

Well Wisdom

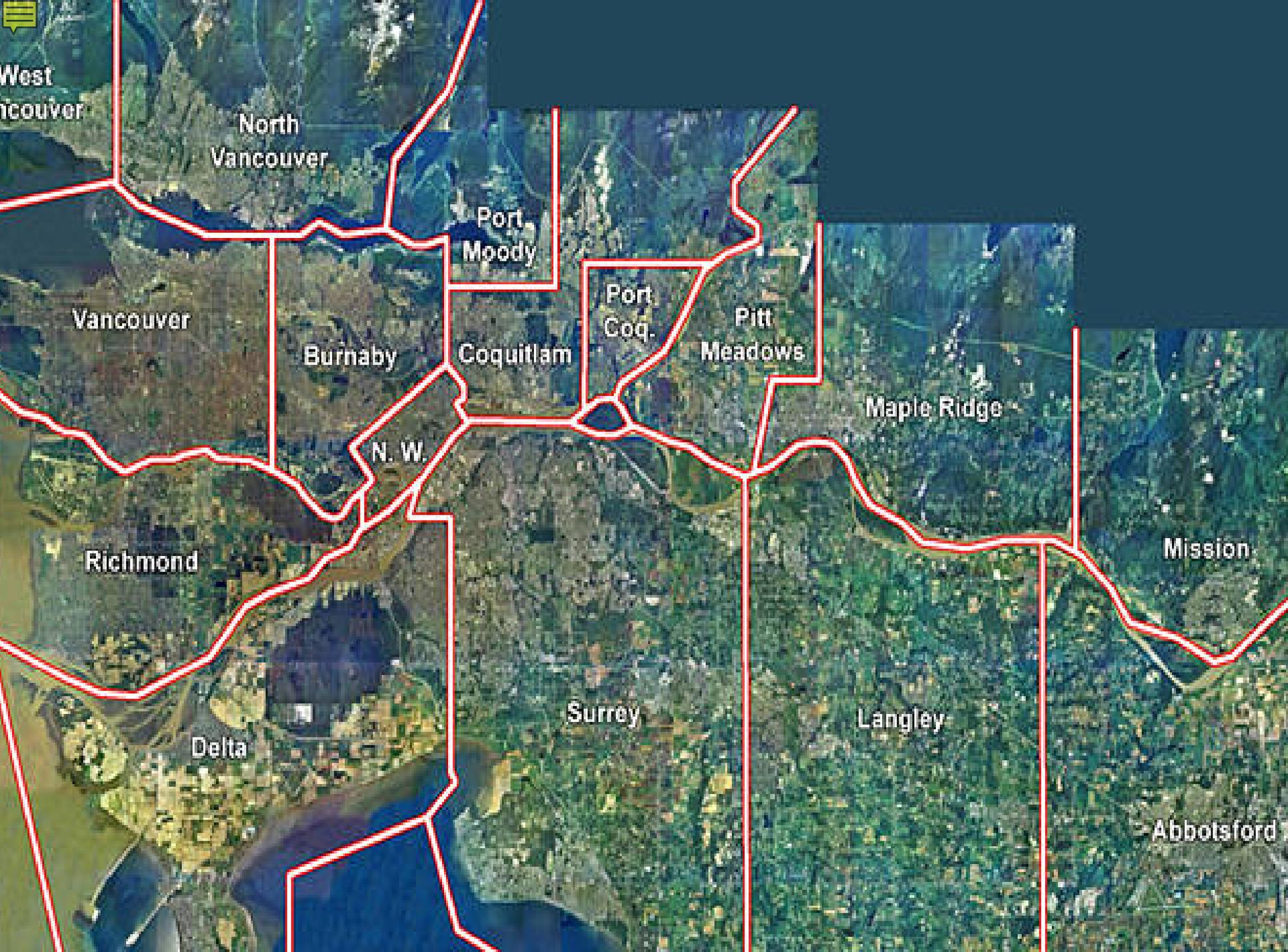
For the Residents of the
Township of Langley

July 17, 2017

Dean Scovill

Overview

- Groundwater
- Types of Wells
- Components of Water System
- Drinking Water Reports
- Maintenance of Water Systems



West Vancouver

North Vancouver

Port Moody

Vancouver

Burnaby

Coquitlam

Port Coq.

Pitt Meadows

N.W.

