

Recharge and Ground Water Quality

Idaho DEQ

Barry N. Burnell


Water Quality Division Administrator



Western Water Fact

- **40% of Colorado's Homicides from the mid 1920s until 1940 were committed with?**
- **Irrigation Shovels**
- **Rita Crumpton**
 - **Grand Junction Water Manager**

Outline

- **Ground Water Quality**
 - **Surface Water Quality**
 - **Managed Recharge**
 - **DEQ Programs**
- 

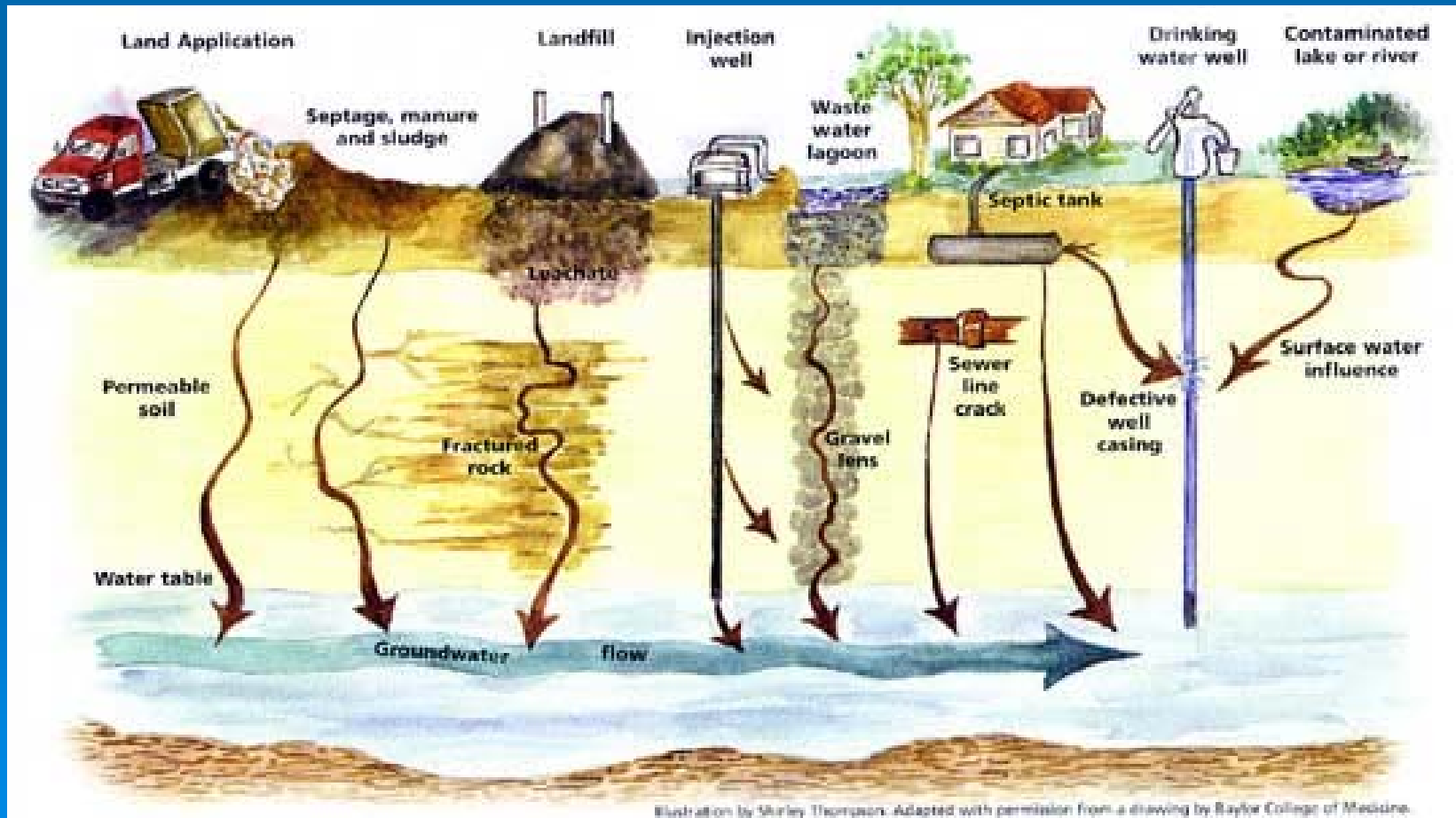
Ground Water Quality

- **Bacteria Standards –**
 - **Total Coliform**
 - **Fecal Coliform**
 - **E. Coli.**



