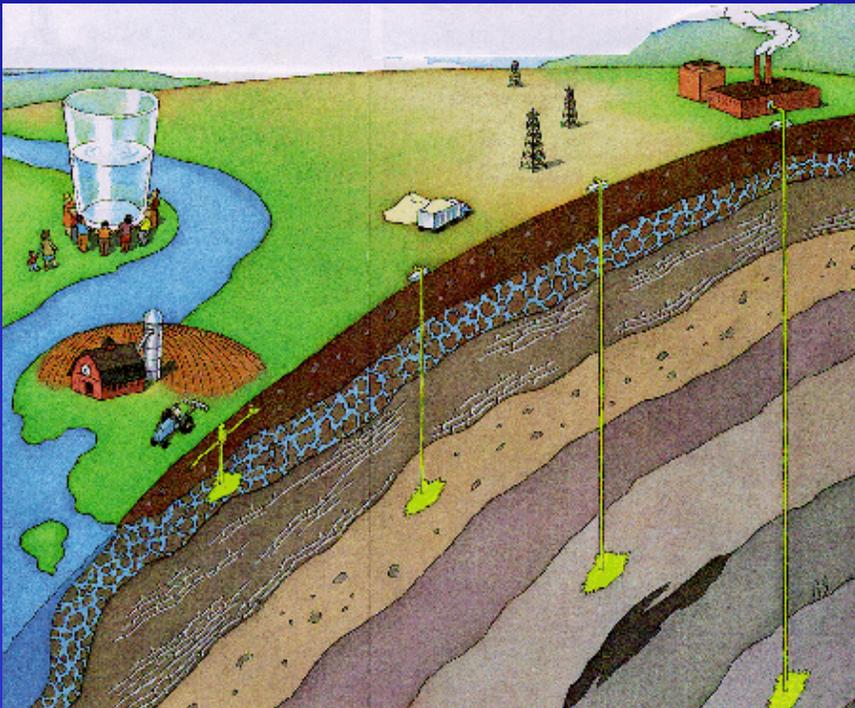


# The Underground Injection Control (UIC) Program



***Regulatory Overview for  
Second Annual  
Conference on Carbon  
Sequestration***

**May 8th, 2003  
Alexandria, VA**



# Overview of the UIC Program

- ◆ Goal is to protect public health through the protection of underground sources of drinking water (USDWs).
- ◆ Provide safe and cost effective means for industries, municipalities, and small businesses to dispose of wastes and store fluids.
- ◆ *Underground Injection*: The practice of **placing fluids** (*injectate*) underground, in porous formations of rock and/or soil, through wells.
- ◆ More than 750 billion gallons of fluid are injected each year.
- ◆ There are between 650,000 and 850,000 injection wells in the U.S.





# Program Scope & Coverage

- ◆ **“Well”**: Any bored, drilled or driven shaft, with a vertical dimension greater than the largest surface dimension; a subsurface distribution system; a “dug” hole, or improved sinkhole.
- ◆ The UIC Program protects **Underground Sources of Drinking Water**; a **USDW** is any aquifer or portion of an aquifer that:
  - ◆ contains a volume of water such that it is a present, or viable future, source for a Public Water System;
  - ◆ contains water that is less than 10,000 PPM total dissolved solids;
  - ◆ and is not exempted.



### Class I Wells

deep disposal of manufacturing process waste, mining waste, municipal wastewater, RCRA & radioactive waste



### Class II Wells

produced brines, crude oil (storage), drilling fluids and muds, and polymers



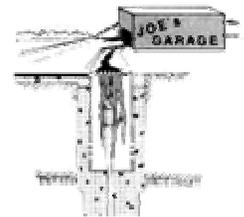
### Class III Wells

“solution mining” w/ fresh water (salt), sodium bicarb (uranium), or steam (sulfur)



