

WATER WATER EVERYWHERE

(only so much to drink)

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Remember the ancient mariner? Well, we aren't him.



"Water, water everywhere, and not a drop to drink," wrote Samuel Taylor Coleridge - a poet, but what do they know? It takes a hydrogeologist, perhaps, to give you the lowdown on the well.

"No, we're not going to run out of water, and yes, we have enough for everybody," both now and in the future, says hydrogeologist Greg Rawl, a consultant on water resources in Southwest Florida, echoing the opinions of other experts, too.

"But," he adds, "it all boils down to the same old thing: Cost. We're used to cheap water. We're water rich when we don't want the water, and water poor when we do. To change some of that, we're going to have to pay more."

While Cape Coral officials (of necessity, most say) led the way last week in redefining the meaning of Water Police - open a spigot at the wrong time and make an immediate, generous contribution to the city coffers - you could almost hear the drawing down of our underground aquifers, as roughly 600,000 Lee County citizens kept sucking at the straw, or letting their tropical plants and emerald green lawns suck at the straw, with their blessings.

The sharp watering restrictions as this dry season climaxes are county-wide and applicable to nearly everyone but Sanibelians, a species of local citizen whose wells run almost 800 feet into the deep Hawthorn aquifer of underground water. (The Island Water Association utility, which produces drinking water for Sanibel and Captiva Islands, also boasts a high-falutin' reverse osmosis plant, like Cape Coral and Bonita Springs and Pine Island, to convert brackish or impure water to pure.)

Meanwhile, as wells continue to go dry here and there, one could get the impression that Lee County residents have something in common with the unfortunate Tantalus, the mythological character who stood neck deep in a pool of



COURTESY PHOTO Gen. Jack D. Ripper (Sterling Hayden) ordered his B52 bombers to attack the Soviet Union because he believed America's water supply had been contaminated by communists, in Stanley Kubrick's epic 1964 film, *Dr. Strangelove*.

clean water, dying of thirst. Every time he lowered his head to drink, the water receded.

But we can beat the myth and make our own history both by education and conservation, insists Kurt Harclerode, operations manager for the Lee County Division of Natural Resources and a longtime former official for the South Florida Water Management District.

"What we save today is going to be available for us tomorrow. For private citizens and companies landscaping, xeriscaping will help.

"The perception for a lot of people who move here is, this is the tropics. They want tropical plants. But this is not the tropics, it's the subtropics, and here we get a wet season and a dry season."

Water, water everywhere

In Lee County alone, the amount of water that recedes each year without being tapped by the tidal rise of people is staggering.

Lee includes 804 square miles of landmass, which takes in an annual average of about 56 inches of rain. That amounts to some 2.4 million-acre feet of water that can fall out of the sky in one year (an acre is 207 feet on a side; stack 2.4 million acres above your acre, and you have 2.4 million acre feet). In gallons that equals 7.82 times 10 to the 11th power.

And never mind that in 2004, 1.8 million acre feet of water came down the Caloosahatchee and across the Franklin Locks in Olga; in 2005 that figure was 3.7 million acre feet (hurricanes created the spike), and in 2006 it dropped to a still-astounding 921,000 acre feet. That was a neat little flood of about 752 billion gallons, says Rawl, who characterizes the quality of that river water with a scientific term employed very precisely by hydrogeologists: "Crap."

But crap we haven't fully figured out how to use, either for irrigation or consumption. And when water stewards come to rely on it for potable water - as they do at a county water treatment plant on the river in Olga, east of Fort Myers - sometimes it doesn't work. Then people may be forced to drink impure water: In the Olga case, water with too much salt to be safe for those with low-sodium diets.

Thus, perhaps, arises the fear that our water supply could easily contaminate our "precious bodily fluids."

Wars have started over less, especially in the movies.

General Jack D. Ripper: *Mandrake, do you recall what Clemenceau once said about war?*

Group Captain Lionel Mandrake: *No, I don't think I do, sir, no.*

General Jack D. Ripper: *He said war was too important to be left to the generals. When he said that, 50 years ago, he might have been right. But today, war is too important to be left to politicians. They have neither the time, the training, nor the inclination for strategic thought. I can no longer sit back and allow Communist infiltration, Communist indoctrination, Communist subversion and the international Communist conspiracy to sap and impurify all of our precious bodily fluids.*

The world is ultimately destroyed in that 1964 flick by Stanley Kubrik, "Dr. Strangelove, or How I learned To Stop Worrying and Love the Bomb." And why? Because an Air Force general sends his bombers into the Soviet Union, equipped with nuclear weapons, after coming to believe his water supply has been polluted by communists.

Too important to be left to the politicians?

Comic as that may have been, many lately have been wondering if water management is too important to be left to the politicians, especially ones who also make the appointments - nine of them - to the South Florida Water Management District's governing board.

They're the folks ultimately responsible for maintaining the supply of water now and in the future for just about everybody south of Orlando, for which they control a \$1.3 billion annual budget. (They're also charged with helping the federal government and the Army Corps of Engineers fix the Everglades - a \$10 billion effort, which isn't enough, says Rawl.)

"If they can tax us, we should be able to elect them," insists Ellen Peterson, an Estero resident and environmental apologist, who offered that opinion about the South Florida Water Management District to a reporter for The Bonita Banner newspaper. She notes that the only two Gov. Crist appointees to the Water Management District board from this region don't have a water-resource background - Charles Dauray, who holds the keys to the Koreshan corporate resources, and Bubba Wade, a U.S. Sugar Corporation executive.

