



Injection of Recycled Municipal and Industrial Wastewater -- UIC Rulemaking

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Erik Boe, P.E.
Manager, GWP Section



IDAHO DEPARTMENT OF
WATER RESOURCES

Background

Interest in injecting recycled municipal and industrial wastewater into Idaho's USDW aquifers has developed and is increasing.

1. Increasing federal regulations (NPDES) and growing populations
 - Additional options in lieu of land application, rapid infiltration, discharge to rivers, etc.
2. Declining water supplies
 - Recharge for declining aquifers
 - Water right mitigation

Current Regulations

- IDAPA 37.03.03 establishes minimum standards and criteria for the injection of fluids into Class V injection wells (primacy program)
 - Intent is to protect Idaho's valuable groundwater resources
 - USDW aquifers provide >92% of the State's potable drinking water supply

Current Regulations

- IDAPA 58.01.08 regulates public drinking water systems
 - Based on 40 CFR Part 141 and Part 143 (EPA Drinking Water Standards, Rules)
 - Intent is to ensure Idaho's PWSs provide safe potable drinking water, free of contaminants
- IDAPA 58.01.17 regulates recycled water
 - Intent is to ensure recycled municipal and industrial wastewater is treated and applied in a manner that doesn't impact USDWs
 - Generally limited to: Land application, rapid infiltration basins, and discharge to rivers (substantial environmental buffers)

Questions

1. What are the implications of injecting treated municipal and industrial wastewater into Idaho's aquifers?
 - Injectate is from an atypical source of water
 - Likely contains contaminants listed in EPA DWSs (~90)
 - Likely contains non-regulated contaminants of emerging concern (CECs) not observed in natural sources of water
 - Limited environmental buffer
 - Implications for shallow and deep injection wells are different
2. When processing applications, how do we ensure Idaho's USDWs are adequately protected from contamination?

Standards of Quality for Potable Drinking water

- EPA Drinking Water Standards (~90)
- Primary DWSs based on what are known or anticipated to occur in PWSs
- Developed for a typical relatively uncontaminated natural source of freshwater (groundwater, rivers, reservoirs...)

Criteria: “whether a contaminant is found or substantially likely to be found in public water systems with a frequency and at levels of concern”

Contaminants of Emerging Concern (CEC)

Atypical sources of water such as municipal or industrial wastewater can contain any number of 1,000s of CECs not present in natural sources

- Examples include:
 - Proprietary industrial chemicals
 - Unidentified halogenated compounds
 - Pharmaceuticals
 - Synthetic hormones
 - Certain pathogens
- Difficult to regulate
 - What analytes to focus on? What concentrations are harmful?

National Regulations for Reuse?

