

California Drought Update

by Patrick Ruckert

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A Note To Readers

On Christmas Eve, as I write this, I am listening to the performance of The Messiah by the Schiller Institute in New York City on December 19. These are my associates who organized and perform in this beautiful event. Parts I and II are below.

This week has seen more precipitation in the state, but there are plenty of voices urging caution-- this drought is not over by a long ways, as reflected in some of the reports below. In addition, even if there is plenty of precipitation, there is no guarantee that agriculture, for example, will get the water required for next year's crops. Erik Wilson, of "My Job Depends on Ag," reports on how, with plenty of water entering the Delta this week, very little is being sent to storage.

The Messiah Part I

https://www.youtube.com/watch?v=qO_HVtf3Sa0&feature=youtu.be&list=PL7exFCu76zxqVT8xLyywWaG6vVq6Zohdt

Part II

<https://www.youtube.com/watch?v=gItnV9i5lV4&feature=youtu.be&list=PL7exFCu76zxqVT8xLyywWaG6vVq6Zohdt>

We shall enter the new year facing a new melt-down of the speculation and gambling system that for decades has destroyed the productive economy and prevented the necessary investment in infrastructure that could have prevented a water crisis. Here is the introduction to a fuller analysis of what to expect in January. For the full report, the link is provided.

Make Sure There Is a New Year: Dump Obama and Wall Street!

larouchepac.com/20151223/make-sure-there-new-year-dump-obama-and-wall-street

December 23, 2015

In the crash process already underway of the entire, dead Trans-Atlantic Financial System, there are now cases by the hour, of insolvencies and withdrawal-runs, while on Jan. 1, a raft of "official" measures take effect, which will add nuclear fuel to the fire. Lyndon LaRouche said of this process last week, "What you're getting is an accelerated rate of crisis. The rate of acceleration—the self-acceleration of the process—is such that, within one week, the whole thing could be wiped out. We're in that kind of situation."

We are at a point of do-or-die challenge this Christmas: either we force action to re-instate Glass-

Steagall and the related emergency measures, or else, it's mass hell and damnation.

What Is To Be done? I'll Say It Again

I have run the following several times this year in this report, but given what the new year will bring, here it is again:

First, recognize that this is not a California water crisis, but a political, cultural and economic crisis of the nation. There has been zero water infrastructure built in this state in more than 40 years-- we have ceased creating a future for ourselves and for future generations. After the death of President Kennedy, and the death of his policies of building nuclear-powered desalination plants and the North American Water and Power Alliance, the nation gave up the idea of progress and development and turned the nation into a speculative gambling casino with an ideology of environmentalism to match.

Second, the central issue to be put on the table is the real nature of progress; the real nature of progress for mankind. Mankind is the only species that creates his own future through the action of the creative power of his mind. It is scientific discovery, and applying that to increasingly master the universe that that future is created. By allowing that to be destroyed we are creating the conditions for our own extinction.

Third, creating new sources of water requires the recognition that processes on our planet, like the water cycle, are largely determined, not by processes on Earth, but by galactic forces like cosmic radiation which affects how water vapor behaves-- whether there are clouds, where they are located, and when precipitation falls. Initial experiments in several nations of artificially ionizing the atmosphere have demonstrated initial success in increasing rainfall. An aggressive program to put such experiments into action must be carried out now.

Providing more water to this state and to all arid areas of the world depends upon unleashing the creative power of mankind to discover how to control those processes. That is the fundamental solution. That requires a new Presidency; it requires the restoration of the Glass-Steagall Act to bankrupt this speculative system; and it requires a return to classical principles of culture to once again unleash the creative powers of our people.

In the meantime, an Apollo Project-style mobilization to build desalination plants over the next few years is what is required to minimize the current disaster. The Carlsbad desalination plant is now delivering 50 million gallons of water per day to the people of San Diego. That facility took less than two years to build. By putting the construction of dozens of plants, from San Francisco Bay to San Diego, on a 24 hours a day/ 7 days per week schedule, in less than a year, rivers of water will flow from the sea to the land. Providing the electricity required will require another crash program to build nuclear power plants. We have accomplished such great tasks before, and we can do it again.

At the same time, recognizing and acting to end the domination of the state by the Brownshirts of the California State Water Board, whose actions of sending millions of acre-feet of water out to sea to protect fish at the expense of human needs, can immediately prevent the further destruction of food production and end the environment of virtual terror they have created.