Maple Ridge

Richmond

Mission

Delta

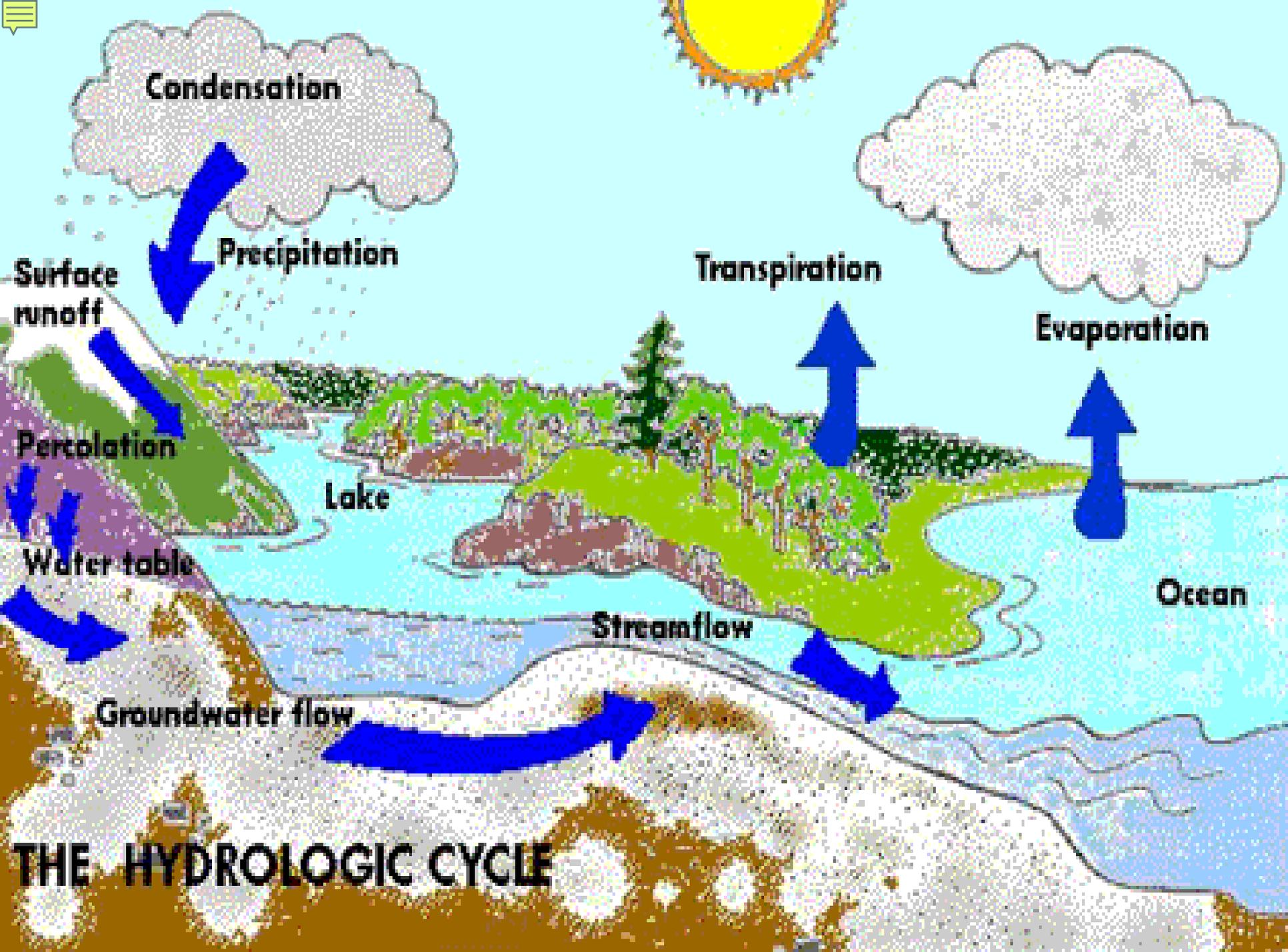
Surrey

Langley

Abbotsford

Our Drinking Water Does Not Come from Mt Baker





Condensation

Precipitation

Surface runoff

Transpiration

Evaporation

Percolation

Lake

Water table

Ocean

Streamflow

Groundwater flow

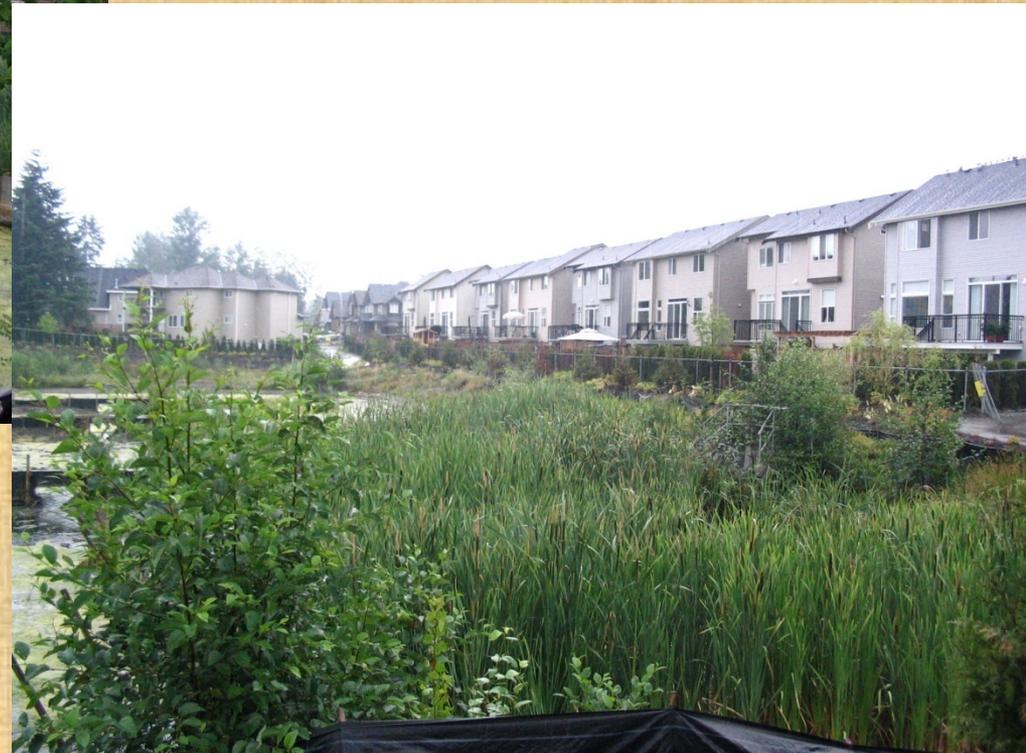
THE HYDROLOGIC CYCLE

Local Recharge Areas





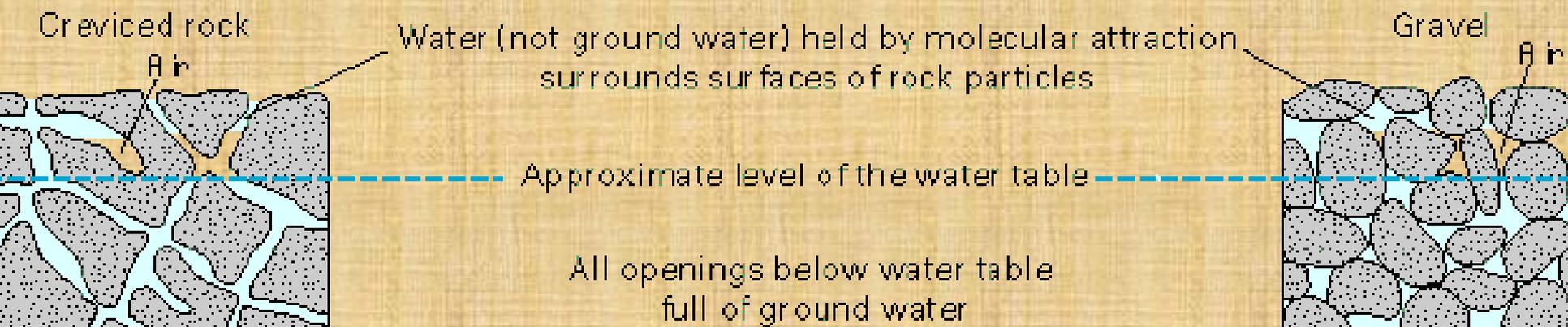
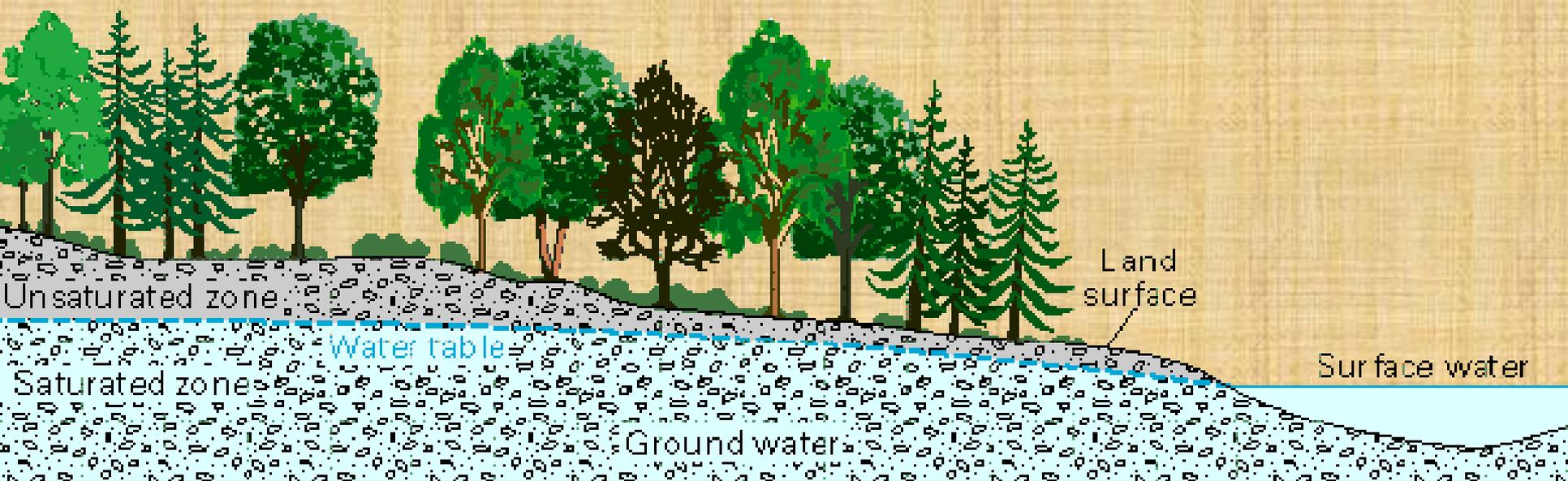
Retention Pond