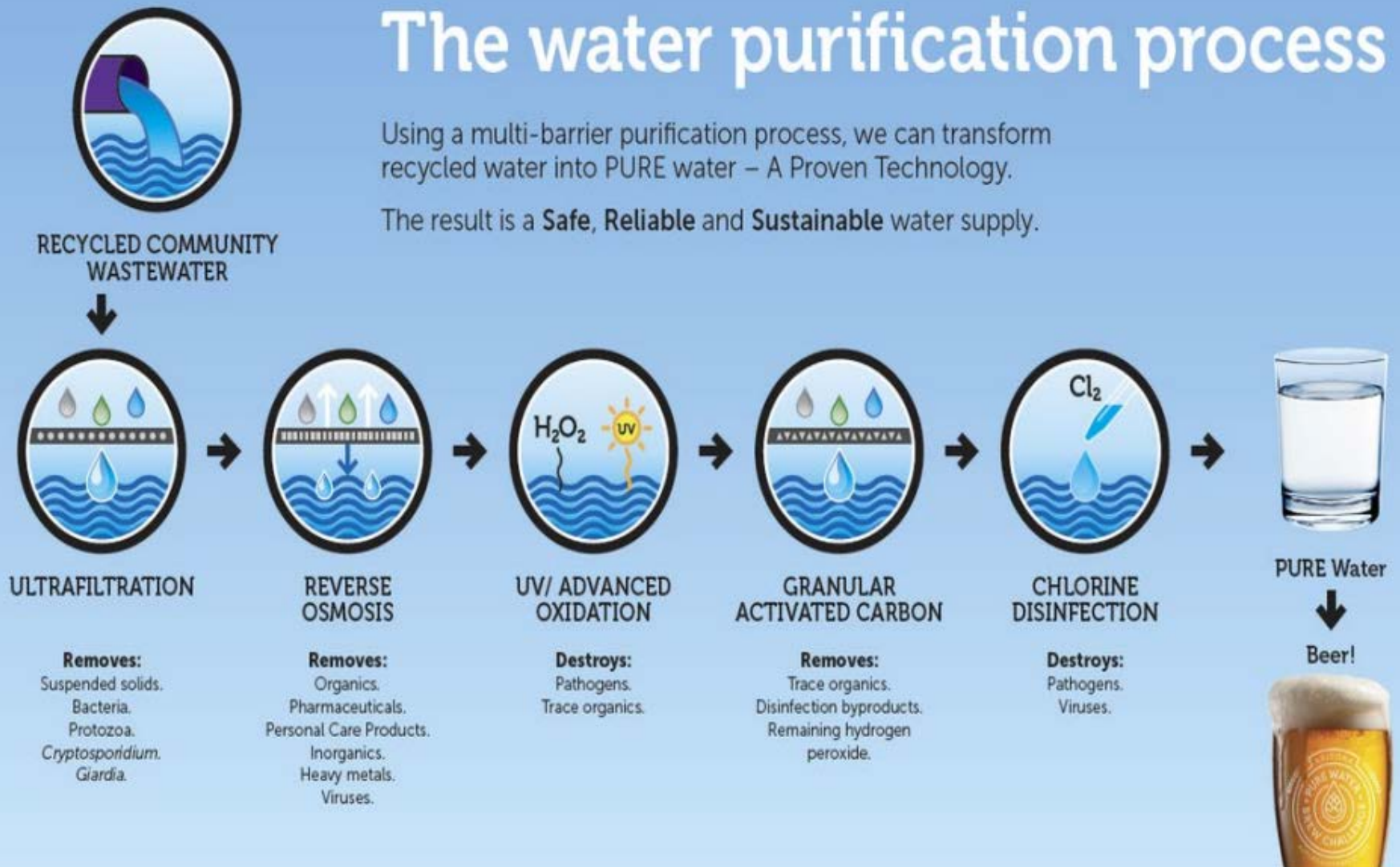
EPA is taking hands off approach and encouraging states to develop appropriate regulation for:

- Indirect Potable Reuse (IPR) which introduces “purified” recycled water into an environmental buffer (e.g., a groundwater aquifer or a surface water reservoir, lake, or river) before the blended water is introduced into a water supply system
- Direct Potable Reuse (DPR) which introduces “purified” recycled water directly into an existing water supply system
- Potable Reuse Compendium (2017)