Farm Income Down

It's not "cyclical"--U.S. 2015 net farm income down 50% from 2013 (peak year)

Dec. 22, 2015 (EIRNS)-- Prices to farmers for their commodities are low, while prices for farm inputs stay high. In a few weeks, the USDA statistics will be released, which are expected to show the 2015 net farm income in the range of \$60 billion, down from \$90.4 billion 2014, and way down from the record high of \$123.7 billion in 2013. U.S. farm debt over 2015 is forecast to show a rise of 6.3+% from 2014. Some farmers are trying to make plans for what crops they will "lose the least" on, if they go ahead and plant this coming Spring. At the present level of grain prices, growers may anticipate bringing in enough to cover basic operations costs like seed, fertilizer and land rent, but crop prices are too low for farmers to cover equipment loans, or even make a dime for their own labor.

FARMERS SKIRMISHING TO STAY IN OPERATION, crop by crop, issue by issue. For example, cotton growers suffering low prices, are seeking to have cottonseed be designated by Federal authorities as eligible, like other oil seeds (canola, etc.), for "risk management," e.g. to have a Federal safety net program. This week, 100 members of the House, Dem and GOP, wrote to USDA Sec. Vilsack requesting this. Cotton prices for growers is running around 60 cents a pound, compared to 88 cents/lb in 2011. With the average yield in U.S. at 685 lbs/acre of cotton, this means each acre is worth about \$500 (counting selling the seeds as well), but it costs \$600 an acre to plant, tend and harvest.

El Nino

Two items provide some analyst and background for our El Nino watch this week. First is this article from the *Christian Science Monitor*, "NASA examines the effects of this year's El Niño."

<http://www.csmonitor.com/Environment/2015/1215/NASA-examines-the-effects-of-this-year-s-El-Nino>

Here are some excerpts:

One of the most important developments the researchers are tracking is what impact, if any, El Niño will have on the drought in California, which is now entering its fifth year. The National Oceanic and Atmospheric Administration and the California Department of Water estimate that the storms from this year's El Niño would need to bring 60 inches more rain over the average, and provide 39 inches of snow water content, in order to help bring California into drought recovery.

Initial satellite observations from NASA appear to indicate that the atmospheric rivers, or narrow corridors of concentrated moisture, that occur during El Niño may provide some relief from the drought. Atmospheric rivers are typically responsible for the patterns of extreme rainfall and flooding that occur in the mid-latitude, westerly coastal regions of the world, like the west coasts of North America, Europe, and Africa.

But experts predict that while El Niño may help alleviate the symptoms of the drought, it will not help eliminate the problem completely. They point to the fact that while El Niño does tend to bring higher-than-average levels of rainfall, it is not a sign of permanent change.

"Over a 25-year period, over the long term, El Niño provides only 7% of our water. So as much as we're hyping it, it's not a big player," Bill Patzert, a climatologist with NASA's Jet Propulsion Laboratory in La Cañada Flintridge, told the Los Angeles Times. "It's fast and furious, but it's too

irregular – the gap between El Niños is too long to [point to it as a] drought-buster.”

And, secondly, some excerpts from an article by *Eenews* provide some perspective on what to expect for the rest of the winter in California. The article, “Burning Amazon forests and a rain-drenched Calif. are likely to come with El Niño – researchers,” by Gayathri Vaidyanathan in *ClimateWire* on December 16, can be found here: <http://www.eenews.net/stories/1060029584>. Excerpts:

The higher fire risk in the tropics is one of many of El Niño's impacts that scientists are observing. In rain-starved California, models are projecting that the weather phenomenon, which is the strongest seen since 1997-98, will likely include heavy precipitation beginning in mid- to late December.

The heavy precipitation will be triggered by "atmospheric rivers," which are weather patterns that bring storms to the West Coast of the United States. The rivers are projected to be warmer and wetter than normal this season.

Still, the deluge would likely not quench the four-year-long California drought, said Martin Hoerling, a research meteorologist with the National Oceanic and Atmospheric Administration's Earth System Research Laboratory.

"It is too simplistic to talk about drought busters about being just about rain," Hoerling said. "You have soil moisture and groundwater that has been depleted over decades that isn't going to be recovered no matter how much it rains."

"Strong El Niños do greatly increase the odds of wet conditions for the state," Hoerling said.

Much rainfall in California is caused by atmospheric rivers, which are responsible for 40 percent of the state's annual precipitation ([ClimateWire](#), Dec. 18, 2014).

Duane Waliser, a scientist at the Earth Science and Technology Directorate at NASA's Jet Propulsion Laboratory, analyzed historical data of atmospheric rivers and found that the present El Niño may not increase the number of rivers that occur in 2016.

