



# **SNS COLLEGE OF TECHNOLOGY**

Coimbatore – 641 029

**An Autonomous Institution**



## **DEPARTMENT OF CIVIL ENGINEERING**

### **23CEB204 – ENVIRONMENTAL ENGINEERING**

**II YEAR / IV SEMESTER**

#### **UNIT 1 : SOURCES, QUALITY AND DEMAND OF WATER**

##### **Topic 1 : Necessity of Water Supply and Sources of water**



# UNIT 1 :SOURCES, QUALITY AND DEMAND OF WATER



Public water supply system – Planning - Objectives - Sources of water and their characteristics - Design period - Population forecasting - Water demand – Standards – Water quality index - Smart Water Management Technologies



# Importance and necessity of water supply scheme

**Water should be free from impurities**

**The utility of water enormously increased & without well organized public water supply scheme, it is impossible to run the present life**

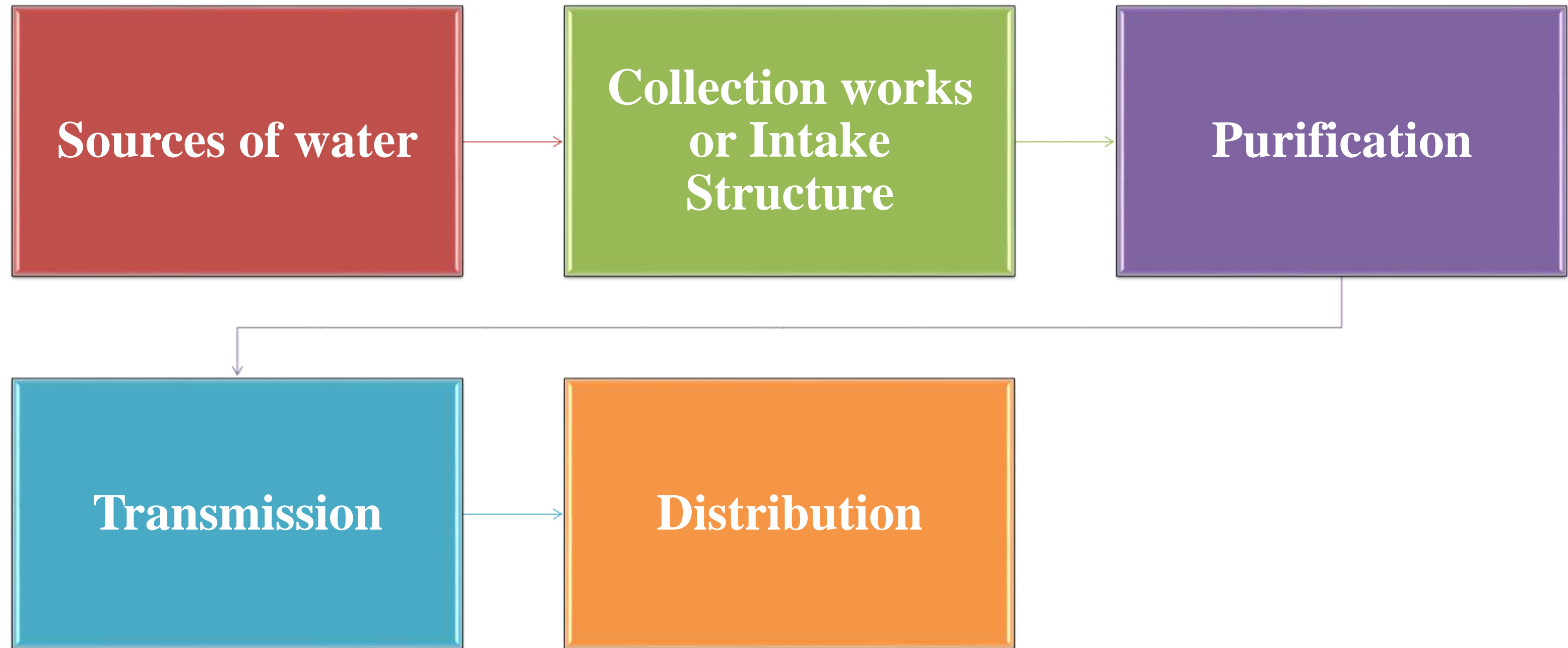
**Wholesome water** - Water that is safe to drink, cook and use for washing

**Water required for various purpose:**

- **Drinking & cooking**
- **Bathing & washing**
- **Lawns, gardens, crops, street washing, fire fighting, various industrial purposes, heating, air conditioners, etc**