The water purification process

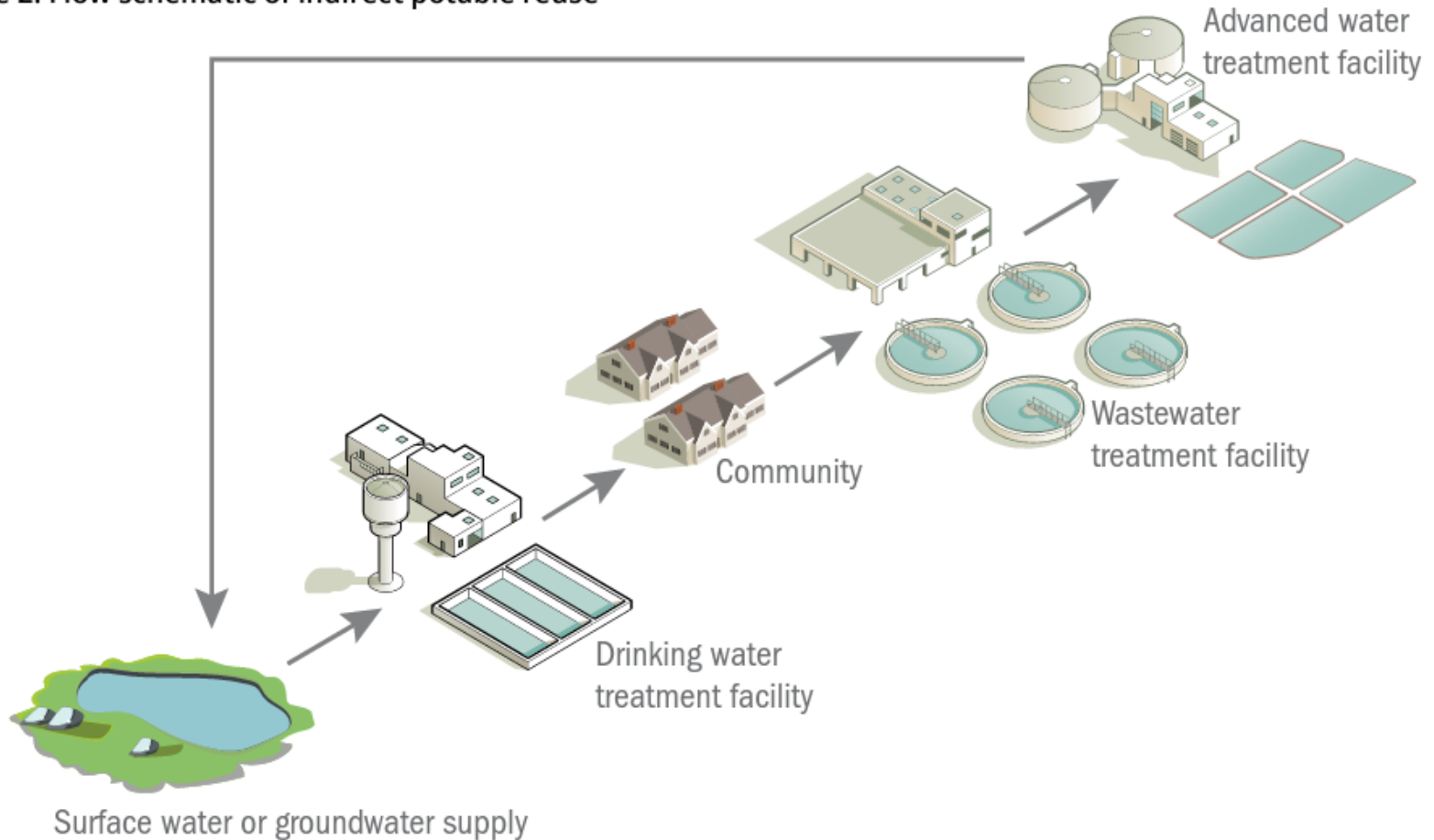
Using a multi-barrier purification process, we can transform recycled water into PURE water – A Proven Technology.

The result is a **Safe, Reliable** and **Sustainable** water supply.



