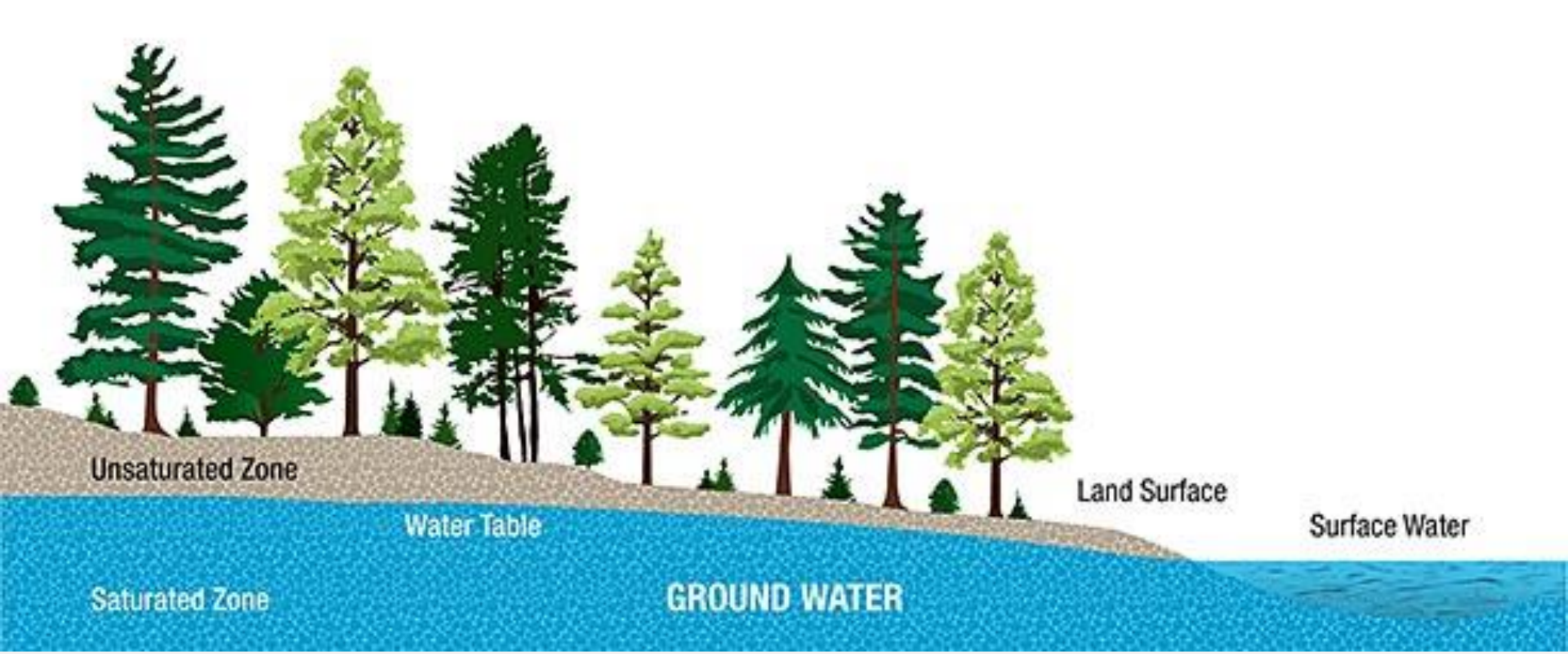
TODAY'S GOALS

- Groundwater
  - Physical environment
- At the end of the lecture, we should be able to understand the variety of groundwater resources and how they fit into the water cycle.