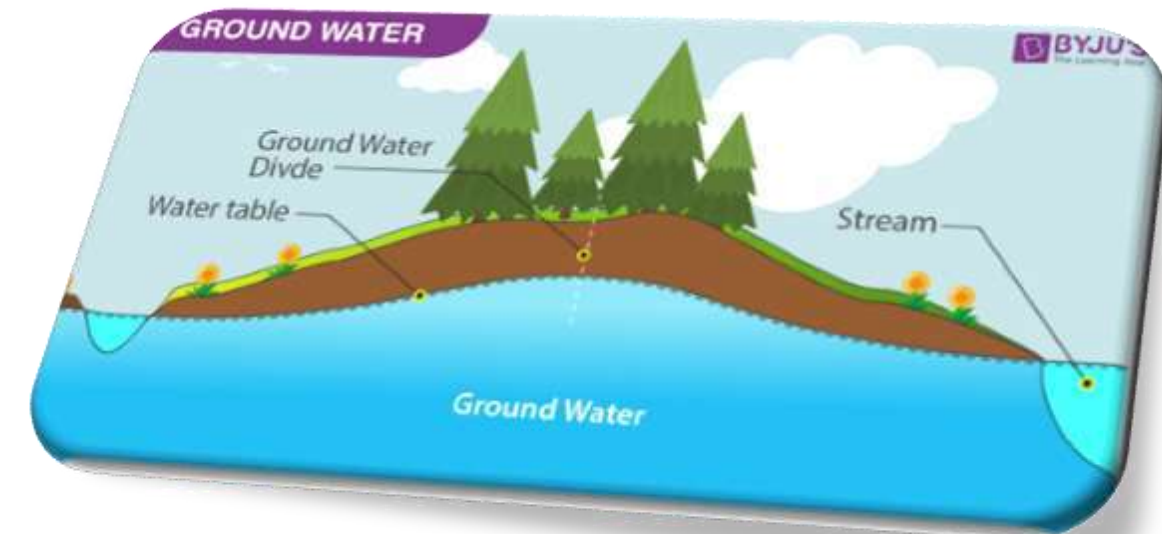
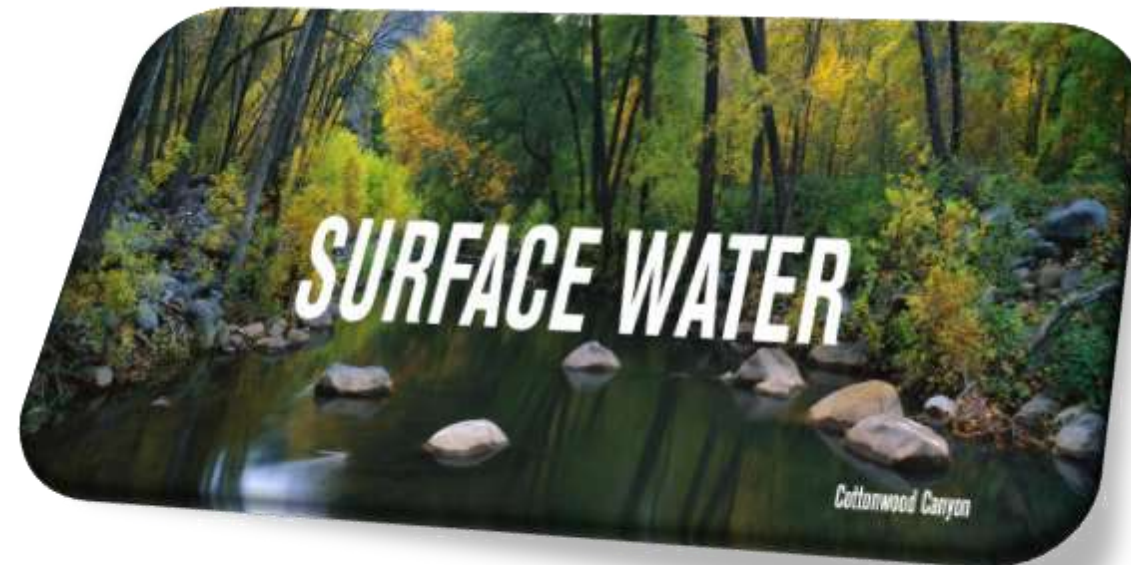
# Water Supply system







# Sources of Water







# RAIN WATER

## (a) From roofs of houses and dwellings

- Water is stored in small underground tank or cistern, for small individual supplies

## (b) From prepared catchments

- The surface of catchment is made impervious by suitable lining material, and suitable slope is given so that water is stored in moderate size reservoirs.







