

# Diving into Owens Valley water well protocol woes

Lots of vegetation and no soil moisture mean more wells in 'off' position but still plenty of available water for LADWP

By Jon Klusmire 1-7-06  
Register Staff

Letting groundwater pumps run during drought years while shutting them down during wet years doesn't make much sense.

That's just one of several problems with the current "on/off" protocols that govern a significant portion of groundwater pumping in the Owens

Valley, according to Tom Brooks, director of the Inyo County Water Department.

The "on/off" protocols, which are based on soil moisture and vegetation levels, "are not good enough" to manage pumping in the valley, said Brooks, and need to be altered to allow some flexibility regarding pumping in an entire wellfield. Plus, the formula for determining "on/off" status should also take into account the depth of groundwater in specific sites and wellfields as a whole, he noted.

The "on/off" protocols are simply a "trigger mechanism" that governs individual wells, said Brooks. As such, they are "not a management strategy" that can be used to assess the complexities of the actual condi-

tions on the ground in a particular wellfield, or the impacts pumping could have on the level of underground aquifers in the wellfield.

In practice, the "on/off" mechanisms have limited opportunities to implement a more sophisticated approach to pumping and wellfield management that would address the status of the entire wellfield, not just what can happen at individual wells, and also take into account the impact groundwater levels can have on vegetation, said Brooks.

In addition, since being adapted as the primary tool to control groundwater pumping so it does not create adverse environmental impacts, the "on/off" protocols have consistently "allowed" for more groundwater

**See PROTOCOLS, page A-5**

Continued from front page

pumping than has actually occurred, thus, they "don't curtail anything," noted Brooks. But, according to the Water Department, negative environmental impacts have occurred even while the Los Angeles Department of Water and Power has been pumping less groundwater than it could be allowed to pump under the "on/off" protocols.

Brooks summed up the "dysfunctional" nature of the "on/off" protocols by noting that "once wells are 'on' they stay 'on' too long, and once they are 'off' they stay 'off' for too long."

Those are some of the larger issues being addressed by the Water Department regarding the "on/off" protocols, which is just a part of the department's current, larger effort to identify possible revisions or modifications to the "Green Book." That document contains the technical and operational guidelines that govern groundwater management and LADWP's pumping program in the Owens Valley. Brooks recently presented the Board of Supervisors a broad outline of the Water Department's initial assessment of the problems with the "on/off" protocols.

The idea behind the "on/off" protocols "is a very straightforward process," said Brooks. If there is enough soil moisture to sustain the plant cover on a monitoring site linked to a particular well, the well is placed in the "on" position, and allowed to pump. If soil moisture is not adequate to maintain the plant cover, the well goes to "off" position and no pumping occurs.

The most glaring problem with that approach occurs when the groundwater has dropped below the root zones of groundwater-dependent vegetation, which has occurred in 17 of 22 monitoring sites as of August 2005.

That creates a "rain-dependent system," where rainfall is the single largest contributor to soil moisture and plant cover, Brooks noted. The problem with that situation is that over time, the plant cover adjusts to the amount of precipitation.

That's why, even in drought years, many wells maintained an "on" status, because the limited soil moisture could sustain the limited, drought-resistant vegetation that was left on the monitoring site, said Brooks. That creates a situa-

are still thriving. "There's lots of vegetation and no soil moisture," noted Brooks.

Even with that many wells "off," the Water Department projects that LADWP would still be able to pump at least 100,000 a.f. of water, and prob-



Los Angeles Department of Water and Power Well 232, south of Big Pine, is currently in "off" status. The Inyo County Water Department is looking at ways to improve or adjust the current "on/off" protocols that govern pumping in the Owens Valley. Photo by Jon Klusmire

tion where a well can stay "on" despite declining plant cover and declining soil moisture, he noted.

That is partly why during the past few years of drought conditions, the "on/off" provisions have indicated LADWP could pump up to 140,000 acre-feet of water.

When heavy rains cause more vegetation to sprout up, the wells move to the "off" position over time as the soil dries up before the plants die off.

That's the case right now after last year's heavy rains and snowfall broke a six-year drought. Brooks said that after the big, wet year, 19 of 22 monitored pumps are on "off" status, because the moisture has evaporated but the plants

ably more, under the terms of the "on/off" protocols.

In addition to the wells governed by the "on/off" protocols, the valley contains numerous wells that are "exempt" from those controls. The approximately 58,000 a.f. of pumping now taking place because of a judge's ruling to curtail pumping, consists of just the amount of water coming from "exempt" wells. Those wells supply town water systems, irrigation and water for enhancement and mitigation measures. Brooks added the Water Department also has some ideas about making changes to how "exempt" wells are operated, but that was a topic for another day.

Thus, LADWP's pumping levels are a combination of water from "exempt" wells and those under "on/off" protocols.

Brooks pointed out that since the "on/off" protocols and "exempt" status system were put in place in 1991, those mechanisms have never capped or altered LADWP's pumping plans. Brooks noted that since that time, LADWP, "to their credit," has pumped less than what was allowed under the "on/off" protocols. On average, LADWP has pumped a total of 75,000 a.f. a year during that time, with the high end of the requested pumping totals in the 90,000 a.f. range.

That begs the question of why pumping is being governed by a system which does not impose any practical limits on the amount of water actually pumped.

The bigger question, and biggest limitation of the "on/off" system, is "that it lacks sophistication," said Brooks, and limits pumping options. For example, if a well-field has three wells, it might make more sense, from both an environmental and water production standpoint, to rotate pumping between those three wells, instead of strictly adhering to the "on/off" status of the wells, he said.

A key to such innovative pumping plans is to break out of the "on/off" mindset, he noted, and work with LADWP to evaluate each well and well-field to arrive at a reasonable amount of pumping while avoiding negative impacts to vegetation and the water table.

Making water table calculations part of the "on/off" criteria, or moving to a monitoring system that puts more weight on water table levels would be a dramatic change from the current "on/off" protocols. However, Brooks said water table conditions must be included when determining groundwater pumping levels if the county and LADWP are to arrive at a pumping program "that really reflects what's going on," above the ground, and below it.