists and seismologists generally agree that hydraulic fracturing operations do not, in and of themselves, create a higher risk of induced seismicity. Rather, as Dr. Zoback comments, they release seismic energy

⁹ See Section IV, Post-Hearing Filings, below.

roughly equivalent to a gallon of milk falling off the table. Ms. McKesson also expresses her concerns regarding injection wells and the potential effect on seismicity.

Her second area of concern in her testimony and her Request for Hearing focuses on the water quality aspects of the Application and subsequent operations. Her Request for Hearing refers to criticisms of the Water Source Management Plan, Underground Freshwater Information, Hydraulic Fracturing Fluids and Flowback. Her testimony largely mirrored her Request for Hearing and suggests that supplement documents numbered four and ten are deficient. (Tr. 41.)

Finally, Ms. McKesson addresses in her Request for Hearing issues related to the financial responsibility of the Applicant with respect to insurance and a surety bond. No testimony was offered with respect to this aspect of her Request for Hearing.

Generally, her Request for Hearing suggests that deficiencies in individual issues should be the basis for a denial of the Application. Ms. McKesson, like the other hearing participants, is a layperson who has received her information from a variety of sources. In particular, Ms. McKesson has relied on previously referenced NRDC statement. In testimony, she indicated her reliance on that statement in the preparation of her testimony. That statement, in its current version, was offered into evidence by stipulation of the parties with respect to its foundation.

Unlike Mrs. Weaver and Mr. Walker, she resides a substantial distance from the proposed well location. Like Ms. Fiorino, she resides in Jackson County near or in the New Madrid Fault zone.

D. James M. Walker

Mr. Walker, through his attorney Mr. Mastrangelo, filed a Request for a Public Hearing by email on July 27, 2017. A copy of Mr. Walker's Request for Public Hearing is attached hereto and incorporated herein as Exhibit 2. His Request consisted of three pages, the first of which indicates that his family lives on a twenty-acre tract of land approximately three miles from the proposed well site. Ex. 2, p. 1. His Request states that he is concerned with "contamination of my land[,] among other things." *Id.* at p. 2. Attached to the page bearing his signature is a two-page form which provides 22 different statements with a checkbox next

to each. Ex. 2, pp. 4-5. The form appears to have been marked by Mr. Walker and signed on the second page.

Mr. Mastrangelo informed the parties at the outset of the hearing that Mr. Walker would not attend the hearing because he was unable to obtain permission from his employer to be absent from work. Mr. Smallhorn indicated that Mr. Walker would “rest” on the written statement that he submitted as his Request for Hearing. (Tr. 47:8)

Similar to the concern expressed by Mrs. Weaver concerning “contamination,” Mr. Walker provides no objective evidence that such contamination may occur as a result of hydraulic fracturing activities. The attachment to his Request for a Public Hearing in which he indicated 5 items of concern appear to fall into two distinct categories. Two of the concerns refer to alleged inadequacies in the Application. The remaining three indications suggest environmental contamination. Similarly, his supplement makes additional unsupported statements pertaining to contamination and the adequacy of the Application.

The absence of Mr. Walker from the hearing prevents any discussion or questioning to obtain additional information or credible evidence in support of any of his assertions. His absence also precludes the Department and the Applicant from any meaningful opportunity to test his assertions through cross-examination or submission of additional material.

IV. Post-Hearing Filings

The Hearing Requestor and Participants, the Applicant and the Department were granted a period ending at 5:00 p.m. on August 3, 2017 in which to submit additional material for consideration. Mrs. Weaver submitted a map that further identified the location of her property with respect to the proposed well. Mr. Walker submitted a supplemental statement in which he comments on increased traffic, hazards of materials hauling, safety procedures at the well site and potential contamination of floodwater. Ms. Fiorino submitted a one-page supplement to her statement commenting further on potential seismic events and limitations of her insurance policy in such an event. Finally, Ms. McKesson submitted a two-page supplement also addressing seismic events in connection with insurance and elaborating on previous comments with respect to the radioactive materials management strategy.