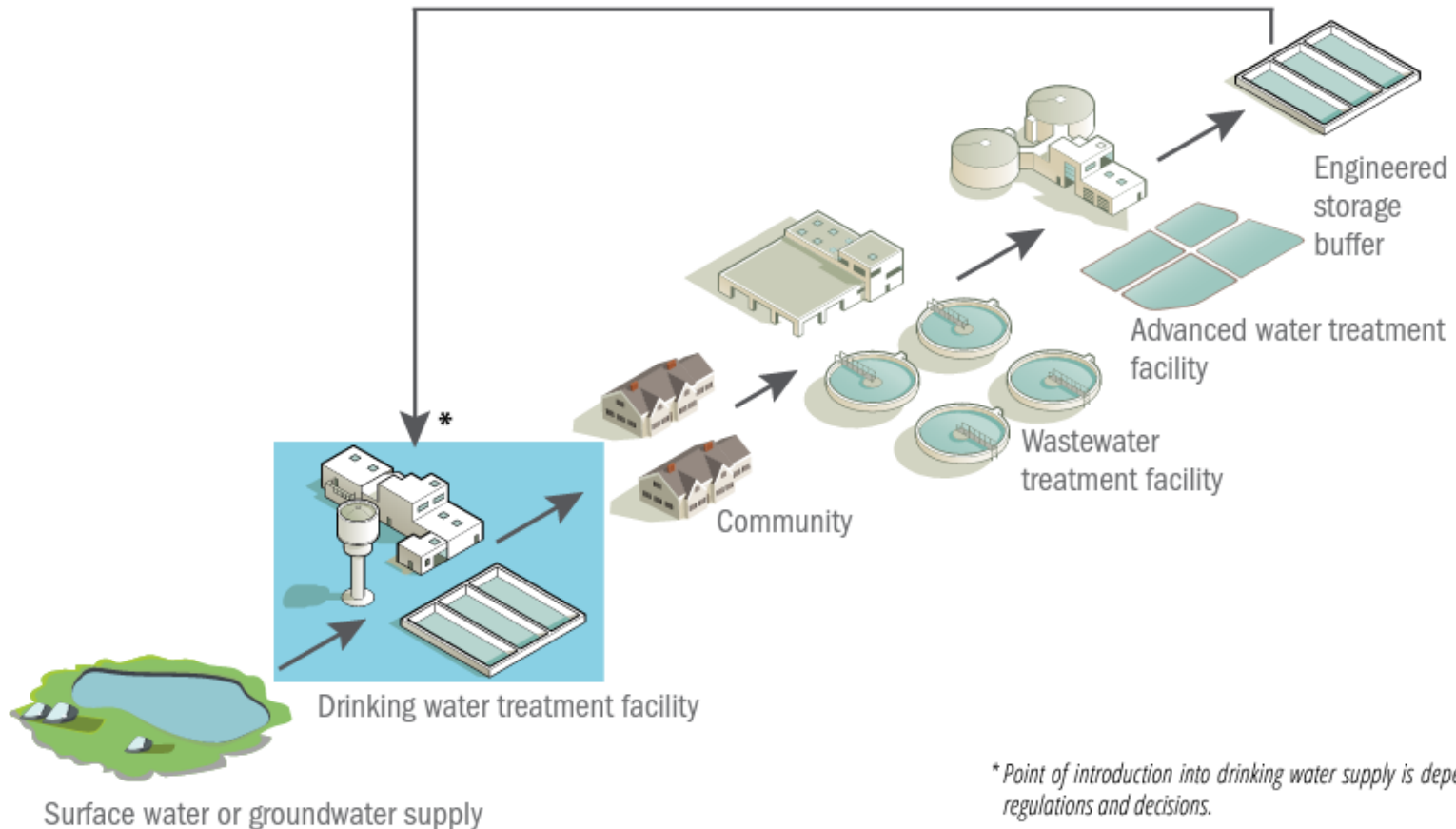
Indirect Potable Reuse (AWWA.org)