Ground Water Quality

- Pathogenic Bacteria are Generally Not Present in Ground Water



Ground Water Quality

- Ground Water Standard for Fecal Coliform and E. Coli is <1 cfu/100 ml
- Total Coliform – Indicator Organism
- Monitoring
 - **IDWR Statewide Program - Voluntary**
 - **Public Water Supplies - Regulatory**
 - **Health Districts – Mortgage Surveys - Bank**
- Follow up monitoring by DEQ or Health Districts
- If Coliform present – disinfect well and retest
- Wells are not generally sampled for Protozoans or Viruses



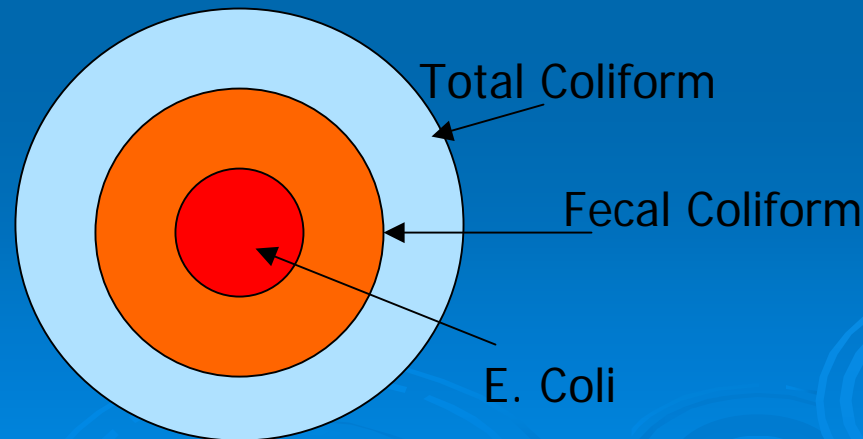
GWQ Rule Coliform Standard

Primary Ground Water Quality Standards for Fecal Coliform and E. coli

Total Coliform is an Indicator of Potential Harmful Conditions

Fecal Coliform and E. Coli are subsets of Total Coliform

- Better indicators of organisms harmful to humans



Surface Water Quality Standards – E. coli

