

Blue World



I moved to eastern Texas from Michigan, a peninsula nestled safely within the deep blue waters of the Great Lakes. It is a common saying in northern Michigan that one is never more than a mile away from water. Cool, clear water that rushes in creeks, rivers and lakes. Drawing from little more than one hundred feet below the Earth's surface, sweet cold water filled my glass at the kitchen faucet.

In Leon County, Texas, water is delivered to my home and the neighboring ranches via a web of water lines buried along county roads; the water is drawn from the Carrizo-Wilcox Aquifer via deep wells managed by the Flo Community Water Supply Corporation ("2004 Annual"). The rains this year in Texas have not come as they should and by mid-2005, the Flo CWSC mailed several notices to its customers, announcing that rates would be increased (29 June 2005) even as water rationing was to commence ("Customer Notice"). The third missive was a notification to boil water "[t]o ensure destruction of all harmful bacteria and other microbes" ("Boil Water").

Now, nearly six months later, the drought of 2005 wears on. Because my mom is undergoing chemotherapy treatment and it has been suggested such patients not drink the water ("2004 Annual"), I purchase every drop of consumable water in gallon jugs, which reinforces the glaring fact that I have taken water for granted. Waiting in line to pay for this new treasure, I and the growing number of others who purchase bottled water face the same realizations: We are not alone in this dilemma and there is no one to blame but ourselves. To keep Earth blue, sustaining life of all kinds, preservation of our water resources must begin in the home.

Sandra Postel, world-renowned expert on water issues, explains in her book "Pillar of Sand," that irrigation of farmland continues to pose the most serious threat to our world's water resources. Irrigation has occurred since 4,000 BC Mesopotamia (present-day Iraq), where the plains between the Tigris and Euphrates Rivers became known as the Fertile Crescent (4). This prosperity eventually spiraled into ruin, with the accumulation of salts in the soils, and silt carried by the sustaining water, irrigation's all too familiar pattern of damage (5).

In California, the manipulation of water has been saturated with political machinations and swindles that take greed to an entirely new level,

as detailed by Marc Reisner in the classic "Cadillac Desert." Although the Central Imperial Valley in Southern California receives a mere three inches of rain per year (Wekesser 13), rice paddy fields--as well as other water-intensive crops such as livestock and alfalfa--are grown with diverted Colorado River water that courses across the desert via canals. Agriculture uses 85% of the water in the Golden State, but contributes a mere 2.5% to the Californian economy (Reisner, "Force Agriculture" 40-41).

Irrigation also occurs in the central United States, the source a flowing river underground. Postel states the Ogallala Aquifer "spans portions of eight states, covers 453,000 square kilometers, and--prior to development--held 3,700 cubic kilometers of water, a volume equal to the annual flow of more than 200 Colorado Rivers" ("Pillars" 59-60).

The problem is that the Ogallala lies beneath the one hundredth meridian, a dry line that begins in the Dakotas and bisects the country through Abilene, Texas. Massive amounts of water are pulled from the aquifer with powerful centrifugal pumps to irrigate our nation's "breadbasket," an area that receives less than twenty inches of rain a year (Reisner, "Cadillac" 3). What took centuries of the Ice Age to create has been squandered in a mere 40 years (Glennon 25-26), and Reisner is blunt in his assessment: "It is a dead certainty that the Ogallala will begin to give out relatively soon" ("Cadillac" 455).

While agricultural irrigation uses the most water, urban waste is another major threat to our water resources. Nowhere is this better exemplified than the illusion of the San Antonio River Walk, a tourist attraction now more popular than the Alamo. In "Water Follies," Robert Glennon informs us that in 1900, also a year of drought, the San Antonio River went completely dry. By 1911, water from the Edwards Aquifer began to be pumped directly into the channel *to support the flow of the San Antonio River*. This practice continued for nearly a century, until the city began to route recycled waste water into the river instead (87-89, 95).

