

Nebraska Oil & Gas Conservation Commission
Interim Study Report
LR 154 and LR 247

Natural Resources Committee
December, 2015

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Interim Study Resolution
Proposed Study Plan
LR 154 and LR 247
2015 Natural Resources Committee

Background

LR 154, introduced by Sen. Stinner, and LR 247, introduced by Sen. Haar, require the committee to study a variety of issues concerning the Nebraska Oil and Gas Conservation Commission (NOGCC). LB 664 was introduced by Sen. Chambers at the end of session, a bill that would require the disclosure of the contents of waste fluid to be injected into wells in Nebraska. The committee has claimed that the matter will be dealt with pursuant to the findings of this study.

Issue

This study will provide factual information regarding the NOGCC and its members, its practices, and the strength of its rules and regulations, particularly when compared to other states.

Study Tasks

1. Research entities that review state oil and gas regulations
2. Research other states regulations, compare permitting processes
3. Review the underground injection well federal regulations
4. Review/understand the EPA/DEQ/NOGCC regulation agreement
5. Gather well data and create maps via Legislative Research
6. Study and compile data on incidents
7. Review the commission's use of the Administrative Procedures Act
8. Research costs associated with injection well regulation, compare with resources available to the NOGCC
9. Research effect of underground injection wells on local government
10. Compare NOGCC's practices with federal requirements and other states

NOGCC Reviews:

- (1) EPA: EPA review is for compliance with the Class II program. EPA was in Sidney reviewing commission records for procedural compliance with the Class II well program on September 1 & 2. Periodic comprehensive program review to evaluate the authorized program to determine what is working well, deficiencies, and recommendations for improvement.

- (2) GWPC: Ground Water Protection Council –Peer review of Class II program. Review looks at program effectiveness, testing, inspections, state questionnaire reviewed by other states' class II programs. Purpose is to evaluate the efficacy of Class II Underground Injection Control programs in states that have been granted primacy by the U.S. Environmental Protection Agency under the Safe Drinking Water Act.

I. Introduction & Report Summary

This study was conducted in response to the handling of an application for a salt water disposal injection well through the Nebraska Oil and Gas Conservation Commission (NOGCC or “Commission”). The permit, Laucomer 13-1, which was granted, allows a Colorado-based company to inject produced water from oil and gas production in Colorado, Wyoming and Nebraska into an existing well in Sioux County for up to 5,000 barrels per day.

Concerns were initially raised about the permit application, which stated that the waste or produced water that would be injected was to come from sites that used hydraulic fracturing to extract oil or gas. Additional issues were raised about the transportation of the produced water from an out of state company, the wear and tear and safety on the state’s roads, and that the application originally requested a 10,000 barrel per day rate of injection, which led to concerns about earthquakes. Later, these issues became exacerbated because of the process the NOGCC used to evaluate and approve the permit, which was viewed to be absent of any sincere public input.

The demand for a study arose from the approval of this injection well, not from the practice of hydraulic fracturing, so the committee focused on the NOGCC’s Underground Injection Control Program and permit process.

The committee studied the state and the federal Class II Underground Injection Control (UIC) Program and reviewed the Nebraska Oil and Gas Conservation Commission’s practices and rules and regulations. The committee also held two public hearings on the study resolutions; one in Sidney in September¹, and the other in Lincoln in December. Further, the committee helped facilitate two program reviews of Nebraska’s UIC Program; one by the U.S. Environmental Protection Agency (EPA) and the other by the Ground Water Protection Council (GWPC). Findings from both of those reviews can be found in this report.

This report concludes with recommendations for program improvements, some from the program reviewers, and some from the committee.

II. Class II Underground Injection Control Program and Wastewater

The federal Safe Drinking Water Act is the primary statute that governs injection wells, which requires the EPA to protect underground sources of drinking water by setting legal limits on levels of potential contaminants caused by underground injection activities. The EPA established five classes of injection wells, categorized by purpose, potential for endangering drinking water, depth of injection, and characteristics of injected material. Class II wells are those related to injection activities of oil and gas exploration and production. There are three types of Class II wells:

- Class II-D, for fluids brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production;

¹ [2015-09-22 hearing transcript Sidney.pdf](#)

- Class II-ER, for enhanced recovery of oil or natural gas, such as stimulation;
- Class II-H, for the storage of liquid hydrocarbons.