Figure 2: Flow schematic of indirect potable reuse

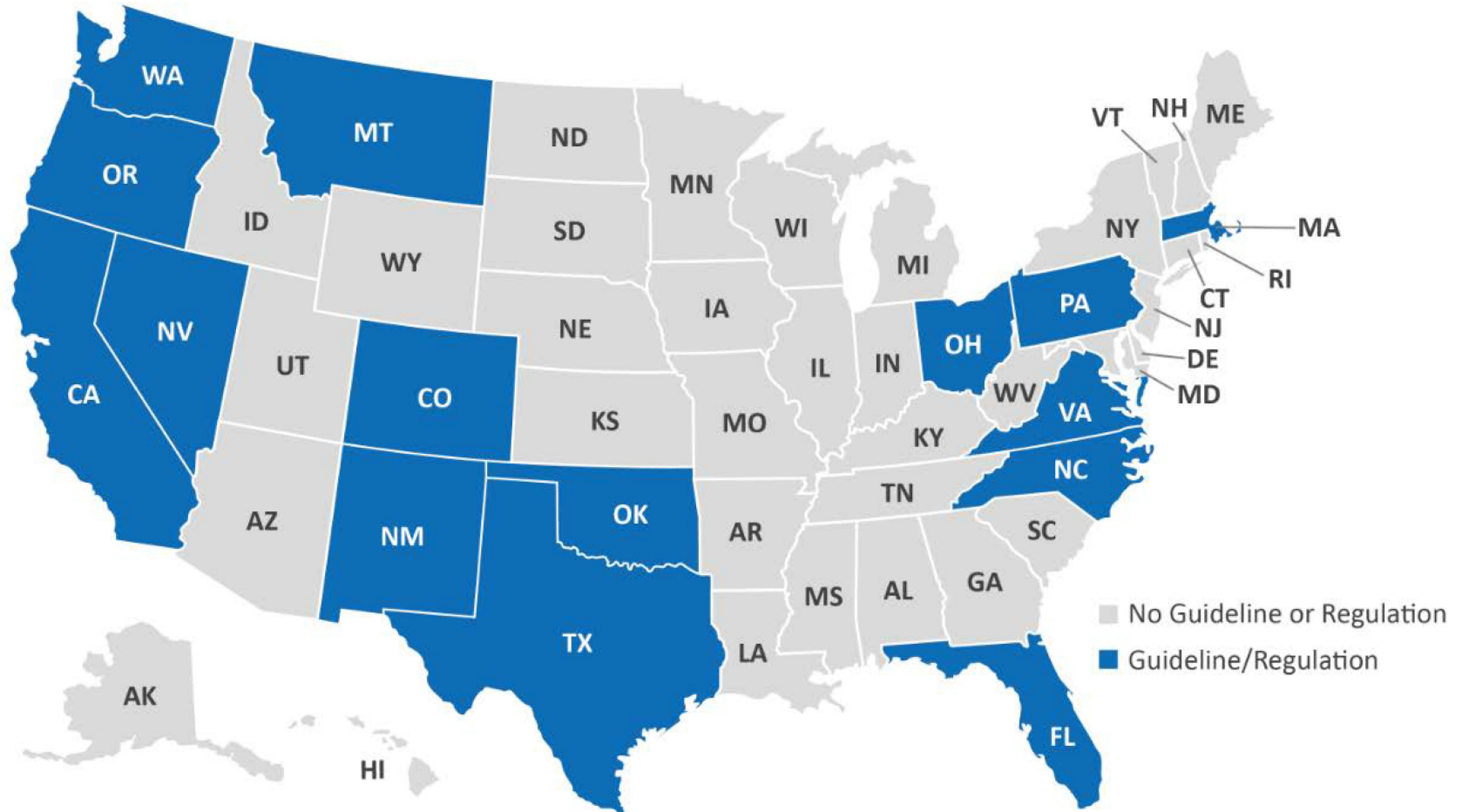


Direct Potable Reuse (AWWA.org)

Figure 3: Flow schematic of direct potable reuse



States with Potable Water Reuse Regulations or Guidelines



Current UIC Rules (IDAPA 37.03.03)

- No specific rule addresses the injection of recycled municipal or industrial wastewater
- Rules broadly authorizes the Director to protect ground water resources from contamination

(IDAPA 37.0303.040.02.b,c)
- IDAPA 37.03.03.070.05.c.(i)(6) states *“At no time shall any fluid containing or suspected of containing fecal contaminants of human origin be injected into any Class V injection well authorized under these rules.”*

Proposed UIC Rules (IDAPA 37.03.03)

IDAPA 37.03.03.010: Added definitions for Industrial Wastewater, Municipal Wastewater, Recycled Water, and Wastewater

Proposed UIC Rules (IDAPA 37.03.03)

IDAPA 37.03.03.035: Added permit requirements for both shallow and deep injection wells. Noted DEQ requirements.