### Class IV Wells

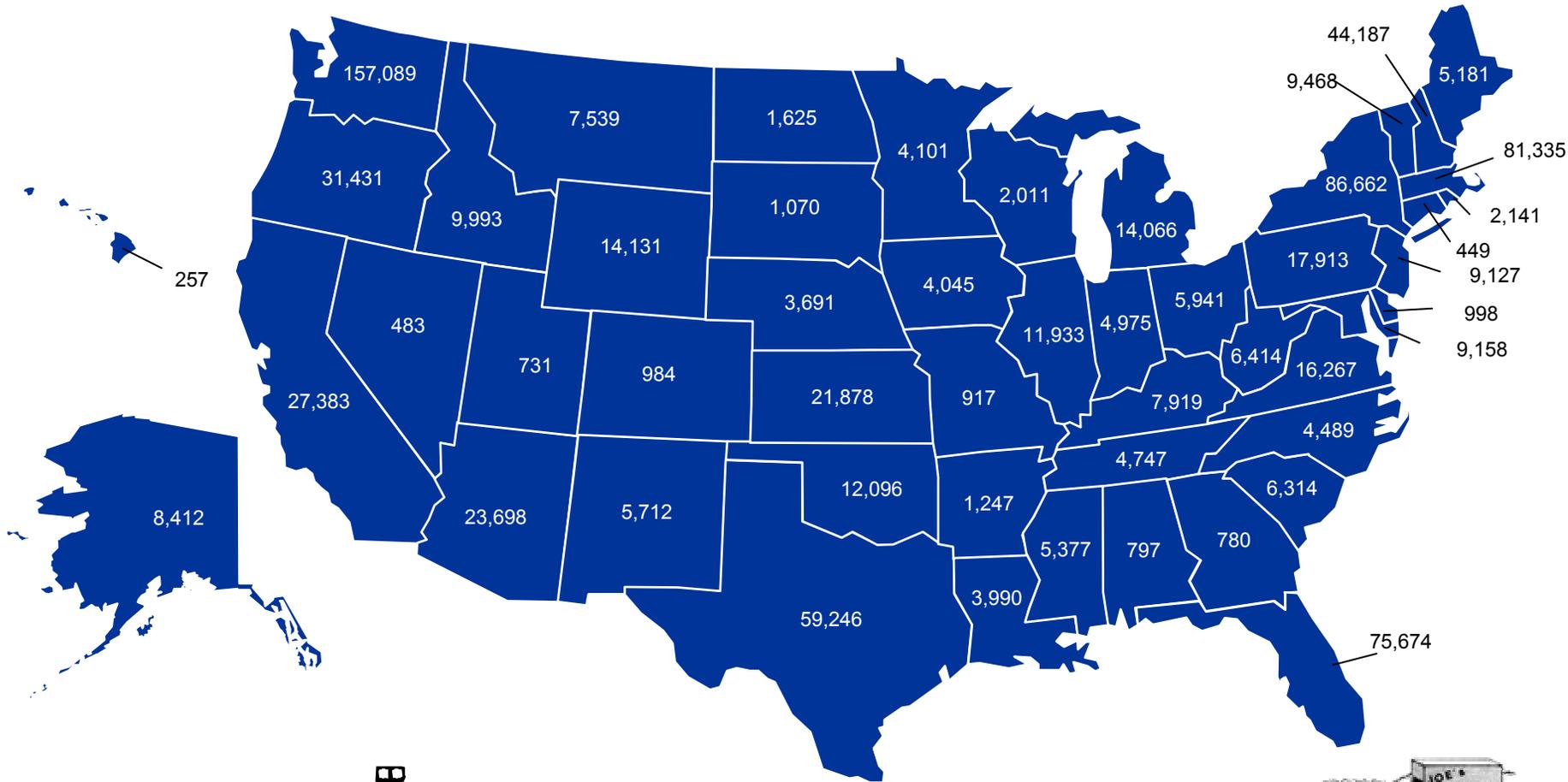
Banned except as part of authorized clean-up activities



### Class V Wells

storm water runoff, industrial wastewater, car wash water, sanitary waste, agricultural waste, aquifer recharge

# Program Scope & Coverage: 650,000 - 850,000 Regulated Facilities



**Class I Wells**  
(deep industrial waste disposal)  
500\*



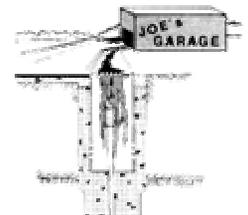
**Class II Wells**  
(for oil and natural gas production)  
147,000\*



