

# "Tikkun Olam..."?

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## County water supplies dwindle

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Despite several years of above average rainfall, streams and underground water supplies are continuing to drop while increased demand is driving agencies to find new sources.

This stark conclusion is from a draft study released Wednesday by the county Planning Department and Environmental Health Service on resources, monitoring and management of Santa Cruz County water.

The study will go to the county Board of Supervisors in April with recommendations for more comprehensive water supply planning and more extensive erosion

control measures.

The two-year study has concluded:

- Groundwater levels have declined significantly in many critical water basins and that pumping in all the county's major underground aquifers exceeds natural recharge rates;

- Streamflows have been diminished, and in some areas depleted, by surface diversions and wells;

- Fish habitat has been degraded by sediment and streamflow depletion to the point that streams are drying up during summer months;

- Water quality is threatened by saltwater intrusion and pollution;

- There is a serious need to develop additional water supplies and to coordi-

nate all water-related activities.

More comprehensive water management is more than a priority, the study concluded: "It has become a necessity."

Underground aquifer systems that provide much of the county's water are severely stressed, according to the study. Increasing demand coupled with the most recent drought from 1987-92 resulted in progressive degradation of groundwater quality, lowered groundwater levels and significant reduction of water to many county streams.

Despite above average rainfall from 1993-97, the aquifers do not seem to have recovered, said John Ricker, county water quality program manager and an author of the study. Well pumping in all of the

county's major aquifers appears to exceed natural recharge rates, resulting in overdraft of the different aquifers, he said.

The study does not include this year's rainfall, but does include three previous above-average rainfall years, said Ricker.

"We keep hoping we'll see some recovery, but haven't," said Ricker.

The "mining" or overdraft of groundwater levels has resulted in seawater intrusion in the county's coastal aquifers that now exceeds water use by all urban areas in the north county, the study said.

The seawater intrusion occurs when groundwater levels are pumped down below sea level, allowing seawater to percolate back into the aquifer, making the groundwater along the coast unfit for use.

The county study concluded that groundwater use in the Pajaro basin is now approximately 70,000 acre feet per year while the safe yield of the basin is half that amount. The volume of seawater now moving into south county coastal aquifers is now about 16,000 acre feet a year. That amount is more water than is delivered annually by all water districts in Mid-County, Scotts Valley and the San Lorenzo Valley, the study said.

Seawater has moved into the coastal aquifers underlying the Pajaro Valley and is now starting to push north into the La Selva Beach areas of the Soquel Creek Water District and to a lesser extent, into the Seaside area, according to the study. While less than the Pajaro Valley, the volume of seawater in those areas "should not be considered insignificant," said the study.

In the Scotts Valley and Pasatiempo areas, groundwater levels have declined by as much as 150 feet, causing dry areas of the Santa Margarita aquifer. As the water levels have dropped, water districts have pushed down to the deeper Lompico aquifer to supply water.

This deeper aquifer, because it gets less natural recharge, is likely to be depleted at a faster rate than the upper Santa Margarita aquifer, said researchers. Pumping of water from the Santa Margarita aquifers already appears to have reduced streamflows in Carbonera Creek, Bean Creek, Zayante Creek, Newell Creek and the San Lorenzo River, the report said. As more and more well water has been pumped, levels of individual private wells have also dropped in the Skyline, Summit, Redwood Drive/Glen Canyon and Bonny Doon areas. In many cases, older wells have dried up and have had to be replaced by deeper wells. In some cases, homeowners truck in water during the summer months.

Groundwater can no longer be relied upon to meet existing demand, the study said. Meanwhile, every major water purveyor is looking to develop additional water supplies, said Ricker.

The study recommends that water districts expand monitoring water levels and use beyond their boundaries and that different water districts and agencies share and better coordinate data. The county should also consider requiring meters on all new wells drilled in critical groundwater areas and should consider requiring meters on existing large wells, according to the recommendations.