# Sources of water



## Surface Water



***Ponds and lakes***



***Rivers and streams***



***Storage Reservoir***

***Oceans***

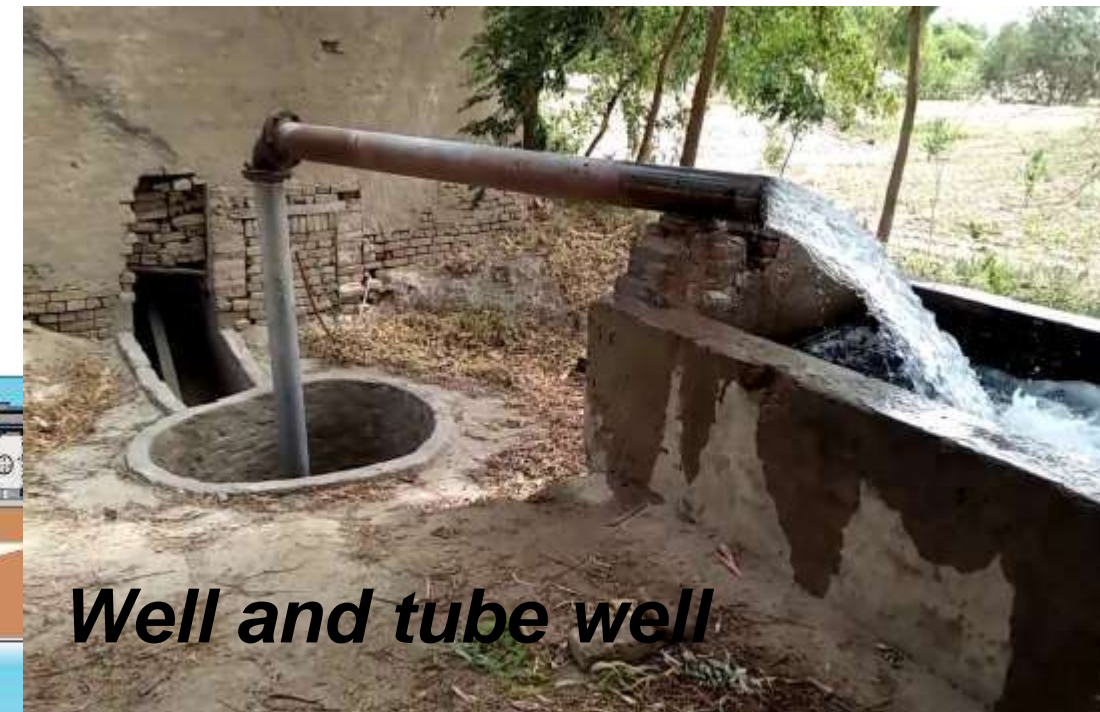
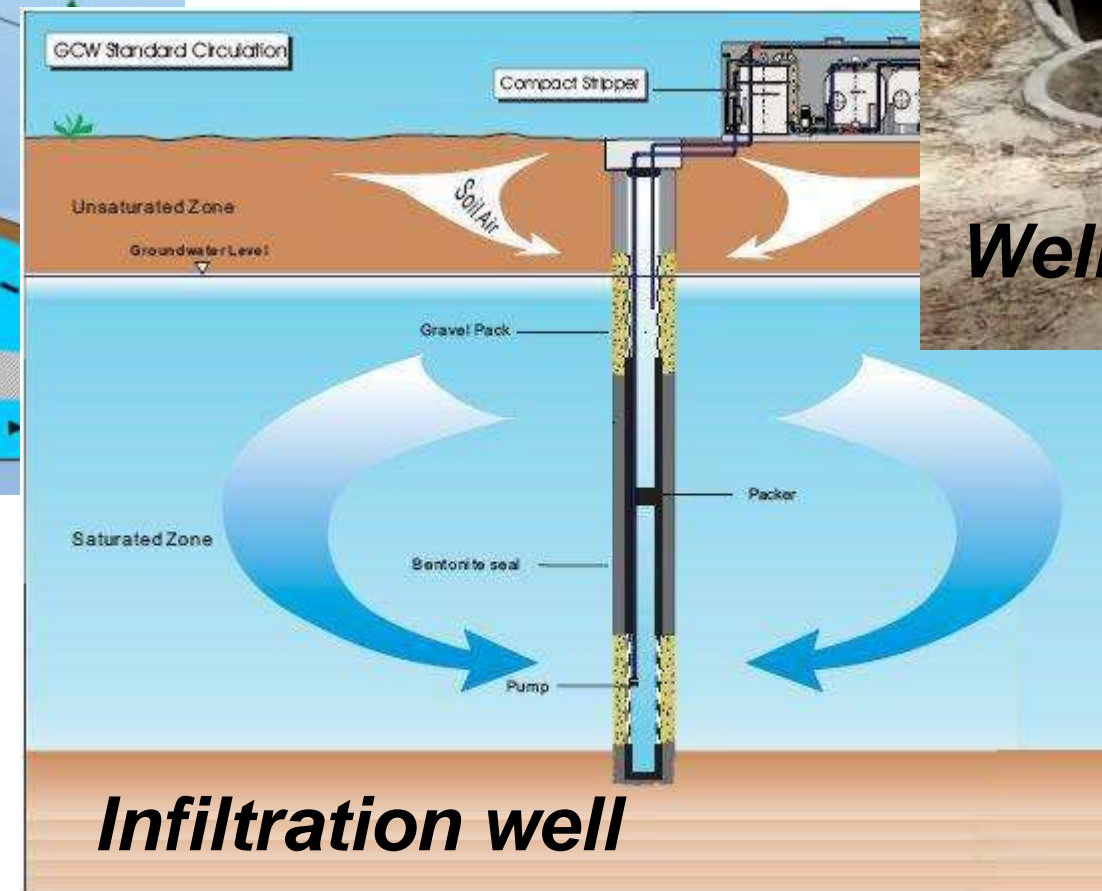
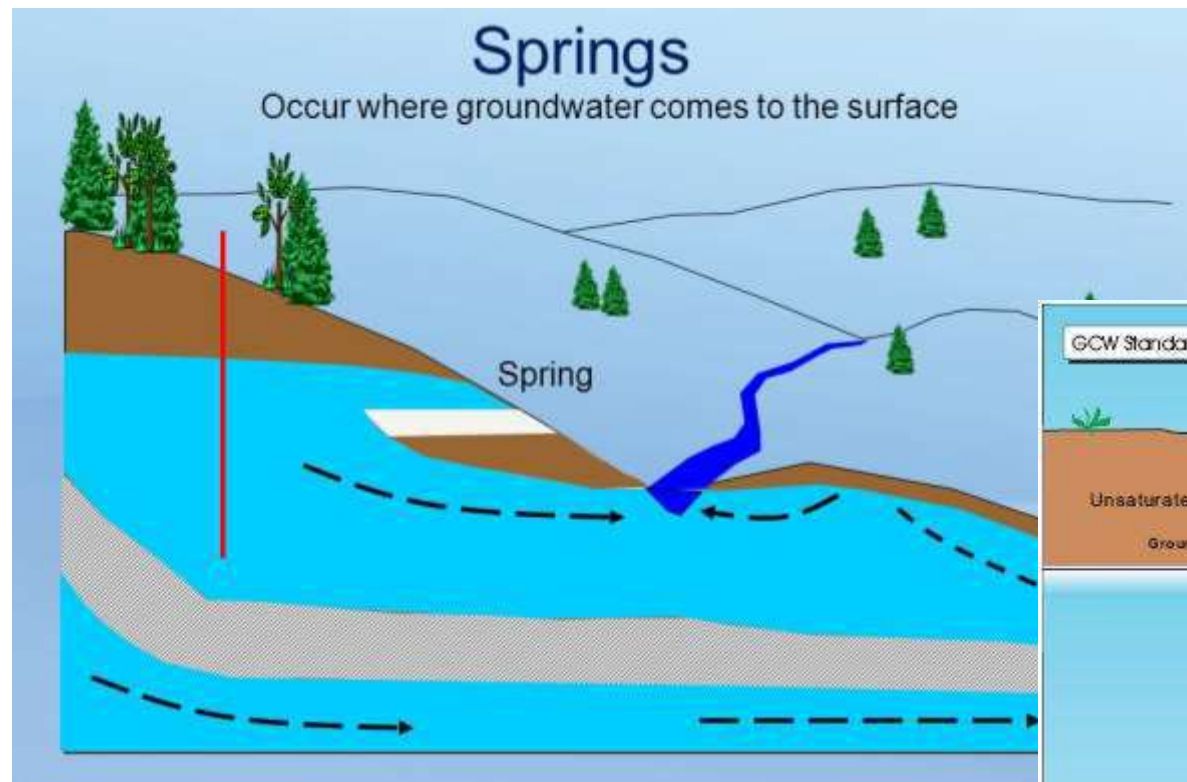