But any given river may bring more rainfall with it, he said. The rivers would be warmer, which means California would likely get less snowfall, he said.

Status of the Drought and Reservoirs

The past weeks' rains, and some snow, have had a measurable impact at least on some of the reservoirs in the state. Lake Oroville, for example, after almost reaching a record low level on December 12, of 649.5 feet, has now reached 654.9 feet. For comparison, the normal level of the lake for this time of year is 750 feet. There is a long way to go to get to normal. As stated by Kevin Wright with the Department of Water Resources in an article on *KRCR TV* on December 21, “But to return to normal levels, Wright said Lake Oroville still needs more help from Mother Nature. 'We need a storm every week for the next five to six weeks just to get back to where we'd be normal.'”

<http://www.krctrv.com/news/local/rains-begin-to-fill-drought-dried-lake-oroville/37074300>

But, things are far from rosey at Lake Shasta. The *Redding Record Searchlight* article of December 23, “Lake level lags behind rainfall,” by Damon Arthur is excerpted below. The entire article is here:

<http://www.redding.com/news/drought/lake-level-lags-behind-rainfall-27953ed9-6595-0641-e053-0100007f2fec-363429681.html>

Rainfall totals for Redding are running nearly twice the normal rate for this time of year, sending runoff into drought-parched streams and reservoirs.

But so far, the rain hasn't made a big difference in the water level at Lake Shasta, about 23 feet lower than at this time last year.

There are a couple reasons why the water level hasn't kept up with the rising rainfall total, said Don Bader, deputy area manager for the U.S. Bureau of Reclamation, which operates Shasta Dam.

The bureau has to keep water releases from Keswick Reservoir higher for spawning Chinook salmon in the Sacramento River. The bureau had to release cooler water from lower in the lake to prevent recently laid salmon eggs from dying, he said.

Doyle echoed Bader in pointing out the other reason why Lake Shasta has filled slower. The ground around the lake is so dry that it is soaking up most of the rainfall rather than letting it wash downstream to help fill the lake, Doyle said.



*People drive in the mud of the dry lake bed of Shasta Lake on Wednesday in Jones Valley.
(Credit: Andreas Fuhrmann/Record Searchlight)*

The New Melones Reservoir on December 23 was still at only 12 percent of capacity and the San Luis Reservoir was at only 17 percent of capacity on that date. San Luis is the major storage reservoir from the aqueducts transporting water from the Delta. With as much rain as we have had, why is San Luis still so low? Erik Wilson puts some numbers on this question below.

The U.S. Drought Monitor for December 22, again, like last week, shows little change in the overall drought conditions for the state. Ninety percent of the state remains in “Severe Drought,” and nearly 45 percent remains in “Exceptional Drought,” the worst drought level. It is useful to recall that until July, 2014, zero percent of the state had ever been in the “Exceptional Drought” category.

Water Is Flowing Into the Delta, But Very Little Is Being Stored

By Erik Wilson of the Face Book page, “My Job Depends On Ag”

Beginning on December 1, surplus water flowing through the Delta that exceeds salinity requirements, and can be sent to storage. Today's inflow to the Delta (December 23) is over 18,000 cubic feet per second (cfs). Generally, 8000 cfs is considered a flow sufficient enough to keep salinity in check. Thus, today, there is 10,000 cfs of surplus water that could be stored for people. Right now the California Water Board is only storing 4,600 cfs from both pumping stations. Thus, in just a 24 hour period, we will lose approximately enough water for 32,000 to 48,000 people for an entire year. The daily report on water flows through the Delta can be found here:

<http://www.water.ca.gov/swp/operationscontrol/docs/delta/deltaops.pdf>

For each 3,000 cfs sent to storage, 1.95 billion gallons would be available for people and agriculture. People were freaking out that Nestlé used 390 million gallons in an entire year. Where are those people right now? Nearly two billion gallons that are above environmental requirements are going unused to the sea for each 3,000 cfs that does not go to storage. The losers? LA residents and people like me who grow FOOD!!

Here is how that is calculated:

A flow of 3,000 cfs in a 24 hour period will make about 6,000 acre feet.

There are 325,000 gallons in 1 acre foot.

Thus, 6000 acre feet times 325,000 gallons equals 1.95 billion gallons.

Erik is not the only one raising this question. *KFSN Fresno*, in an item on December 23, "Valley farmers still concerned despite wet winter," also addresses this question.

<http://abc30.com/news/valley-farmers-still-concerned-despite-wet-winter/1134465/>

Some excerpts:

Experts say with the design and regulations of our state's current water system, too much of the runoff will end up in the ocean.