Some streams are faring no better. According to the study, it appears that direct water diversions from streams and groundwater pumping have lowered streamflows, especially in the summer when it is most critical for fish and water supplies. Records of how much water is diverted are sketchy, but in Soquel Creek it seems that either more water has been allocated for diversion than is actually available or some parties are taking more than their fair share, the study has concluded.

The diversions and reduced groundwater levels below the creek are contributing to the more frequent drying of the creek in its lower reaches. Mid-County groundwater levels have declined to the extent that groundwater no longer appears to contribute to streamflows for the last three or four miles of Soquel Creek, said the study.

Ricker said more tracking of water rights and stream use is needed throughout the county to better manage streamflows and increase the amount of water in the summer. He and county hydrologist Bruce Laclergue said water rights in Soquel Creek may need to be reallocated.

"I'm wondering if that's not jumping the gun," said Laura Brown, general manager of the Soquel Creek Water District. Brown maintained that more study is needed to determine the causes of Soquel Creek's woes.

According to Ricker, erosion and sedimentation are perhaps the worst villains causing surface water quality problems and fishery declines in the county. Excessive erosion also limits the ability to use surface water during the winter, when large volumes of flow are available.

Despite the severity of the sedimentation problem, however, no monitoring is devoted to the issue and little progress has been made over the years in controlling it, he said. "We've been trying for years and haven't made much progress," said Ricker.



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### Dear Friends and Neighbors,

We all are probably somewhat aware that we have water problems across the entire Monterey Bay region. For years now, weekly articles in this paper and others have addressed ground water overdraft, salt water intrusion, nitrate contamination, dropping water levels and quality in our aquifers, our bay and our streams.

Yet most people I talk to aren't even aware of where our water comes from, let alone how serious the problem and the permanent damage to our natural water systems are. Nor what the cause is and, maybe, possible solutions other than desalination or importing outside supplies by pipeline. So that's what this letter to you is about.

Please notice here I intentionally use the term "problem" instead of "shortage". That's because the truth is that our problem here is really only in how we are over-using and permanently harming our regional water supplies, rather than any inherent shortage in them.

And it's not that we don't appreciate and highly value our water here. In fact, you, our human population, make very judicious use of our supplies and actually receive awards and commendations for your frugality. As for value, if you think about it, you'd realize you may have well paid over five times the price of gasoline for that last bottle you bought.

So may I speak with you frankly about the current state of our water supply and how we are using it? All of our regional water supply, which is predominantly ground water, is local and, therefore, at least, potentially in our control. This is very rare and precious in the world today.

**Unfortunately, however, for well over at least the last decade, we have been using up to three times as much water yearly as we should and still sustain our healthy, reliable supply. And for quite awhile, we simply didn't notice.**

But in 1998, we began getting a clear signal that the fresh groundwater in all of the aquifers underneath us -- the prolific, natural underground reservoirs we depend on -- was being seriously contaminated and depleted.

Most seriously, saltwater--flowing in from the ocean in massive amounts to replace the rapidly depleting groundwater in our aquifers--began showing up in dozens of coastal wells. A comprehensive county report in 1998 officially documented the nature and severity of this saltwater intrusion--massive ground water overuse.

**In fact, this paper printed this accompanying 1998 multi page front-page headlined article describing it all.** And since 1998, over these last seven years, the rate of saltwater intrusion resource loss has continued unabated at, actually, 15,000 acre-feet yearly. To perhaps put this figure in a more familiar context, this yearly loss is two times Watsonville's annual supply, two times Santa Cruz's and Soquel Creek's needs for the next 50 years, two times Loch Lomonds' worth, or a water supply for around half of our 260,000 county population.

And the total loss so far, since 1998, exceeds 100,000 acre-feet of our ground water storage. That's about a year's water supply for our entire region. The monetary value of this deficit spent water resource minimally amounts to around \$225 million annually at the very low end of today's projected desalination costs. By contrast, astonishingly, the same saltwater intrusion water resource loss for the entire Salinas Valley of 9,000-13,000 acre-feet annually (vs. our 15,000) is less. However, the ag production for the Salinas Valley is around \$4 billion annually, over eight times ours here!