# Sources of water

## Underground Water







# SPRINGS



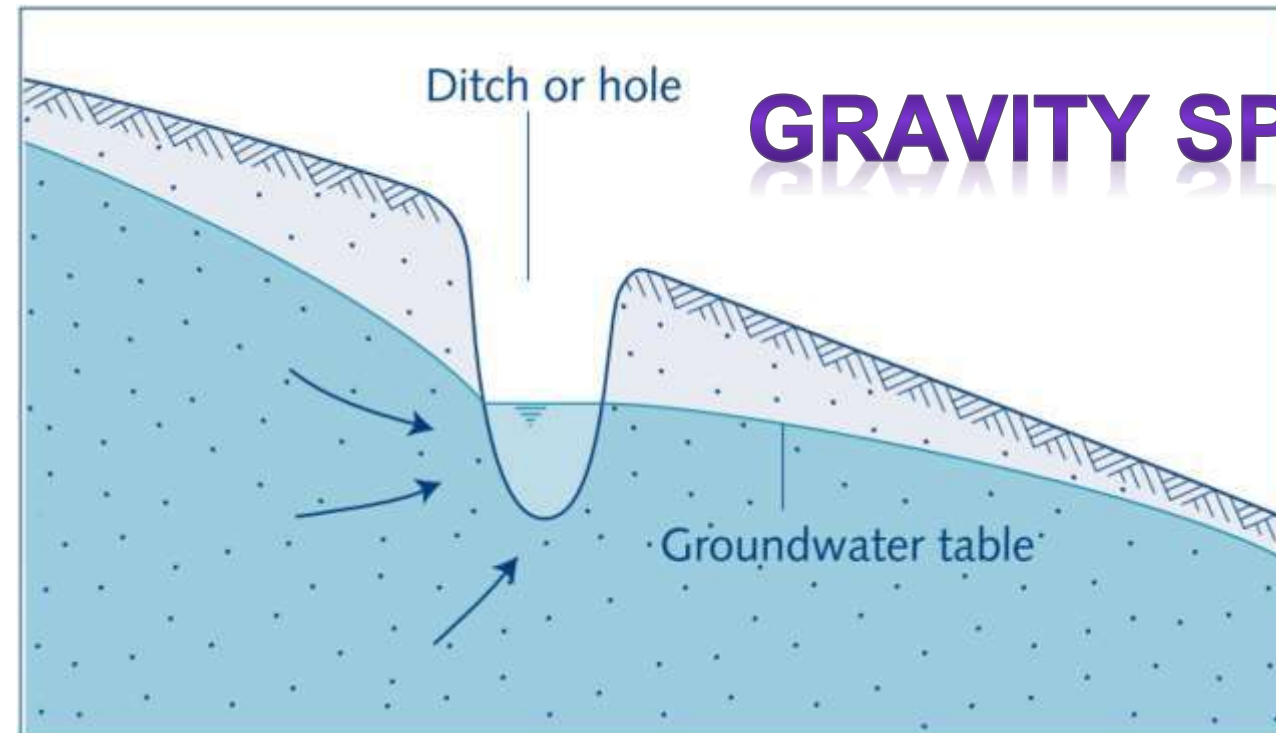
***THE NATURAL OUTFLOW OF GROUNDWATER AT THE EARTH'S SURFACE IS KNOWN AS SPRINGS***