The statement of NRDC merits some additional comment. The document, as presented at the hearing, represents a continuing evolution of a document that was originally submitted during the original comment period on the Application. It purports to include in its comments supplements to the Application that have been requested by the Department. It is a multidisciplinary document which addresses design, engineering, operational, legal and financial issues. By its own terms, it includes scientists, lawyers, policy advocates and other professionals. It points out on the first page of the document at “[t]he [Act] enacts the nation’s strongest environmental protections for hydraulic fracturing’... and ‘makes Illinois a national model for transparency, environmental safety and economic development.¹⁰” The thirty-page document raises a variety of issues some of which appear in the comments of the hearing participants. It is beyond the scope of this Public Hearing to review each of the comments, concerns or issues raised in the document. Repeatedly, the document attempts to set up an issue that is determinative on the “completeness” of the Application. Certain issues have what are, apparently, common sense solutions for the issue or concern that is raised. Others appear intended to simply create cause of action for future litigation. For these reasons, this statement is separately addressed along with certain exhibits promoted by the Requestor and certain participants in an order with respect to their admissibility.

V. Final Comments

Finally, some historical perspective on the regulatory capability of the Department is necessary and appropriate in the consideration of the Application. The Department, and its predecessors, have been responsible in this State for the regulation of oil and gas drilling since the earliest recorded date in Department records of an oil well drilled in 1906 in Crawford County. With respect to injection wells, Department historical records indicate the presence of the first injection well in Illinois in 1938 which continued operations until it was plugged in 1971. In 1984, the Department was charged with the authority to regulate and administer Class II Injection Well drilling and operation in the State of Illinois. These activities by the Department and its predecessors have given it substantial experience and expertise in the

¹⁰ Comments of the Natural Resources Defense Council on the Woolsey Operating Co., LLC Woodrow HVHHF Permit Application, as Supplemented, p.1 quoting Governor Quinn upon signing of the Act.

analysis of proposals, granting of permits and regulation of all the component parts of hydraulic fracturing activities. These activities occur every day in the Department, largely without notice or comment until a new program, different approach or newly identified concern appears.

Ms. McKasson and the NRDC statement are both correct in one respect. The review and analysis of the application is the first under the new Act. This process will require the Department, the Requester, the Participants and outside organizations to continue to communicate and develop the experience necessary for the appropriate analysis, permitting, operation and conclusion of hydraulic fracturing as authorized by the Act.

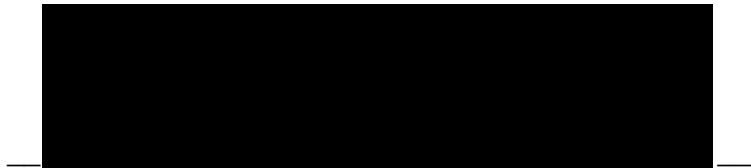
VI. Recommendations

1. The Public Hearing provisions of the Act and the Regulations have created an opportunity for both nearby residents and persons with broader concerns to appear and state their issues in a manner that can be summarized in a concise format for presentation to the Department. Future public hearings should continue and encourage this participation, particularly from residents in the immediate vicinity of the proposed well site, to identify and address localized concerns of citizens and landowners.
2. The early implementation of the “traffic-light” monitoring system has the potential to provide the earliest indications of induced seismicity in the vicinity of the proposed well. Recommendations contained in the works cited herein and the public comments for refinement and development of such a system should be considered for implementation. The varied parties seem to agree that the collaborative production of well information and seismic data in a near real-time format provides the best information for regulation and monitoring as well as future planning.
3. The use of a “closed loop” fluid injection and recovery system minimizes the potential for environmental contamination resulting from those fluids. Commenters have expressed concerns regarding the storage methods, capacities and transportation formats of those fluids. The Department should consider those issues, and design revisions were necessary, to maximize the probability of a completely closed loop.

4. The Department should develop and continue ongoing communications with nearby landowners, land tenants and other stakeholders to inform, educate and listen with respect to the permitting, construction and operation processes of the proposed well. The Applicant should be a participant in those communications throughout the life of the proposed well, if it is constructed.
5. The Department should, as it has for over 100 years, exercise its best engineering, regulatory and policy-making judgment in considering the Application and making a permitting determination. Valuable insight can be gained from the many sources of information provided by the commenters, the Requestor and the Participants; those parties should develop and make their comments in the manner best to encourage constructive dialog and cooperation between the Applicant, the Department and the other interested parties.

BUREAU OF ADMINISTRATIVE HEARINGS

Dated: August 11, 2017



Daniel P. Schuering,
Administrative Law Judge