

Sample Research Paper

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A complete heading is provided.

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The title is centered.

The Ogallala: Preserving the Great American Desert

Double spacing is used throughout the paper.

Long ago, the middle of the North American continent was a treeless prairie covered by tall grasses and roaming buffalo. When European settlers came, they called this area the Great American Desert. Today, this "desert" is covered with fields of wheat, corn, and alfalfa made possible by center-pivot irrigation. My grandfather used to sell center-pivot systems, and when my family drove to my grandparents' home in Nebraska, we would count how many "sprinklers" were watering each section of land. At the time, I didn't know that this water was being pumped from something called the Ogallala Aquifer, a huge underground water supply. Throughout the years, this aquifer has made the Great American Desert one of the best farming areas in the world. Unfortunately, the Ogallala Aquifer's future as a valuable resource is in jeopardy, unless citizens of the Plains states reduce their water consumption.

The writer introduces her subject and states her thesis (highlighted).

Subheadings help readers follow the organization.

Background of the Problem

To understand why the problem is important, it is necessary to know some basic facts about the Ogallala Aquifer. This underground reservoir covers 174,000 square miles. According to John Opie, author of *Ogallala: Water for a Dry Land*, the Ogallala was formed over the course of millions of years. The land flooded, dried out, and flooded again. As the glaciers melted, carrying water, silt, and rock

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Because the authors are named in the text, only the page numbers are cited in parentheses.

down to the Great Plains to form the Ogallala. Dirt, clay, and rocks accumulated above it so that the waters of the Ogallala can now be reached at depths of 300 feet beneath the surface (29-35). Some people think that the Ogallala is a huge underground lake, but this idea is wrong. As Erla Zwingle puts it, an aquifer such as the Ogallala is like a "gigantic underground sponge" (83). The water fills in the spaces between the sand, silt, clay, and gravel that make up the Ogallala formation. This gigantic sponge ranges in thickness from one foot to more than 1,000 feet; the average thickness, however, is about 200 feet (Zwingle 85). The aquifer reaches its deepest points under the state of Nebraska, which is not surprising because most of the Ogallala's water lies beneath this state. The rest lies under Colorado, Kansas, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming.

A quotation helps readers visualize the size of the aquifer.

The Ogallala Aquifer is the largest "underground sponge" in the United States. It contains more than 977 trillion gallons, or three billion acre-feet of water. (An acre-foot is 325,851 gallons, or the amount of water it would take to cover an acre to the depth of one foot.) According to Jack Lewis in the *EPA Journal*, the water contained in the aquifer is enough to fill Lake Huron plus one-fifth of Lake Ontario. "If pumped out over the United States," Lewis writes, "the High Plains aquifer would cover all 50 states with one and one-half feet of water."

The main problem is identified and then explored in detail.

The Nature and the Extent of the Problem

Each year, at least 7.8 trillion gallons of water are drawn up from the Ogallala Aquifer to irrigate the crops planted on the High Plains. These crops are the main food source for our entire country. Tragically, irrigation is depleting the aquifer faster than it can replenish itself, and that is the problem. In fact, only the tiniest fraction of the water is ever replaced in the

A question serves as a transition to a new paragraph.

Multiple sources of important facts are cited in a paragraph.

A long quotation is introduced.

A quotation longer than four lines is indented on each (ten) spaces.

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Ogallala Aquifer. If the water were ever fully depleted, the aquifer would need 6,000 years to refill naturally (Zwingle 83). The only way the Ogallala can be replenished is by water seeping down through the layers of soil until it reaches the aquifer. This water comes from the small amount of precipitation in the region, as well as from streams, reservoirs, canals, and irrigation (McGuire and Sharpe).

A question serves as a transition to a new paragraph.

— How serious is the problem? Since 1930, the aquifer's water has been reduced by 11 percent (Lewis). The volume of water has decreased because the use of irrigation has increased so much since World War II. In 1949, 2.1 million acres were under irrigation. In 1969, the amount of irrigated land rose to 9.0 million acres; and in 1978, it rose to 13 million acres (McGuire and Sharpe). The land presently under irrigation in the Texas Panhandle alone is equal to the size of New Jersey (Thorpe). All of this land is supplied by irrigation wells, and the number of wells has exploded over the decades—from just 170 in 1930, to more than 150,000 today (Nebel and Wright 279).

Multiple sources of important facts are cited in this paragraph.

A long quotation is introduced.

— The biggest technological advance that has made this irrigation explosion possible is the center-pivot irrigation system. John Opie explains the system:

A quotation longer than four lines is indented one inch (ten spaces).

The center pivot is a 1300-foot-long pipe that is held eight feet off the ground by a row of seven or more towers on large wheels. Sprinklers are attached at regular intervals along the pipe, pointing up or down. One end of the pipe is set in the middle of a 160-acre quarter section around which the pipe and wheeled towers circle. (146)

The water pumped through the pipe triggers a mechanism that causes the system to roll in a large circle. All of the crops within the circle receive a generous amount of water.

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"Works Cited" is centered one inch from top.

Sources are listed in alphabetical order.

Second and third lines are indented five spaces.

Double spacing is used throughout.