There are currently 1.4 million people in San Antonio, a number expected to double in the next twenty years (89). Because the city relies almost completely on the Edwards Aquifer for its water supply, San Antonio is seeking alternate sources, with plans to pipe water from the Carrizo-Wilcox Aquifer, a resource 120 miles to the northeast (Glennon 94-95). This means that residents of Leon County, Texas will be sharing with those living in San Antonio ("2004 Annual").

Glennon states flatly that we all have an "unlimited human capacity to ignore reality" (12). Never mind for the moment the extinction of species, the idea of which somehow causes the eyes to glaze over with a complete lack of empathy. It is this same failure of vision, as well as our innate inaction, that has depleted our water sources thus far, creating damage without thought as we satisfy every want.

"The typical American diet," Postel informs us, "with its large share of animal products, requires twice as much water to produce as nutritious but less meat-intensive diets that are common in developing countries and some Asian and European nations." Grain that could sustain humans is fed to cows, to pigs, to chickens. Postel maintains that by reducing water usage through a diet less heavily reliant on animal meat, twice as many people in the world could be fed with the same resources, preserving the water savings for regeneration of damaged ecosystems ("Pillar" 260).

Estimated amount of water required to produce crops and livestock

Legend for Chart:

A - Crop or livestock

B - Water required (liters per kilogram)

A	B
CROP	
Soybeans	2000
Rice	1600
Sorghum	1300
Alfalfa	1100
Wheat	900
Corn	650
Potatoes (dry)	630
Millet	272
LIVESTOCK	
Broiler chicken	3500
Pig	6000
Beef cattle	43,000
Sheep	51,000

(Pimentel 12)

Consider the statuesque, white french fry that protrudes from the super-size box at McDonald's. The main suppliers of french fries will only purchase Minnesota potatoes grown with supplemental irrigation. This is because only potatoes saturated with water will grow uniformly, without blemishes or discoloration. Yet more water is then needed to prepare the potatoes prior to shipment, for arrival in optimum condition to the restaurants' freezers. The aquifers and river systems in Minnesota are being emptied at a rate of "600 million gallons per year" to create the perfect McDonald's french fry (Glennon 145-152).

Many Americans on the dry side of the one hundredth meridian prefer to enjoy a bright green lawn. They want turquoise blue swimming pools. No one would expect to downhill ski in Florida and yet golf courses abound in

Arizona, lush greenways scarring the desert, fountains of liquid gold sparkling from manmade water hazards. Recycled water may be used for irrigation of the greens, but the point remains: Why use this precious commodity, even if it is recycled water, to grow grass in the desert?

We are a spoiled, disposable society, where convenience takes precedence over the economy of water. It takes "more than 50 times its weight in water" to manufacture an automobile (Postel, "Last" 190). How much water-cost would be applied to the manufacture of a pair of shoes, or the plastic cover encasing a music CD?

Finally, what of the animals and plant life that have as much right to live and thrive on this planet as does humanity? Barbara Kingsolver, respected author and environmentalist, lives near the San Pedro Riparian National Conservation Area in southern Arizona. Named by The Nature Conservancy as one of Earth's Last Great Places, this area is home to "82 species of mammals...43 kinds of reptiles and amphibians...(and) 385 species" of birds. The Fort Huachuca army base is also nearby, as is the burgeoning city of Sierra Vista. The fort has made some progress with conservation, but the city's deep-water wells continue to drain the same aquifer that feeds the San Pedro River. In her National Geographic article, Ms. Kingsolver relates that beavers once lived along the San Pedro, creating dams that in turn formed grassy pools shadowed by green cottonwoods, all in the heart of the desert. The beaver are gone, as are eleven of the thirteen species of fish native to the San Pedro River (Kingsolver).

John Muir, the noted environmentalist, claimed his preservation actions were "rooted in aesthetic truths impermeable to scientific scrutiny and only understandable to the heart" (Feldman 37). A colorful stance to be sure, but in it the ultimate truth. Individuals, themselves forming the makeup of corporate agriculture, industry, and urban growth, must look beyond personal interests, comfort, and gain; water rights belong to all life on this planet, not just human life (38).