To clarify, underground injection does not include hydraulic fracturing, unless diesel fuel is used.²

These permit types represent generated oil and gas drilling and production wastes that need to be managed in a manner that protects human health and the environment. The EPA has published that prudent waste management decisions, even for nonhazardous wastes, should be based on the inherent nature of the waste.³ Federal law in the Resource Conservation and Recovery Act (RCRA) Subtitle C which provides hazardous waste management standards, exempts gas and oil drilling muds and oil production brines, including drilling fluids, produced water and other wastes associated with the exploration, development, or production of crude oil or natural gas.⁴ Such waste, however, is subject to other state and federal hazardous and non-hazardous waste management regulations, including the Clean Water Act⁵ and the Safe Drinking Water Act⁶.

The water that comes to the surface due to the oil and natural gas producing process is called produced water. Most produced water is reinjected underground through the UIC program. This primarily saline water can range from less than 1,000 parts per million (ppm) total dissolved solids (TDS) to over 200,000 ppm TDS. To compare, seawater contains about 35,000 ppm TDS. Produced water may also contain acids, various oils, alkalis, heavy metals, radionuclides, biocides, lubricants, corrosion inhibitors, glycols, amines, untreatable emulsions and other compounds. Nebraska rules and regulations require protection of underground sources of drinking water that are less than 3,000 ppm TDS or any water source that could reasonably be utilized as domestic fresh water, unless exempted.

Before an injection well is approved, the well site must be evaluated to ensure an injection zone can contain injected fluids and is overlain by sufficient confining zones to keep the produced water out of drinking water sources. Wells are designed to confine injected fluids to the authorized injection zone, which would be an identified geologic formation. The technique used to construct the wells include use of steel pipe casing cemented in place to keep the produced water confined. Sections behind the injection casing are also cemented. Produced water is pumped from the surface through an injection tubing, and a casing-tubing annulus, a packer used to isolate the injection zone from the space between the tubing and injection casing above the packer, is also used. Injection wells are tested and monitored, according to EPA standards. Recycling and reuse of produced water is increasing and will require a different set of regulatory measures, but the topic was not covered in this study.

Nebraska's Class II Injection Well program in Nebraska regulates more than 500 active permits. Most are Class II permits for enhanced oil recovery (EOR), where techniques are used to increase the amount of oil that can be extracted. The class of permits that were the subject of this study are Class II-D, salt

² In February, 2014, the EPA released an interpretive memorandum and technical guidance to clarify UIC program requirements for underground injection of diesel fuels for hydraulic fracturing for oil and gas extraction. Anyone who wishes to use this practice must obtain a UIC Class II permit before injection. <http://www.epa.gov/uic/diesel-fuels-hydraulic-fracturing-dfhf>.

³ Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations, <http://www3.epa.gov/epawaste/nonhaz/industrial/special/oil/oil-gas.pdf>.

⁴ Solid Waste Disposal Act Amendments of 1980 (Public Law 96-482).

⁵ 40 CFR Parts 100-129 and 400-503.

⁶ 40 CFR Parts 141-143 and 40 CFR Parts 144-148.

water disposal permits. There are 126 such permits in Nebraska. Four are commercial injection wells, which are used for the injection of brine generated by off-site third party producers for a fee.

III. Sioux County Injection Well – Laucomer 13-1

In 2014, a Colorado-based company, Terex Corporation, filed a permit application⁷ with the Nebraska Oil and Gas Conservation Commission for the use of an unused oil well as an injection well for the disposal of produced water from oil and gas operations. The original application requested permission to pump up to 80 trucks per day of brine, or saltwater waste, meaning that up to 10,000 barrels of the waste would be injected, at least initially, into the well daily. The application proposed a maximum injection pressure of 0.7 psi per foot depth, measured at the surface. According to the application, the lowest fresh water zone of the Ogallala Aquifer has a depth to the base around 550 feet, and the vertical distance separating the disposal zone and the base of the fresh water strata is around 5316 feet. As originally proposed, the commercial project would have been the largest Class II well in the state.

The NOGCC held a hearing on March 24, 2015, and considered the evidence presented by the applicant's representatives and the objections of landowners with standing. Other entities were allowed to testify, including the Scotts Bluff County Commissioners, the Sioux County Commissioners, the Village of Harrison, the City of Mitchell, Mitchell Public Schools, the North Platte Natural Resources District, the Panhandle Public Health District and the Oglala Sioux Tribe, but as none were fee, leasehold, mineral or royalty interests within the allowed one-half (½) mile zone of the well, they were not considered "interested parties".