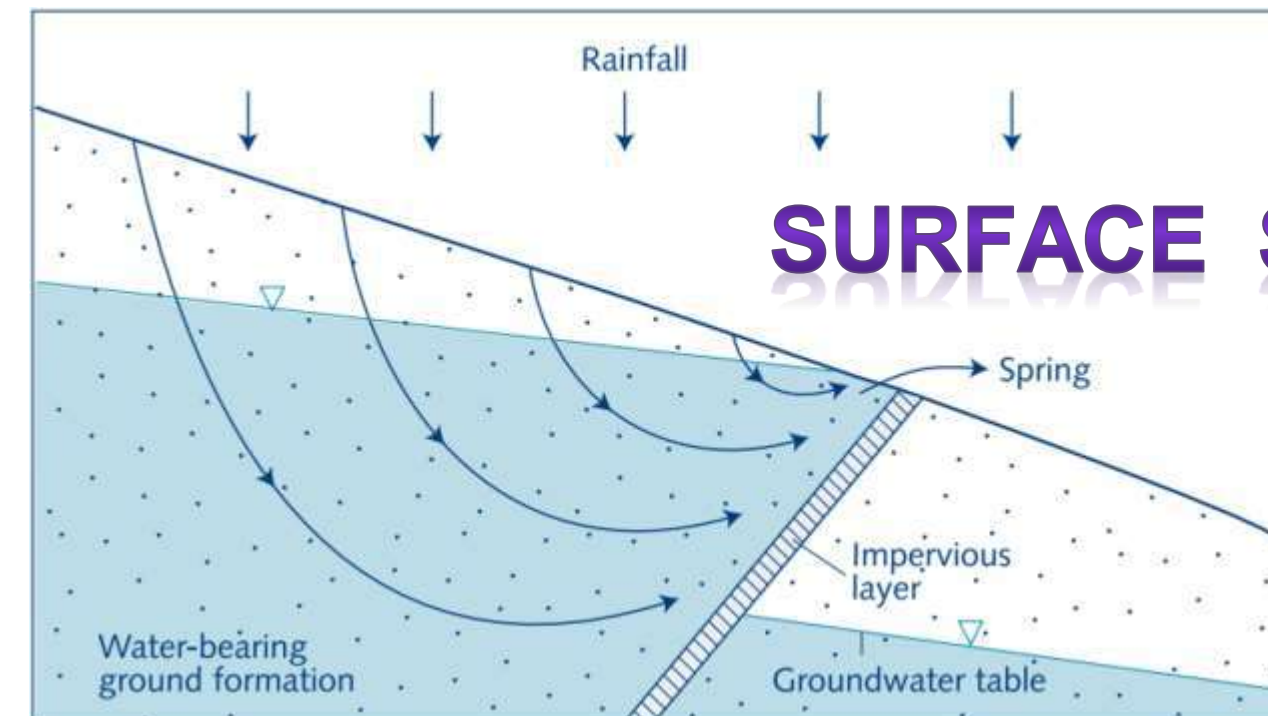




# TYPES OF SPRINGS

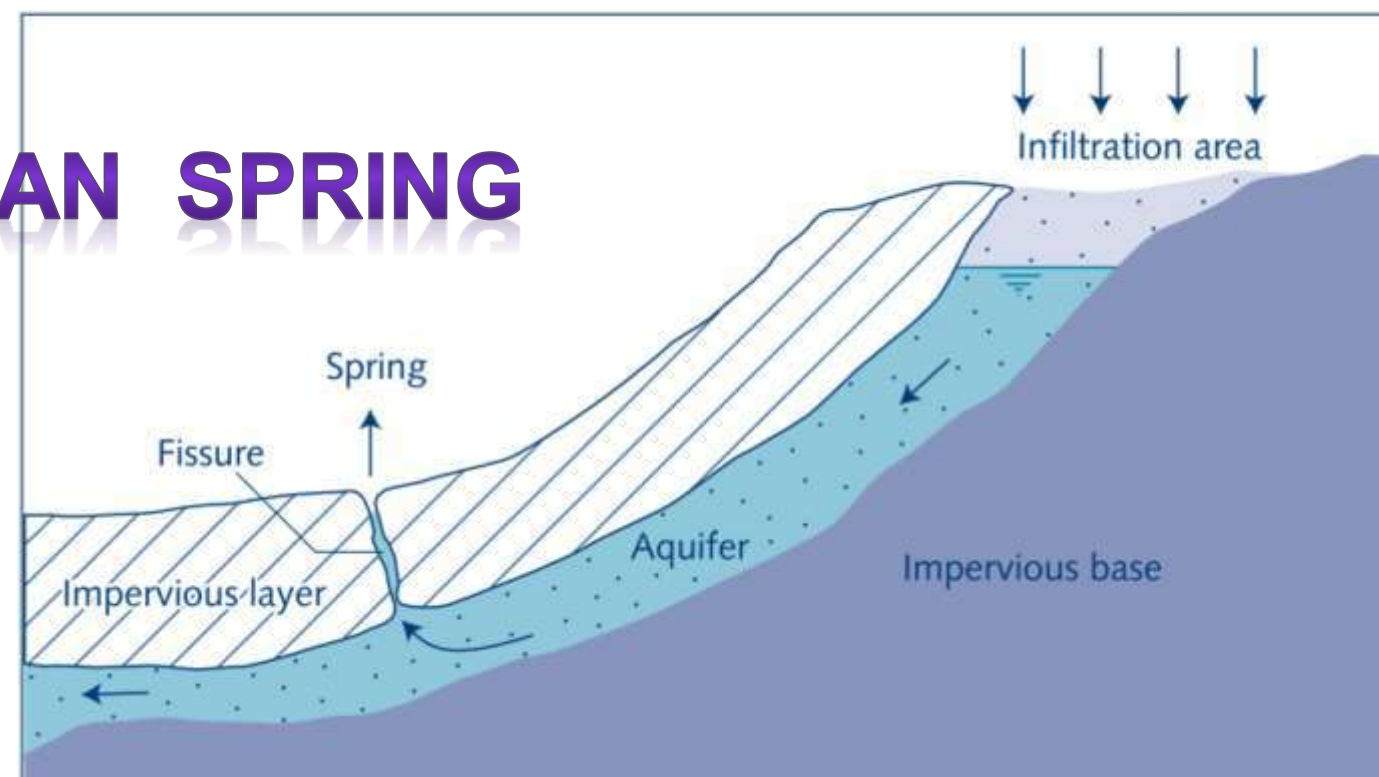


**GRAVITY SPRING**