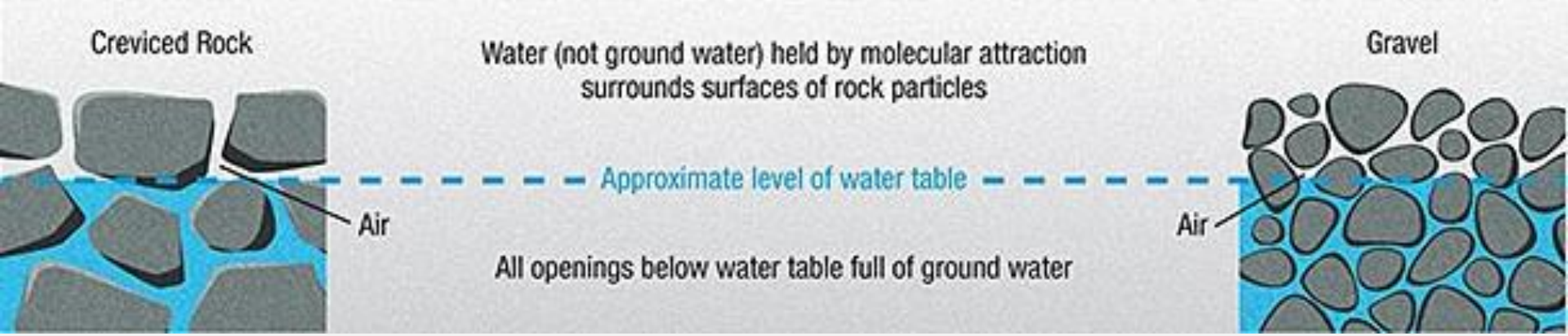
INTRODUCTION

- Groundwater



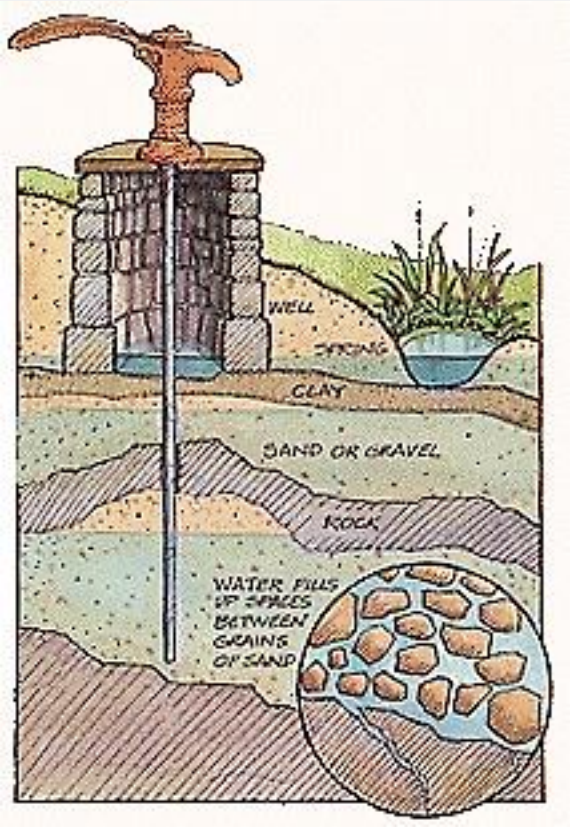
GROUNDWATER PHYSICAL ENVIRONMENT

- Unsaturated zone – the upper levels of the ground that are <u>not</u> completely filled with water
- Saturated zone – the lower levels of the ground that are full of water
- Water table – top of the saturated zone
- Recharge – when precipitation refills the groundwater
  - Quantities and rates of recharge depend on the type of soil and geologic materials
  - Porosity



GROUNDWATER PHYSICAL ENVIRONMENT

- Permeability – the ability for water to penetrate the ground
- Transmissivity – the rate of groundwater movement



Excessive groundwater pumping

- Depletion of groundwater – when the amount of groundwater is no longer sufficient for human use by pumping or to support the ecosystem
- Salt water intrusion – in coastal regions, ocean saltwater can enter the groundwater
- Land subsidence – groundwater removal causes the land above to gradually drop

DEMONSTRATION

- Comparison of the transmissivity (water flow rate) through two different simulated ground samples