FLOW
FOR LOVE OF WATER

ADVANCING PUBLIC TRUST SOLUTIONS
TO SAVE THE GREAT LAKES

FLOW's Comments re: Michigan Department of Environmental Quality's Proposed New Rule Changes to Address Unconventional and Horizontal Hydraulic Fracturing Oil and Gas Development

James Olson
and
Elizabeth Kirkwood

FLOW (For Love of Water)*
July 31, 2014

1. Overview

In response to high volume hydraulic fracturing ("HVHF") and the recent pressures and risks of increased unconventional horizontal oil and gas well development in Michigan, the Michigan Department of Environmental Quality ("DEQ") developed and drafted amendments to its Oil and Gas Regulations, R324.102 *et seq* in the fall of 2013. On October 28, 2013, the DEQ filed a request for rulemaking with the Office of Regulatory Reinvention. The DEQ released the draft of proposed rule changes for public comment on April 24, 2014 and filed a regulatory impact statement on April 25, 2014.

The proposed rule changes concerning HVHF and related facilities or activities, as described by the DEQ, cover water withdrawals, baseline water quality sampling, monitoring and reporting, and chemical disclosure.[1] The DEQ defines HVHF "as pumping more than 100,000 gallons of fluid into a deep rock formation to fracture the rock and allow oil or gas to flow into the wellbore." According to the DEQ, hydraulic fracturing is a completion technique for "enhancing" oil and gas production that "is far from new" in Michigan.[2] To

---

*FLOW is a Great Lakes water law and policy center. James Olson is the founder and President of FLOW, and also is a senior principal of Olson, Bzdok & Howard, P.C. in Traverse City, Michigan. Elizabeth Rosan Kirkwood is the Executive Director of FLOW. More information about FLOW and our staff, board, directors, and programs can be found at www.flowforwater.org

[1] Office of Oil, Gas, and Minerals, "Rules about hydraulic fracturing to be promulgated," www.michigan.gov/deq/0,04561,7-135-3306_57064-87386–00.html. For purposes of this comment and to distinguish between the current rules, R324.102 et seq., the proposed rules will be referred to in these comments as "P-R324._____" (The relevant number or section will be shown in the blank space).

[2] http://www.michigan.gov/deq/0,4561,7-135-3306_57064-87386--,00.html Limited hydraulic fracturing has been done to enhance or increase pressure to recover gas or oil from shallow formations with conventional vertical wells and bores, particularly with the Antrim shale play in Michigan that began in the mid-1990s. This involved small amounts of chemicals and water similar to the ranges associated with conventional oil and gas development. It was not until about 10 to 15 years ago that unconventional high-volume fluids were used to actually crack and force open tight rock formations that heretofore could not be developed. This was made possible by higher prices paid for crude oil. The technique was then applied to rock formations, like Marcellus shale in Pennsylvania

the contrary, current HVHF practices are significantly different than previous types of hydraulic fracturing because of the horizontal drilling required to access the deep shale formations and the size and magnitude of potential impacts and harm to Michigan's waters and natural resources. As a result, current HVHF can consume up to 21 million gallons of water and thousands of gallons of chemicals per well in order to fracture these tight deep rock formations and release the oil and gas.[3]

The proposed rules relax spacing, interference, and pooling requirements to provide more flexibility and ease for oil and gas producers to locate drilling pads, oil and gas wells, and related facilities.[4] For example, a permit can now be issued on a drilling unit that is not completely leased or pooled because other landowners or oil and gas leaseholders are not in agreement.[5] Under the current rule, if all land is not leased and no voluntary agreement to pool is reached, the producer must obtain a compulsory pooling order under the Oil and Gas Act ("OGA") and Rule 304.[6] The proposed rule softens the language to "statutory," presumably because it is not as harsh when it comes to forcing non-consenting landowners and/or leaseholders to participate.[7] Moreover, P-Rule 301(d) on its face purports to allow a drilling permit for hydraulic fracturing by an owner of a drilling unit consistent with a

---

or Collingwood/Utica shale here in Michigan. High-volume hydraulic fracturing or unconventional oil and gas development, on the other hand, requires anywhere from 3 million to 31 million gallons of water and 15,000 to 150,000 gallons of chemicals. The oil and gas recovery is not so much "enhanced," as it is released from rock formations from which it would not otherwise be available under conventional or enhancing techniques.

[3] *Id*.

[4] For example, well locations to determine spacing requirements and set backs for interference and other impact issues in Rule 301, R324.301, have been changed based on a "producing interval," which is the open end of a well bore. P-R324.103(h). In the case of hydraulic fracturing, this could be thousands of feet away from the well surface location, and there could be multiple wells or "legs" on one pad with the open end of well bores in several directions, an activity often referred to as "hubbing." It is proposed that the "producing interval" will be 330 feet from any drilling unit boundary; in the case of high volume hydraulic fracturing, there is no longer a requirement for a hearing on spacing order exception if the boundary limitations are exceeded. In fact, the 495 feet boundary rule is now deleted. P-R324.301(b), (c) and (d).

[5] P-R324.301(d).

[6] MCL 324.61513(4) (referred to herein as "Oil and Gas Act" or "OGA"); R324.304. The current term "compulsory" pooling is proposed to be called "statutory" pooling, presumably to soften the language to guard against claims of takings when it comes to high volume horizontal fracturing in tight-rock formations. When it comes to HVHF, there is a fundamental constitutional question of whether a person can be forced to "pool" land or leasehold interests without consent, because the nature of the process requires an entry into another land's far below the surface to fracture the rock and capture any oil and gas. That is, there is no "pool" of oil or gas in the conventional sense. Section 61513 of the OGA and MCL 61701 *et seq*. authorize a pooling order of landowners who are in the field of a pool. The term "pool" means a "common source of supply," which is a "a natural underground reservoir containing or appearing to contain a common accumulation of oil and gas." MCL 61501(l); MCL 324.61701(d). The OGA and MCL 324.61701 *et seq*. do not address the legal authority to force a landowner into a "pool" where the oil and gas is trapped in rock formations and cannot be produced without first invading and breaking the rock.

[7] P-R324.304. In tight shale formations for example, it is necessary to explode the rock with the pressurized high-volume fluids and proppants before there is any gas or oil to extract and produce; i.e. there is a fundamental question of whether there is a "pool" of oil and gas, or if it is captured in the rock and not released until the physical breaking or fracturing of the rock formation itself.

spacing order who does not own or control all the lease rights within the pool.[8] The proposed rules themselves do not address the underlying constitutional problems associated with physically entering or trespassing into another's property beneath the surface to explode or fracture the landowner's rock without his or her consent.[9]

As a whole, the DEQ's proposed new rules to address the risks, impacts, and uncertainties surrounding HVHF in Michigan do not measure up to the values and principles embodied in Michigan's history, law and policy when it comes to protecting our air, water, natural resources, the public trust, and public health and welfare.