Protect G/W from Contamination



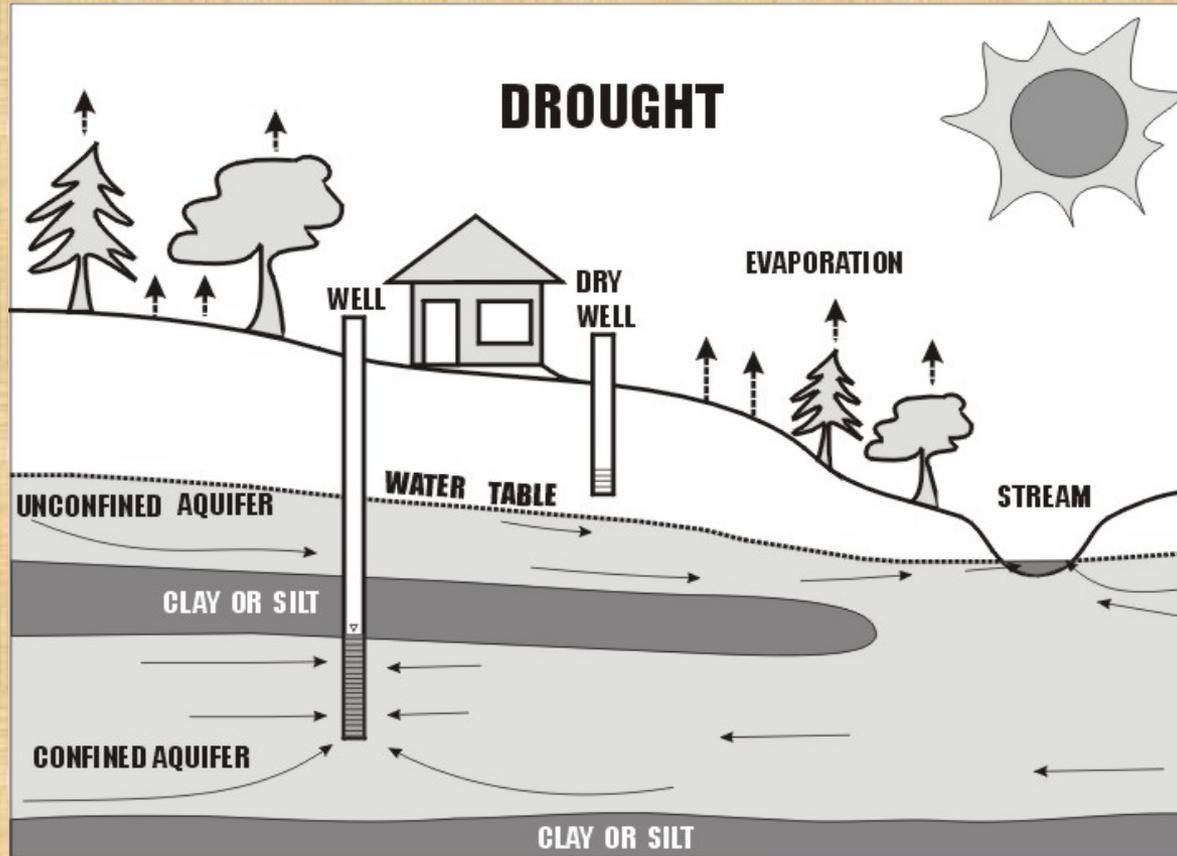
'Unconfined' Aquifer



Shallow Well



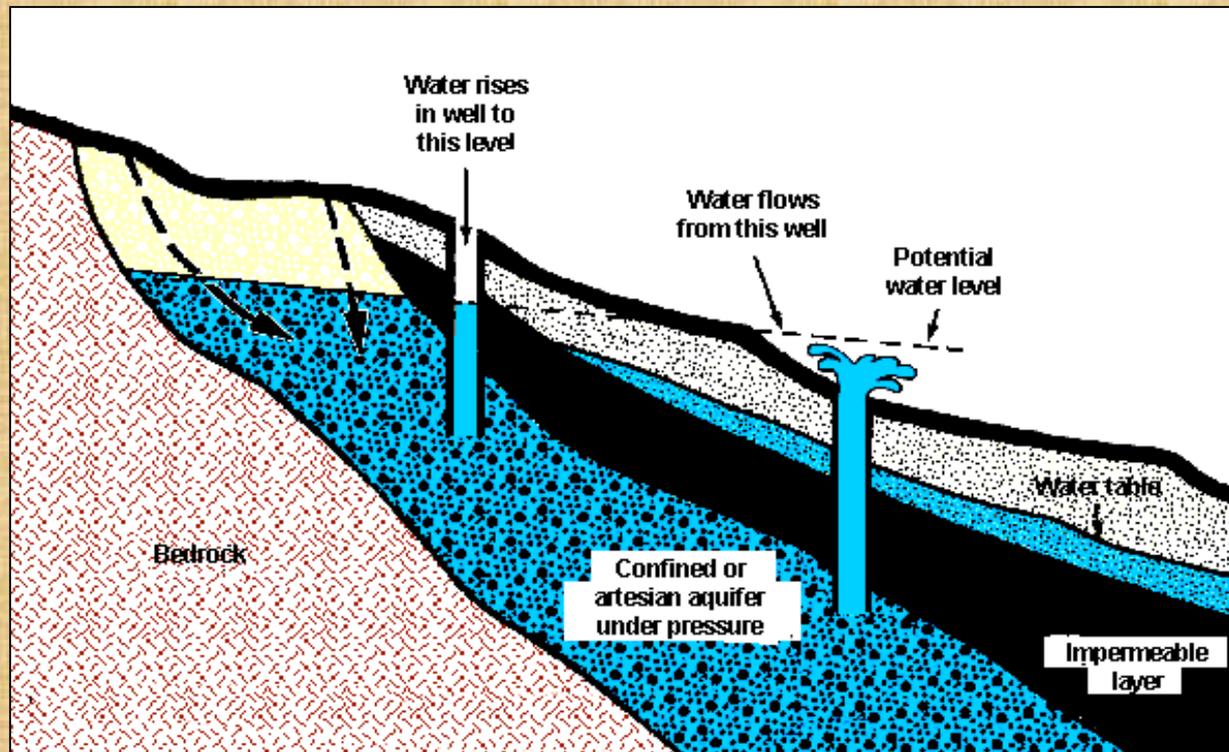




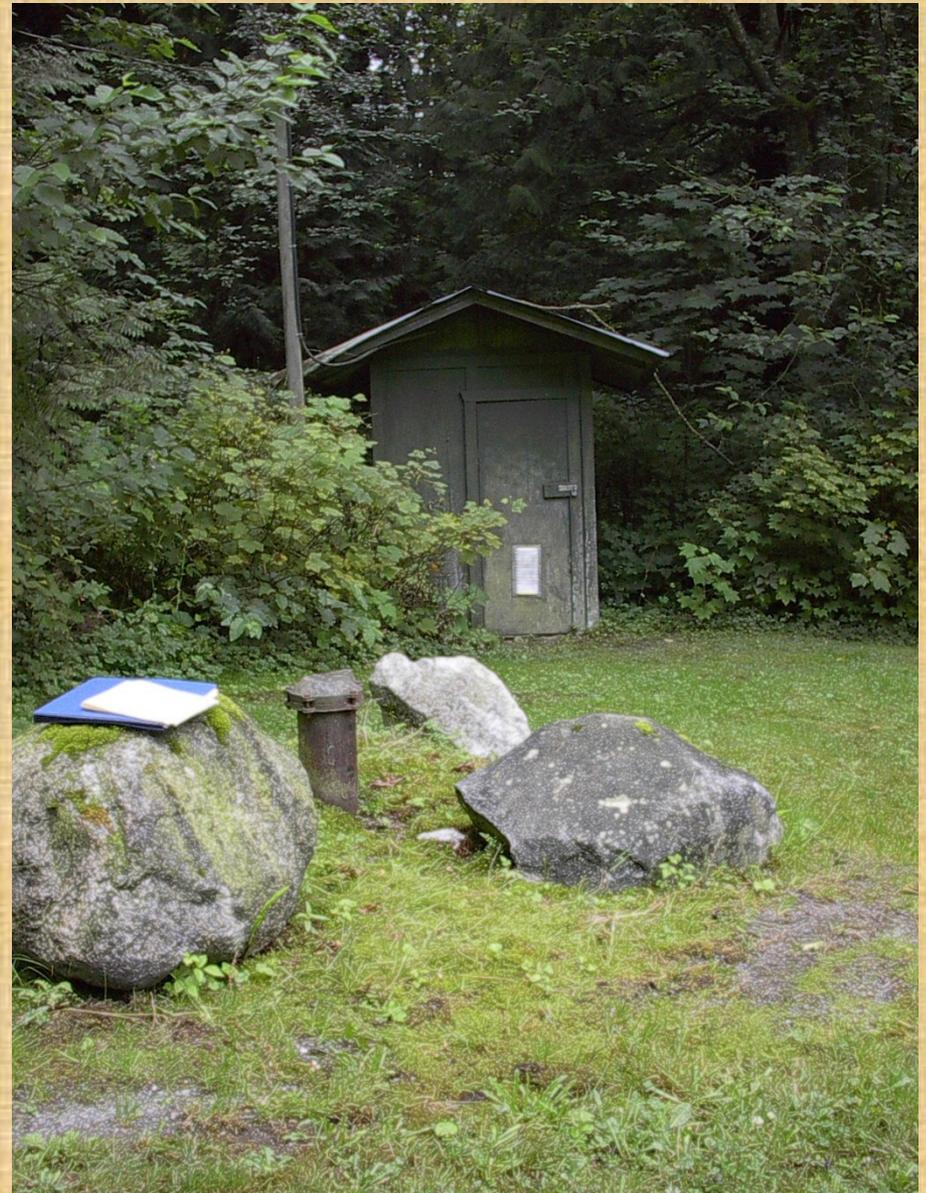
Climate Change: Fraser Basin