By [Sara Sandrik](#)

Many Californians have high hopes for a wet winter, but it may not help Valley growers as much as they'd like.

More water is now flowing through Merced's Bear Creek from the recent rain, and our local mountains are covered in several inches of fresh snow. But some experts say with the design and regulations of our state's current water system, too much of the runoff will end up in the ocean. That means even a very wet winter most likely won't do enough to help valley farmers recover from the drought.

"We are in a crisis," said Amanda Priest with the Merced County Farm Bureau. "It's not solved with a few weeks of rain. We have a long, long way to go."

More Farm Acreage to Disappear

Yes, the cause is water, but this time ground water and the new regulations. The *Hanford Sentinel* on December 9, ran this article by Gary Feinstein: "Neves: New law could cut deep into farm acreage." http://hanfordsentinel.com/news/in_focus/california_drought/neves-new-law-could-cut-deep-into-farm-acreage/article_e447f2fb-19db-5e0a-9d3b-cc62a8fe8d88.html

Kings County Supervisor Joe Neves is quoted saying that as much as 25 to 50 percent of the Kings County farmland could be idled. Excerpts:

The agencies will have to be formed by 2018, and will have to submit approved plans by 2020 that — for the first time — explain how the Kings River basin will reverse the long-term groundwater overdraft that has defined the area for decades.

The definition of overdraft is simple: Pumping out more groundwater than is coming into the basin from runoff surface water. Somehow, under the new law, long-term overdraft has to end by 2040.

There's a major question looming on the not-too-distant horizon: How much Kings County farmland will have to be taken out of production to meet the sustainability requirement?

Kings County Supervisor Joe Neves thinks the loss could be 25 percent to 50 percent.

The new groundwater management agencies tasked with implementation will do one of two things: Either bring in more water than is coming in now, or cut groundwater pumping back from current levels.

Ideally for Kings' agricultural economy, new water storage projects outside the county will be built so that water managers can bring more in. But because the political climate in California is trending against building new dams, Neves figures the ax is going to fall mostly on groundwater pumping.

If his 25 percent to 50 percent acreage cutback proves accurate, the amount of land taken out of production would dwarf recent acreage losses from drought.

Water for Farms or for Salmon?

As the California Water Board continues its juggling act of moving and impounding water in an impossible attempt to provide water for all sectors of the state's population and other requirements, the issue of salmon vs. agriculture never goes away. The Water Board, over the past few years, has wasted millions of acre-feet of water in this game they play. This week, after having earlier made an announcement that set farmers into a rage, they backed off. The *Sacramento Bee's* Dale Kasler covered this on December 15, "California drought regulators back off controversial salmon-rescue plan."

<http://www.sacbee.com/news/state/california/water-and-drought/article49929220.html>

Here are some excerpts:

As regulators consider how best to manage the state's meager water supplies – decisions that have life-and-death impact on Chinook salmon – new data is showing that the species is faring worse than ever.

California drought regulators on Tuesday backed off a controversial plan to withhold water from farms and cities next year in an effort to preserve an endangered species of salmon, instead choosing a more flexible approach they said still could do the trick.

The State Water Resources Control Board, after a four-hour meeting, voted 4-0 to require that regulators work to ensure Sacramento River temperatures don't exceed 56 degrees next year, the maximum at which juvenile winter-run Chinook salmon can survive. But the board decided to give the U.S. Bureau of Reclamation considerable leeway in determining how best to meet that temperature threshold.

The board was contemplating a plan that would have required the bureau to hold back an additional 200,000 acre-feet of water at Lake Shasta through next October. That would help ensure that the water released into the Sacramento River would be cool enough to keep the juvenile salmon alive during next year's run. The plan would have kept 1.6 million acre-feet in Shasta much of next year, up from 1.4

million acre-feet this year.

Farmers and groups representing downstream cities complained that the plan was too rigid and would deprive them of badly needed supplies. Environmentalists, conversely, complained it didn't go far enough to guarantee the species' survival. Practically everyone agreed that the proposal was premature and that the water board should wait to see how heavy the winter rain and snow gets.

The new order establishes 1.6 million acre-feet in Shasta as "a planning target," not a requirement.

A Strategic Water Plan?

That title is appropriate for the section above under the title, "What is to be Done?" But, a useful discussion of this idea was presented by Ian Lamont on December 12 in the *Orange County Register* in a column titled, "California needs a strategic water plan."