The NOGCC, having a quorum present for the March 24th hearing, approved the Terex application, and issued an official order approving the application on April 22, 2015⁸. There are several conditions the commission placed on the approved permit, including the reduction of the maximum number of barrels per day allowed to 5,000, and also lowering authorized injection pressure at the surface.

An audio stream of the hearing and public comments on the Terex permit can be found on the NOGCC website at <http://www.nogcc.ne.gov/NOGCChearings.aspx>.

a. Litigation

Opponents to the well application objected to the handling of the March 24th hearing by the NOGCC. While the commission did allow a special format to accept public comment, it held the hearing at its Sidney office, with seating for only 25 members of the public, who would be limited to three minutes of testimony each between the hours of 10:00 a.m. and 1:00 p.m. After the public comment period, the commission recessed, then reconvened to hear interested party testimony. The commission promised a decision within 30 days, and issued its approval on April 22nd.

Based on the limitations of the March 24 hearing, opponents of the permit filed a complaint with the state's Attorney General, who appointed a special assistant attorney general to investigate the

⁷ [Terex Application.pdf](#)

⁸ [Terex permit CaseUIC14-14Order.pdf](#)

complaint that the NOGCC violated the state's Open Meetings Act. The appointed special assistant attorney general found that the commission did not violate the Open Meetings Act⁹ and clarified that different duties apply depending on the nature of the hearing. On March 24, the public comment portion of the meeting was distinct from the actual hearing on the application portion. Because the hearing on the application was quasi-judicial, it was considered a contested case subject to the Administrative Procedure Act (APA). If the APA is applicable, the public meetings laws do not apply.

The appointed attorney further found that the public comment portion of the hearing did not violate the Open Meetings Act.

On May 8, 2015, the Hughson Flying "A" Ranch, Inc. and Jane Grove filed a lawsuit in Cheyenne County District Court, alleging that the NOGCC did not have jurisdiction to enter an order of approval on the permit, that it did not properly consider all presented evidence and did not sufficiently acknowledge verbal testimony or the commission's own records.¹⁰

The case is pending in the Cheyenne County District Court.

IV. Nebraska Oil and Gas Conservation Commission (NOGCC)

a. Laws & Regulations

Links to the statutes and rules and regulations applicable to the NOGCC can be found in the attachments. Some of the provisions on which the study focused include the following:

Interested Persons

Neb. Rev. Stat. 57-913 allows any person having an interest in property who is affected by and dissatisfied by an order of the NOGCC may appeal such order under the Administrative Procedure Act. Chapter 4 of the NOGCC's rules and regulations requires that applicants for an injection well locate each owner or operator of land in the affected area, and that each owner of a fee, leasehold, mineral or royalty interest within the project area, or within one-half (½) mile of an injection well, whichever is greater, be notified of the application.

If there are objections by an interested party, the matter becomes a contested case, which is to have a hearing. This is the point where the commission acts as a quasi-judicial entity, which bases its permit application decision on the evidence provided at the hearing, presented by attorneys and backed by sworn expert testimony. Such hearings are an official proceeding, which are appealable through the judicial system.

The radius of ½ mile that determines the area of review has led to the controversy over who is considered an "interested person." The ½ mile radius is not an arbitrary distance, but is based on federal regulations. 40 CFR 146.6 sets the area of review for each injection well to be using one of two methods. One, by using a mathematical model using time, storage, injection rate, hydrostatic head of

⁹ [Open Meetings Law Violation Evaluation, William F. Austin, Special Assistant Attorney General.](#)

¹⁰ [Petition for Judicial Review, Hughson Flying "A" Ranch, Inc. v. The Nebraska Oil & Gas Conservation Commission, Petition for Judicial Review.](#)

injection zone, fluid gravity, and other factors. Two, a fixed radius may be used of not less than one-fourth (1/4) mile. To determine what the fixed radius should be, chemistry of fluids, hydrogeology, population and ground water needs, and historical practices must be taken into consideration.

This is the basis for the legal determination of who is an interested party in a permit proceeding.

Purpose of Commission

Paraphrased, Neb. Rev. Stat. 57-901 states that the intent behind the oil and gas conservation laws is to encourage and promote the development, production, and utilization of oil and gas and provide for the operation and development of the greatest ultimate recovery of oil and gas. Each and every oil and gas pool in the state is to be allowed to produce up to its maximum efficient rate of production, subject to waste and owners' rights considerations.