'Confined' Aquifer

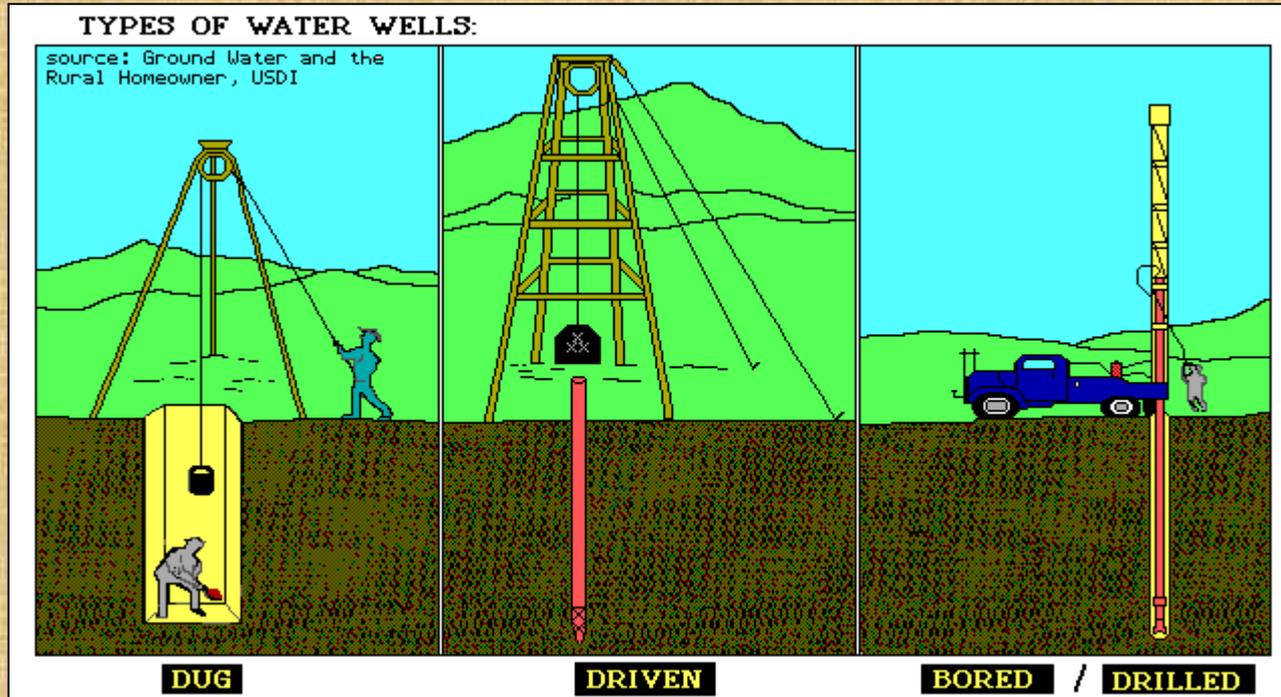
- Aquifer is overlain with impermeable soils
- Water is under pressure (artesian)



Drilled Wells



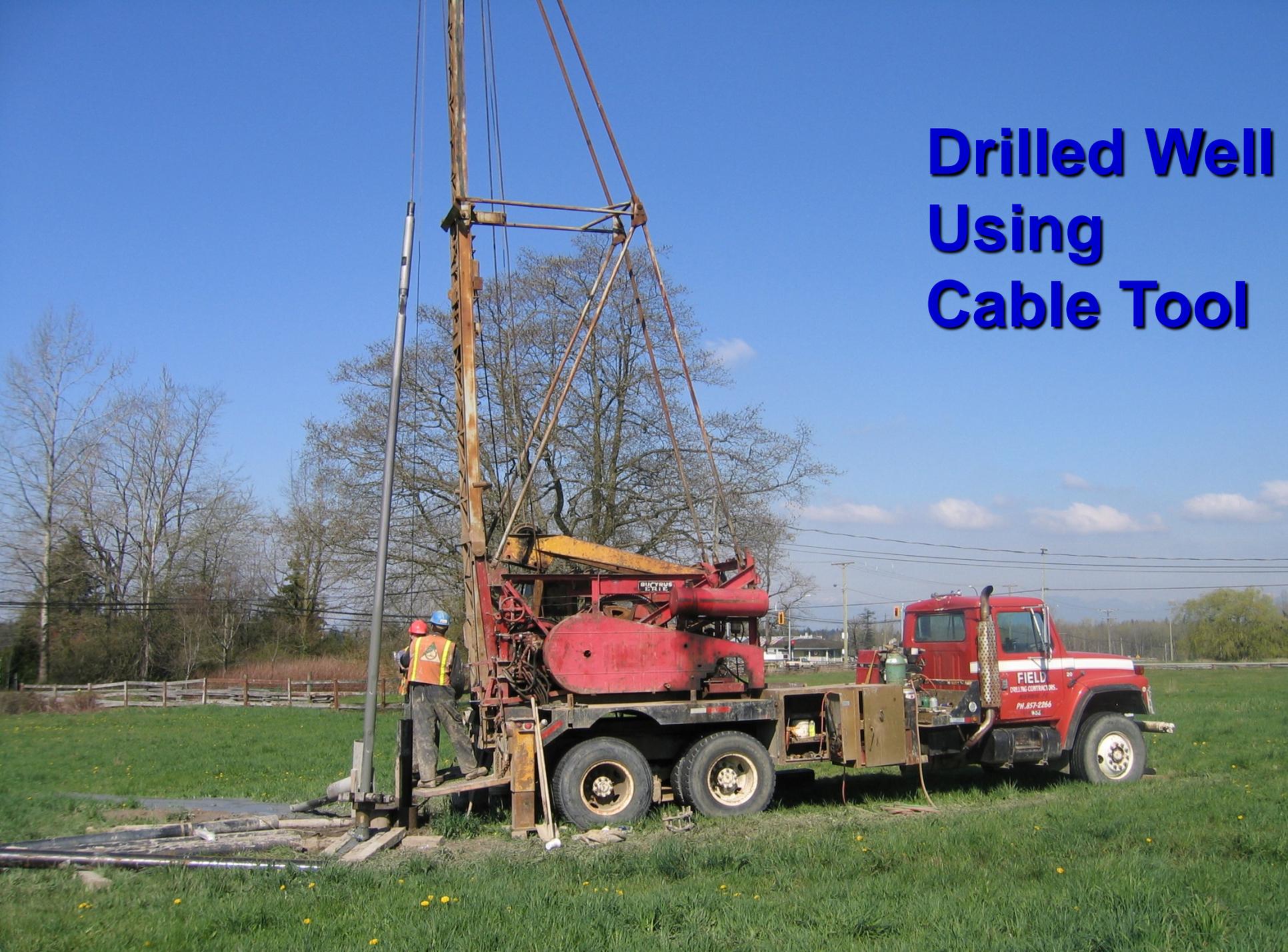
How are Wells Constructed?



