HARVARD LAW SCHOOL
Environmental Law Program
POLICY INITIATIVE

Regulatory Developments in Baseline Water Quality Testing and Monitoring

Presentation to Groundwater Protection Council

2.11.15

Jurisdictions Studied

I reviewed jurisdictions with rules, guidance relating to drinking water testing and investigations:

- 16 states (AK, CA, CO, ID, IL, KS, NC, ND, NV, OH, OK, PA, SD, UT, WV, WY)
- 7 cities, counties (in TX, NM, ID)
- Industry standards (API, CSSD)
- ongoing

Survey of Practices: Baseline Water Quality Testing

Baseline Water Quality Testing

WHY?

These background readings can:

- identify other threats to public health;
- rule out contamination from oil and gas;
- build the public's trust in public oversight of oil and gas; and
- facilitate an efficient, effective response where contamination from oil and gas activities does occur.

Baseline Water Quality Testing

DESIGN ELEMENTS:

- Is Baseline Testing Required? For whom?
- What Features Trigger Testing (wells, well pads, laterals)? Distance from Features?
- Number of Baseline and Post-Drill Samples?
- Testing Parameters?
- Minimum Standards for Tester, Lab?
- How are Results Shared?

Baseline Water Quality Testing

IS BASELINE TESTING REQUIRED?

- AK, IL and WY require throughout the state; OH and CO in certain areas
- NC requires pre- and post-drilling sampling as a lease term.
- ID requires notification, testing upon request of land owner.

Baseline Water Quality Testing

IS BASELINE TESTING REQUIRED (CONT.)?

- Alternative model: presumption incentive to test
  - State presumptions of liability if water is contaminated within 1,500 ft of a well site (PA), 5,000 ft of a well head (NC), or 1,500 ft from the center of a well pad (WV), are rebuttable by an operator's baseline water quality test.
  - A ND land owner must conduct baseline testing w/in 1 year before drilling, to be entitled to restoration of supply if seismic, drilling activity impacts water quality, quantity.

Baseline Water Quality Testing

WHAT FEATURES TRIGGER TESTING?

- CO requires ½ mile radius from well, multi-well site, or dedicated injection well.
- NV requires 1 mile radius from well bore or surface projection of any lateral component.
- Impoundments may have separate testing, monitoring requirements.

DISTANCE FROM FEATURES?

Sampling radii range from 1,000 feet to 1 mile from the target feature. (TX cities: Fort Worth, 500 feet; Dallas, 2000 feet to water wells and 750 feet to surface waters; Colleyville, Southlake, 2000 feet.)

Baseline Water Quality Testing

NUMBER OF BASELINE SAMPLES?

- CO, NV and WY require up to 4 samples from "available water sources" within required zone. State provides guidelines for prioritizing water sources to sample.
- IL requires a minimum of 3 samples from each water source within the zone.
- 4 TX cities surveyed each require all water sources within the zone to be tested.

Water Quality Monitoring

POST-DRILLING SAMPLES?

- ID requires freshwater monitoring at the operator's cost unless the state determines the proposed project does not pose a threat of pollution to waters.
- IL requires testing 6, 18, and 30 months after HVHF operations are completed.
- NV, CO require testing (1) 6-12 months after HF commences, and (2) 60-72 months after HF.
- WY requires testing between 12-24 months after setting the production casing, and again 36-48 months after casing.
- Southlake, TX requires "continual quarterly testing" from construction of the first well to abandonment.

Baseline Water Quality Testing

TESTING PARAMETERS?

- Common parameters: pH; alkalinity; barium; calcium; iron; magnesium; BTEX compounds; sulfates; sodium; dissolved gases (methane, ethane, propane); bacteria; total dissolved solids.
- AK appears to require the broadest suite of testing parameters.
- Cities, counties tend to require fewer testing parameters.
- IL specifically mentions testing for NORM (other states list specific types of radioactive elements).
- KS tiers testing parameters in its voluntary guidelines. Tier 1 = barium, bromide, chloride, nitrate, pH, sodium, specific conductance, strontium, sulfate.

Baseline Water Quality Testing

MINIMUM STANDARDS FOR TESTER, LAB?

- PA requires an independent certified lab to conduct the survey; a “person independent of the well owner/operator, other than an employee of the certified laboratory, may collect the sample” if the lab affirms the procedure.

- IL requires an independent third party under the supervision of a professional engineer or professional geologist.

- Southlake, TX – the City engages a third party to coordinate sampling (and seeks reimbursement from the operator)

Baseline Water Quality Testing

HOW ARE RESULTS SHARED?

- PA requires test results to be shared with DEP within 10 days of receipt of analysis; CO requires test results within 3 months of sample collection
- IL requires results within 7 days, and posts results on its website. If property owner wants to keep information private, a non-disclosure agreement must be signed.
- CO requires immediate notification if results show BTEX, TPH; NV requires immediate notification if results show BTEX or H2S that exceed drinking water standards
- AK requires state notification if dissolved gases are detected above a threshold.

Survey of Practices: Water Quality Investigations

Water Quality Investigations

DESIGN ELEMENTS:

- Presumptions of Liability for drinking water contamination or diminution (legal tools, not basis for scientific determination)
- Process, timeline for investigations
- Results of investigations
- Public Access to results

Water Quality Investigations

PRESUMPTIONS OF LIABILITY

- In PA, presumption applies if contamination appears within 2500 feet of an unconventional well and 1 year of operations. In NC, presumption applies if contamination appears within 5000 feet of a wellhead (no deadline).
- In these states, baseline tests are used to rebut the presumption.
- IL uses baseline data differently –presumption applies if contamination appears within 1500 feet of a well and within 30 days of operations, and baseline tests showed absence of contamination.
- Injection wells may not fall within presumptions.
- Legal tools, not basis for scientific determination.

Water Quality Investigations

PROCESS, TIMELINE FOR INVESTIGATIONS

- CA, an investigation can happen on the supervisor's own initiative; other states (PA, OK, IL) seem to require a complaint from a landowner or water supply owner.
- IL, investigation must begin within 30 days, with a "reasonable effort" for a determination with 180 days. PA, investigation must begin within 10 days, with a determination within 45 days.
- OK requires very quick initial action (referral or start process within 2 days) with resolution within 180 days.

Water Quality Investigations

RESULTS OF INVESTIGATIONS

- If PA presumption applies, temporary water source must be provided to persons with no “readily available alternative.”
- [NOTE: PA has a different remedy when a residual waste disposal facility affects a water supply – the owner must provide a permanent source of water (no water buffaloes).]
- WV requires emergency water provided within 24 hours, a temporary water supply within 72 hours, and a permanent supply within 30 days, as needed.
- CA, IL may issue orders as needed, for temporary or permanent supplies of water.
- Other remedies available; court reviews of determinations.

Water Quality Investigations

PUBLIC ACCESS TO RESULTS?

- PA will post on its website lists of confirmed cases of “subterranean” water supply contamination.
- IL will post on its website lists of confirmed cases of pollution of diminution that result from HVHF.

Next Steps?

- Integration of testing requirements, presumptions, and remedies for production wells, injection wells, and impoundments?
- “Traffic Light System” for testing monitoring, based on distance between production zone and aquifer
- Use of tracers (Dallas, TX; some companies)
- State-wide water flow, quality mapping efforts (Utah Geol. Survey; Garrettsville, OH water utility)
  - Provides broader baseline data set
  - Helps determine water travel time to set more appropriate post-drill sampling timelines.