The statute implies that this regulatory, quasi-judicial agency, responsible for enforcing statutes and rules and regulations and making decisions on industry activities that are appealable to a court of law, is to be mindful that it is the state's policy to promote oil and gas development to the greatest extent possible. This contradiction was raised throughout the study and will likely be addressed by the committee.

b. Primacy

The UIC Program requirements were developed by the EPA¹¹ and were designed so that states could apply to the EPA to get primary enforcement responsibility, or primacy. States with primacy are authorized to oversee injection activities in their states.

Nebraska is one of the states that have been granted primary enforcement authority (primacy) by the U.S. Environmental Protection Agency (EPA) under sections 1422 or 1425 of the Safe Drinking Water Act (SDWA). States are granted primacy if the EPA requirements are met. Nebraska has held primacy since 1983.¹²

The Memoranda of Agreement between the NOGCC and the EPA relating to primacy can be found [here](#).

c. Nebraska Department of Environmental Quality

According to a State Oil and Gas Regulatory Exchange and Groundwater Protection Council publication, effective regulation requires that state, local and federal regulatory agencies communicate routinely and define the boundaries of each agency's responsibilities. The Nebraska Department of Environmental Quality (DEQ) administers the Underground Injection Control (UIC) Program but has only been granted primacy for Class I, III and V wells. Primacy for Class II wells rests with the NOGCC.

The NOGCC and the DEQ regularly consult with each other on issues related to the UIC program and safe drinking water. As a matter of practice, any incident involving a release of produced water would likely

¹¹ 40 CFR Part 145.

¹² <http://nebraskalegislature.gov/laws/statutes.php?statute=81-1531.01>

result in the agencies communicating, not only with each other but with other affected entities to ensure an appropriate response, regardless of jurisdiction.

There are notification requirements in DEQ's rules and regulations, however, if a release occurs of a hazardous substance or oil that presents an imminent and substantial hazard to the public health or welfare, including wildlife.¹³ This provision would apply to trucks transporting produced water from the production site to the injection well site, and would involve the DEQ's emergency response team assessing the situation.

V. Financials

The NOGCC has three primary sources of state funding: 1) the Oil and Gas Conservation Tax, 2) permit fees, and 3) Income interest paid on cash fund balance. The commission also applies annually for an EPA grant for funding to administer the UIC program. No General Funds are appropriated to the NOGCC. The Legislative Fiscal Office's summary of the commission's financial records can be viewed [here](#). Charts showing NOGCC historic appropriations, expenditures, federal contributions and well counts for the UIC program and employee positions contributing to the UIC program can be found [here](#).

While the commission has seen reductions in federal funding for the UIC program, it has maintained its duty to inspect injection wells at least once per year. The commission has produced and expects improved efficiency to continue through the use of the Risk Based Data Management System (RBDMS)¹⁴, a multi-state database used to manage oil and gas and underground injection control programs. Program reviewers stated that Nebraska has been a national leader in the development of this data management system that has led to more efficient regulatory practices. For example, Nebraska uses a GIS function in the RBDMS program to overlay the areal extent of source water protection areas over a well location map. Field inspectors can prioritize inspections by using the proximity of oil and gas wells to source water protection areas.

Additional funding, however, would ease the workload on current field inspectors.

VI. Geology and Seismic Activity

The concern about seismic activity caused by oil and gas production has grown significantly over the past few years. A report published in June, 2015 in Science magazine¹⁵ linked increased seismicity with oil and gas wastewater injection into wells. The higher the rate of injection (more than 300,000 barrels per month) the more likely the activity is connected to an earthquake. The study, conducted by scientists at the University of Colorado, Department of Geological Sciences and the U.S. Geological Survey, also found that a well's cumulative injected volume, wellhead pressure, and depth did not significantly contribute to the likelihood of an earthquake. The report concluded that management of injection rates would be a useful tool to reduce the risk of earthquakes caused by injection wells.

¹³ Nebraska Administrative Code Title 126, Rules and Regulations Pertaining to Management of Waste.

¹⁴ <http://www.rbdmsonline.org/>

¹⁵ <http://www.sciencemag.org/content/347/6224/830>

Some states have experienced increases in frequency and strength of earthquakes, such as Kansas, Colorado and Oklahoma. The oil and gas industries are more active in those states, so there are more injection wells to contribute to the problem. However, other factors still come into play to accurately assess the risk of an earthquake caused by injection wells.