"I don't think Dauray has the experience or qualifications of someone I'd like to see in such an important position," says Peterson.

Both Dauray and Wade contributed to Gov. Crist's campaign fund before the last election, records show. But asked if that had anything to do with his appointment, Dauray told a reporter from The News- Press, "Heavens, no."

Yet Rawl and Wayne Daltry, both of whom garnered numerous and strong letters of recommendation from local officials, didn't make Crist's cut. Both have spent their careers thinking about resource management.

"We have abundant rainfall, our issue is simply water management," says Daltry, executive director of Lee County Smart Growth. "Essentially we've let politics and

money dictate that no matter how lowlying the land is, somebody has to pay for it to be drained and protected against flooding, such as along the coastal areas, in ways that exceed even nature's."

It's politics defying gravity, Daltry adds, since flooding can be contained and even used if there's a place for the water to go, downstream. But not if politicians and officials have allowed developers to remove areas that accommodate water naturally from the big map.

So much for politicians.

Meanwhile, even if an analyst ignores non-home uses of water, people keep drinking it in enormous quantities - or at least using it in the house. In one study conducted by students seeking ways to conserve, they estimated the following rough quantities per use: a bath, 30 gallons. A shower, 20; a flush of the toilet, 3.5; cleaning your teeth or hands, 2.5; and getting a glass of water, three quarts or so. That's before efforts at conservation.

Thus, if 600,000 people were each to take one shower per day (20 gallons), flush the toilet twice (7 gallons), brush their teeth and wash their hands both twice (10 gallons), and drink four glasses of water (3 gallons), each of those people would use 40 gallons of water per day, or 24 million gallons.

In a year, they'd require about 8.76 billion gallons, a bit more than came across the Franklin locks on the Caloosahatchee last year (by about 1.24 billion gallons), but a lot less than flowed down the river the year before that.

Where to find the good stuff

To be sure, Cape Coral gets generally high marks from hydrogeologists for trying to get ahead of the water.

"The Cape has the largest residential reuse system in the United States," Harclerode explains. "There, a customer has a dual water system, with one line coming in for drinking water, and a second for treated water - treated waste water and canal water. You don't have to worry about splashing it on you or running through it, but it's designed for irrigation."

So why not do that everywhere?

Cost. But it's a cost many are trying to find ways to meet, using both state and federal help.

"Local governments here are trying to come up with a regional system to collect wastewater, to use rainfall and treated effluent, and provide it back to the customer. That's going to be crucial if we're going to meet the needs of the future," says Harclerode.

A future in which the importance of sources might change: now 90 percent of Lee County's water comes from underground, and only 10 percent from the river or rainfall - from above-ground and surface sources - which suggests inefficiency and waste.

But technological artistry is something people here can do well, judging by the past. Once, Lee County residents could tap into groundwater sources that seemed to lay just beneath their feet - and in some cases still do. Now, however, many rely on water as deep as three football fields or so.

Imagine a cake of rocky lakes under the county, with vast pools of water trapped on four different levels among pockets and crevices in the limestone. Separating those levels are layers of earth - clay, for example. Each of those pools is an aquifer with a name.

If you live in Lehigh Acres and parts of east Lee County, for example, your water will come from the shallow Sandstone aquifer, at depths of about 50 to 100 feet, explains Harclerode.

In south Lee County you're probably drawing from the Lower Tamiami aquifer, the shallowest and traditionally most troubled by saltwater intrusion, at 25 to 30 feet below the surface.

In the Cape and the barrier islands, utility companies draw from the deep Hawthorn, 700 to 800 feet or more below the surface - a location not possible to reach by homeowners with wells. So there is heavy draw from the mid-Hawthorn aquifer (separated from the deep Hawthorn below it by clay and earth) throughout Lee County, at depths of 60 to about 200 feet. Once, it was the primary and dependable source of water for nearly everyone in Lee.

And all of it has to be used wisely now.

"A lot of people say we're running out of water, and I'm here and I want to close the door behind me because we don't have the resources," says Harclerode. "That's not the case. When we go through dry times, the older systems may not reach water, because at the time they put the well in, it was drilled only to a certain depth.

"And no one wants to re-drill or extend it deeper, but the resource is still there." The resource is there, but since salt water is heavier than fresh, and can encroach on the supply of fresh either horizontally or from below, when you draw down too much, the water takes on salt, and shortages occur.

Throughout Florida, like throughout parts of the West and elsewhere in the world, people find new ways to meet their needs. Tampa Bay, for example, has a desalinization plant - costly but effective. In Lee County, aquifer storage recovery (ASR) has been underway for about 15 years, a process that requires pumping abundant fresh water back into the rock formations at a geologically correct place.

Golf courses are becoming water-smart, too. At the Fort Myers Country Club, for example - where watering now occurs only about 4:30 a.m., nearby residents say - the supply comes from rainwater and lakes, officials say, and when they get low, the course gets less.

And ultimately, less is not what anyone wants, especially Gen. Ripper. When things got tight, his solution was simple: Bomb somebody, then stop worrying and start mixing.

General Jack D. Ripper: *Now why don't you just take it easy, Group Captain, and please make me a drink of grain alcohol and rainwater, and help yourself to whatever you'd like.*