< 30Ft > 75Ft
Depth

High Low
Vulnerability to contamination

Drilled Well Using Cable Tool



Installing 20' Steel Casings

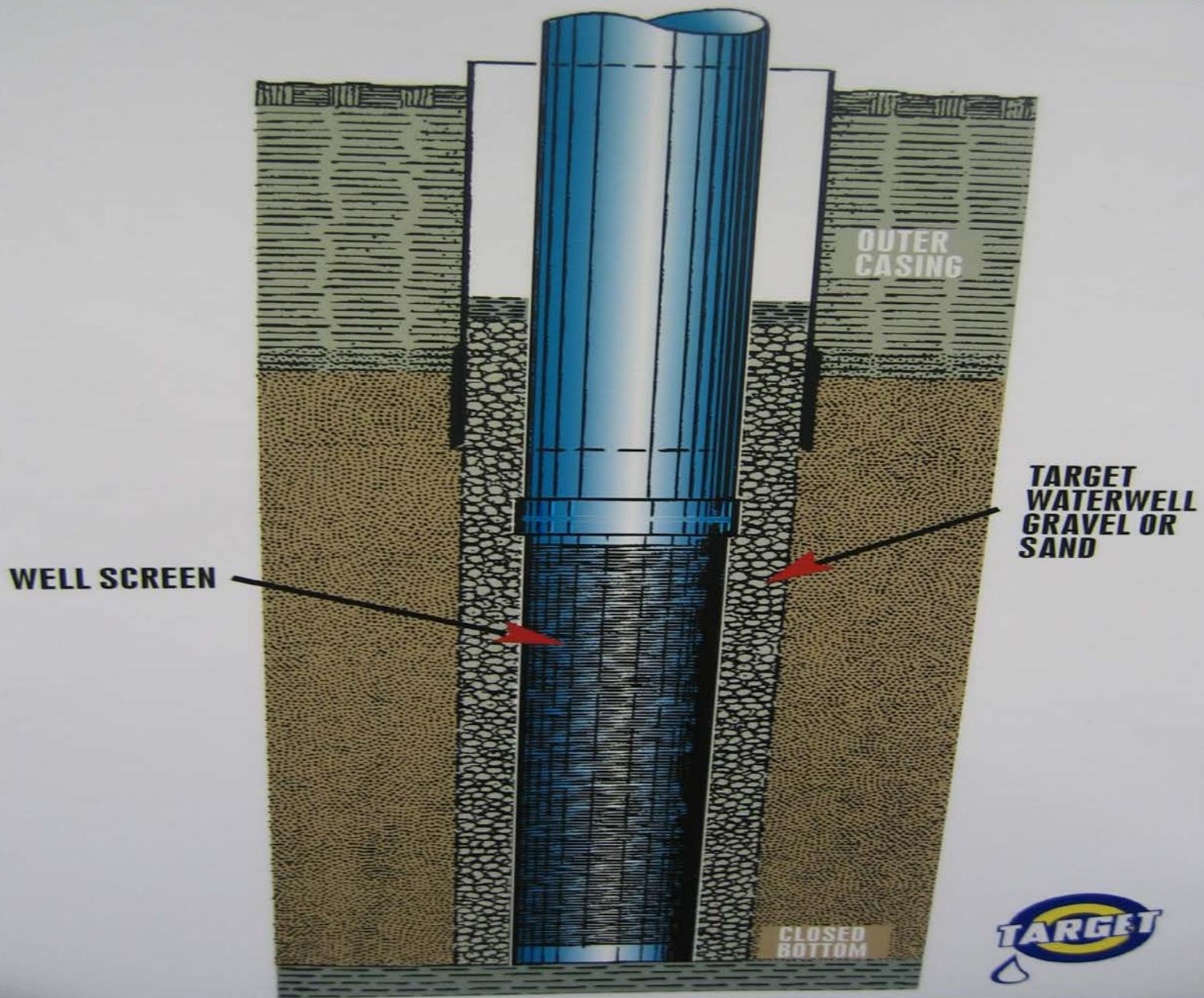




Submersible Pump



Typical Schematic of Gravel Packed Waterwell



Johnson screens™
A Wearable Industry

To solve Your Waterwell Needs

Reliable Long Life

Maintenance

TECHNICAL
SUPPORT



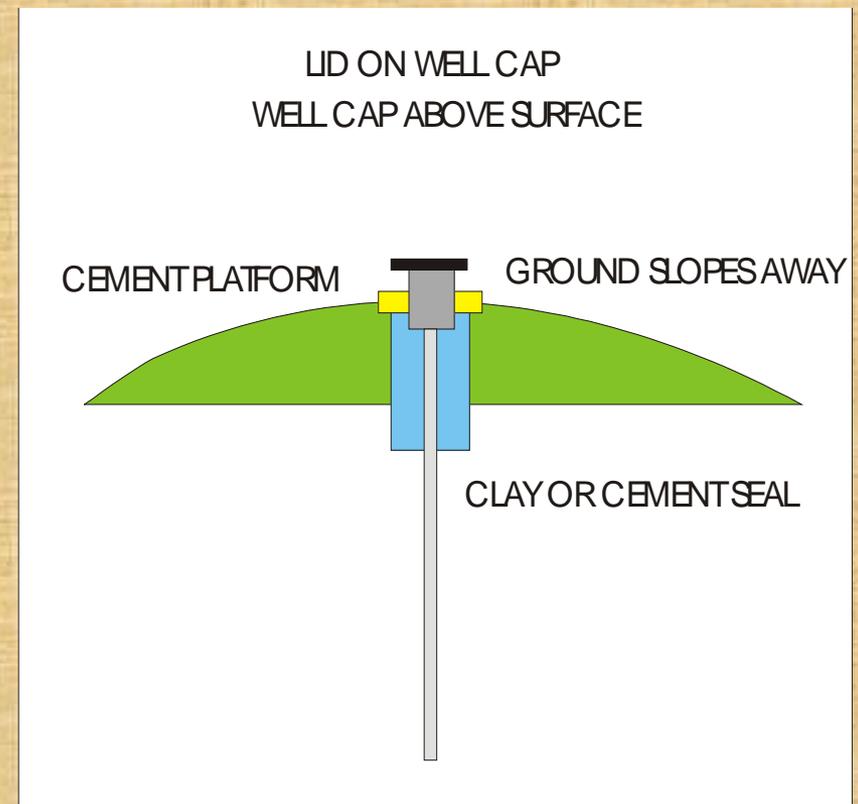
CUSTOMER
SERVICE

**Well
Screens**



Cement/Clay Seal

- Surrounds well casing
- Prevents contaminants from running down the outside of well casing



Drilled Wells below Surface



Raising well cap



BENSSEAL[®]

GROUTING BENTONITE

- FOR:
- GROUTING CASING
 - PLUGGING DRILLED HOLES
 - SEALING WATER PONDS
 - SEALING EARTHEN STRUCTURES

Net weight: 50 pounds/22.7 kilograms

CAUTION

See back panel for caution before use

MSF

Any Questions?