**Class III Wells**  
(related to mineral recovery)  
17,000\*



**Class IV Wells**  
(inject hazardous or radioactive waste above USDWs)  
banned

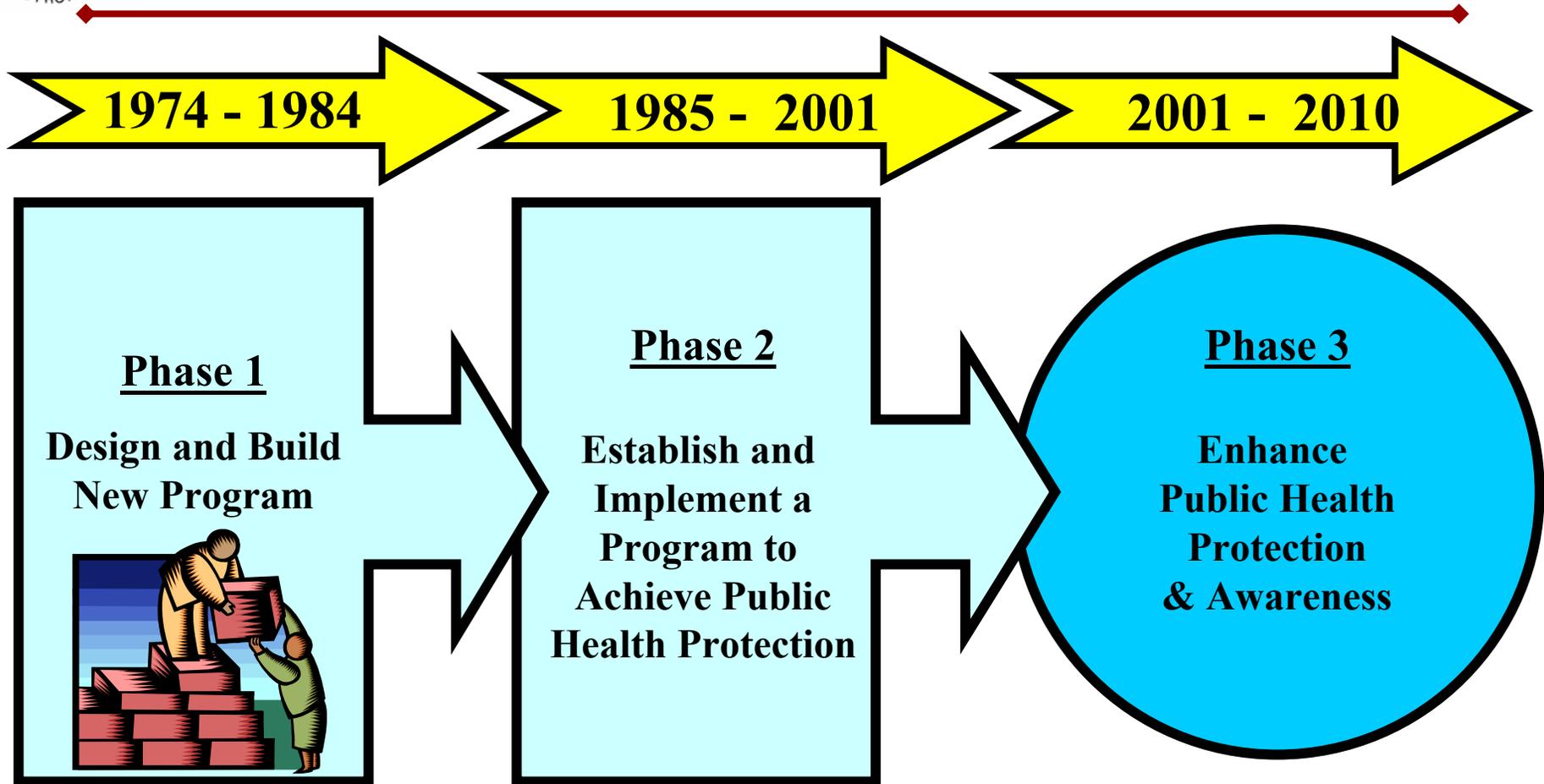


**Class V Wells**  
(generally shallow disposal wells)  
Between 500,000 & 685,000\*

\* Estimates



# Program History and Evolution



- **Class IV Ban**
- **Class I-III Regulations**
- **Delegate State Programs**

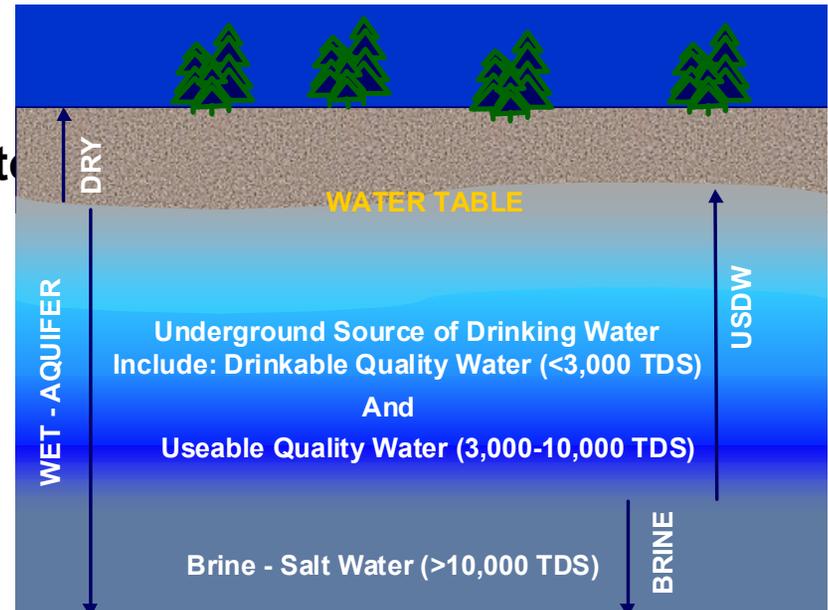
- **Land Ban Petitions**
- **Class V Study & Rule**

- **Address Uncertainties & Risks**
- **Increase Stakeholder Involvement**