**SURFACE SPRING**

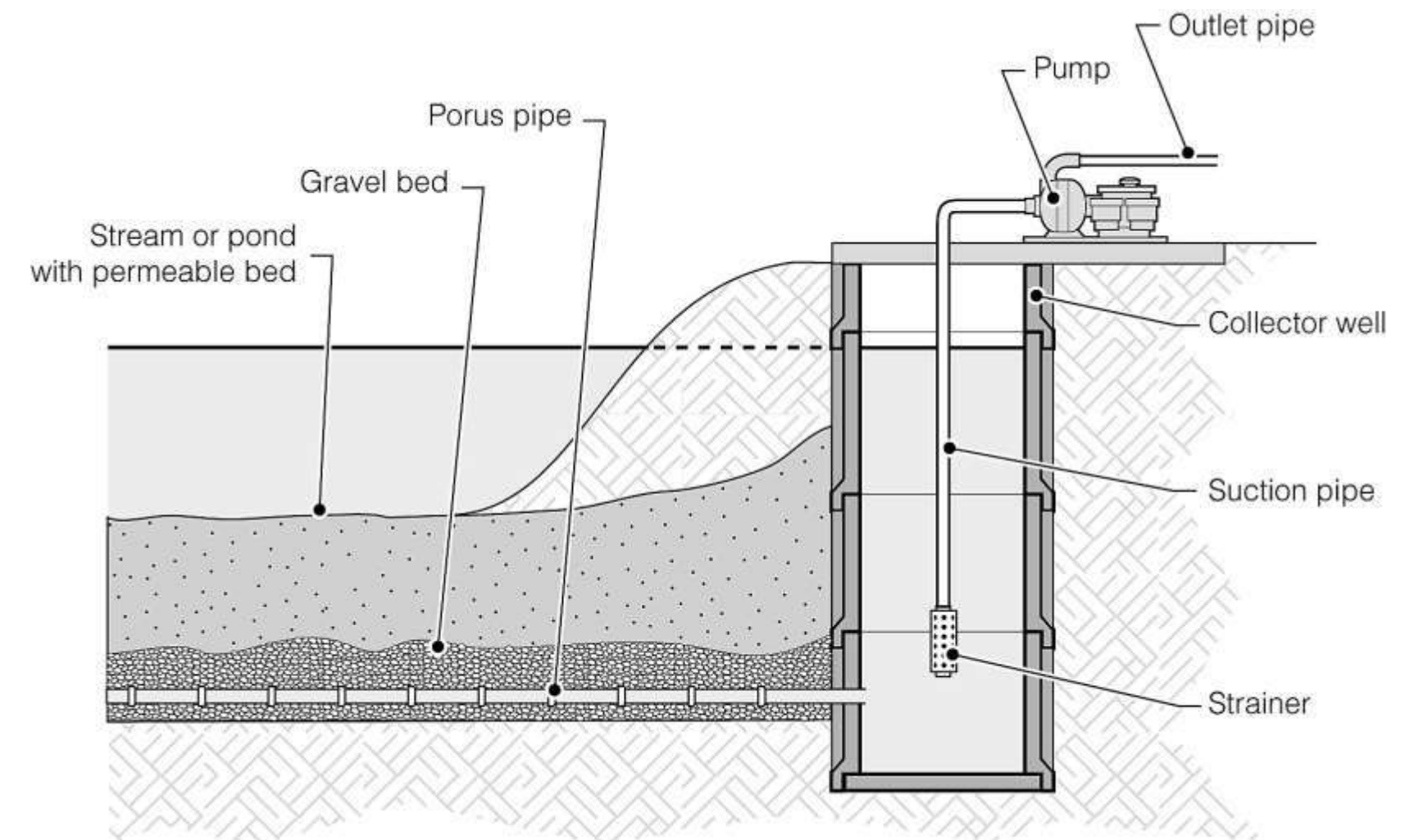
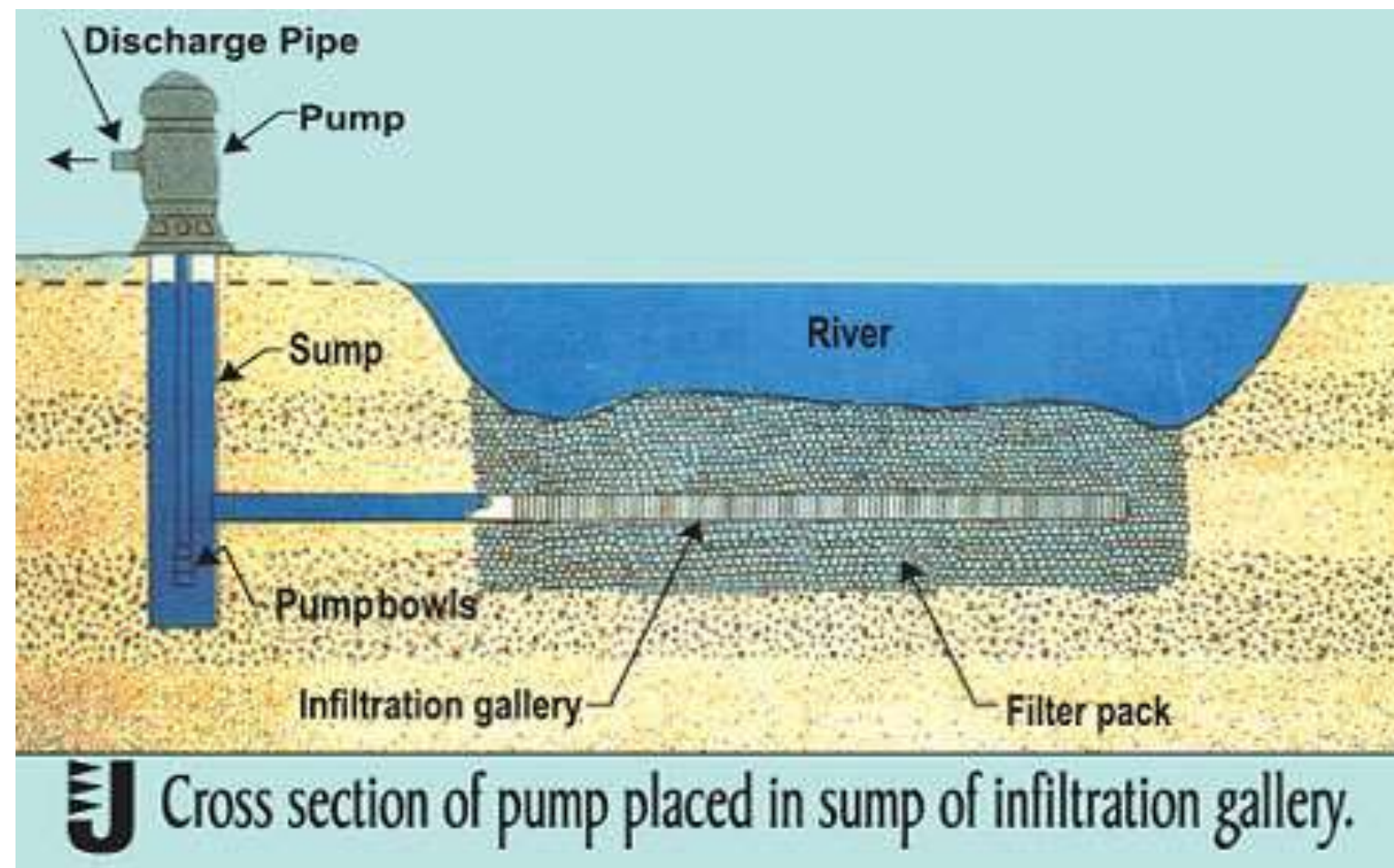
**ARTESIAN SPRING**