BE

GROU

BENTONITE

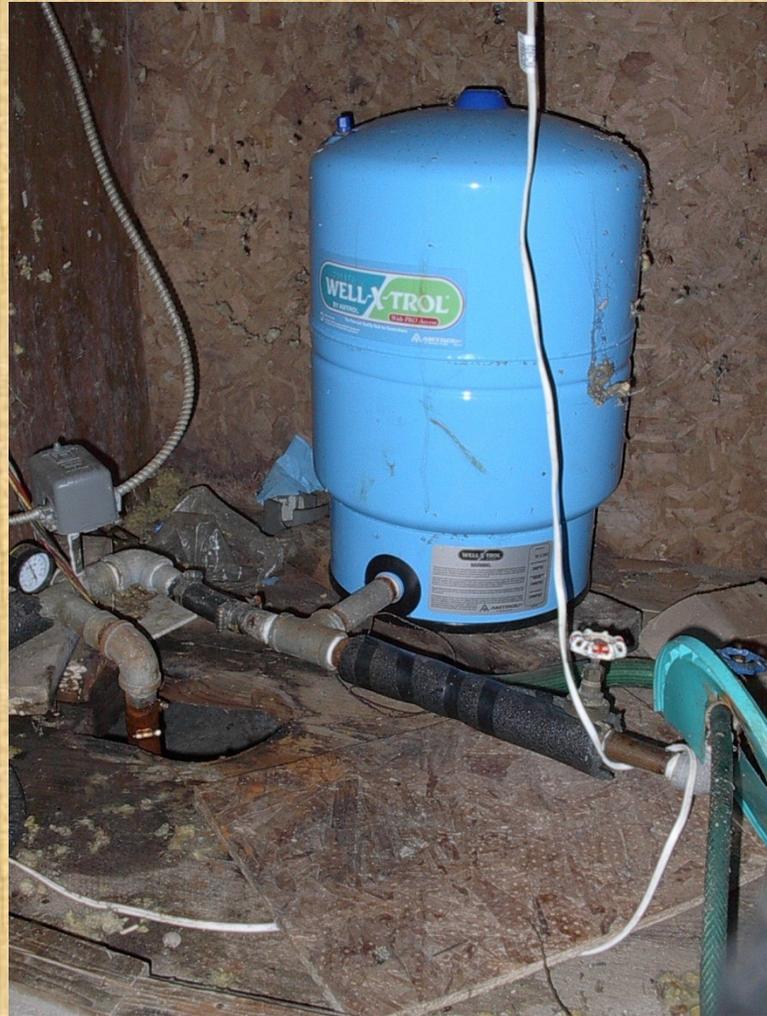
This product is
carcinogen by the
silicosis, a non-
and use a NIOSH

CAD

140

Any Questions?
Call us toll-free at 1-800-
We're here to help you with
any questions you have about
our products.

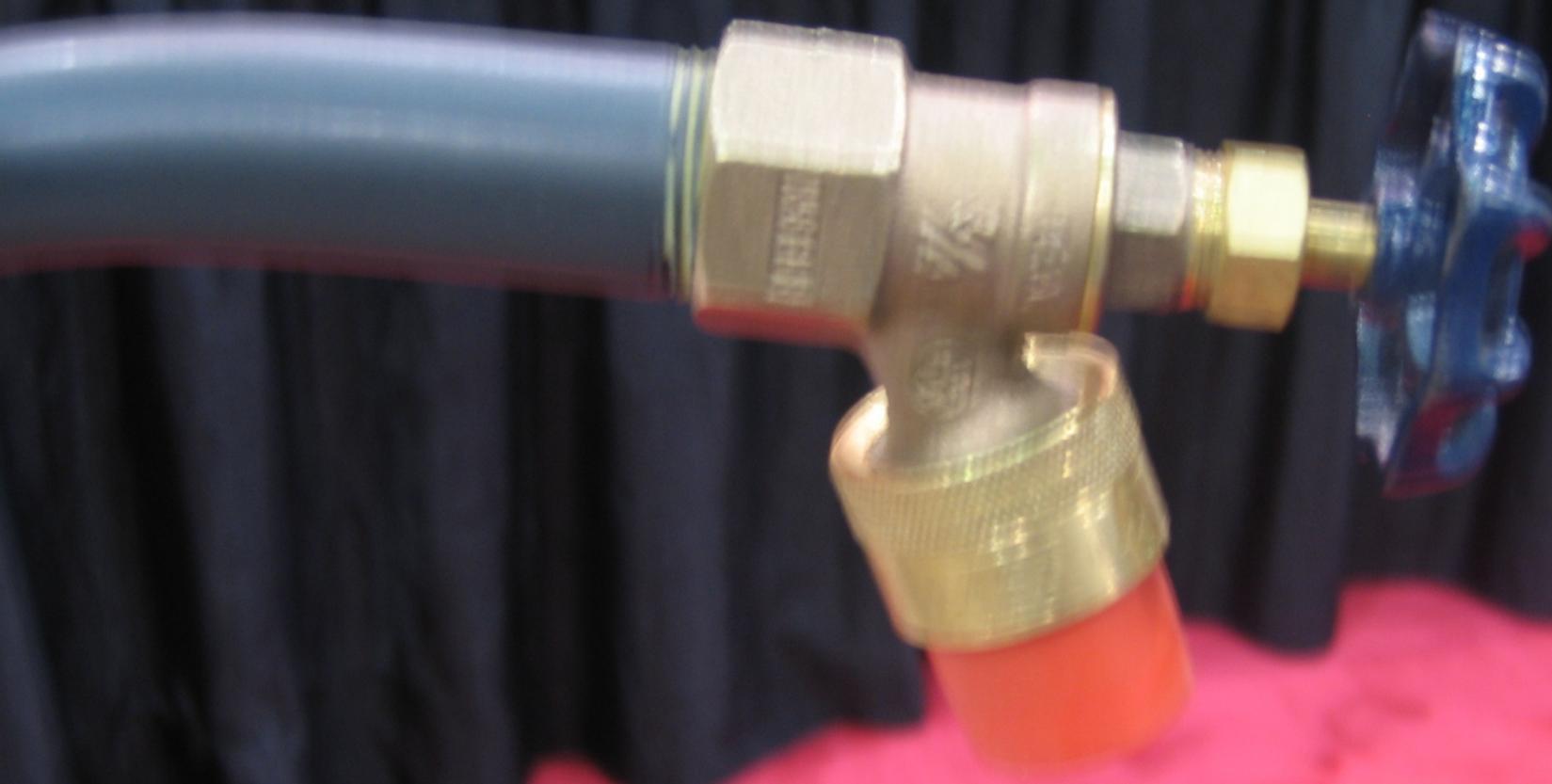
Pressure Tank



Ultraviolet Treatment



Backflow Preventor





**NORWEST
LABS**

Agri Food & Environmental Group
Calgary Edmonton Winnipeg Lethbridge Surrey

Analytical Report

Norwest Labs
#104, 19575-55 A Ave.
Surrey, BC. V3S 8P8
Phone: (604) 514-3322
Fax: (604) 514-3323

Bill to: School District #35
Report to: School District #35

20260 - 64th Ave
Langley, BC, Canada
V3A 4P7

Attn: Mike Wall

Sampled By:
Company:

Project ID:
Name: S. Carvolth
Location:
LSD:
P.O.: C4076
Acct. Code:

NWL Lot ID: **240644**
Control Number:
Date Received: Jun 25, 2003
Date Reported: Jun 30, 2003
Report Number: 416407

Page: 1 of 4

NWL Number: 240644-1
Sample Date: Jun 25, 2003
Sample Description: S. Carvolth 25-June-03 10:30am

