Underground Injection Control
Class V Well Injection
- An Overview -

Jeff Jollie

EPA Office of Water
Office of Ground Water and Drinking Water

Underground Injection Control Conference
January 22-24, 2013

GROUNDWATER PROTECTION COUNCIL

Scope of the Presentation

- Class V Definition
- Evolution of Class V Well Types/Subtypes
- Minimum Federal Requirements
- Inventories
- 2013 and Beyond…

Class V Well Definition

- By definition, a well is “any bored, drilled, driven shaft, or dug hole that is deeper than its widest surface dimension, or an improved sinkhole, or a subsurface fluid distribution system” (40 CFR §144.3).

- Class V wells are injection wells not included in Classes I, II, III, IV, or IV.

Class V Well Types

- Most Class V wells are unsophisticated shallow disposal systems that depend on gravity to drain fluids into or above USDWs, but may also inject below USDWs.
    - Spent brine disposal
    - Stormwater drainage wells, Large-capacity septic systems
    - Spent brine disposal
- Numerous well subtypes that fall into the Class V category.
- Inject a variety of **non-hazardous** fluids underground.
- More than 680,000 nationwide.

- **Class V Wells Are Not Created Equally**

- **Wells that discharge directly into USDWs are typically held to higher standards for injectate quality.**

I987 Report to Congress

The 1986 Amendments to the Safe Drinking Water Act (SDWA) required EPA to prepare and submit to Congress a report on Class V wells. Required information included:

- The number of categories of Class V wells
- Primary contamination problems associated with each Class V well type
- Recommendations for minimum design, construction, installation and siting requirements

Study Results:

7 general well types and 30 well subcategories

Well subcategories classified by contamination potential (high, medium, low)

General Well Types in 1987 Report

- Drainage (58%)
- Geothermal Reinjection (6%)
- Domestic Wastewater Disposal (28%)
- Mineral and Fossil Fuel Recovery Related (5%)
- Industrial/Commercial/Utility Disposal
- Recharge
- Miscellaneous

The Class V UIC Study, 1999

- The study was conducted to develop background information for USEPA to use in evaluating the risk that these wells pose to underground drinking water supplies and to determine the need for additional federal regulation.
- Information collected on these wells included: inventory, injectate constituents, contamination incidents, and current state regulations.

General Well Types in 1999 Report

1. Agricultural Drainage
2. Aquaculture
3. Aquifer Recharge
4. Aquifer Storage and Recovery
5. Aquifer Remediation
6. Carwashes
7. Experimental
8. Food Processing Disposal
9. Geothermal Direct Heat Return Flow
10. Geothermal Electric Power
11. Heat Pump/Air Conditioning Return Flow
12. In-Situ Fossil Fuel Recovery
13. Large-Capacity Septic Systems (51%)
14. Laundromats without dry cleaning facilities
15. Mine Backfill
16. Noncontact Cooling Water
17. Salt Water Intrusion Barrier
18. Sewage Treatment Effluent
19. Solution Mining
20. Special Drainage
21. Spent Brine Return Flow
22. Storm Water Drainage (36%)
23. Subsidence Control

Class V Inventory

- UIC Inventory Reporting System 2011

  States - **468,543**

  Tribes - **2473**

  TOTAL 471,016

- UIC National Data Base > 40 subtypes

  180,000 Class V Wells

  LCSS 28%

  Stormwater 20%

  Aquifer Remediation 23%

Class V Requirements

Prohibition of Fluid Movement into USDWs (40 CFR 144.12)

No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 142 or may otherwise adversely affect the health of persons.

For Class V wells, if at any time the Director learns that a Class V well may cause a violation of primary drinking water regulations under 40 CFR part 142, he or she shall:

(1) Require the injector to obtain an individual permit;

(2) Order the injector to take such actions (including, where required, closure of the injection well) as may be necessary to prevent the violation. For EPA administered programs, such orders shall be issued in accordance with the appropriate provisions of the SDWA; or

(3) Take enforcement action.

Class V Requirements

Under the minimum federal requirements Class V wells are authorized by rule. This means that a federal permit is not required if:

- Injection wells do not endanger underground sources of drinking water (USDWs), and
- Inventory requirements are met.
  - Facility name and location
  - Name and address of legal contact
  - Ownership of the facility
  - Nature and type of injection well
  - Operating Status

Class V Requirements

Additional DI Program Requirements for (a) sand and backfill wells, (b) geothermal and energy recovery wells, (c) brine return flow wells, (d) experimental technology wells (e) municipal and industrial disposal wells (other than Class I):

- location of each well or project
- date of completion of each well
- identification and depth of the injection zone
- total depth of each well
- well construction diagrams (cross section and plan view)
- average and maximum injection pressure at wellhead
- average and maximum injection rate
- date of the last inspection

2013 and Beyond

- Class V wells are not created equally.
  - Vary in contamination potential
  - Vary in resources needed to manage
- National Database represents a significant tool to aid in our ability to better document the nature of Class V wells and there potential impacts on USDWs.
- We recognize that some wells are key water management tools. The national program is committed to finding a way to work within the SDWA framework.