

Copy Edit with Explanation (10%)

This attached chapter about groundwater needs to be edited before the EPA delivers the information to the document design team.

To copyedit this article, you will need to make decisions about spelling, capitalization, and abbreviations as well as to edit for consistency. Use a style manual and dictionary as you make copyediting decisions. Make a short **style sheet** indicating choices that involve editorial judgment and that might apply to this and related documents, even if the judgment is to leave the text as it stands. You will need to explain the editing and fact checking decisions you have made; a memo detailing your editing and style sheet must accompany this assignment.

You may be tempted to edit for organization and sentence structure. However, your supervisor has limited your responsibilities on this task to basic copyediting. You may, however, **query** the author if you see a confusing point of content.

You will also need to mark for graphic design according to these specifications:

title	boldface, centered, ulc
headings	bold, left justified, ulc,
paragraphs	flush left, ragged right, indent 2 ems

CHAPTER I. Introduction

Many people have never heard of ground-water. That's not really so surprising since it isn't readily visible ground water can be considered one of our "hidden" resources.

What Is Ground Water, and Where Does It Come From

Actually, ground water occurs as part of what can be called the oldest recycling program the **hydrologic cycle**. The

hydrologic cycle involves the continual movement of water between the earth and the atmosphere through evaporation and precipitation. As rain & snow fall to the earth some of the water runs off the surface into lakes, rivers, streams and the oceans; some evaporates and some is absorbed by plant roots. The rest of the water soaks through the ground surface and moves downward through the **unsaturated zone**, where the open spaces in rocks and soil is filled with a mixture of air and water, until it reaches the

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water table. The water table is the top of the **saturated zone**, or the area in which all inter-connected spaces in rocks and soil are filled with water. The water in the saturated zone is called **ground water**. In areas where the water table occurs at the ground's surface, the ground-water discharges into marshes, lakes, springs, or streams and evaporates into the atmosphere to form clouds, eventually falling back to earth again as rain or snow - thus beginning the cycle all over again.

Where Is Ground Water Stored?

Ground water is stored under many types of geologic conditions. Areas where ground-water exists in sufficient quantities to supply wells or springs are called **aquifers**, a term that literally means "water bearer". **Aquifers** store water in the spaces between particles of sand, gravel, soil, and rock as well as cracks, pores and channels in relatively solid rocks. An aquifer's

storage capacity is controlled largely by its **porosity**, or the relative amount of open space present to hold water. Its ability to transmit water, or **permeability**, is based in part on the size of these spaces and the extent to which they are connected.

Basically, there are two kinds of aquifers: **confined** and **unconfined**. If the aquifer is sandwiched between layers of relatively impermeable materials (i.e., clay), it is called a confined aquifer. Confined aquifers are frequently found at greater depths than unconfined aquifers. In contrast unconfined aquifers are not sandwiched between these layers of relatively impermeable materials, and their upper boundaries are generally closer to the surface of the land.

Does Ground Water Move

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Ground water can move side-ways as well as up or down. This movement is in repose to gravity, differences in elevation and differences in pressure. The movement is usually quit slow, frequently as little as a few feet per year although it can move as much as several feet per day in more per- meable zones. Ground water can move even more rapidly in karst aquifers, which are areas in water soluble lime stone and similar rocks where fractures or cracks have been widened by the action of the ground-water to form sinkholes, tunnels, or even caves

How Is Ground Water Used?

According to the U.S. Geological Survey, ground-water use increased from about 35 billion gallons a day in 1950 to about 87 billion gallons a day in 1980. Approximately $\frac{1}{4}$ of all fresh water used in the Nation comes from ground water. Whether it arrives via a public water supply system or directly from a private well, ground water ultimately provides approximately 35 percent of the drinking water supply for urban areas and 95 % of the supply for rural areas, quenching the thirst and meeting other household needs of more than 117,000,000 million people in this nation.

Overall, more than one-third of the water used for agricultural purposes is drawn from ground water. Arkansas, Nebraska, Colorado, and Kansas use more then 90 percent of their groundwater withdrawals for agricultural activities. In addition approximately thirty percent of all ground-water is used for industrial purposes.

Ground-water use varies between the states, with some states, such as Hawaii, Mississippi,

Florida, Idaho, and new Mexico, relying on ground water to supply considerably more

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than three-fourths of their household water needs and other states, such as Colorado & Rhode Island, supplying less than one-quarter of their water needs with ground water..

Ground-Water Quality

Until the 1970's, ground water was believed to be naturally protected from contamination. The layers of soil and particles of sand, gravel, crushed rocks, and larger rocks were thought to act as filters, trapping contaminants before they could reach the ground water. Since then; however, every State in the nation has reported cases of contaminated-ground water, with some instances receiving wide-spread publicity. We now know that some contaminants can pass through all of these filtering layers in to to the saturated zone to contaminate ground water

Between 1971 and 1985 245 ground- waterrelated disease outbreaks, with 52,181 associated illnesses, were reported. Most of these diseases were short term digestive disorders. About 10 % of all ground-water public water supply systems are in violation of drinking water standards for biological contamination. In addition, approximately 74 pesticides, a number of which are known carcinogens, have been detected in the ground water of thirty-eight states. Although various estimates have been made about the extent of ground-water contamination, these estimates are difficult to verify given the nature of the resource and the difficulty of monitoring it's quality.

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Style sheet

List Dictionary consulted:

List Style manual consulted:
(From EPA.gov—errors introduced)