The Michigan Constitution declares that our "air, water, and natural resources" are of "paramount public concern," and requires that our legislature and executive branches of government to pass laws to "protect the air, water, and natural resources from pollution, impairment, or destruction."[10] Similarly, the Constitution requires the legislature to "protect the health, safety and general welfare" of our citizens.[11] Michigan adopted the Michigan Environmental Protection Act ("MEPA") in 1970 in response to these constitutional mandates.[12] And, in passing the OGA, the basis of authority for the DEQ's oil and gas rules, the legislature found that:

> It has long been the declared policy of this state to foster conservation of natural resources so that our citizens may continue to enjoy the fruits and profits of those resources. Failure to adopt such a policy in the pioneer days of the state permitted the unwarranted slaughter and removal of magnificent timber abounding in the state, which resulted in an immeasurable loss and waste.
>
> * * *
>
> The interests of the people demand that exploitation and waste of oil and gas be prevented so that the history of the loss of timber may not be repeated. It is accordingly the declared policy of the state to protect the interests of its citizens and landowners from unwarranted waste of gas and oil and to foster the development of the industry along the most favorable conditions and with a view to the ultimate recovery of the maximum production of these natural products. To that end, this part is to be construed liberally to give effect to sound policies of conservation and the prevention of waste and exploitation.[13]

Under Michigan's Constitution and environmental protection mandate, the Supreme Court has ruled that the DEQ and other agencies have a mandatory duty to "prevent or minimize likely environmental degradation,"[14] and that these agencies must thoroughly consider the

---

[8] See *infra* comment, section i of these comments. It should be noted that this is contrary to the requirement for notice and opportunity to be heard on the pooling of a common source of oil or gas before a drilling permit is issued.
[9] See *infra* comment, section 1.
[10] Mich Const 1963, Art 4, Sec. 52.
[11] Mich Const 1963, Art 4, Sec. 51.
[12] *State Hwy Comm'n v Vanderkloot*, 392 Mich 159; 220 NW2d 416 (1974); *Ray v Mason Cty. Drain Comm'r*, 393 Mich 294; 224 NW2d 883 (1975).
[13] MCL 324.61502.
[14] *Ray v Mason Co Drain Comm'r*, 393 Mich 294; 224 NW2d 883 (1975).

cumulative and likely impacts and alternatives when examining applications for permits and other approvals.[15] Overall, there is a paramount responsibility in the constitution and law on the DEQ in its actions, including the proposal of new rules, to protect and conserve the air, water, natural resources, and public trust in those resources.[16] There is a corresponding obligation to protect the health, safety and welfare.[17]

Under the OGA and its Rules, there is a duty to prevent "waste." Waste includes harm to the air, water, natural resources, environment, and wildlife.[18] Clearly, the legislature has declared that oil and gas development authorized by the OGA is subject to the overriding concern for prevention of waste, which includes the protection of the environment, people's health and welfare, and decisions that wisely benefit the long-term economy of the state.[19]

Finally, the DEQ and Governor Snyder have supported the ongoing University of Michigan Graham Sustainability Institute's "Integrative Assessment Study" ("IA"), a multi-unit participant and disciplined evaluation and problem-solving approach to the gap in information and adequate procedures and protections of the environment, public health, and communities that could result from HVHF.[20] The goal of the IA is to identify those policy options that will minimize impacts from hydraulic fracturing, particularly HVHF, as well as those that will "guide future decision making on the issue and help decision makers avoid some of the missteps that have occurred in other states."[21]

The IA asks the fundamental question: "What are the best environmental, economic, social, and technological approaches for managing hydraulic fracturing in Michigan?"[22] Based on the IA, the State of Michigan, the DEQ, communities, industries, public health and environmental organizations, and citizens will be able to make conscientious choices concerning what policy options and approaches will best minimize negative impacts.[23] Hence, the Graham Institute's IA project is essential for the DEQ in fulfilling at least one of its primary mandates: to "prevent and minimize" environmental degradation. Nevertheless, the final IA is not completed and yet the DEQ is seeking to finalize these proposed new rule changes.

For these reasons, when compared to existing specific DEQ Supervisor orders on HVHF and the promising results of the Graham Institute IA, the DEQ's proposed new rule changes may be premature. Moreover, these new proposed rules will have to be reviewed and modified again following the recommendations of the IA's multi-stakeholder effort.

---

[15] *State Hwy Comm'n v Vanderkloot*, 392 Mich 159; 220 NW2d 416 (1974).
[16] See *supra* note 10.
[17] See *supra* note 11.
[18] *Michigan Oil v Natural Resources Comm'n*, 406 Mich 1, 276 NW2d 141 (1979).
[19] See 324.61502.
[20] IA/Hydraulic Fracturing in Michigan, Graham Sustainability Institute (2014). Http://graham.umich.edu/knowledge/ia/hydraulic-fracturing.
[21] *Id.* at 1.
[22] *Id*. at 2.
[23] While Michigan law and policy very clearly demands "prevention" and "minimization" of impacts, the goal of the IA is to focus on minimizing impacts. Even so, minimizing impacts is a duty imposed on the DEQ, and hence the IA process, reports, and final assessment are important to DEQ decision-making polices and rules.

2. The Proposed Rules, Related Comments, and Recommendations

a. A separate approval request for a high-volume water withdrawal for horizontal fracturing should be disclosed and integrated into the initial drilling permit application.

Comment:

Current requirements for oil or gas well drilling permits demand compliance with Rule 201,[24] and other related rules. The proposed Rule 1402 requires the applicant for a drilling permit to file a statement as to "whether high volume hydraulic fracturing is expected to be utilized" in connection with the well.[25] This does not require any further information if such a statement is made. For example, if hydraulic fracturing is expected, the applicant should describe the exact nature of the fracking completion technique, including the depth of vertical and horizontal bore holes, the rock formation, the technique(s) of fracturing, the estimated volume of water required, and any chemicals, compounds, gases, solids, acids, fracking, or other liquids that may be utilized, and their likely impacts and alternatives. Chemicals should be disclosed as required by new Rule 1406, subject to modifications based on these overall comments consistent with the protection of health, safety, property, and environment.[26]

If the fracturing is expected to utilize HVHF fluids or other horizontal fracturing compounds and techniques, the permit applicant must submit the additional information required by proposed Rule 1402. Proposed Rule 1402(2) states only that a permittee "shall not begin a high volume water withdrawal for a high volume hydraulic fracturing operation without approval of the supervisor." In other words, an application for a drilling permit can be approved and a water well installed, without baseline information or a complete environmental impact assessment[27] of water removal or mixing and drilling operation for use of fracking fluids. The request for the water well approval "may" be filed with the drilling permit application, but it is not mandatory. In fact, the request need only be made 30 days before drilling operations start. Thirty (30) days, however, is too short and does not afford adequate time for meaningful review and comment or for submission of basic information that should be required. Further, results from sampling groundwater or water wells, although limited in scope, do not have to be filed with the Supervisor, and therefore do not have to be made available to the public until seven (7) days before drilling.[28]

Moreover, the request for the high volume water withdrawal or removal or other activities associated with horizontal hydraulic fracturing are not part of the already limited environmental impact assessment about the drilling pad and well location.[29] Hence, there is

[24] R324.201.
[25] P-R324.1402.
[26] P-R324.1406(c); for additional comments, see section m, *infra*.
[27] R324.201(1)(f). See comment on adequacy of environmental impact statement, comment c., *infra*.
[28] P-R324.1404(1)(b).
[29] R324.201(f) "A person shall file an environmental impact statement as instructed by the supervisor." The statement is limited to filling out a form concerning impacts of the "well and production facilities." Permit Application Instructions for Oil and Gas Wells, DEQ. Form EQP-7200-

no environmental impact information regarding the entire location, pipelines, roads, or other facilities or operations associated with or ancillary to the well. Further, if there are multiple wells to be developed by a producer in the area, there is no cumulative consideration and determination of likely impacts on air, water, natural resources or the public trust, or of alternative locations, water volumes, or other techniques to high volume water removal. The Supervisor and DEQ have a duty to require a complete and accurate application, including information on water, waste, and environmental impacts.[30] The Supervisor also has a duty to prevent waste,[31] environmental degradation,[32] and any nuisance.[33] The State's duty to prevent or minimize likely waste or environmental harm[34] is not fulfilled under the current and proposed rules.

Recommendation:

In order to assure full review of information, including high volume water withdrawal and chemicals for hydraulic fracturing, R324.1406(c) should state that the request for approval with required information "shall" be filed with the application for drilling permit. Accordingly, the rule would ensure that no permit is issued until the water withdrawal and other aspects of high volume water/chemical fracturing have been submitted and approved in compliance with the rules. Moreover, under this recommendation, the DEQ would be required to consider the impacts of a high volume water removal and potential harmful or risky techniques for horizontal fracturing *before* a permit to drill is finally issued.