- **Improve Data Quality & Utility**



# SDWA UIC Provisions

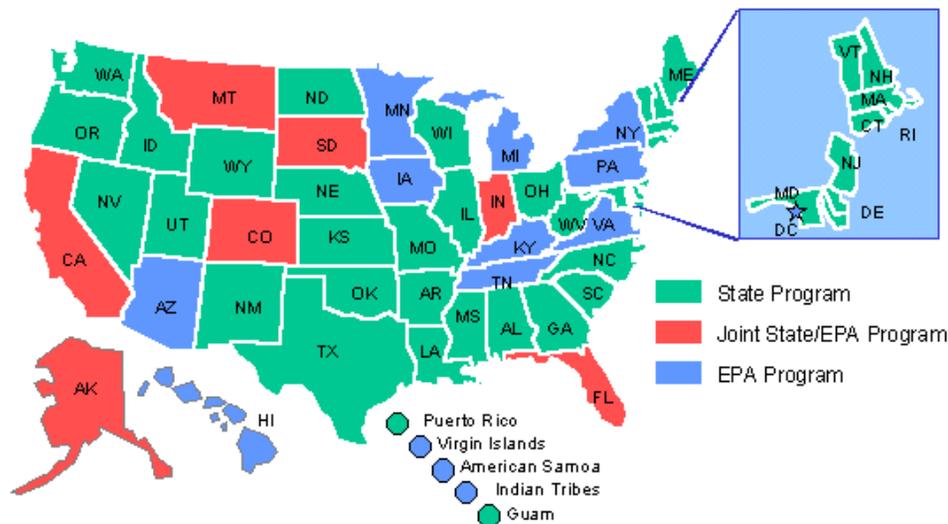
- ◆ **SDWA (1974) requires that EPA determine the need for and promulgate regulations sufficient to protect underground sources of drinking water (USDWs).**
- ◆ **Establishes a process for delegating primary enforcement authority to States and Tribes.**
- ◆ **Authorizes EPA to provide grants to the States (and tribes) in support of essential program functions.**
- ◆ **Provides States with flexibility to establish effective Class II (oil and gas) programs [since 1981].**