Beaches = 235/100 ml

All others = 406/100 ml

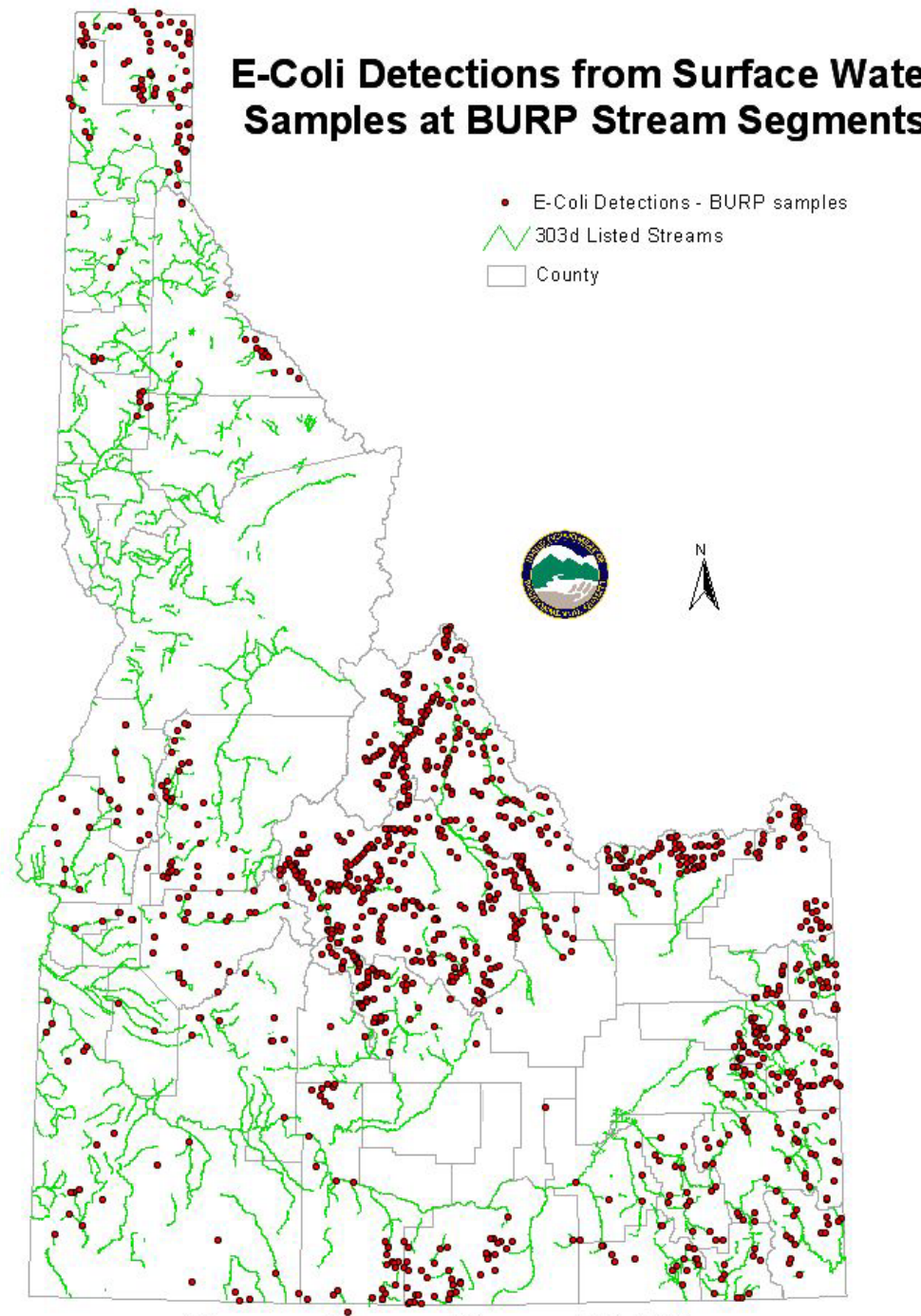
Secondary = 576/100 ml

30 day ave = 126/100 ml

Bacteria in Wadable Streams

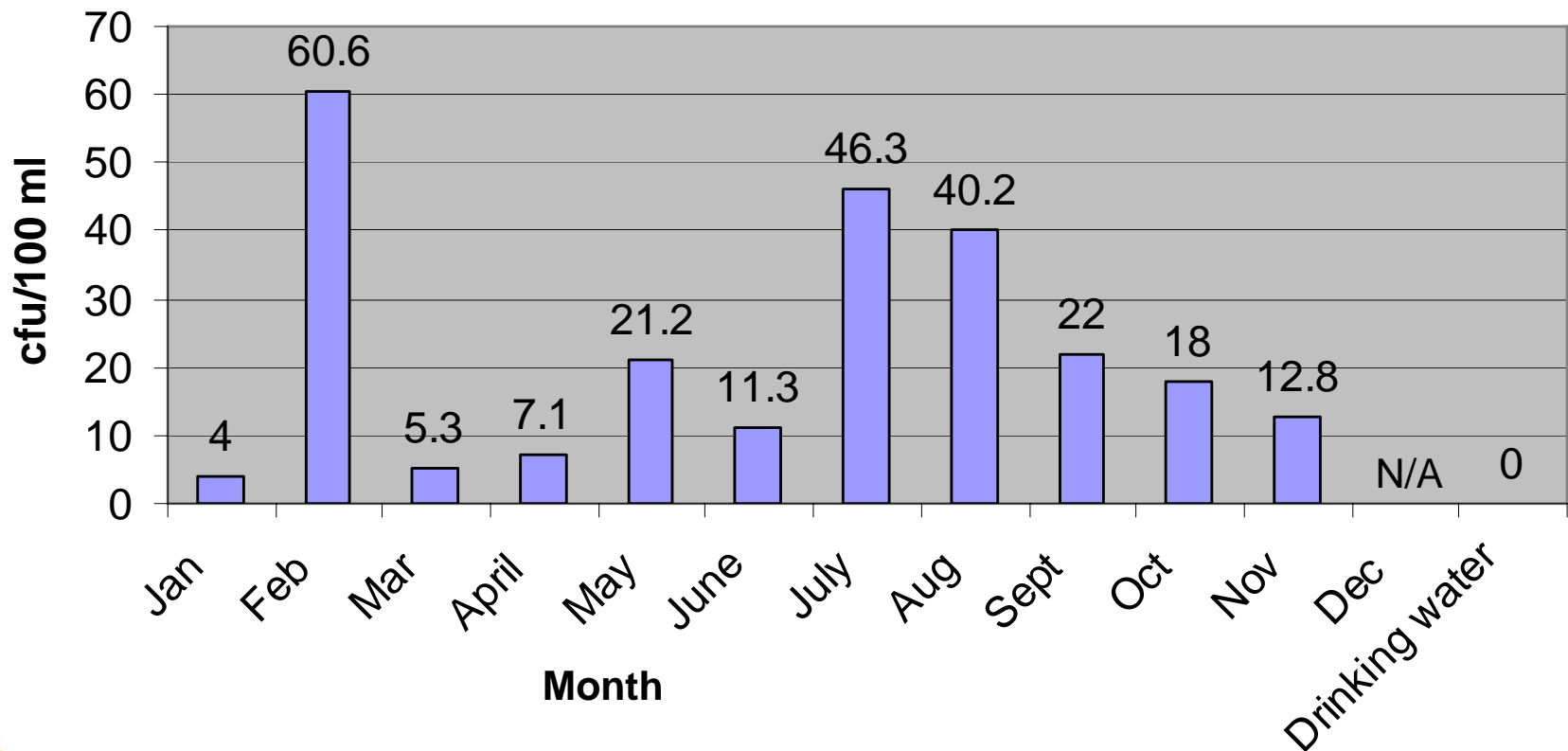
-Beneficial Use
Reconnaissance
Program Monitoring

Bacteria are present in
surface waters



Surface Water Quality

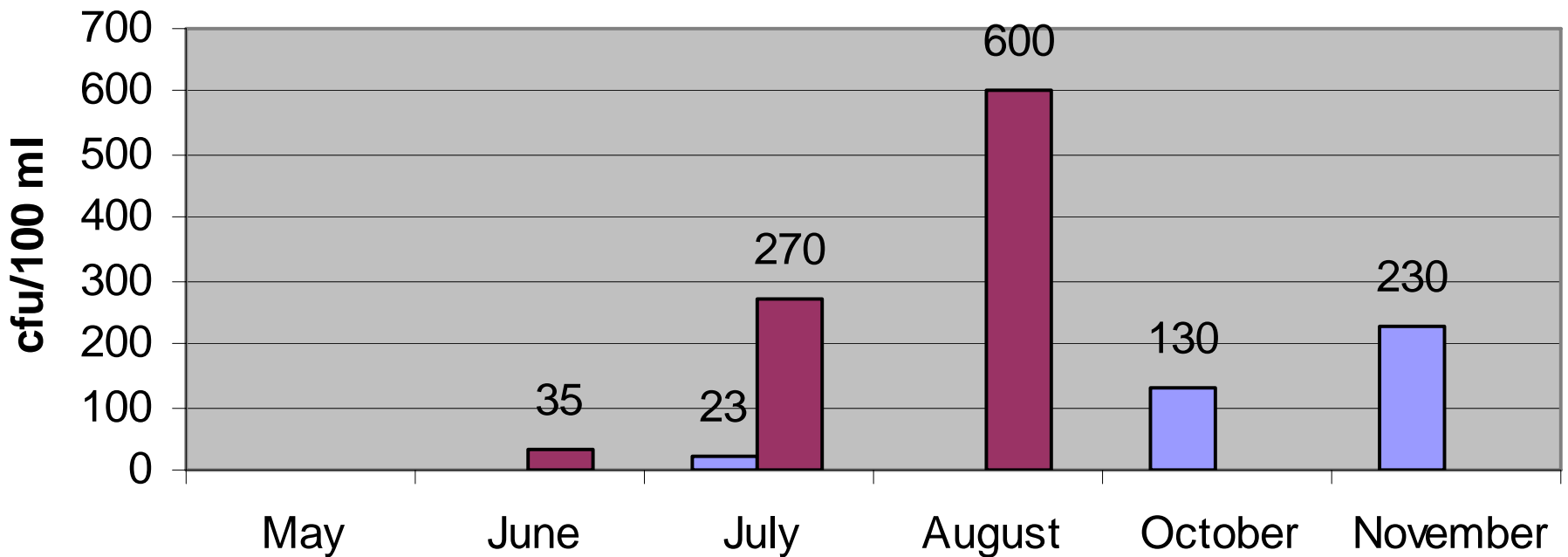
Monthly Average Fecal Coliform Mid Snake River 1990-1997