<http://www.ocregister.com/articles/water-695772-california-state.html>

Lamont's column discusses the interesting, long ago proposal, "The Reber Plan, also known as the San Francisco Bay Project, (which) would have constructed a dam across the Sacramento River, creating multiple channels and two freshwater lakes. The dam would provide power, and the two lakes would provide drinking water for the greater Bay Area and Northern California. The federal Central Valley Project would then create a system of canals, pumps and aqueducts up and down the San Joaquin Valley, providing enough freshwater for the agriculture growth occurring in the Central Valley."

While that is of interest, Lamont also provides some useful background statistics on the California water cycle and reservoirs:

Water for much of California is dependent on the state's 161 reservoirs. In an average year, each of these reservoirs is replenished during California's wet months (October through March). As of last May, the state's reservoirs had only received 6.5 million acre-feet of water from last winter – only 78 percent of the necessary annual recharge of 8.2 million acre-feet. For reference, a single acre-foot contains 325,000 gallons of water.

Our four-year drought has resulted in state reservoir levels of 17.2 million acre-feet as of last May. The typical annual withdrawal over the dry months (April through September) is around 8 million acre-feet. Therefore, if California has a fifth year of drought, it will only have a little more than two years of water left in the reservoirs, and for the first time in history, the reservoirs will have less than 10 million acre-feet of water stored.

Hydroelectric Production Collapse

The following from the *Weeklyunion.com* says it all:

<http://weeklyunion.com/2015/12/drought-is-killing-california-x2019-s-hydroelectric-power/>

The 102-year-old central-California complex owned and operated by Southern California Edison lost 80 percent of its hydroelectric power this year, a direct result of a persistent drought that has wiped clean the Sierra Nevada snowpack and produced an eerie silence inside Big Creek's 27 dams and nine powerhouses. "This is definitely the worst I've ever seen," said Andrew McMillan, operations manager

for Edison's massive hydro plant, a historic project situated between Yosemite and King's Canyon financed by Henry Huntington in 1913 to send power to his Pacific Electric Red Cars.

The White House Spouts More Nonsense

Following the Paris Climate Summit, Obama continues to push conservation as the only policy on water questions, while bad mouthing desalination. Carolyn Lochhead of the *San Francisco Chronicle* reports on this on December 15.

<http://www.sfgate.com/nation/article/White-House-pushes-water-conservation-in-wake-of-6700525.php>

Here are some excerpts:

White House pushes water conservation in wake of climate pact

WASHINGTON — The White House followed Sunday's landmark climate pact in Paris with a push Tuesday on water conservation and efficiency, as top administration officials warned that water shortages are among the biggest consequences of rising global temperatures.

Following the same model it used to push solar power, the Obama administration seeks to use federal research, better data collection and private-sector incentives to boost water-saving technologies

White House science adviser [John Holdren](#) and Interior Secretary [Sally Jewell](#) said the plan is to find ways to squeeze more water from existing systems through new technologies.

But "no one technological bullet" can solve water shortages, he said. Desalination remains four times more expensive than traditional water sources, he said. It uses three times more electricity and contributes twice the greenhouse gas emissions, he said. Ocean intake valves disturb marine life, and disposal of the concentrated waste brine remains a problem, he added.

Desalination "has to sync with our climate change objectives," Jewell said.

South Africa Repudiates Environmentalism

Sanity, on the other hand, is shown by South Africa:

Way-Out Claims, Falsehoods, and Fantasies Shall Not Stop South Africa's Nuclear Program

Dec. 21 (EIRNS)--"I am tired of reading of British or American professors of sociology, pronouncing from their countries, that nuclear power construction is beyond the capability of South Africans," says Dr. Kelvin Kemm, CEO of Nuclear Africa in an op-ed today. "It is quite amazing to hear, at times, the completely way-out claims of self-appointed experts who [spout] complete nonsense and insult South African intellect [in] the bargain." South Africa has no choice but to go nuclear, he explains, and is perfectly capable of doing so.

He reviews the current energy situation in South Africa, where coal is transported from one end of the country to the other, comparable to the distance between London and Rome. The inefficiency and cost of transport makes large-scale expansion of coal-fueled power plants prohibitive.

And Dr. Kemm reminds, only 5-15% of "our African neighbors" have electricity. "Their electricity production must double, and double again, and again." This means that "we have to stand by them for the sake of the stability of the sub-continent. So, we effectively have electricity commitments to contend with, beyond our national borders." He advises that Africa is not Europe, where nuclear energy is contracting, and solutions will not be found there. "It is not Africa."



In 1920
Each Farmer fed
19 mouths



In 1970
Each Farmer fed
26 mouths



In 2013
Each Farmer feeds
155 mouths
And counting...

No Farms, No Food, No Future