In addition, the environmental impact assessment ("EIA") in Rule 201(1)(f) should be amended to read: "the assessment shall include information, data, studies and evaluations reasonably necessary to consider and determine that there will be no waste as defined in R324.61501(q), and no likely pollution, impairment, or destruction of the air, water, or natural resources or threat to public health and safety, including an analysis of alternative locations, methods and technologies where such effects or waste is likely."[35]

b. Notice of a drilling application permit should be published in a newspaper, and interested persons should be allowed to comment, in the same way other statutes administered by DEQ provide for notice and comment.

Comment:

Under current rules, an application for a drilling permit is fairly informal. There is no hearing or proceeding for the public or affected persons to comment. There is no publication

---

21. It does not cover water withdrawals such as high volume fracturing or other facilities associated with horizontal hydraulic fracturing covered by P-R 1406.

[30] MCL 324.61506(r).

[31] MCL 324.61501(q). The term "waste" includes harm or degradation of the environment, including but not limited to lakes, streams, and wildlife. *Id.* 61501(q)(B).

[32] *Ray*, *supra* note 14.

[33] MCL 324.61506(t).

[34] MCL 324.1701 et seq.

[35] See section c, *infra*.

in a newspaper, no notice to townships, or other adjacent persons or landowners. Only notices to the county clerk and surface owner of the leased oil and gas rights are required.[36] If the DNR owns the surface, i.e. state land, then no member of the public except the county clerk receives notice.

The existing rules raise two concerns: (1) the Supervisor can issue a drilling permit within a fairly short time without being fully informed of the issues, concerns, or potential impacts that may be unique to the location, well, technology and methods, or overall cumulative development in the vicinity; and (2) the public or affected landowners can be cut out of this rapid process that involves matters crucial to their person, property, or community and are unable to comment.

Furthermore, the proposed rules would delete the 60-day fixed time period, with extensions for incomplete information, now in Rule 201(4),[37] in favor of following the requirements of section 61525 of the OGA. This section has no fixed time period for decision-making, and in effect works both ways. The Supervisor can approve the permit anytime, or can take a longer time depending on the circumstances. While the Supervisor should be granted as much time as necessary to decide whether to issue or deny a permit, there should be limits against immediate approval. Absence of such limits would negate the right of an affected or interested person to file comments. With little notice or opportunity for comment as it is, the Supervisor and DEQ would have the freedom to do what it wants, and concerns about safety, health, and the environment, or other risks and harms to adjacent property or lease owners would be seriously hampered. Moreover, an informal process without notice and opportunity to comment prohibits any meaningful judicial review, as interested parties will not be able to submit information and comments into the record before the decision is made. Because current completeness and time limits for formal decisions define parameters of a permit proceeding for all interested parties, Rule 201(4) should not be deleted. Finally, the compulsory or "statutory" pooling provision P-R324.301(d) must provide adequate notice, or the provision would violate due process of law.[38]

Recommendation:

Because there is a duty to prevent "waste" and likely harm to both the environment and public health and safety, as noted above, the rules for the drilling permit application process (especially for horizontal hydraulic fracturing) should be more carefully defined. They should mandate public notice, establish a specified time period for comment, and provide notice of any decision to "affected persons" and to those who have submitted comments.

Furthermore, in addition to the inclusion of a notice requirement to affected landowners and publication in the newspaper, the current Rule 201(4) should remain the same and not be deleted as proposed in P-R324.201(4).

---

[36] R324.201(d).
[37] MCL 324.201(4); see P-Rule 201(4).
[38] See Comment and Recommendation for section g., *infra*.

c. The current environmental impact assessment ("EIA") for single drilling permit applications should be amended to comply with Michigan law to assure consideration of direct, likely, and cumulative effects on the environment as defined within the "waste" standard of the OGA and as required by the Michigan Environmental Protection Act ("MEPA").

The existing R234.201(1)(f) requires a person to "file an environmental impact assessment ("EIA") as instructed by the supervisor." The Supervisor instruction is form EQP7200-19. The EIA is limited to the single well and the proposed area, or pad, of the well. The entire related facilities, such as roads, pipelines, and pumping or lift stations, along with associated activities, such as water withdrawal or removal, trucking and other associated impact-causing actions, are not covered by the EIA. Moreover, as stated at public meetings by Supervisor Hal Fitch, there is no consideration of these or the cumulative effects and alternatives associated with a well application, such as the other existing, proposed, or planned wells and related development in the area.

The proposed DEQ Rules, including P-R324.406 regarding HVHF, do not address this deficiency. Proposed Rule 406 requires a check-list type review of the existence of features within certain distances of the well, but neither demands an EIA covering all aspects of a proposed well, nor contains a provision requiring consideration of cumulative impacts from other nearby or proposed high volume fracturing wells or related oil and gas development, such as pipelines, roads, transport, off-site water wells, compressors, condensers or other equipment.

The provisions for review of high volume water wells and chemical fracking fluids do not consider the associated effects, impacts, or potential alternatives to high volume water removal or fracking fluids. Rather, they simply look at the impacts according to the Water Withdrawal Assessment Tool ("WWAT"), and a specific site review is only required if the proposed water withdrawal does not pass the tool. The specific site review itself is limited and tied only to the water withdrawal or removal; it does not assess the cumulative removals or the use and loss of fracking fluids.[39]

As established in court decisions interpreting the MEPA,[40] government and private developers have a substantive duty "to prevent or minimize likely environmental degradation."[41] In the *Vanderkloot* case, the Court ruled that an agency decision, for its own development or for a proposed conduct or development by another person, is void or an abuse of discretion if the agency fails to conduct the equivalent of an environmental impact statement or report on the likely effects on air, water, natural resources or the public trust. The Court expressly ruled that the MEPA establishes two causes of actions that citizens can enforce if the agency fails to comply with this mandate. One cause of action is for breach of a state agency's duty to consider likely environmental effects and alternatives, similar to an environmental impact statement, including cumulative and related impacts and activities.

[39] For comments on the removal of high volumes of water and use of fracking fluids, see section e., *infra*. about P-R324.406.
[40] MCL 324.1701 *et seq.*
[41] *Id*.

The other is for direct judicial review of proposed conduct "likely to pollute, impair or destroy the air, water, natural resources or public trust in those resources."[42]

In addition, the OGA, as noted at the outset of this submission, imposes an affirmative duty on the DEQ to "protect and conserve" natural resources of the state. More specifically, the OGA mandates that: "The supervisor shall prevent the waste prohibited by this part," which is the overriding obligation of the DEQ and supervisor in the exercise of their enumerated authority under the OGA.[43] The term "waste" covers impacts on the environment, including those affecting air, water, and natural resources.[44] Further, the MEPA applies to the DEQ and other agencies in their permit, approvals and other proceedings.[45] By its terms, the MEPA requires "consideration of likely effects and feasible and prudent alternatives" by an agency in addition to other statutory impact standards, such as the "waste" provision in the OGA and the "adverse environmental impacts" standard in the 2008 Water Withdrawal Act and WWAT.[46]

The Graham Sustainability Institute's IA Environment/Ecology Report found that "high-density operations, numerous well pads, located within the same watershed" result in a "compounding of cumulative impacts.[47] For instance, high volume water level for multiple fracturing wells on the same or nearby pads can have significant effects on the flows and levels of creeks and streams.[48] Not surprisingly, the report pinpointed the need for an enforceable duty in explicitly stated rules to address the effects from related activities, wells, and facilities to assess cumulative effects and alternatives.[49]

In summary, the current EIA and consideration of effects and alternatives are not in compliance with the duties imposed by the MEPA and the obligations under the OGA. The process is fragmented and conducted piecemeal, so that many stages and approvals of the development required for an oil and gas well, particularly HVHF, are completed without a cumulative impact assessment.