Analyte		Units	Result	Detection Limit	Guideline Limit	Guideline Comments
Metals Extractable						
Aluminum	Extractable	mg/L	<0.005	0.005	0.1	Acceptable
Antimony	Extractable	mg/L	<0.0002	0.0002	0.006	Pass
Arsenic	Extractable	mg/L	0.0102	0.0002	0.025	Pass
Barium	Extractable	mg/L	0.009	0.001	1	Pass
Boron	Extractable	mg/L	0.018	0.002	5	Pass
Cadmium	Extractable	mg/L	<0.00001	0.00001	0.005	Pass
Chromium	Extractable	mg/L	0.0010	0.0005	0.05	Pass
Copper	Extractable	mg/L	<0.001	0.001	1	Acceptable
Lead	Extractable	mg/L	<0.0001	0.0001	0.01	Pass
Uranium	Extractable	mg/L	<0.0005	0.0005	0.02	Pass
Zinc	Extractable	mg/L	0.003	0.001	5	Acceptable
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1	1	<1	Pass
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1	1	<1	Pass
Heterotrophic Count - Aerobic	Pour Plate	MPN/mL	108	1	500	Pass
Physical and Aggregate Properties						
Colour	Apparent, Potable	Colour units	3	1	15	Acceptable
Turbidity		NTU	0.2	0.1	5	Acceptable
Routine Water						
pH			8.04	-	6.5 - 8.5	Acceptable
Sodium	Extractable	mg/L	11.1	0.4	200	Acceptable
Iron	Extractable	mg/L	0.08	0.01	0.3	Acceptable
Manganese	Extractable	mg/L	0.107	0.005	0.05	Above Aesthetic
Chloride	Dissolved	mg/L	4.7	0.5	250	Acceptable
Fluoride		mg/L	0.09	0.04	1.5	Pass
Nitrate - N		mg/L	0.043	0.004	10	Pass
Nitrite - N		mg/L	<0.002	0.002	1	Pass
Sulphate (SO4)		mg/L	5.03	0.03	500	Acceptable
T-Alkalinity	as CaCO3	mg/L	91	5		Low
Total dissolved solids		mg/L	102	1	500	Acceptable
Hardness	as CaCO3	mg/L	72.2	-		Soft







Poor Well Conditions

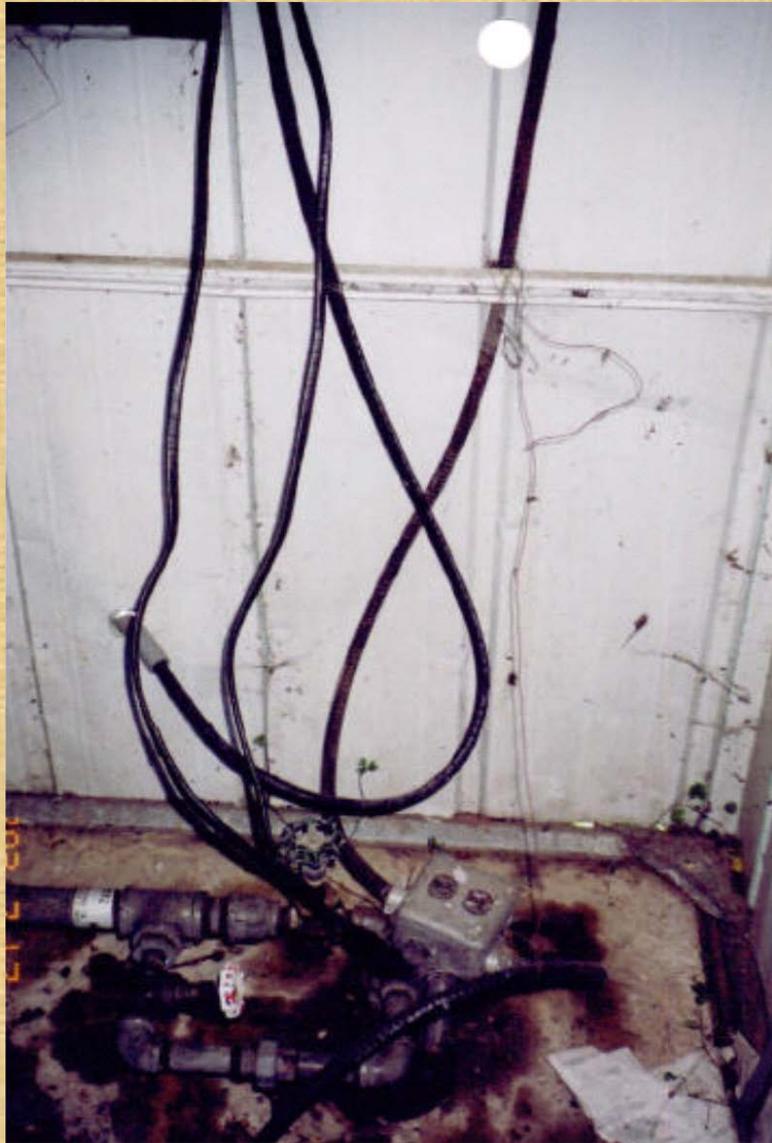


Well House





**Well head
not sealed**



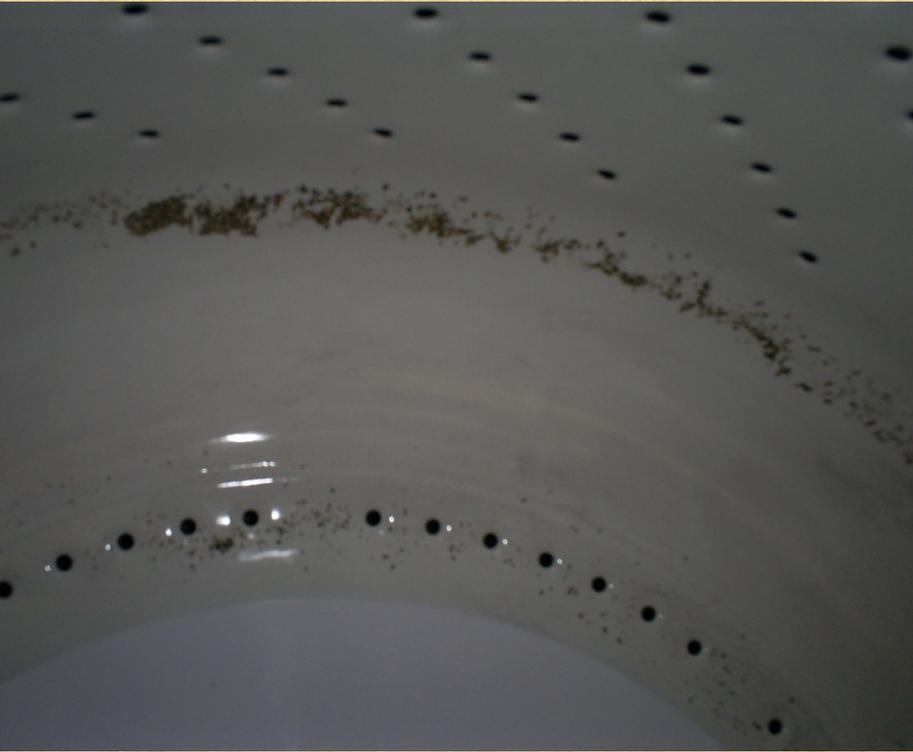
Faulty wiring



Breathing Tube

- use 1/16 diameter stainless steel meshing - not pop bottle!!