Surface Water Quality

Total Coliform

Milner Gooding Ridenbaugh



Upper Snake River Basin

WQ STDs Not Met in Middle Snake River

- Nutrients
- Sediment
- Dissolved Oxygen
- Temperature
- Turbidity
- Fecal Coliforms



Water Transmitted Pathogens

➤ Bacteria

- E. Coli, Shigella sp



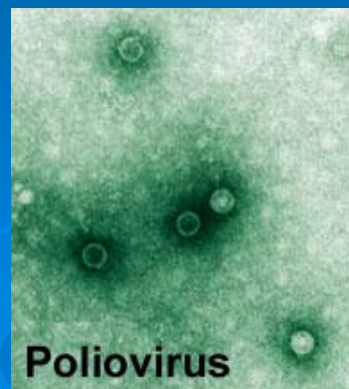
➤ Protozoa

- Giardia
- Cryptosporidium



➤ Enteroviruses

- Poliovirus
- Hepatitis A



Managed Recharge

- **Managed Recharge –**
 - **Existing State Policy**
 - **NO DEQ PERMIT**
 - **Monitoring Program Approval**

Managed Recharge

- **Ground Water Quality Plan Adopted in 1992 under Idaho Code §39-102**

- **Monitoring Policy V-C:**

“The policy of the state of Idaho is that any program designed specifically for the artificial recharge of ground water, existing or proposed, be consistent with the policies and management objectives for water quality and quantity.”



Managed Recharge

- Policy V-C was adopted because “artificial recharge has the potential to significantly impact the quality of ground water.”
- DEQ is directed to work cooperatively with other state agencies, to:
 - Develop Guidelines,
 - Develop Management Practices, and
 - Develop Rules to insure that artificial ground water recharge projects comply with the Ground Water Quality Plan (1992).



Managed Recharge Guidance

➤ “Guidance For Developing a Ground Water Quality Monitoring Program For Managed Recharge Projects by Land Application”

➤ **NO DEQ PERMITS**

Guidance for Developing a Ground Water Quality Monitoring Program for Managed Recharge Projects by Land Application



Idaho Department of Environmental Quality

April 2006 (Revised 8/1/2006)