#01. Permit Required for Class V Deep Injection Wells. No person shall construct, modify, maintain, or use a Class V deep injection well unless a permit has been issued by the Director. An application for permit shall be completed and filed with the director on a form approved by the department accompanied by a filing fee as specified in Section 42-3905(1), Idaho Code. Applications proposing to inject recycled municipal wastewater or recycled industrial wastewater must also adhere to IDAPA 58.01.17 (Recycled Water Rules) permitting requirements. ()

02. Permit Requirements for Class V Shallow Injection Wells. No person shall construct, modify, maintain, or use a Class V shallow injection well to inject recycled municipal wastewater or recycled industrial wastewater unless a permit has been issued by the Director. An application for permit shall be completed and filed with the director on a form approved by the department accompanied by a filing fee as specified in Section 42-3905(1), Idaho Code. An application for permit may be required for the construction, modification, or use of all other shallow injection wells if the Director determines that the injection could result in unreasonable contamination of a USDW or cause a violation of water quality standards that would affect a beneficial use. Applications proposing to inject recycled municipal wastewater or recycled industrial wastewater must also adhere to IDAPA 58.01.17 (Recycled Water Rules) permitting requirements. ()

Proposed UIC Rules (IDAPA 37.03.03)

~~IDAPA 37.03.03.070.05.c.(i)(6)37~~

IDAPA 37.03.03.055.04.f

f. At no time shall any untreated fluid containing or suspected of containing fecal contaminants of human origin be injected into any Class V injection well authorized under these rules. ~~Irrigation practices using~~ Subsurface fluid distribution systems that apply or discharge recycled water ~~limited to saturation of discharged into~~ to the root-zone and regulated by IDEQ under IDAPA 58.01.17 (Recycled Water Rules) are exempt from this rule. ()

Proposed UIC Rules (IDAPA 37.03.03)

IDAPA 37.03.03.055.06: Added rule regulating standards of quality for the injectate for both shallow and deep

- ❖ Focused on not degrading USDW aquifers

06. **Injectate Standards for the Quality of Recycled Municipal Wastewater or Recycled Industrial Wastewater.** ()