---

[42] NREPA, MCL 324.1703(1) ("MEPA).
[43] MCL 324.61506; see *Michigan Oil v Natural Resources Comm'n*, 406 Mich 1, 276 NW2d 141 (1979).
[44] MCL 324.61501(q).
[45] *Vanderkloot, supra* note 15 and *Ray*, *supra* note 14; MCL 325.1705(2).
[46] MCL 324.32701 *et seq*. In 2008, the water withdrawal law was added to Part 327, NREPA in conjunction with the adoption of the Great Lakes Compact that prohibits water diversions from the Great Lakes basin and imposes minimum requirements on states to conduct environmental impact analyses, consumptive use of water, and foster conservation. In addition to common law reasonable use standards, the OGA "waste" criteria, and the MEPA duty and standard, the water withdrawal law imposes a no "adverse resource impact" standard on any water withdrawal. MCL 324.32701(a).
[47] IA/Ecology/Environment Report, Sections 2.1, 3.0, 4.0, Graham Studies Institute (2014). http://graham.umich.edu/media/files/HF-04-Environment-Ecology.pdf
[48] Hyndman, David, Ph.D., Preliminary Analysis of Fracking and Flows in Upper Manistee River, Oct. 3, 2013 (Comments, Anglers of the AuSable, submitted to Graham Institute, IA Process, Oct. 7, 2013).
[49] *Id.*

Recommendation:

The DEQ must fulfill its legal duty to consider likely effects or impacts on the air, water, natural resources, public trust and public health environment, as well as alternatives to a proposed oil and gas well and related wells (such as high volume fracturing). To satisfy this duty, the DEQ should amend P-R324.201(f) to read: "201(f) A person shall file an environmental impact assessment, which considers the likely effects on air, water, natural resources or public trust in those resources from the development of an oil and gas well, or related activities, including adjacent or other existing, proposed, or planned oil and gas wells to be developed in the surrounding area. This should include consideration of both likely impacts and alternatives to the proposed well or wells and related activities or operations. The details for such assessment and consideration shall be done as instructed by the supervisor."

d. The DEQ and DNR should better coordinate review of the development of oil and gas wells, especially of those wells utilized for high volume and density horizontal hydraulic fracturing.

Comment:

The Oil and Gas Act and Rules originated when the DEQ and DNR were housed in one agency. With the split in the 1990s, the reunification in the early 2000s, and the re-split in the past few years, fragmentation of the functions, legal responsibilities, instructions, and standard practices built into the custom and law of a single agency emerged. Aside from addressing the issue of a re-merger of the agencies, there are some important concerns that can and should be examined in the new proposed rules. For example, leasing by a single agency enabled impact review, rather than separate reviews by the DNR at the point of leasing, and later a single, oil and gas well-by-well review at the permit stage by the DEQ. As noted above, the impact assessment process has been reduced to a narrow one, conducted at later and fragmented or different stages, rather than as part of one single and cumulative impact review. Other examples include the separation of pipeline and road impact review on state lands in the DNR from the well drilling impact assessment by the DEQ. In short, the review of permit requests for oil and gas well development is separated between agencies and largely informal with little public notice and opportunity for comment or participation by affected or interested persons.

Another important example is the need to comply with the duty to carefully consider and evaluate likely impacts and alternatives associated with oil and gas development in a given area.[50] For instance, in 2013, there were reported impacts on groundwater levels from an

[50] For example, state land leasing and oil and gas development is viewed as a whole. After the state leases land for development, oil and gas developers and the DEQ are required by lease to submit plans for environmental review and negotiation before any drilling permit is required (State Oil and Gas Form Lease, paragraph I, p. 8) for large important tracts of state land, such as Pigeon River Country State Forest management area. As a result of duties imposed by the OGA and MEPA, the DNR (with DEQ functions) required development plans and cumulative impact and alternatives assessment or analysis. E.g, *Michigan Oil v Natural Resources Comm'n*, 406 Mich 1, 276 NW2d 141 (1979); *West Michigan Environmental Action Council v. Natural Resources Comm'n*, 405 Mich 741 (Mich. 1979).

approved oil and gas drilling permit where water volumes were underestimated.[51] This practice and duty to consider impacts and alternatives has been largely abandoned or is given lip service even though it is required by law as noted under Comment c. above, and by oil and gas lease forms for development of state lands.[52] The state standard oil and gas lease, for example, mandates that a lessee shall submit a development plan to the DNR for approval simultaneously with the lessee's submission of a drilling permit application to the DEQ.[53] This development plan is critical to understanding the scope and magnitude of the project and associated impacts on natural resources. While this development plan is required for state land oil and gas development leases, it is not part of the Oil and Gas Rules. Consequently, the lease form contemplates that both the DNR and DEQ consider likely environmental impacts to minimize surface waste and to remain consistent with the DEQ's spacing requirements.

Recommendation:

As part of the drilling permit application and as required by the state land lease form and the duty to consider cumulative effects and alternatives under the MEPA, the proposed DEQ rules should amend R324.201(e) to include a provision that requires: "[A] person shall also submit a development plan to the DNR, showing all aspects of its oil and gas development associated with the drilling unit or adjacent or nearby drilling units or spacing orders, for review and approval with the DNR and the supervisor as required by paragraph I of the State Land Lease. If state lands are not involved, the person must file the development plan with the DEQ as part of its permit application."

e. R324.206(4) should be amended to require that when a drilling permit applicant discloses that the development will involve HVHF, the request for modification of a permit or change in status of the well triggers an application for a new permit.

Comment:

Current Rule 206(3)(b) allows for the modification of a drilling permit to change the method of drilling upon application and approval by the Supervisor. There are not specific standards, and it is not clear if the "change in method" would include high volume hydraulic fracturing. If it does, this is substantially different than a change in permit conditions regarding the method because of the increased density, potential impacts and risks, and high volumes of water removal and chemical mixtures of fracking fluids. In addition, a request to "change the well status" to allow the deepening of a well within a producing horizontal formation can be approved informally, by as little as a phone call; there is no new permit application, no public

[51] Alexander, Jeff. "Canadian firm plans fracking campaign that could require 4 billion gallons of Michigan water." MLive, (June 25, 2013). http://www.mlive.com/environment/index.ssf/2013/06/canadian_firm_plans_fracking_c.html

[52] The State Land Oil and Gas Form Lease, paragraph I, p. 8, requires the DEQ and applicant requesting oil and gas permit to submit a development plan to the DNR as a condition of and before approval of a drilling permit. This practice has been largely abandoned by the Supervisor of Oil, Gas and Minerals and the DEQ, and is not enforced by the DNR.

[53] *Id.*

notice regarding the changes, and no opportunity for comment by interested or affected persons. Substantial changes can be, and are often, allowed with little review (especially pertaining to requests to change methods to high volume fracturing), even though the action may involve significantly greater or previously not considered likely impacts.

Recommendation:

R324.206 should clarify that a change in well status, the deepening of a permitted or completed well, or the permit modification from a conventional well, drilling method, or change in operation that includes HVHF or a change in the producing interval[54] shall be treated in the same manner as an application for a new drilling permit. This would require supplemental information related to HVHF and high volume water removal and fracking fluids to be submitted as part of the new or supplemental permit application and approval.

f. The drilling well application or change in well status should not be issued or approved until the DEQ grants a spacing order or exception, unitization or pooling agreement or compulsory or statutory pooling order pursuant to R 324.304.

Comment:

The spacing and location of wells is governed by Rules 301 and 302 to prevent waste, interference between wells, or risks to integrity of wells, well bores, and nearby facilities. Under current rules, spacing orders and exceptions to those orders, including spacing and location as a result of pooling and unitization are governed voluntarily by R324.303 and compulsorily by R324.304. Under R324.301(1)(b), a bottom hole or well bore cannot be closer than 330 feet from a drilling unit boundary included within the order or voluntary agreement. Because hydraulic fracturing in horizontal and directional drilling situations moves the bottom hole some distance from the surface location, DEQ proposes to change the distance or interference isolation distance based on the location of the "producing interval."[55] As a result, there is a need to not only maintain isolation or a buffer to guard against interference in production, but also to protect the integrity of the well and entire length of the piping along the length of the well. HVHF and directional drilling can cover distances of ½ of a mile to 2 full miles, vertically and horizontally to reach the bottom hole or target. Thus, isolation from other wells during the drilling and completion process may be important from the surface location along the entire length to the target area.