# UIC Roles and Responsibilities

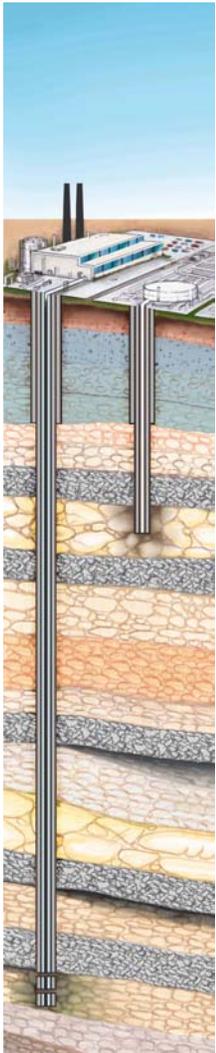
- ◆ **Federal Roles:** Set national standards & program requirements; provide State assistance; support & advance sound science; approve & oversee State delegations; 17 direct implementation programs in states.
- ◆ **States and Tribes:** Submit applications & assume program primacy authority for all or part of the UIC Program; 33 States have primacy.  
[Requirements must *meet or exceed* Federal standards; states & tribes must demonstrate adequate enforcement capability.]
- ◆ **Operators:** Manage wells in compliance with all requirements.
- ◆ **Public & Interest Groups:** Involvement.
- ◆ **GWPC (& other Associations):** Facilitate communication; training & assistance.



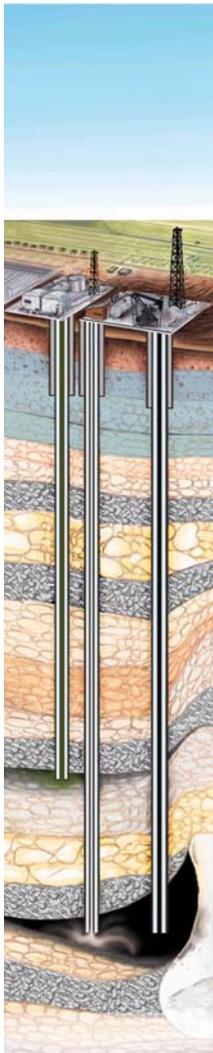


# UIC Program: Major Components

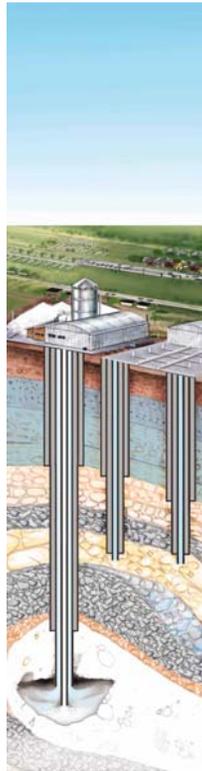
**Class I**



**Class II**



**Class III**



**Class V**





# UIC Strategic Plan & Priorities

- 1. Maintain & Improve A Sound Program Foundation:**  
Refine policies to meet public health and other objectives.  
Fulfill obligations (new and old) with static funding.
- 2. Build A Credible & Robust Class V Program:**  
Fully support Phase I rule implementation in States.  
Issue Final Phase II Determination (May 2002).  
Initiate comprehensive Class V management plan .
- 3. Establish Effective Data Management System:**  
Improve flexibility to meet present and future demands.  
Make data available in useful form to stakeholders/programs.
- 4. Integrate the UIC Program With Other CWA/SDWA and RCRA/CERCLA Programs**





# Public Health Concerns

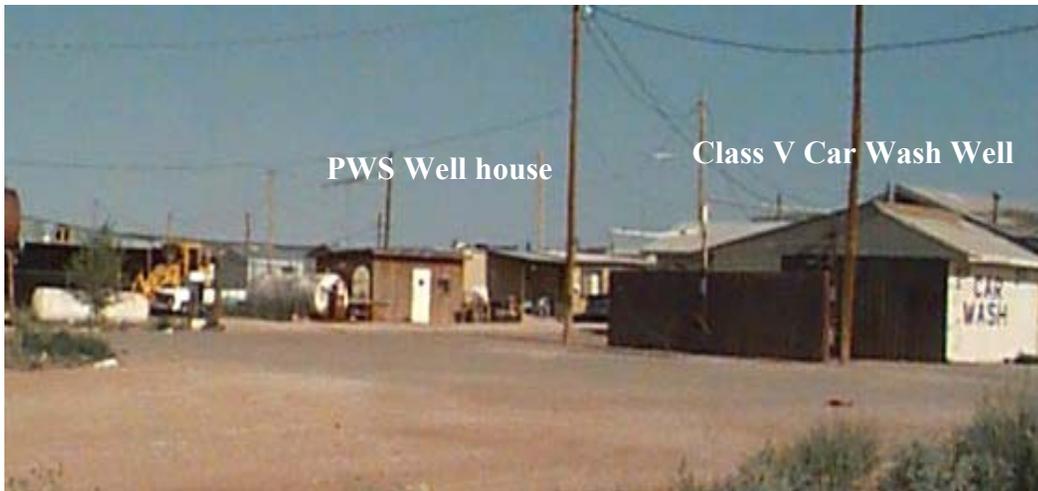
- ◆ Nature of injected fluids pose a risk to ground water quality and public health if managed improperly.
- ◆ Deep Class I and Class II wells must be properly sited and constructed to avoid contaminating USDWs.