The aggregate resource loss since 1998 is over \$1.5 billion! These amounts perhaps are mind boggling in their enormity for our small place. That's why the late Marc Reisner (author of Cadillac Desert, a world noted book on California water) -- speaking here in 1998 -- characterized Pajaro's ag overdraft problem as the worst in the world. Surprised? I hope so.

In the no spin zone apparently nonexistent in our too numerous, self-congratulatory, and inefficient Santa Cruz water and other government bodies, this constitutes a true ground water emergency and crime, environmentally as well as fiscally.

Furthermore, it is unrealistic to believe that this damage and loss can or will ever be cured. This ground water, in some instances deposited over geologic time over 20,000 years ago, will never be "recharged" or recovered. The process is too expensive and risky, the loss too great, and the regional water too scarce.

So where is the loss coming from? What's causing this gross over pumping, literally driving seawater into our aquifers? UCSC, too many illegal immigrants, golf courses, tourists, leaks, our Silicon Valley bedroom community?

I'm afraid it's none of these.  
**In fact, if we were to eliminate all the above plus all other human activity from our region except the true statistical culprit-agriculture, we would still be using up to twice as much water as we prudently should.**

That's because agribusiness and farming now use over 80% of our local supplies. It was different here before. Orchards, which stretched across the sunny flatlands from 41st Avenue to Watsonville, were relatively low-intensity crops. They didn't need much, and didn't use much. However, in recent years, crops favored by agribusiness have supplanted orchard production -- water, chemical and labor-intensive crops, which are both popular and valuable -- such as my favorite, strawberries.

Berry production now dominates local agribusiness to the tune of \$500 million annually. And, atypical of the rest of California and perhaps the world, there's no farmland urbanization problem at work here in Santa Cruz. The amount of county agricultural acreage in recent years here has actually increased.

What about the importance of these revenues and jobs from this \$500 million annual production and their consequences? Well, the average farm worker family, and there are a lot of them here, earns only around \$18,000 annually, produces only around \$32,000 revenue annually for his/her employer, and averages around a 100 mile daily commute to reach these strawberry fields. In short, in return for low-wage/low revenue production employment and mass congestion, we're using up our most precious resource.

And don't forget, these berries contain at least that 80% or around \$180 million annually in value of our lost local water--some 36% of their value. Whether considered necessary or optional, that's quite a subsidy.

In effect, we are exporting our irreplaceable, deficit spent ground water supply on a massive scale. Year after year, we're spending a huge amount of the principal in addition to all the interest of our ground water bank account.

**We are doing what third world nations do: spending our scarcest resources and exporting them while perpetuating non living wage jobs which degrade our environment and overload our schools, housing, roads, among other costs. This is not very progressive. This is, instead, the tragedy of our commons.**

**We can do better than this. We can and must use our water here more sensibly and productively so our children and grandchildren can continue our diverse way and quality of life in our most unique and special place here.**

**The solution is simple. All we need do is live within our means and be gentle with our earth. In the mystical and spiritual terms of the Kabala, this is called Tikkun Olam--healing or restoring the earth. This should be our way and our goal.**

**Instead, we are now exceeding what is reasonable and sustainable for us agriculturally; our "agricultural carrying capacity". This should not be surprising to any of us because no one has ever taken the trouble to determine what our local agricultural carrying capacity should be in the first place.**

Our local abundant water supply, competently and responsibly regionally managed and sustainably used, can answer that question, and many others, for us. And if and when it does, Santa Cruz and our Monterey Bay Region will stand alone as the first true symbiotic and sustainable social, economic, and natural system for the rest of the planet to admire and emulate.

I'll be back to you soon with how we can do this here if you want to, and thank you for your interest in reading all of this.