In addition, under R324.301(b) actual bore holes must follow the same basic spacing distances as discovery wells, unless changed by a hearing or for environmental reasons by the Supervisor, (which can be occur without a hearing if located not more than 495 feet from the unit boundary). It should also be noted that for safety, production, and environmental reasons, R324.303(c) prohibits the location of a well within 660 feet of an adjacent well.

[54] See R324.301(1).

[55] Producing interval means any section of a well bore that is open to or intended to be open to a formation that is to be explored or produced, including perforated casing connected with high volume fracturing.

The proposed changes to Rule 301 apply to "producing intervals" only, not the entire pipe system or well surface location. Moreover, the new P-R324.301(b) would require 330 feet for producing intervals, but nothing else, and delete the 660 feet separation and interference prevention requirement between wells. It would also delete all hearing requirements for changes and approval by the supervisor for environmental reasons. This means that well piping, casing from well head to bottom holes, or the various legs from the original well, sometimes extending in several directions for 1 to 2 miles within a pooled unit or area, can be closer than the 660 feet standard safety zone. In some instances, failure to follow a safe distance where there are several wells and horizontal bores springing off the same pad can result in an accident, an interference with production, and releases or shut downs of adjacent wells.

Recommendation:

A spacing exception or change in status of the producing interval should not be granted without a hearing on a petition, and as previously noted, DEQ should not grant a drilling permit until it approves the order or exception. This will assure that any requested changes are subject to a comprehensive EIA and full consideration of likely effects and any possible alternatives as required by the MEPA and court precedents as discussed in Comment c. above. Moreover, the 660-foot isolation distance should not be changed unless also requested as part of the spacing exception or change in well status order. Change should only be allowed after submission and thorough review of basic seismic data, estimated engineering designs, and pressure integrity testing, and after environmental risks and likely degradation have been considered and clearly demonstrate that such risk is not likely.

Proposed Rule 301(d) should be deleted. Rather, the last sentence should read, "Before such a well is drilled for discovery or any other purpose, a pooled drilling unit shall be formed by voluntary agreement or compulsory pooling pursuant to R 324.304 and Parts 615 and 617, NREPA."

g. A drilling permit should not be allowed under P-R324.301(d) based on a mere statement of good faith effort to obtain voluntary agreement, but rather only when until there is a leased, pooled or communitized drilling unit as required by Part 615 and Part 617, NREPA.

Comment:

Under proposed Rule 324.301(d), a leaseholder or producer with 25 percent or less of the acreage desired for a drilling unit or special spacing order can petition to force a drilling unit or pooling of another who has not consented to drilling or exploration and production. P-R324.301(d) would remove the forced pooling requirement to get a drilling permit if the applicant files "a certified statement establishing that a good faith effort has been made to obtain a lease or communitization agreement to form a unit." Production would not start until the forced pooling or agreement is obtained under R324.304, but as shown below, would result in several shifts or encumbrances to the landowner who for whatever reasons does not negotiate with the leaseholder.

Part 615 authorizes spacing orders and pooling orders to prevent waste form drainage where oil and gas acreage is assembled by less than all of the oil and gas lease interests, based on fair and equitable terms.[56] If all interested persons agree, the Supervisor can enter a voluntary pooling order. If all of the interested landowners, oil and gas interest owners, and lease interests cannot come to an agreement, then the person or party, usually possessing 50 percent or more of the interests, can petition to form a drilling unit by unitization and pooling.[57]

Part 617 also governs pooling, and authorizes a plan for unitization for a drilling unit through pooling by petition to the Supervisor. Specifically, Section 1706[58] prohibits the unitization of a pooled unit area, depending on the circumstances set forth in this section, unless there are at least 50 percent or more of the interests in production in the unit area.

Reading Parts 615 and 617 together leads to the conclusion that a drilling unit in a pooling and unit area or unitized area is not formed until the procedures and orders are entered for unitization and pooling under these Parts. Rule 324.301(d) would allow for the formation of a drilling unit area with less than a majority of interests in production and/or without unitization or pooling as required by parts 615 and 617. Hence, it appears that if the owner of a 40-acre leased tract wants a larger drilling permit and is unable to find agreement with the other interests or parties in the intended drilling unit, a drilling unit cannot be formed unless or until the requirements of Parts 615 and 617 have been satisfied. As drafted, proposed Rule 301(d) exceeds the authority granted to the DEQ and Supervisor.

Recommendation:

For the several reasons noted above, P-R301(d) should be deleted. The only way the proposed rule can be cured would be to require actual notice and opportunity to interested parties to comment on the drilling permit application under R324.201. In addition to the notice requirement, the last sentence should read: "Before such a well is drilled for discovery or any other purpose, a pooled drilling unit shall be formed by voluntary agreement or compulsory pooling pursuant to R 324.304 and Parts 615 and 617, NREPA." Still another alternative would be to grant a landowner who has not signed a lease but who is in a drilling unit the right to "opt out" of the unit; provided, however, it is understood that by opting out the producer and DEQ do not have the right to pool the land or subsurface formations or to otherwise invade the subsurface within the boundary lines of the landowner.

---

[56] See generally MCL 324.61513. This section is premised on drainage for establishing a pool, drilling unit, spacing order, or exception to a regular unit or spacing requirement. Where there is a common source or pool, Section 61513 contemplates the entry of a pooling order and then the establishment of a drilling unit, spacing order and/or exception where necessary. P-R324,301(d) inverts this order and, therefore, may not be authorized by the OGA. Moreover, as noted earlier, there is no drainage when it comes to high volume hydraulic fracturing; this raises the fundamental problem and issue of whether the DEQ can "pool" or otherwise force a landowner into a pooling order or drilling unit.

[57] MCL 324.61517.

[58] MCL 324.61706.

h. A drilling permit or drilling unit should not be allowed to be approved or formed, respectively, under Proposed Rule 301(d) without notice, opportunity for comment, and hearing on application for permit or other proceeding afforded by current rules for the affected leaseholders, landowners, or interested persons.

Comment:

Under existing R324.304, if a leaseholder/producer of part of a drilling unit or of a drilling unit that is part of a larger pool or communitized area cannot obtain voluntary agreement, then the producer can request a hearing for "compulsory pooling." A drilling permit cannot be issued until a compulsory order is approved or voluntary agreement is reached and approved. Furthermore, notices, hearings with rights of subpoenas, cross examinations, and other due process protections must be provided.

According to P-R324.301(d), a leaseholder of a 40-acre drilling unit could negotiate with a landowner for reasons other than oil and gas development, such as protection and conservation of the environment, wildlife, and quietude of an area if the landowner refuses to discuss the issue. The leaseholder with 40 acres could then file the certificates of good faith negotiation and proceed with a drilling permit and drilling of an exploratory well. In this case, the interest of the landowner is excluded from the process but included in the drilling unit that is intended once the exploratory well is completed. The likely or threatened harm to the environment, which is also protected by the definition of "waste" in Part 615, is precluded from review, except on informal opposition or objection to a drilling permit application.

In any event, even if a landowner does not agree with the lease terms offered by the 40-acre leaseholder who files the good faith certificate, the landowner's property is still designated as a drilling unit, thus encumbering his or her property without a hearing, while also limiting during the time of exploration and exercise of pooling petition rights, hearing and process without consent. The stigma of inclusion in a drilling unit coupled with exploratory drilling affects the marketability of the landowner's property interests without notice or hearing. Moreover, the application for a drilling permit does not require notice to the landowner, allowing only for informal comment, a process vastly different than the notice, hearing, and trial-type proceeding to protect his or her interest afforded by Part 615 and current rule 304 of Part 615 for pooling.

Recommendation:

Proposed Rule 301(d) should be deleted. Comparatively, the last sentence should read: "Before such a well is drilled for discovery or any other purpose, a pooled drilling unit shall be formed by voluntary agreement or compulsory pooling pursuant to R 324.304 and Parts 615 and 617, NREPA."