State geologist Matt Joeckel, also associate director for Conservation and Survey in the School of Natural Resources in the Institute of Agriculture and Natural Resources at the University of Nebraska, testified at the September 22 hearing in Sidney¹⁶. He stated that there is not much evidence of induced seismicity in Nebraska, but he did not deny that it was possible with the injection of produced water. The adding of weight to geologic matter underground and the elevation of pressures to deep underground pores, can together or separately lead to seismicity. The actual earthquake hazard, however, would depend on a combination of the volume of fluid injected over time; proximity to and size of faults; rates of occurrence; stresses to the earth's crust, existing fluid pathways, pressure changes and magnitude of historical earthquakes, among other factors.

Dr. Joeckel further found that the injection zone of the Laucomer 13-1 well does not cross with a known fault. The geologic zone into which produced water would be injected under the permit is more than a mile below the estimated base of the High Plains Aquifer, and must go through significant layers of strata before reaching the targeted area.

A significant amount of research has been conducted on the topic¹⁷, and best regulatory practices are being adopted in those states that have experienced increased seismic activity. Nebraska's geology makes it less of a risk for injection well-related earthquakes, but as geology changes, it would not be wise to stray from the path that states with less favorable geologic conditions are taking to reduce seismic activity related to wastewater injection wells.

VII. EPA Review

The EPA Region 7 conducted a comprehensive review of Nebraska's Class II Underground Injection Control Program in accordance with federal law on states that have been granted primacy. Such reviews are to be performed periodically to ensure the program is working as it should. Nebraska's last review was conducted in August of 2009. The questionnaire from the EPA and the commission's responses can be found [here](#).

The EPA's final report, including attachments, can be found [here](#).

VIII. States First Review

¹⁶ [Joeckel presentation.pdf](#)

¹⁷ Congressional Research Service, "Human-Induced Earthquakes from Deep-Well Injection: A Brief Overview, May 12, 2015, [CRS May 2015 Earthquakes from deep-well injection.pdf](#) and U.S. EPA Memorandum, "Distribution of Final Work Product from the National Underground Injection Control (UIC) Technical Workgroup – Minimizing and Managing Potential Impacts of Injection-Induced Seismicity from Class II Disposal Wells: Practical Approaches, February 6, 2015, [EPA report induced-seismicity-201502.pdf](#)

The Class II UIC Program review is a product of the State Oil and Gas Regulatory Exchange, or SOGRE, which is an initiative of States First. SOGRE was developed to open communications between states so they could share best practice, focus on field operations, and continuously improve their programs. States First is a product of a partnership between the Interstate Oil and Gas Compact Commission (IOGCC) and the GWPC. The review is based on national standards and best practices, involving a variety of regulatory entities.¹⁸

The GWPC conducts the Class II Peer Review process as part of SOGRE. This review was conducted in Nebraska to evaluate the state's Class II Underground Injection Control (UIC) program.

The review process evaluated the state's Class II UIC Program against the requirements of the federal law to determine if the program is effective in achieving the goal of protecting underground sources of drinking water. A team of oil and gas experts evaluated the state's regulations, programmatic elements, staffing, bonding, field operations, permitting, enforcement and compliance, and administrative processes. The scope of this review and the specific questions asked can be viewed in the attached document.

The protocol followed for the review can be found [here](#).

The questionnaire from the GWPC reviewers and the commission's responses can be found [here](#).

Review Team:

- Mike Nickolaus, Ground Water Protection Council – 30+ years of geologic experience, including twenty years as a state regulatory official. Responsible for the coordination of activities to support state UIC programs including special report development in areas such as arsenic contamination in ground water, environmental regulations for oil and gas exploration and production, and CO2 geo-sequestration. Lead staff person for FracFocus.
- Scott Kell, Ohio, Ohio Department of Natural Resources – Geologist, Division of Geological Survey and Mineral Resources Management, 30+ years regulatory experience and overseeing agency groundwater investigations.
- Andrew Adgate, Ohio Department of Natural Resources – geologist and Program Administrator for Underground Injection Control.
- Dan Jarvis, Utah Division of Oil, Gas and Mining – 30+ years, Geologist, involved in the UIC program since the division received program primacy in 1983. Field inspector, seismic operations specialist and UIC geologist. Administers the RBDMS database.
- John Taylor, EPA Region 5 (retired), Environmental Engineer, 25+ years.
- Kurt Hildebrandt, EPA Region 7 – Environmental Scientist, EPA, Water Wetlands and Pesticides Division, Drinking Water Management Branch.
- Adam Peltz, Environmental Defense Fund – New York City, attorney for EDF's US Climate and Energy Program, focusing on natural gas regulation and policy.
- Marty Link, Nebraska DEQ – Associate Director, Water Quality Division.

