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The impending urban water crisis

There'd be plenty of water, if only our fastest-growing cities weren't in deserts. We'll need creative fixes, fast

BY WILL DOIG



TOPICS: DREAM CITY, EDITOR'S PICKS, LIFE NEWS



(Credit: iStockphoto/Davel5957)

In January, the town of Spicewood, Texas, **ran out of water**. It's a scenario virtually unheard of in modern America, but the state's worst drought in half a millennium changed that. Now, four times a day, a 7,000-gallon truck rolls into town, a sort of liquid life-support system that's the only thing preventing a full-scale evacuation.

That's not going to work in Las Vegas. Nevertheless, Vegas' main water source, Lake Mead, is nearly tapped out. The water level there will soon drop below one of the city's two pipelines. So they're building a third pipe, except this one will come up from

How should we build the cities of our dreams? How do we create the urban spaces which reflect our values and the ways we want to live? In cities around the world, the future is being created now and Henry Grabar will chronicle the most exciting and innovative ideas. Follow him on Twitter at [@henrygrabar](#).

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It's a slo-mo '70s disaster flick that seems too improbable to panic about — cheap, clean water-on-demand is, after all, practically an American birthright. But another birthright (one that we've exercised liberally) is the right to move to illogical places: car-dependent exurbs, coastal flood plains and, most recently, very dry cities. Of the past decade's 10 fastest-growing metro regions, three get less than 15 inches of rain a year, and several of the others are prone to severe dry spells. Yet these cities have grown as if they had all the rain in Seattle — complete with omnipresent lush lawns, swimming pools and golf courses — just as climate scientists are predicting that they're about to get even drier.

"When I talk to water utility people, one of the things I say to them is, 'I bet most of you aren't planning how to manage your water demands with 20 percent less than what you have now,'" says **Charles Fishman**, author of "The Big Thirst." "If you don't have a plan for that, you're in trouble."

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You'll find Fishman's book in the nature section at Barnes & Noble, but it's really about urban planning. Because the creeping hydro-crisis has nothing to do with "running out of water." The earth has the same amount of water as it had 4 billion years ago, and it always will. "It's all Tyrannosaurus rex pee," says Fishman with a laugh. The water's recycled endlessly through the clouds, but it's the way we've built that's made it seem scarce — with industry, farming and cities in places where there's not enough water to support them, but still demanding more every year.

Luckily, an urban-planning problem can be mitigated with urban-planning solutions, and cities are blazing the trail — including, believe it or not, Sin City itself. Today, Vegas is soaked in "reclaimed water," water that's been used once and then purified for another go-round. It waters the golf courses and washes the thousands of hotel bed sheets. Even the pond at Treasure Island, where the nightly pirate-ship battles take place, is filled with water that the hotel's guests have brushed their teeth with. (It gets run through a treatment plant under the casino.)

But even reclaimed water has a way of vanishing in a place where the sun shines 300 days a year — some estimates suggest Lake Mead loses half its water to evaporation. One solution? Store it underground, says Tom Brikowski, professor of hydrology at the University of Texas-Dallas. "It could work in a lot of places and it's starting to be done now." For instance, Tampa, Fla., is trying it out with a method called **aquifer storage and recovery**, pumping water into the earth when it rains, then extracting it during the drier months.

It's an artificial version of how Los Angeles' water supply operates naturally. California



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California cities. Climate change is wreaking havoc on this system. “We depend on that water staying up in the mountains as snow through August,” says Andrew Schwartz, an engineer for the state’s Department of Water Resources. “Now, a lot of the precipitation that used to fall as snow is falling as rain, and the stuff that still falls as snow is melting faster.”

Making things worse, on its way south, this water flows through the Sacramento-San Joaquin Delta. The rising sea levels are turning the delta saltier, rendering some of the water undrinkable. It’s a one-two punch that California may try to fight with what Schwartz says would be “the biggest construction project in the country,” an enormous water tunnel that would bypass the delta and head to cities in the southern part of the state.

Such a project would cost billions. Changing a city’s culture is far cheaper, and while California is reasonably water conscious, in San Antonio, conserving water is a religion. In the ’90s, the city was sued by the Sierra Club for draining the Edwards Aquifer. The aquifer happens to be the home of the Texas blind salamander, an endangered amphibian. A small culture war ensued, but after a few years of predictable hippies-versus-cowboys animus, something incredible happened: San Antonio became a capital of conservation chic. Low-flush toilets became status symbols, and overwatering your lawn could get a person ostracized. Water consumption dropped from 200 to 130 gallons per person per day. And suddenly, droughts that crippled neighboring cities weren’t affecting San Antonians. “I hate to say ‘big government,’” says Brikowski, “but these regional plans where everyone shares the sacrifice are pretty effective.”

Compare that to Brikowski’s hometown of Dallas, the “water hog” of Texas, where no such stigma exists, and the average resident uses more than twice as much water as a San Antonian. Between 1980 and 1999, as other big Texas cities slashed their water consumption, Dallas’ grew by 35 percent. And now Dallas, like Vegas, is looking for water elsewhere — specifically, east Texas and Oklahoma. “It’s not that they need the water to survive,” one irate east Texan **told** the Wall Street Journal. “What they want is to destroy our wildlife so they’ll have enough water for their grass.”

The kicker is this: Dallas isn’t even that parched. It typically gets only a few inches less rain than Boston each year, and even during last year’s epic drought, it still got 26 inches. Likewise, Florida. The so-called Sunshine State gets tons of rain yet suffers from water shortages, says Fishman, simply because they don’t bother to use it. “Forty-eight inches of water fall as rain on every square foot of Florida. They gather it, put it in a drain, and ship it right out to the ocean. And then they take their water supply from an aquifer under the state, and that aquifer is tapped.”

In other words, it’s not the water that’s bad, it’s the system. “The system is set up to dispose of storm water, and then there’s a vast, separate infrastructure that depends on groundwater,” says Fishman. Unifying these systems — drinking water, wastewater and storm water — could transform a city from one with chronic water shortages to an oasis of hydration.

There’s nothing icky about it. Dallas’ wastewater is so fit for reuse that another city drinks it — Houston, 250 miles down the Trinity River, where Dallas dumps its wastewater. People grimace at the phrase “toilet-to-tap,” a water-treatment option that’s spawned many a **gross-out news story**. But lots of us drink such water already. “The water in Houston has been through Dallas toilets,” Brikowski says bluntly.

If rivers like the Trinity can move water from city to city, why can’t we? Could waterlogged Baton Rouge send its overflow to Oklahoma City? Believe it or not, the idea has been floated. Patricia Mulroy, Las Vegas’ celebrated water czar, wants the U.S. to construct transnational canals to transport water from the Mississippi Valley to the dusty Midwest.

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economic growth occurs in the future — shifting, for instance, the balance of prosperity from the Sun Belt back to the Rust Belt. And it might not be too far off. Because while the average person may not think much about the future of water, says Fishman, “these huge corporations have water security on their top-five lists of critical issues.”

Till then, small changes can make a big difference. Fishman recalls how, in the 1950s, Hong Kong, just beginning to industrialize, mandated that its toilets be flushed with seawater. Today, the city’s population has quadrupled, and 80 percent of its toilets still work that way. Because of one forward-thinking tweak, today Hong Kong saves 73 billion gallons of water a year. “That would supply a city of 2 million,” says Fishman — the population of Las Vegas, it just so happens. “It’s a perfect example of how organization can have a huge impact on outcome.”



Will Doig writes the *Dream City* column for Salon

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