Moreover, Parts 615 and 617, including pooling and unitization, incorporate a duty to prevent "waste" in the exploration for oil or gas.[59] Accordingly, in addition to notice, hearing, and

due process hearing rights, proposed Rule 301(d) should include the requirement that there will not be "waste," including harm to wildlife and the environment under Parts 615 and 617, and that there will not be likely pollution, impairment or destruction to the air, water, natural resources, or the public trust in those resources under Part 17, MCL 324.1701 *et seq.*

i. The application or design of proposed Rule 301(d) for high volume horizontal fracturing is not contemplated by the OGA, Part 615, or the unitization and pooling provisions of Part 617, because it would authorize an unlawful trespass or takings of the property of others for a primarily private purpose and the interest of the minority leaseholder.

Comment:

When a drilling application involves the disclosure of HVHF, this means that the production of the well, and all interests agreed or forced into the drilling unit, will be subject to a technique that invades the formation under another's land and fractures the rock of the other person in order to release and produce oil and/or gas. In effect, an applicant with less than or equal to only 25 percent of the acreage of a unit or land area can attempt to negotiate, and if no agreement is reached, obtain a drilling permit, then force pool or form a drilling unit without the consent of others to invade their property. In tight rock formations, like the Collingwood or Utica shale underlying areas of Michigan's Lower Peninsula, this raises a substantial legal and constitutional question. Is there a "pool" in the traditional sense as intended by the Oil and Gas Act and rules? Shale or other rock formations that do not release or produce oil and gas are not a "pool."[60] Therefore, in this instance, the justification from threatened drainage and the need for equitable sharing from a common pool underlying lands rationalizing compulsory pooling under the OGA and rules does not exist.

Further, when the utilization of P-R301(d) and pooling involves HVHF, there is the additional physical invasion that results from the millions of gallons of water and chemical mixture left in the bore-hole underneath but within the boundaries of an adjacent landowner's property, especially where the landowner has not consented to the inclusion of her or his property in the pool or drilling unit. This physical invasion is compounded by the fact that the water/chemical mixture often contains hazardous substances, thereby creating a "facility" from the release of such hazardous substances on another's property without her or his consent.[61]

Moreover, as described in comment h. above, encumbering or designating an landowner's property in a proposed drilling unit so a private producer can apply for and obtain a drilling permit for an exploratory well constitutes the exercise of governmental power that promotes

---

[59] MCL 324.61504: "A person shall not commit waste in the exploration for and in the development, production, handling, or use of oil and gas..." As covered earlier in these comments, the term "waste" includes potential harm to air, water, natural resources, wildlife, and the environment. *Michigan Oil*, *supra* note 18; see also MCL 324.61701(I) and 324.61704(4)(b).

[60] See "Pooling of Properties for Oil and Gas Production," DEQ, Office of Geological Survey (now Office of Oil and Minerals) http://www.michigan.gov/documents/deq/ogs-oilandgas-pooling_257974_7.pdf

[61] Part 20101 *et seq*., MCL 324.20101 *et seq.*

the interests of one private person or entity or purpose.[62] The property of another cannot be designated or encumbered through actions by the state that shifts control over another to a private person or entity.[63] Finally, the exercise of such power, in the nature of eminent domain, cannot favor a private purpose.[64]

P-R324.301(d) appears to violate all of these principles and constitutes a violation of due process and eminent domain or effectuates a takings in violation of the U.S. Constitution and Michigan Constitution.[65]

Recommendation:

The part of P-R 301(d) that shifts or allows control to a less than majority leaseholder to form a drilling unit and obtain a drilling permit denies due process of law, because on its face it promotes the interests of one private owner over another. Further, the shifting of control to a minority leaseholder or any leaseholder with more than a majority for purposes of forming a drilling unit and obtaining a drilling permit promotes a private purpose in violation of the power of eminent domain. Finally, a regulation that designates, classifies or encumbers private property for a private purpose, or even a public purpose or use constitutes an unconstitutional takings of property. For these reasons, P-R 324.301(d) should be deleted.

In addition, the proposed and existing rules must be reevaluated to address the physical invasion, trespass, and takings problems associated with the exercise of authority by the DEQ to "pool" or use compulsory pooling where a landowner does not consent to the inclusion of her or his property in a drilling unit or pooling order. There are significant questions of whether this is even authorized by the OGA, and whether this constitutes a takings or trespass. It appears P-R301(d) would do so.

j. The drilling permit application for an oil and/or gas well should require hydrogeological and other related information in order to provide for adequate notice, comment, and evaluation of baseline information and likely impacts and alternatives.

Comment:

P-324.1402(1) correctly requires a statement that an applicant intends to utilize HVHF. However, P-R1402(2) does not require submission of expected bore target, volumes of water, chemicals, or whether it will likely be part of a larger drilling unit. Moreover, it does not require a separate application for the HVHF that must be approved before a drilling permit is issued. It simply provides that the Supervisor must approve of a high volume water withdrawal 14 days before the withdrawal commences. Because of the nature and potential

[62] The exercise of eminent domain can only be exercised for a public use. Mich Const. Art. 10, Sec. 2; 5th and 14th Amends. U.S. Const.
[63] *Lucas v South Carolina Coastal Council*, 505 U.S. 1003 (1992); *Miller Brothers v DNR*, 203 Mich App 674; 513 NW2d 217 (1994).
[64] *Wayne County v Hathcock*, 471 Mich 445 (2004); Moreover, a designation or encumbrance on property in favor of another may constitute an exaction of private property. *Nollan v California Coastal Comm'n*, 483 US 825 (1987).
[65] 5th and 14th Amends., U.S. Constitution: Mich Const. Art 1, 17 and Art 10, Sec. 2.

impacts, chemicals, noise and odors from truck and drilling operations, drilling unit, spacing, pooling and other issues associated with HVHF, its disclosure and request for approval, including high volume water withdrawal and use, should be disclosed at a reasonably early stage. P-R1402(2) recognizes this by at least providing that an applicant "may" submit the request with the application for drill or by separate application. However, this should be mandatory or within a reasonably short time after the submission of the application to drill. If the request is not mandatory at that time, there is little or no opportunity for notice, comment or objection to a HVHF well by affected interested persons.

Moreover, the review of the application, including the EIA, is segmented. As noted previously, as part of the duty to prevent waste, the DEQ has a duty to consider all likely effects and alternatives regarding the application for a drilling permit or proposed oil and gas well development. This obligation cannot be adequately met without the inclusion of those basic facts required to conduct such a review and consideration of likely impacts. Adjacent owners, including residences and farmers who operate high volume water irrigation systems and wells, can be adversely impacted by high volume water withdrawals. Likewise, high volume water withdrawals or transfers can significantly impact wetlands, lakes, ponds, streams and creeks, especially first-order or upper watershed water bodies that are connected to groundwater. At the rates of water withdrawal required to conduct HVHF in Michigan (6 million to as high as 35 million gallons over 21 days) and with the likelihood of "hubbing" several oil or gas wells on the same pad or in close proximity (see removal of isolation distances or intervals), the loss or consumptive use of such water draws down water tables and reduces the flow and/or level of connected water bodies.[66] Given Michigan's hydrogeology, although subject to case-by-case variations, the only reasonable and scientific reliable way to determine whether a high volume water well will have significant or harmful impacts is to evaluate the soils and hydrology through adequate baseline measurements of flows and levels and to compare those with measurements and monitoring under scientifically proper hydrological protocol.

Finally, the standards for approval under P-R1402(4) and (5) do not comply with the "prevent waste" or 'prevent likely impairment" of water and the environment under the OGA, Part 615, and the MEPA, Part 17. In addition, the standards do not require full compliance with the WWAT and the requirements to obtain approval or a permit under Part 327, MCL 32701 *et seq*., for high volume water withdrawals in Michigan.