Managed Recharge

➤ Main Concern is Pathogens

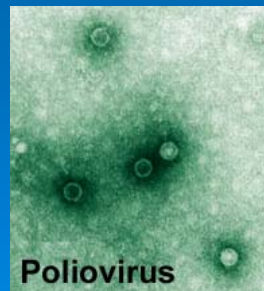
- E. Coli



- Protozoans



- Viruses



DEQ Programs

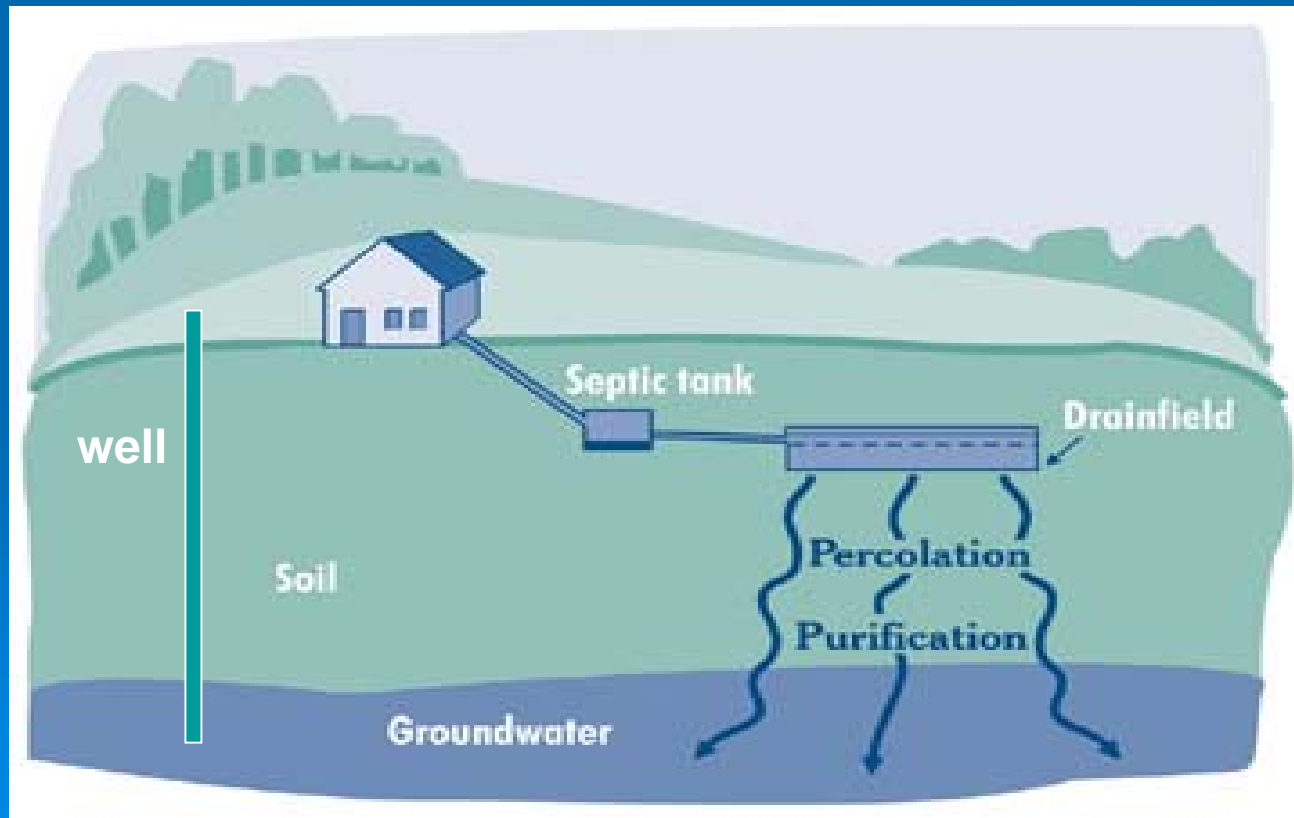
- **Wastewater Reuse –**
 - **Class A Wastewater can be used for Ground Water Recharge**
 - **Must have < 2.2 Total Coliform/100 ml**
 - **Redundant Treatment Systems**
 - **Disinfection - 5 log Removal for Viruses**
 - **1000 feet from Drinking Water Well**



DEQ Programs

Septic Systems

- 3, 4 or 6 feet of effective soil depth



Barry N. Burnell
Water Quality Division Administrator
Idaho Department of Environmental Quality
1410 N. Hilton
Boise, ID 83706

Phone: 208-373-0194
FAX: 208-373-0576
E-mail: barry.burnell@deq.idaho.gov
Website: <http://www.deq.idaho.gov>