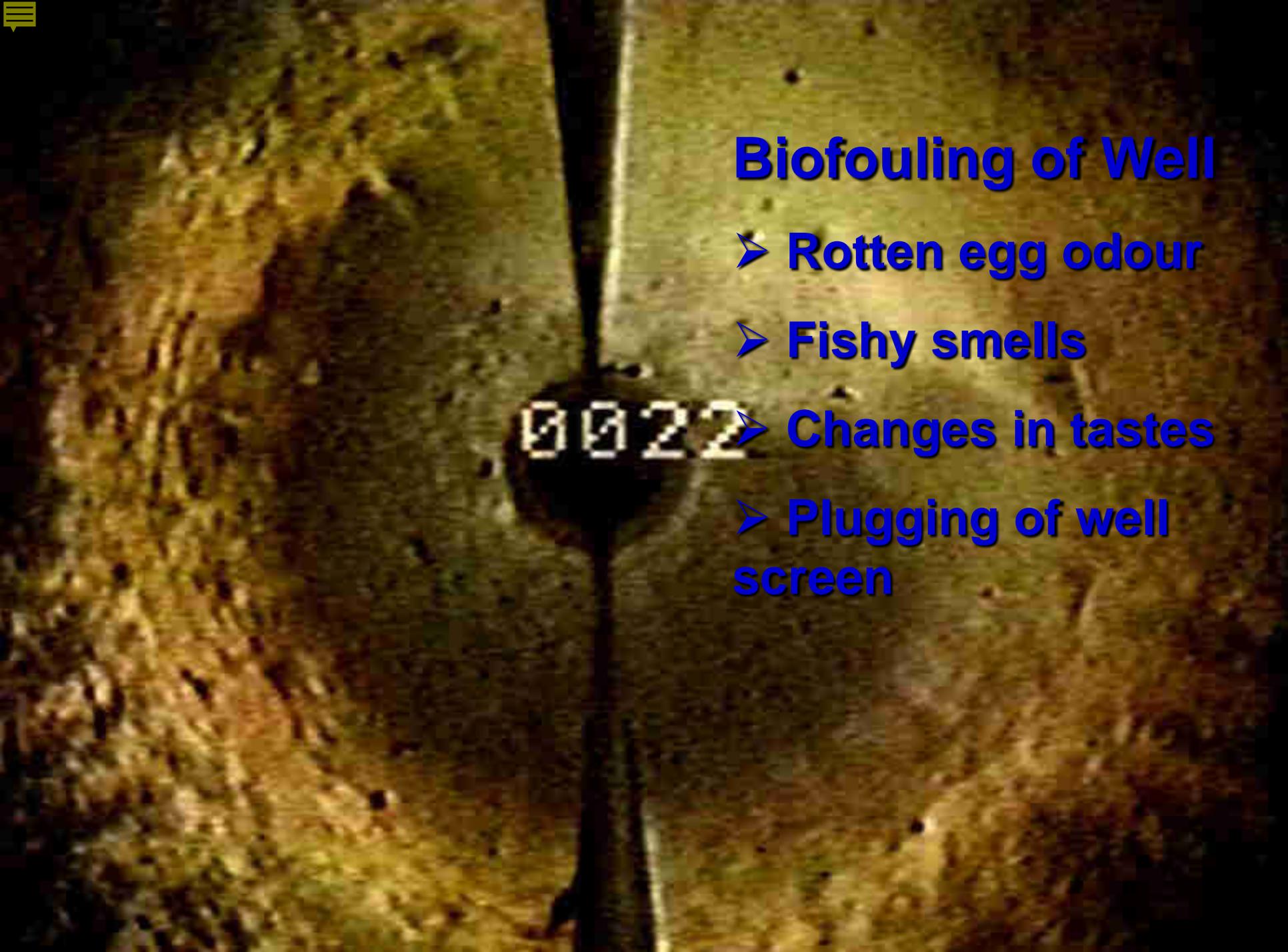
Mineral Deposits



Clean Well Screen

Ø242

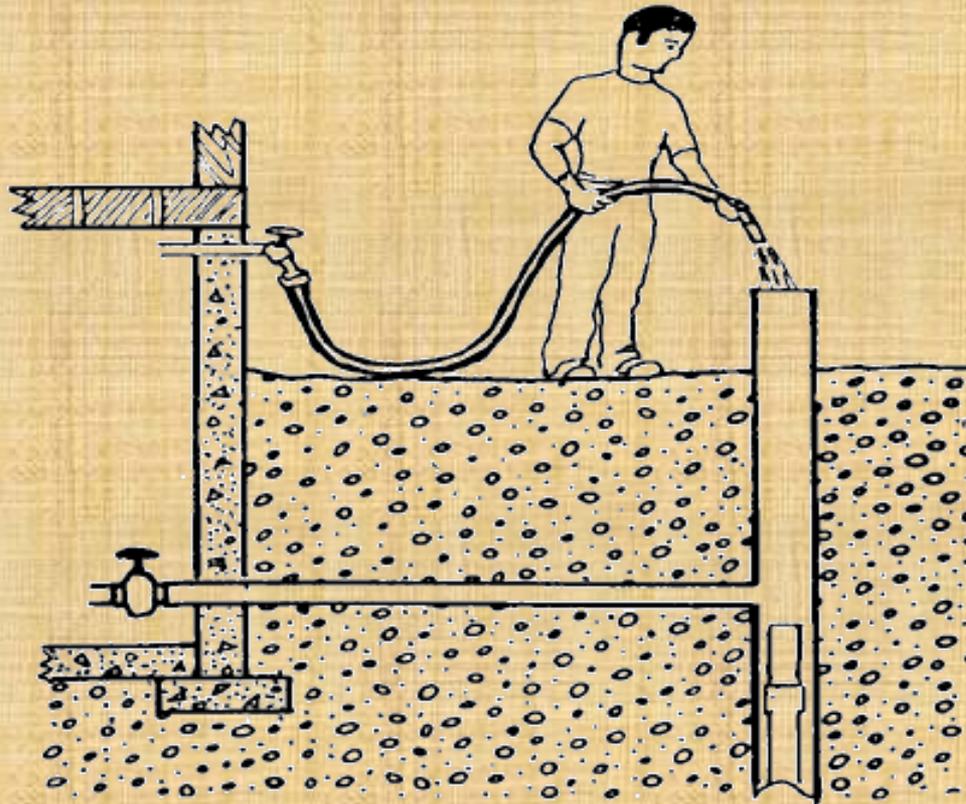
A close-up photograph of a well screen. The screen consists of numerous parallel, curved metal bars that form a cylindrical structure. In the center of the screen, there is a circular marker or label with the text "Ø242" printed on it. The lighting is bright, highlighting the metallic texture and the curved shape of the screen.

The background of the slide is a photograph of a well. A vertical pipe or shaft is visible, with a digital display in the center showing the number '0022'. The surrounding area is a textured, brownish-yellow surface, likely the interior of the well or a concrete wall. The lighting is somewhat dim, creating a slightly grainy texture.

Biofouling of Well

- Rotten egg odour
- Fishy smells
- Changes in tastes
- Plugging of well screen

Disinfecting Your Well with Bleach



Well Rehabilitation

Carela

Biodegradable
product
containing
hydrochloric acid
and hydrogen
peroxide



Well Maintenance

- Disinfect well once per year with bleach.
- Ensure well head cap sealed with rubber gasket.
- Repair all leaks and ensure components are free of any potential sources of contamination.
- Conduct a chemical analysis once every three years.
- Keep all sources of contamination such as manure a minimum of 100 feet (30 m) from well

Decommissioning a Well

HOLEPLUG[®] MADE WYOMING COARSE BENTONITE

CONTROLLED SIZE NATURAL BENTONITE FOR:

- PLUGGING AND ABANDONING DRILLED HOLES TO PREVENT AQUIFER CONTAMINATION
- STEMMING SHOT-HOLE EXPLOSIVES TO PREVENT BLOW-OUTS AND SURFACE CRATERING

TREATMENT:

1. OPEN TOP OF BAG HALFWAY
2. HOLD BAG TWO (2) FEET ABOVE HOLE
3. POUR HOLEPLUG BENTONITE SLOWLY (3 MINUTES/BAG) INTO HOLE
4. FILL HOLE, AS REQUIRED, FROM BOTTOM TO STATIC WATER LEVEL OR TO GROUND SURFACE
5. OBSERVE ALL LOCAL, STATE AND FEDERAL REGULATIONS

NET WEIGHT: 50 POUNDS/22.7 KILOS
NET VOLUME: APPROXIMATELY 0.69 CUBIC FEET

"THIS PRODUCT HAS BEEN CERTIFIED BY AN INDEPENDENT TESTING/AUDITING BODY TO MEET ANSI/NSF 60 SPECIFICATIONS."



3/8

Any Questions?

Call us toll-free at 1-800-735-6075.
When we talk to you, we learn how to improve our products and service.
That's why we're here.

BARON INDUSTRIES
P.O. Box 10000 Houston, Texas 77251

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HOLEPLUG[®]

Any Questions?



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