New Rule I - Sewage Lagoon and Water Well Setback

Summary

• Setback designed to protect wells from pathogens
• Previous setback of 500 feet in statute (WQA)
• 2017 – HB 368 removed 500 foot statute and directed DEQ to establish new rules (New Rule I)
  • Variable setback for site-specific conditions
  • Prescribes location for both sewage lagoon and water wells
  • Coordinated with DNRC to update well drillers rules
BER
- Ground water rules
- Concentrated animal feeding operation rules
- Public water/wastewater plan rules
- Circular DEQ-1 (Water works)
- Circular DEQ-2 (Wastewater facilities)
- Circular DEQ-3 (Small water systems)

DEQ - NEW RULE I

DEQ
- Subdivision rules
- Solid waste management rules

DNRC
- Well drillers rules
Sewage Lagoon and Water Well Setback - Technical Requirements

- 1,000 foot default setback
- 100 foot minimum setback
- Setback less than 1,000 feet allowed for these site-specific conditions:
  - Leakage from sewage lagoon that is hydraulically disconnected from the aquifer supplying the water well. Setback = 100 feet.
  - Sufficient soil beneath the sewage lagoon and horizontal distance to the water well to provide 4-log (99.99%) pathogen reduction. Methods to determine pathogen reduction are in the rule. Setback = between 100 – 1,000 feet.
  - Disinfection of a public water supply well or disinfection of wastewater in sewage lagoon. Setback = 200 feet.
Method 1
• Ground water flow beneath lagoon is away from the well (accounts for drawdown created by well pumping).
Method 2

- Well intake depth is separated from lagoon discharge by impervious geologic layer (e.g. glacial till, clay, unfractured bedrock). Doesn’t matter which direction groundwater is flowing.
**PATHOGEN REMOVAL EXAMPLE**

**Method 3**
- If $V + H > 4$ log pathogen removal (99.99% removal), then XXX foot setback is OK.
- If $V + H < 4$ log pathogen removal, then setback should be increased until pathogen removal exceeds 4 logs (up to maximum setback of 1,000 feet).

**Legend**
- **GW Flow**
- **Vertical (V)**: # days travel time ~ # log pathogen removal
- **Horizontal (H)**: # days travel time ~ # log pathogen removal
- **XXX feet**
- **LAGOON**
- **WELL**
- **Water Table**