Recommendation:

P-R1402(2) should be amended to read: "A permit applicant or permittee shall submit a request to conduct a large volume water withdrawal at the time of the application or 30 days before the drilling permit is issued. The applicant shall comply with all notice requirements for a drilling permit application under Rule 201. In addition, notice shall be sent by first class mail to all adjacent land owners within located within ½ mile of the proposed well."

[66] See *Michigan Citizens for Water Conservation (MCVC) v. Nestle Waters*, 709 N.W.2d 174 (Mich. Ct. App. 2006). The trial court found and the court of appeals affirmed that a withdrawal of groundwater from high-volume water wells above 200 gallons per minute was unreasonable and unlawful because it was shown that it did and would diminish the flow and levels, and harm the environment, of a stream and two small lakes within ½ mile of the well-field.

In addition, the request or application for a high volume water well should also include baseline information under subparagraph (b) on the location of all wetlands, lakes, ponds, streams, creeks within ½ mile of the proposed well site and water withdrawal well or water source. Further, subparagraph (b)(ii) should locate all water wells (including agricultural), and lakes, streams, creeks and wetlands within ½ mile. The 1,320 feet or ¼-mile is insufficient because the cone of depression or zone of influence of high volume water withdrawals at the volumes for hydraulic fracturing in Michigan will normally extend out beyond a radius of ½ mile.[67]

P-R1404(4) should be changed as follows: "(4) If the assessment tool and other data and information is a zone A withdrawal, or a zone B withdrawal in a cool river system, and the results of the tool and other data and information show there will be no "waste" or likely impairment of water or water related resources, and the withdrawal is otherwise lawful, the supervisor shall approve the withdrawal."

Under P-R 1402(5)(ii), zone C and D water withdrawals can be self-certified. For the reasons stated above, this would not provide the information reasonably necessary to approve a large volume water withdrawal and would not address groundwater and or effects on adjacent water wells. Moreover, there is no authority in the OGA and it would be contrary to the duty to prevent "waste" to allow self-certification. Self-certification is also an unlawful sub-delegation of legislative and administrative power to a private party.[68]

P-R1402(5) should be changed as follows:

"(5) if the assessment tool and other data and information establish the proposed withdrawal is a zone B withdrawal in a cold-transitional river system, or a zone C or zone D withdrawal, or that there will be "waste" or likely impairment of water or water related resources, the Department shall conduct a site-specific review, consisting of hydrogeological baseline testing, pump test, and flow and water level measurements from any water body or water well within ½ mile of the water withdrawal well. If such data is inadequate or incomplete, the Department may require from an applicant or permittee obtain such additional hydrological data or information that as may reasonably necessary to evaluate and determine whether there will be adverse resource impacts, waste, or impairment of water or water related resources."

"(i) If the site-specific review determines that the proposed withdrawal is a zone A or a zone B withdrawal, and there will be no "waste" or likely impairment of water or water resources and it is otherwise lawful, the supervisor shall approve the withdrawal."

"(ii) If the site-specific review determines that the proposed withdrawal is a zone C withdrawal, the supervisor shall not approve the withdrawal unless the applicant or permittee has obtained a water withdrawal permit under MCL 324.32723 and otherwise shown there will be no waste, likely impairment of water and related water resources, and that the

[67] *Id.*; see "Public Comments concerning "Hydraulic Fracturing in Michigan Integrated Assessment Report Series," Anglers of AuSable (Oct. 7, 2013), pp. 1, 2, 5-7.
[68] *Maxwell v. Bay City Bridge Co.,* 41 Mich 453, 465 (1879).

withdrawal is otherwise lawful. In the alternative, the applicant or permittee may submit a hydrogeological study and other data and information that demonstrate that the proposed withdrawal will not cause waste or likely impairment of water or water resources, and that the withdrawal is otherwise lawful."

"(iii) If the site-specific review determines that the proposed withdrawal is a zone D withdrawal or likely to cause an adverse resource impact, the supervisor shall not approve the withdrawal unless the applicant or permittee has obtained a water withdrawal permit under MCL 324.32723 and demonstrates that the proposed withdrawal will not cause waste or likely impairment of water or water resources, and that the withdrawal is otherwise lawful."

k. The extent and reliability of using the Water Withdrawal Assessment Tool to satisfy an adequate evaluation of high volume water withdrawal under P-R1402(12)(a) is unclear, and, therefore, the information and utilization of the assessment tool must be modified through changes to P-R324.1403 and 1404 to include assurances of adequate hydrogeological baseline data on water quantity, namely the flows and levels of water bodies within ½ mile of the proposed withdrawal location or water source.

Comment:

As noted in comment j. above, at a minimum there must be adequate baseline hydrogeological information and study to adequately consider the effects of high volume water withdrawals. Michigan's WWAT provides a method to look at adverse resource impacts, but that standard is limited in scope and does not evaluate the expected drops in water flows or levels of wells and water bodies within the cone of depression or zone of influence of a high volume water withdrawal like those associated with HVHF. In addition, the assessment tool is based on assumptions that are merely extrapolated from a limited number of measurements of the flows, levels, and characteristics of streams, creeks, rivers in Michigan.[69] Further, the assessment tool does not take into account the effects or impacts on groundwater or groundwater wells. Similarly, P-R324.1404 groundwater baseline sampling does not address lakes, streams, wetlands or other water bodies, and does not sample or measure flows and levels. As a result, information is insufficient to reliably and adequately determine impacts, effects, or "waste," and impairment of water and related water resources.

Recommendation:

P-R324.1402(a) also should include a baseline hydrogeological study that verifies the results of the assessment tool. This can be done by requiring this study or minimum

[69] IA/Environment and Ecology Technical Report, Graham Sustainability Institute (2014). http://graham.umich.edu/media/files/HF-04-Environment-Ecology.pdf ("The WWAT estimates surface water flows across the state from fewer than 150 USGS river and stream gauges, which tend to be located on medium and large sized streams. Sensitive headwaters are rarely monitored; therefore the WWAT model has high associated uncertainties. It was primarily designed to account for long term withdrawals, such as agricultural irrigation. However, questions have been raised about the ability of the tool to address short-term intensive withdrawals such as those associated with hydraulic fracturing operations.")

hydrogeological information through recommendations to comment j. above and by amending P-R1403(1) and/or 1404(1) as follows:

> "If one or more water wells or a water body, consisting of wetland, pond, creek, stream or lake, are located within ½ mile of a proposed large volume water withdrawal, the permittee shall install monitoring wells between the water withdrawal well(s) and the nearest freshwater well (including agricultural) before a drilling permit and large volume water well are approved. If a water body is within ½ mile of the proposed water withdrawal well, then a flow and water level measurement shall be installed before a drilling permit and large volume water withdrawal are approved. The applicant or permittee shall measure the level of groundwater and the level of any water body to establish the baseline of the groundwater and water bodies. The applicant or permittee shall conduct a pump test at 125% of the rate of the proposed large volume water well for a period of at least 3 days under 100-day drought conditions or longer as determined by the supervisor based on variations in climate change. The applicant shall submit the baseline data and results of the pump test to the supervisor as part of the information required for approval of the large volume water withdrawal. Such data and pump results shall be used in conjunction with the assessment tool to consider whether there is an 'adverse resource impact,' a reasonable use of groundwater or water body or surface water, and likely impairment of water or impact on water resources or the public trust in those resources."[70]

l. Groundwater monitoring and baseline sampling for HVHF and water withdrawal wells in R-P324.1403 and R-P324.1404 must not only include up to 10 freshwater wells[71] for sampling, but measure the water levels of such wells; if there are no freshwater wells, the applicant or permittee must install at least one groundwater well downgradient from the oil or gas well, and one upstream background and one downstream monitoring point to measure flows and levels as baseline during and after drilling and completion of the well.

Comment:

P-R324.1404 adds a new requirement to collect baseline water quality sampling from existing freshwater wells within ¼ mile of the oil or gas well location. However, it does not require any background sampling if no wells are located within ¼ mile of the well. As a result, there is no baseline to determine whether drilling, completing or oil or gas well operations cause pollution to the water of the state, including where groundwater is connected or tributary to nearby wetlands, lakes, or streams. Moreover, the ¼ radius is arbitrary, because contaminated groundwater can migrate rapidly and over significant distances in a relatively short period of time.