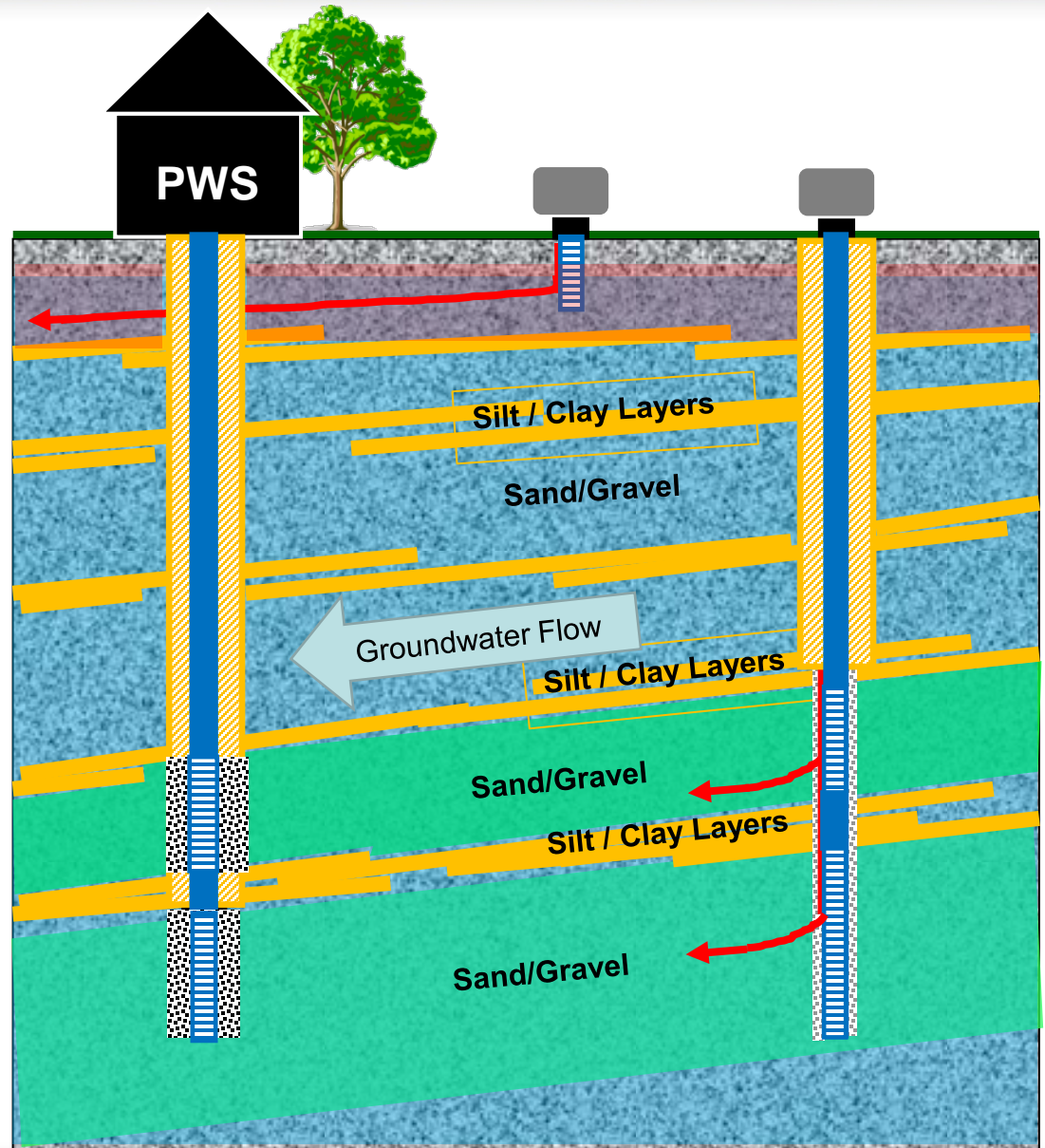
a. **Shallow Injection Wells.** Recycled municipal wastewater or recycled industrial wastewater shall meet or exceed ground water quality standards (IDAPA 58.01.11) and comply with IDAPA 58.01.17 (Recycled Water Rules) prior to injecting into a shallow injection well. ()

b. **Deep Injection Wells.** Recycled municipal wastewater or recycled industrial wastewater shall meet or exceed ground water quality standards (IDAPA 58.01.11) and comply with IDAPA 58.01.17 (Recycled Water Rules) prior to injecting into a deep injection well. Additionally, the concentration of each contaminant in the injected fluids shall not exceed the background concentration of each contaminant in the receiving water that is likely to reach a USDW. The background concentration of any applicable contaminant shall be determined by a statistical analysis consisting of a type and method approved by the Department. ()

IDAPA 37.03.03.055.06

How do shallow and deep injection wells differ?

- ❖ Environmental buffers are significantly different



Next Steps

- 8/17/2023: Meeting with DEQ Executive Team to discuss the issue, review our draft rules, and develop a strategy
- 8/18/2023: Internal meeting to discuss status of UIC draft rule. Determine timeline.

Questions?

Erik Boe, Section Manager, Ground Water Protection
Idaho Department of Water Resources

erik.boe@idwr.idaho.gov

208-287-4935