

Geothermal Energy Collides With Drinking Water Needs in High Sierra

Linda Carroll, NBC News, 10-4-14

A bitter battle is playing out on the eastern slopes of the Sierra and it's all about water: hot versus cold.

The town of Mammoth Lakes is marshaling forces against a geothermal company that wants to substantially increase the amount of hot water it's pumping from a source deep underground. Mammoth residents fear that the expanded pumping could threaten the aquifer that sits hundreds of feet above the hot water zone and supplies 70 percent of the community's drinking water.

That cold water aquifer has taken on even greater significance during California's persistent drought.

Locals say they aren't against geothermal power; they just want the company to commit to drilling dedicated deep wells that would allow constant monitoring of changes in the hot water zone and provide a warning of any threat to the cold water aquifer.

"Somewhere a compromise has to be struck."

The company agrees that monitoring is important, says Bob Sullivan, a senior vice president at Ormat Technologies. But Sullivan doesn't believe there's a need to drill expensive deep wells solely to keep track of water pressures and chemistry. He says the hot zone can be monitored by taking working wells off line periodically to gather measurements.

It's not as if the water is removed permanently from the geothermal zone. It's put back after its heat has been used to create electricity — but not in the same spot it came from.

The geothermal zone can be looked at as an underground river that starts west of the town and flows eastward until it hits the surface at a lower-elevation spot called Big Hot Springs in the Hot Creek Gorge.

Ormat essentially pumps hot water from this "river" and then returns it, cooler, through a well further downstream. What has people concerned is the distance between where the water is removed and where it is returned. It's possible that removing that water could cause a pressure drop in the geothermal zone that might then draw down water from the cold water reservoir, says Bill Evans, a research chemist with the U.S. Geological Survey in Menlo Park, Calif. Or, it might cause steam and other gases to shoot up into the cold water aquifer, potentially contaminating it. That scenario, Evans says, is less likely.

Ormat would increase the amount of pumping by about 50 percent overall but double the amount from wells in the area that the water district says are most sensitive. The water coming up would be much hotter than the current flow, allowing Ormat to double its power output to about 60

megawatts. The plant's power flows off to homes and industries in Southern California and San Francisco.

While everyone agrees there should be some sort of monitoring, the battle is being waged over how it should be done.

Currently the town is asking that four deep wells be drilled along with an assortment of shallower ones. The USGS is suggesting at least one, but preferably two new deep wells. Ormat is arguing that no dedicated deep monitoring wells are needed and that enough measurements can be taken from production wells.

"We make recommendations for monitoring," Evans says. "But we're not an enforcement agency. We just say that these are the wells you should have and how often they should be measured. Neither side has to follow our recommendations. But somewhere a compromise has to be struck."

Patrick Hayes, the general manager at the Mammoth Community Water District, said he can't begin imagine how much damage would result should the water supply be compromised.

"The counties of Mono, Inyo, and Alpine all depend on tourism in the summer and winter," Hayes says. "Without a reliable water supply there isn't much viability in the community."

Mammoth Lakes, for example, has about 8,000 permanent residents, but that number swells to about 35,000 during tourist seasons, Hayes says.

"Ormat wants the risk to be borne by the community," Hayes says. To him, the deep monitoring wells are his community's "insurance."

For his part, Sullivan says that the decision not to drill deep monitoring wells isn't written in stone. But he's going to have to be convinced that there is a need.

Evans suspects that ultimately the project will go smoothly, but he points to places in the area where steam rises to the surface.

"You have to look at those and say there are through-going faults, pathways where hot and cold could be connected," he says. "So, in my opinion, despite all the groundwater models you draw and the predictions you make, ultimately you have to have monitoring in place to make sure there isn't an impact."