

# Salinas Valley farmers tackle seawater intrusion

**Bob Johnson, Ag Alert, 4-17-13**

After more than six decades of painstaking efforts, Salinas Valley farmers are on the verge of ending the advance of seawater intrusion into the groundwater they use to irrigate nearly \$4 billion worth of crops.

Construction in the 1960s of reservoirs at Lake Nacimiento and Lake San Antonio in the hills at the south end of Monterey County produced a supply of water to recharge the underground aquifer in the height of the pumping season. Completion at the end of the century of a plant in Castroville capable of treating wastewater to the point it can be recycled for irrigation allowed many coastal growers to shut down their salty wells. And the recent installation of a rubber dam on the Salinas River near Marina has allowed thousands of additional acre-feet of surface water to be diverted for irrigation.

These water supply projects have been matched by farmers' investments in efficiency and conservation measures on a significant scale.

"The Salinas Valley is changing in response to the problem," said Rob Johnson, Monterey County Water Resources Agency general manager. "You see a tremendous decrease in furrow or sprinkler irrigation, and a corresponding increase in drip irrigation. That's a great story agriculture needs to get out there; ag needs to do a better job of getting its story out there."

Twenty years ago, less than 3 percent of Salinas Valley vegetable acreage was under drip irrigation, as farmers generally used some combination of sprinkler and furrow irrigation.

But by 2010, nearly half the vegetable ground had been converted to drip, and the water agency's most recent survey shows that by 2012, drip irrigation was being used on nearly 60 percent of the vegetable acreage.

There has also been a steady increase in use of other conservation technologies like soil moisture sensors, flow meters and land leveling.

"The farmers have spent tens of millions of dollars on conservation measures. They've really gone the extra mile," said Nancy Isakson, president of the Salinas Valley Water Coalition.

It is difficult to precisely measure the impact of conservation because rainfall affects annual pumping figures. But in the 1990s, growers throughout the Salinas Valley generally extracted about 450,000 acre-feet from beneath the ground and reached a peak in 1997 of nearly 552,000 acre-feet. In 2011 it was 404,000 acre-feet.

Conservation has narrowed the deficit between water pumped from the ground and recharge. The rate at which seawater advances into the 400-foot aquifer has slowed to a snail's pace and has even allowed the underground water table to rise.

"The agency has been working on this since it was started in 1947," said Johnson, who has been in charge of the county water resources agency for the last 24 years. "We have had a threefold strategy: First, develop a new water source; second, move that water to the coast; and third, stop pumping on the coast."

The decreased water use has been accomplished despite the growing importance of crops that need the water, according to Johnson. There are many more acres of strawberries in the Salinas Valley, for example, and they take about 3.5 acre-feet of water to grow while lettuce takes around a foot of water.

"We're using a lot more drip irrigation and water-sensing equipment in the field," said Dale Huss, general manager of Sea Mist Farms in Castroville. "With drip irrigation we're probably averaging about a 25 percent reduction in water use. We're doing everything possible to conserve and still get a crop."

Sea Mist Farms stopped pumping the salty water from its wells near the coast in the late 1990s, when the Castroville plant developed the ability to treat wastewater to the point it is safe to recycle for irrigation.

"We irrigate our cool-season vegetables—everything from artichokes to spinach, our lettuces and cole crops," Huss said. "The water we're using is better than the water we would be pumping."

Recycled water from the Castroville plant and from a similar project in Watsonville costs Sea Mist a premium price between \$220 and \$230 an acre-foot, compared to a cost of around \$125 to \$180 to pump water from the 400-foot aquifer. But the quality of the water is exceptional, and it replaces ground water near the coast that has high salt levels.

"We might not be in business without it," Huss said. "It's better water than most of the people in the world have for drinking. It's one of the safest sources of water for irrigation in the world. It is sanitized and tested beyond belief."

Three years ago, a rubber dam on the Salinas River near Marina began diverting additional water every spring to be mixed with the recycled water.

"The Salinas Valley water project has only been in operation three years, and you need 10 years of data to really assess the impact. We are delivering 4,000 acre-feet of water to Castroville," Johnson said.

The reservoirs, recycled water projects and conservation efforts have added up to enough that the advance of seawater intrusion is barely visible on the most recent maps.

"I think it's a fair representation from the maps that intrusion has been slowed," said Claude Hoover, Monterey County Farm Bureau representative on the Monterey County Water Resources Agency board. "Whether it's reversing or not, I'm not enough of an expert to say. It seems like we're doing the right things. Everyone is aware and sensitive to the issue."

The Salinas Valley is probably only around 10,000 acre-feet short, by Isakson's estimate, of matching pumping of the underground water with recharge.

"We're inching closer this year. Indications are that saltwater intrusion is definitely slowing, and ground water tables are rising," said Norm Groot, Monterey County Farm Bureau executive director. "All the indications are there that we are moving in the right direction. We will probably not reach a balance between pumping and recharge in the next two or three years, but we may in the next five or 10 years."

Some, maybe most, of the small remaining deficit could be made up with ongoing conservation efforts.

"I guess a little more could be gained, there's always room for a 5 percent gain over a period of years," Groot said. "If you look at the numbers on drip tape and the other conservation things, we're doing pretty well."

While the data on seawater intrusion keep coming in, the Salinas Valley community is already looking at the next steps to continue moving the decades-long effort forward.

"We're going through an effort now to solicit input from people throughout the county for beneficial projects for water," Hoover said. "One project being considered is a tunnel between the two reservoirs to use them more

efficiently for water storage, flood control, electricity generation and recreation."

The last five decades have also seen a calming of the sometimes-intense conflicts over who should pay for the projects that slow seawater intrusion and how much they should pay.

While the efforts have literally meant life and death for farmers near coastal Castroville, they have been less vital for farmers away from the coast near Soledad, Greenfield and King City.

"The widening and lowering of the spillway at Lake Nacimiento and adding the rubber dam have served to curtail pumping in the impacted area," said Bob Martin, general manager of Rio Farms in King City. "But down here in King City, we're not worried about seawater intrusion much. We're about 50 miles from the coast."

These differences in interests were eventually resolved through a fee scale based on zones of benefit, with growers near the coast paying the most.

"I think agriculture is coming together, and a lot of the issues of the past are behind us," Groot said.

South county growers have also done their part in adopting conservation measures to reduce pumping.

"We're seeing much more drip irrigation going on," said Martin. "It started around 10 years ago, and it's gone up the chart. People have curtailed water use just by using drip. We're just being more efficient with it."

The real payoff with drip irrigation is best measured in crop per drop, according to Martin, because the improved efficiency frequently means using the same amount of water but getting better yields and quality.