¹⁸ [Program review plan](#).

Though a final report is pending, one of the reviewers attended the December 15 hearing to present the group's findings. A copy of Mike Nickaulas's testimony can be found [here](#).

IX. State Comparisons

The Legislative Research Office charted how Nebraska compares with surrounding states on the topics of bonding requirements, notice of permit applications, standing to protest, public input, permit fees, reporting, substance disclosure, and ground water protection. That document can be viewed [here](#).

X. Recommendations

It was observed in both external reviews the need for the NOGCC to develop official, written procedures for the many duties it has under the UIC Program. The NOGCC answered several of the questions asked in the reviews that certain practices were conducted informally or at the director's discretion. The commission has functioned well with a small, experienced staff. However, to ensure consistency and smooth transitions, the institutional knowledge of the NOGCC needs to be documented in the form of procedural guides and manuals.

Further, both reviews noted that a wealth of information on the commission's activities is available on the NOGCC website. The data, however, are presented in a manner intended for industry experts, geologists, engineers and other scientists. The commission would benefit from the public being able to access the information in a non-technical, user-friendly sense. However, the committee recognizes that such an effort would require additional time and resources to accomplish.

In addition to the regulatory clarifications suggested in the reviews, the committee recommends the following policy modifications.

a. Public Hearing Process & Interested Persons

Engaging with the community and communicating about oil and gas related projects helps prevent misunderstanding, confrontation, and potential litigation.

Current rules require the commission to issue notice of an application filed, and set a time for a public hearing. The applicant is required to provide notice to every person owning a fee, leasehold, mineral or royalty interest within a project area or within ½ mile radius of the injection well, whichever is greater. Those become the interested parties to an application. If there are no written objections from the interested parties, the commission may approve an application. If there are objections from interested parties, a hearing is held and anyone wishing to speak is allowed. However, only the sworn testimony of experts and interested parties are relied upon in application decisions.

The Sioux County Commissioners voted to oppose the Laucomer 13-1 permit through a resolution. The resolution of the county had no bearing on the NOGCC's decision to grant the permit. This concerned the committee, leading to the recommendation that the affected local governing body be given due consideration.

In one of the program review interviews, the commission indicated that it wasn't clear that it had legislative authority to conduct open forums or information meetings on applications. The committee recommends that the legislative authority be clarified and that the NOGCC create a forum for information sharing and opportunities for the public to engage with the commission on its permitting activities.

b. Promotion of Industry

As indicated in Section 4, the committee recommends that the purpose of the NOGCC be refined as a regulatory agency, rather than an entity that encourages and promotes oil and gas production.

c. Monitoring Transportation and Content of Wastewater

There is no uniform monitoring standard of injection fluids, and states have discretion to monitor content for the protection of underground sources of drinking water as necessary. Some states require well operators conduct additional analyses of Class II well fluids injected after the well has been permitted, but at varying intervals. Some states require updated information on injected fluids when the source of the fluids change. And some states, such as Nebraska, only require information on fluid characteristics during the Class II well permitting process or when requested by state officials.

Currently, the NOGCC only requires that a representative sample of injectate be provided with the application. The committee recommends that the content of the fluid injected into Nebraska's Class II wells be monitored and reported at least annually.

It is important to make a clarification here that not all produced water injected into Class II wells comes from hydraulic fracturing. The committee acknowledges that the growth in use over the past 10 years of hydraulic fracturing and horizontal drilling to open up previously inaccessible oil and gas resources has led to increased public concern about the possible health and environmental effects of the practice. One of the committee's most heard-about topics has been the public's interest in the disclosure of hydraulic fracturing fluid.

NOGCC rules and regulations require that an operator who uses hydraulic fracture stimulation post all elements used in the process within 60 days to FracFocus. FracFocus is the national hydraulic fracturing chemical registry managed by the Ground Water Protection Council and Interstate Oil and Gas Compact Commission. It was created for use by states as a means of official state chemical disclosure. The committee would like to acknowledge that recent improvements have been made to FracFocus towards complete system reporting. By changing the way the individual chemicals are listed in the system, it reduces the likelihood that proprietary information will be claimed. Before the reporting change, chemicals used in hydraulic fracturing were listed in a manner that allowed viewers to determine the combinations that companies sought to protect. The new reporting system takes away that ability, leading to significantly reduced claims of proprietary information.