---

[70] See also comment on P-R1404, *infra*. Baseline sampling should include both quality and quantity sampling of groundwater in nearby freshwater wells, and if no wells exist, then in at least one nearby groundwater well between water source and creek or stream, and two monitoring locations in the surface water – background and in surface water within ¼ to ½ mile of the water withdrawal well.

[71] "Freshwater wells" should include farming and commercial, as well as residential, to assure HVHF does not interfere with or impair existing adjacent or nearby land uses.

In addition, P-R1404 neither requires baseline sampling of nearby wetlands, streams or lakes, nor baseline measurements of flows or levels of groundwater or wetlands, streams or lakes. One of the weaknesses of the evaluation of the effects of water withdrawals from HVHF and the WWAT, as described in comments a. and k. above, is the lack of adequate actual flow and level data before, during, or after completion of the well, or with respect to the cumulative effects of additional oil wells and continued water withdrawals from the same drilling site or adjacent sites in a particular drilling unit or "pool." In the absence of such data or at least confirmation of the assumed flows and levels in the WWAT, there is no way to adequately consider or determine the likely effects on water quantity (flows and levels) of HVHF before or during completion. Lack of flows and level data ignore the probable or likely effects and impacts on wetlands, ponds, creeks and small lakes in headwater streams or rivers that are fed by the groundwater from which the water for HVHF is withdrawn. Withdrawals from the same pad or drilling unit and/or "pool" at rates of 10 million to 21 million gallons, or more, over 21 days can dramatically cause adverse impacts, especially during base or low flow months. Moreover, the term "withdrawal" is not entirely accurate; the word removal or divert would be more accurate since the water is never returned to the watershed that is the source of the stream or lake. Hypothetical or extrapolated assumptions built into the WWAT tend to overstate flows and levels, thereby understating effects and impacts.[72] As a result, the present and proposed water withdrawal evaluation and the baseline and monitoring it relies on fall short of scientific reliability.

Finally, P-R1404(1)(c) does not require any baseline or subsequent sampling for key hazardous substances that are intended to be used in fracking fluids. Without any hazardous substance markers in the monitoring protocol, this proposed rule fails to protect water quality and water sources from such hazardous substances.

Recommendation:

P-R324.1403 water supply monitoring should be tied to P-R324.1404 baseline sampling, so that freshwater wells, or if there are none, groundwater wells and surface water monitoring and measuring are established.

P-R324.1404 should be revised as follows:

Second part should be added to P-R1404(1). * * * "An applicant or permittee shall also measure the levels from the same freshwater wells at the time they are sampled for baseline quality, during the drilling and completion of the well, and for 30 days after completion. In the event there are no freshwater wells within ¼ mile of the oil or gas well or high volume water withdrawal well, a groundwater monitoring well shall be installed downgradient within ¼ mile of the well and water withdrawal well. In addition, monitoring stations shall be installed upstream of the point of connection or influence on surface water from a water withdrawal well, and applicant or permittee shall measure the flows and levels of the surface water body at the same time baseline water samples are collected, during drilling and completion of the well, and 30 days after completion."

[72] E.g. *Anglers of the AuSable v Merit Energy and DEQ,* (Cir. Ct. No. 06-11697-CE, Trial Ct. Opinion, May 29, 2007.

P-R1404(a) should be amended to read: "If there are no freshwater wells within ¼ mile of the well and the water withdrawal well, a groundwater shall be installed downgradient within ¼ mile of the well and water withdrawal well in accordance with R1404(1). In addition to groundwater sampling wells provided for in this subparagraph, monitoring stations shall be installed in surface waters that are within ½ mile of the water withdrawal well to measure flows and levels as required by R1404(1)."

P-R1404(1)(b) should be amended to eliminate the 3-year grace period of conducting water sampling or measurements in R1404(1) from the first oil or gas well on the same pad or within the drilling unit or "pool" unless the applicant or permittee continues to conduct water quality measurements and water measurements at the same locations established in accordance with 1404(1) throughout the period of the drilling and completion of additional wells on the same pad or in the same drilling unit or "pool," provided, however, that such continued sampling and monitoring shall not be required if applicant certifies in writing that no other wells will be drilled and completed at such locations. If additional wells are subsequently applied for, then sampling and measurements shall be conducted as provided in R1403 and R1404."

P-R1404(1)(c)(ii) should be amended to include subparagraph (g) to provide for at least one additional hazardous substance "marker" that is intended to be used as chemical additives in fracking fluids, and at least one additional hazardous substance marker in the primary carrier fluid.

Add a new sentence to P-R1404(5) to clarify that "disclosure of high volume water use in R1404(5) does not apply to the submission and disclosure of water sampling and measurements required by these rules or where there is a release of a hazardous substance, in which event the permittee shall report such release to the supervisor within 24 hours of the time of the release."

m. The chemical disclosures required by P-R324.1406 must be made to the fullest extent possible at the time applicant files a drilling permit application, and supplemented by the disclosure of actual chemical and volumes utilized, left in the bore hole, stored and hauled off site, and disposed of in accordance with law, including manifest forms filed with the Supervisor.

Comment:

Under P-R1406(1) a permittee is required to post the "chemical additives" used in a HVHF well operation on the FracFocus Chemical Disclosure Registry. If the registry is not available, then disclosure goes to the Supervisor in an unspecified manner. A permittee is not required disclose on FracFocus until 30 days after the fracturing operation.

"Chemical additives" are limited to the active chemicals in a HVHF operation, and not the carrier fluids, which may also have hazardous chemicals that require disclosure. Moreover,

as noted above, proposed water quality sampling is not tied to the chemical additives or other hazardous substances that are proposed for or used in the operation. In effect, there is no baseline for chemicals, and the disclosure is not required until almost two months after the drilling starts. Local emergency and preparedness or rescue units do not have the information in advance. The DEQ does not have the information. Other interested and potentially affected persons do not have the information. If there is a release, there is no information available until 30 days after completion.

In addition, the Supervisor and DEQ have a duty to prevent waste and prevent environmental degradation or threat or harm to public health and safety. However, there is a complete vacuum of consideration, determinations, or conditions imposed on a permit regarding what hazardous substances or chemicals are proposed or being used at a drilling location. This is contrary to the duty to consider and determine effects or potential waste or harm to health and safety of persons in the area of the well. As described above in comment c., this violates MEPA and Part 615. Chemicals that are proposed for a drilling operation should be disclosed along with the EIA required by Rule 201.

Further, as part of the DEQ's duty to prevent waste and environmental impacts, the department has an obligation to consider feasible and prudent alternatives or ways to conserve natural resources and the environment or prevent potential harm to health and safety.[73] If chemicals or hazardous substances and their related fracturing techniques are not disclosed as part of the drilling permit application, or well before drilling operations begin, the DEQ does not have the opportunity to consider other so-called green chemicals or fracking methods.

Recommendation:

P-R324.1406(1) should be changed to conform to earlier disclosure: "An applicant or permittee shall submit the information and disclose the chemical additives or other hazardous substances that are proposed for a well at the time or within 30 days from the date of the application for a drilling permit or with the environmental assessment information required by Rule 201. A permittee shall also submit information and disclose the chemical additives or hazardous substances actually used in the drilling operation within 30 days of the completion of a high volume hydraulic fracturing operation."

P-R324.1406(1) should also be changed to add a subparagraph "(f) any hazardous substance that is proposed to be or is used in the drilling or completion operation."

P-R234.1406(3) should be modified as follows: "(3) Nothing in this rule shall authorize any person to withhold information that is required by state or federal law to be provided for a health care professional, emergency preparedness or contingency plan, or where required by the Supervisor on a case-by-case basis to prevent waste, likely environmental degradation or undue risk to public health and safety."

[73] *Vanderkloot*, *supra* note 15; Part 17, MCL 324.1705(2).