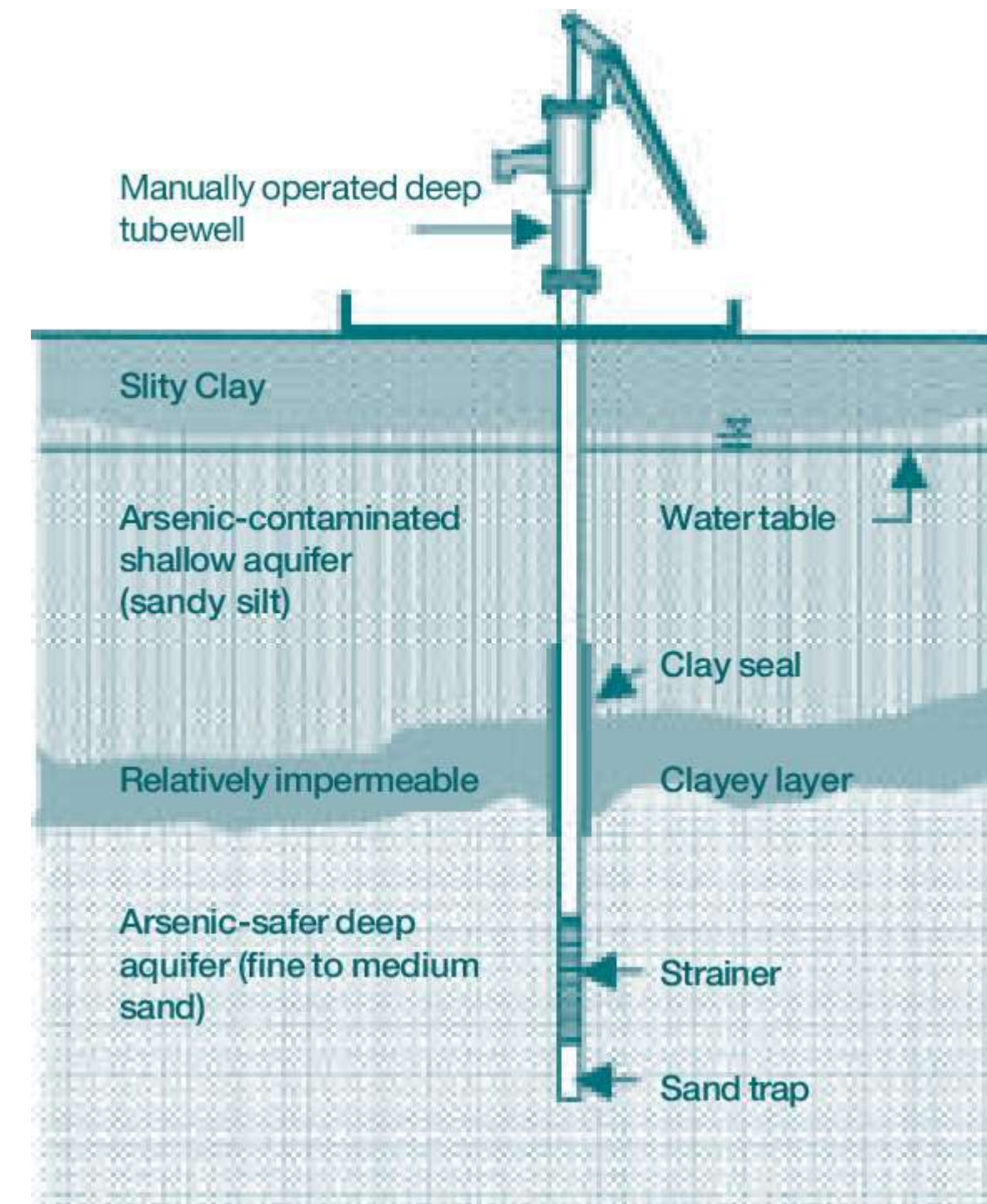
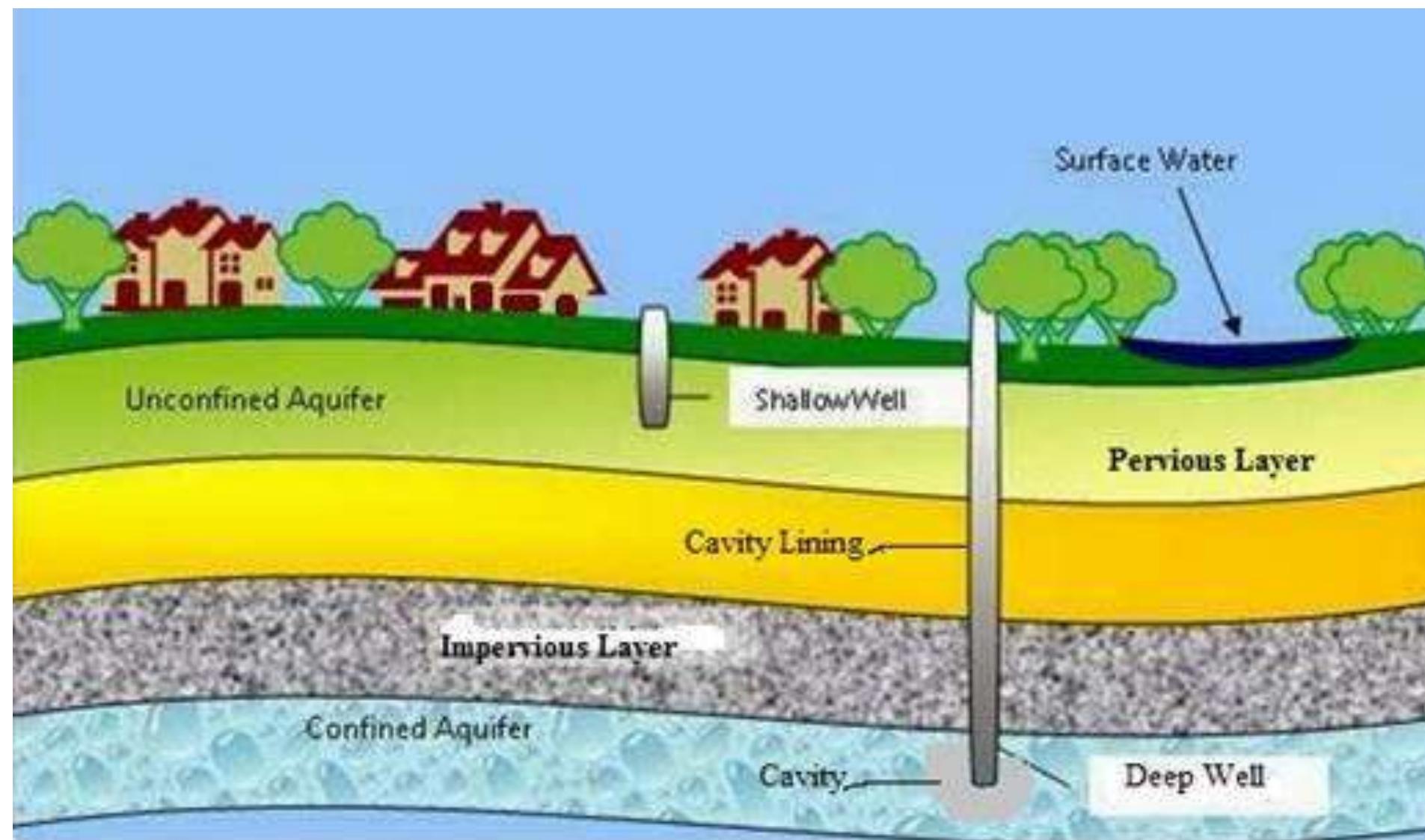
# INFILTRATION WELL AND GALLERIES