While there have been improvements in disclosure of hydraulic fracturing fluid, Class II injection well fluid content disclosure remains an issue. As such, the committee recommends that the commission be authorized to place certification and monitoring requirements on produced water transporters and to require periodic reporting of fluids injected into Class II wells.

d. Financial Assurance

To protect underground sources of drinking water, injection well owners and operators are required to maintain financial responsibility for all classes of permit-authorized wells that must be sufficient to maintain and plug and abandon wells consistent with approved closure plans. The regulations for Class I, Class II and Class III wells can be found at 40 CFR 144.28(d).¹⁹ Financial responsibility for Class II wells is provided in guidance, and are recommendations on financial instruments.²⁰

The EPA recommended in its report that the commission's rules and regulations better reflect the current pricing required for financial assurances, including a periodic reevaluation of existing financial assurance requirements on existing wells to ensure they are adequate to cover the costs of plugging and abandonment. The GWPC review recommended that a maximum number of wells allowed under a blanket bond be set to ensure adequate amounts are bonded for each well.

In practice, the commission allows one required to file a surety bond to post cash or certificates of deposit delivered to and in the name of the NOGCC.

The committee supports strengthening financial assurances. During the reviews, the committee learned that certificates of deposit held by the commission are the instruments used to provide financial assurance. Current rules require a \$10,000 bond for each well or hole before drilling or operating a well. Alternatively, a blanket bond of \$100,000 can be filed that covers all wells or holes drilled in the state by the bond holder/owner. Also, a \$10,000 bond is required if one other than the well-owner purchases a well for the purpose of salvaging material.

The GWPC review states that the commission does not require periodic review or adjustment for inflation of the bonding amounts. The committee recommends that the financial assurances required in other states be reviewed and that the NOGCC adjust bonding requirements to ensure all possible costs would be covered.

¹⁹ <https://www.gpo.gov/fdsys/pkg/CFR-2010-title40-vol22/pdf/CFR-2010-title40-vol22-sec144-28.pdf>

²⁰ <http://www.epa.gov/sites/production/files/2015-06/documents/epa570990003.pdf>

Resources

- Overview of Groundwater Protection Regulations in Oil and Gas States, Report Prepared for the Environmental Defense Fund, Steven P. Musick, P.G., Groundwater Protection Council, April, 2014
- State Oil and Natural Gas Regulations Designed to Protect Water Resources, U.S. Department of Energy, Office of Fossil Energy, National Energy Technology Laboratory, May, 2009
- Crude Oil and Natural Gas Exploration and Production Wastes: Exemption from RCRA Subtitle C Regulation, U.S. EPA, May, 1995
- Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources, Executive Summary, U.S. EPA, Office of Research and Development, June, 2015
- State Oil & Gas Regulations Designed to Protect Water Resources, State Oil and Gas Regulatory Exchange, Groundwater Protection Council, 2014 Edition
- Class II Underground Injection Control (UIC) Peer Review- Small Program, Groundwater Protection Council, 5/1/2014
- State Oil and Gas Agency Groundwater Investigations and Their Role in Advancing Regulatory Reforms, A Two-State Review: Ohio and Texas, Groundwater Protection Council, August, 2011
- Human-Induced Earthquakes from Deep-Well Injection: A Brief Overview, Congressional Research Office, May 12, 2015
- Review of State and Industry Spill Data: Characterization of Hydraulic Fracturing-Related Spills, EPA, May 10, 2015
- U.S. Government Accountability Office Memorandum, "Drinking Water: Characterization of Injected Fluids Associated with Oil and Gas Production, GAO-14-857R Drinking Water, September 23, 2014.
- In 2009, the 111th Congress requested the EPA to conduct a study on the relationship between hydraulic fracturing and drinking water to gain a better understanding of potential contamination risks. In 2011, the EPA issued a study plan that was to include the life cycle of water in hydraulic fracturing, from water acquisition to wastewater treatment or disposal. An executive summary of the draft report, issued in June, 2015, can be found at http://www.epa.gov/sites/production/files/2015-07/documents/hf_es_erd_jun2015.pdf.