## Class V Wells:

Are numerous & may be in close proximity to PWS or private wells;

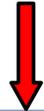
Inject a wide range of fluids;

Inventory, location & injectate data is incomplete.



**SAFE DRINKING WATER ACT**  
**PROTECTING AMERICA'S PUBLIC HEALTH**  
***MULTIPLE RISKS REQUIRE MULTIPLE BARRIERS***

**RISK**



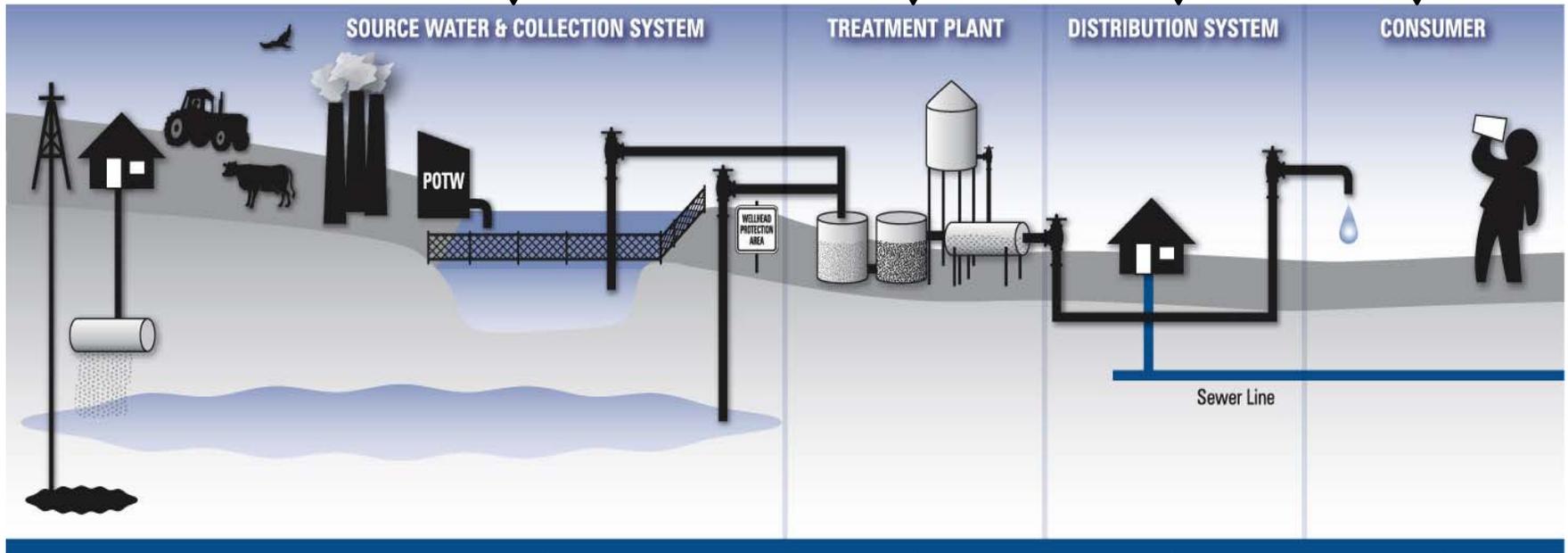
**RISK**



**RISK**



**RISK**



PROTECTION BARRIERS :

**PREVENTION**

**PROTECTION/  
CAPACITY**

**MONITORING/  
COMPLIANCE**

**RIGHT-TO-KNOW**