SLIDES: The Role of Groundwater Sampling/Monitoring: COGCC Proposed Rule 609

Gene Florentino

Follow this and additional works at: https://scholar.law.colorado.edu/monitoring-and-protecting-groundwater-during-oil-and-gas-development

Part of the Energy and Utilities Law Commons, Energy Policy Commons, Environmental Health and Protection Commons, Environmental Policy Commons, Environmental Public Health Commons, Hydraulic Engineering Commons, Natural Resources Law Commons, Natural Resources Management and Policy Commons, Oil, Gas, and Energy Commons, Water Law Commons, and the Water Resource Management Commons

Citation Information

Reproduced with permission of the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment (formerly the Natural Resources Law Center) at the University of Colorado Law School.
The Role of Groundwater Sampling/Monitoring
COGCC Proposed Rule 609

University of Colorado Law School
Nov 26, 2012
What is the Purpose of Proposed Rule 609?

• To document baseline groundwater conditions prior to initiation of oil and gas drilling or facility installation activities
• To ensure no impacts to underground sources of drinking water occurred in the near future from these activities
How Can Sampling/Monitoring Be Accomplished?

- Groundwater collection:
  - Domestic wells
  - Springs
  - Monitoring wells (optional)
What will the Sampling Tell Us?

- Baseline conditions in the immediate vicinity of the well/facility site
  - Will provide the State and homeowner with sample results
  - Will document limited aquifer/domestic well water quality
  - Will protect the operator from false claims from homeowners
  - Will provide a comfort factor to the homeowner
What will the Sampling Tell Us? (continued)

- **May** minimize adverse impacts to homeowners if mitigation practices are implemented to address:
  - existing (baseline) contamination that is discovered; or
  - subsequent contamination that is detected after drilling/fracing or facility construction is complete

- **May** help with early detection of an adverse impact from drilling operations and thus aid in early implementation of mitigation practices
What will the Sampling Tell Us? (continued)

- **Will not** prevent an adverse impact to an aquifer or homeowner
- **Will not** fully characterize water quality of an aquifer or the potentially impacted zone
- **Will not** address data quality issues that are inherent with domestic wells
- **Is not** fool proof! (i.e., two samples may not be enough to detect existing contamination or any potential contamination caused by the drilling activity/facility)
What Does All This Cost?

- Two GW samples from domestic wells or natural springs:
  - **Analytical costs:**
    - Approx. $600/sample (basic analytes)
    - Approx. $500/sample for gas compositional analysis and stable isotope analysis if methane detected in the initial basic analytes)
  - **Total analytical cost:** $1,200 - $2,200
  - **Sampling labor/ODCs:** approx. $1,500 – 2,000
  - **Total Cost:** $2,700 - $4,200 per well/facility
  - **Time:** 1 day

Note: significant implementation cost (1600 wells/$4.8M+)
Issues and Concerns

- Two GW samples may not be enough
  - Operator option: typical investigations include at least one upgradient and two downgradient sample locations
- Proximity to the project site (side gradient is not preferred)
- Proposed rule requires sampling of GW within a half mile radius of the well/facility site (i.e., well head). Operator option: additional sampling along the well lateral which could be as much as 7,000 feet; will increase sampling activity/cost
Issues and Concerns (continued)

- Access agreements with landowners
- Liability insurance
- Access to the well
  - Pumps, wires, tubing
- Sampling methods
  - Sample drawn from tap
  - Sample drawn from well (EPA preferred method)
- Potential damage to well from sampling process: indemnification, waivers
Issues and Concerns (continued)

• Questionable data due to unknowns associated with existing wells:
  ➢ Well Records
  ➢ Aquifer in which the well is drawing from
  ➢ Zone of influence
  ➢ Well integrity
  ➢ Well use (private, commercial, drinking, irrigation)
  ➢ Historical water quality
  ➢ Tampering

Note: this is a critical issue that should considered during rulemaking and at least addressed during sampling planning stages
How Can an Operator Deal With The Issues and Concerns?

- Collect additional samples (operator option)
  - All wells or a percentage of wells within the half mile radius from the project site
- Utilize wells that are upgradient or downgradient of the project site
  - Could install monitoring wells (operator option)
- Extend radius of concern to include the lateral
- Obtain access agreements with landowners in advance
- Apply for “exception” if satisfactory locations are not available or homeowners decline access
How Can an Operator Deal With The Issues and Concerns? (cont.)

- Make sure consultants (performing the sampling) have sufficient liability insurance
- Well inspections prior to sampling
- Discuss preferred sampling methods with Fed/State agencies
- Perform record searches with State agencies
- Homeowner questionnaire to document well construction details (depth, screen level, installation materials, seals, etc.)
Monitoring Wells (optional)

- Not required
- In some cases, operators may want to consider installing monitoring wells
  - Drill/install/develop/sample standard monitoring wells:
    - 2 shallow wells (<25 ft): $13K - $15K
    - 2 intermediate wells (≈100 ft): $30K - $40K
    - 2 deep wells (≈300 ft): $80K - $100K
Questions?

Gene Florentino, PG
gflorentino@ene.com
716-684-8060
Walsh Environmental Scientists and Engineers
303-443-3282