# WELLS







# Water obtained by reclamation



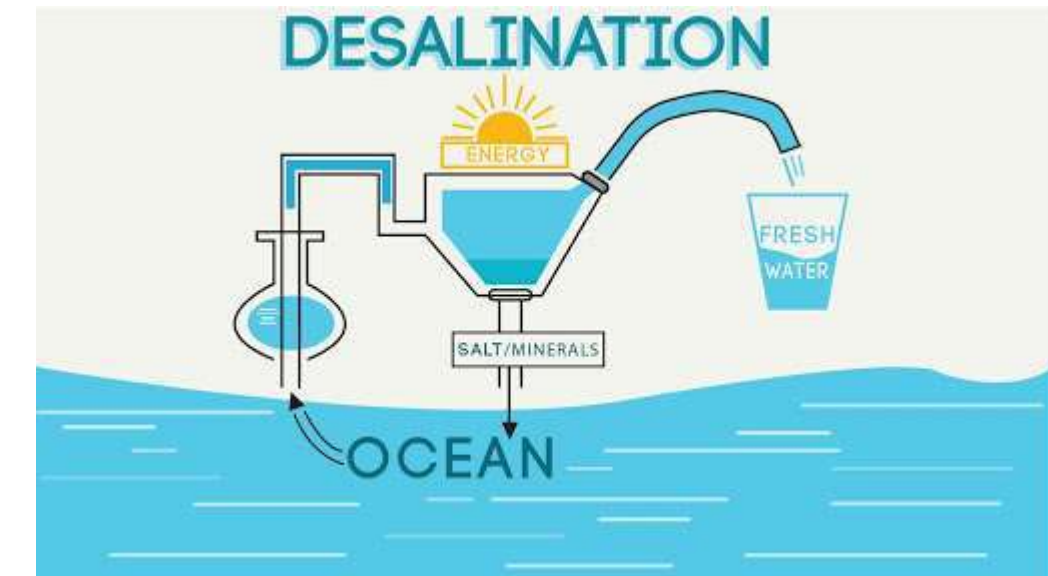
## ✓ Desalination

Saline or brackish water may be rendered useful for drinking purposes by- installing desalination plants..

The common methods used for desalination are: distillation, reverse osmosis, electrodialysis, freezing and solar evaporation.

## ✓ Re-use of treated waste water

Effluent or waste water can be treated suitably so that it may be re-used❖.





# References

- <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=2571>
- <https://www.britannica.com/technology/water-supply-system>
- <https://nptel.ac.in/courses/105/105/105105201/>

**NOTE: GARG, S.K., "ENVIRONMENTAL ENGINEERING"  
VOL. I & II, KHANNA PUBLISHERS,  
NEW DELHI, (REPRINT 2014).**





*Thank You*