Some may agree that humans are wasteful, but they will argue that we are innovative and resourceful, continually developing technologies to overcome the basic problems of groundwater depletion. Water is recycled within closed systems for industry, so that the same water is used repeatedly (Postel, "Last" 137). Drip systems and other innovative water-conserving irrigation methods are now in use in many parts of the country and the world (101-103). Massive wastewater recycling facilities are being constructed in Southern California (Adler 53-54). Many would claim we are good stewards of our blue planet. We are already saving the world.

In actuality, the world is not being saved fast enough. Nature moves slowly. Glennon feels damage already done to rivers and wetlands from the pumping of aquifers may not be evident for many years, and that the long term future of our rivers and streams does not look promising (212).

Since it has been for the benefit of humans to waste the water, so it should follow the efforts of humanity are required to preserve our remaining resources. "Because of the size of the human population," Postel argues, "even small changes in individual consumption can have a large collective impact on the environment" ("Pillars" 260).

Water is a healthful necessity for our bodies, many do not drink enough water each day, and reduction in personal consumption is not suggested. Instead, basic household conservation techniques, while not glamorous, are known to prevent water waste.

Water-saving shower heads, faucets, and toilets should be installed in homes; leaking faucets should be replaced. Water-efficient washing machines and dishwashers are readily available.

CHANGES OF HABIT	
	Turn off the faucet while brushing teeth
	Catch rainwater from the roof for landscape watering
	Two inches of water in the sink is enough to wash dishes
	Enjoy a meat-free day once per week
	Recycle at every opportunity
	Use your vehicle one more year than planned
	Choose organic meat and produce

Consumer choices are an effective way to voice opinions (Fisk par. 8). When purchasing water in the store, choose "artesian" rather than "spring" water. They are essentially identical, but the latter is harmful, requiring the source be close to a fragile river or spring. Cut back on consumption of french fries (Glennon 224) and meat; if vegetarianism is not an option, choose organic meat, as organic farms by their nature operate ever mindful of the environment (Pennybacker par. 6).

We are powerful when motivated. In the "Consumption Manifesto," a sensible list of principles to follow, Umbra Fisk suggests voting with the environment foremost in mind, so that environmental issues become equally important to local and national political representatives. Lawmakers in North Carolina have approved a plan to build a rainwater collection system; precious water falling on the roofs of governmental buildings will be diverted to cisterns for controlled irrigation of the grounds ("No Drips").

Some city water boards offer rebates toward the purchase of water-saving home devices. Other programs involve incentives to plant "low-water trees and shrubs," and to use water-saving lawn irrigation systems. Some municipalities just raise the water rates, which provides further incentive to conserve (Romeo). Tucson has decreased its per capita water usage rate from 205 gallons per person per day to 165 gallons, just by implementing water-wise landscape ordinances (Kunzler, par. 7).

"[O]ur uses of water are not sustainable over the long term" (Glennon 211) and preservation must begin at once. This need not be a daunting task, a few simple changes of habit will result in many gallons of water saved, resources that will then be used by a man, woman, child or fish in the future.

The rancher down the road, a youthful lady of 70, is stoic when she tells me her hay production this year is reduced by half: "Water is becoming a critical issue too. Two of our tanks are dry and the others aren't looking very good" (Graham). The lake next to my pasture is down five feet from normal, but walking beyond its shores, I find a spring that seeps even now, in this driest of times. The seep trickles over clay to join other springs, to form a creek that is replenished with the slow patience of nature from the underground rivers, the aquifers.

Despite the drought, water restrictions have been lifted by Flo CWSC ("Customer Notice"), but the question of possible contaminants in the water remains. Therefore, I continue to be a consumer of bottled water. According to the label, I am enjoying Fort Worth's municipal water, which is very likely drawn from the Ogallala Aquifer. If I purchase Perrier's Ice Mountain brand water, I may drink water bottled in Mecosta County, Michigan (Glennon 11), a handful of miles from where I once lived!

It is a parasitic cycle, as the aquifers continue to be depleted, as the rivers dry. Water preservation must begin now as our blue world pales to brown.

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