

## Ebb and flow control

---

### Tunnel to keep Lake Hodges wet even in dry spells

By Michael Burge

STAFF WRITER

September 3, 2005

DEL DIOS – It is a cyclical phenomenon that the County Water Authority would like to break.

A drenching winter, like the past one, fills Lake Hodges to the brim until it overflows in a cascade of tumbling water.

Then a dry summer is followed by a dry winter, followed by a few more dry summers and winters that shrink the reservoir until trees sprout on the parched lake bed where bass used to roam.

With a series of blasts that began Wednesday, the San Diego County Water Authority has begun to dig a tunnel designed to end that cycle and keep Lake Hodges wet even in dry times.

The excavation will punch a hole through Mount Israel, which stands between Hodges and the new Olivenhain Reservoir, about 1¼ miles away.

Combined with a pump station to force the water through a pipe, the project is expected to cost \$106 million.

Olivenhain Reservoir, which is celebrating the two-year anniversary of its dedication this week, was created by the construction of a 318-foot-high dam that sealed off a bowl-shaped valley.



CHARLIE NEUMAN / Union-Tribune

A rock-drilling machine began work on a tunnel from Lake Hodges to the Olivenhain Reservoir that will keep the lake full even during dry times. The 14-foot-wide tunnel will encase a 12-foot-diameter steel pipe that will connect Hodges to Olivenhain, and to two aqueducts.

In contrast to Hodges, which is fed by a 300-square-mile watershed, the reservoir gets practically no water from its surroundings and is entirely dependent on water piped in via aqueducts.

When completed about two years from now, the 14-foot-wide tunnel will encase a 12-foot-diameter steel pipe that will connect Hodges to Olivenhain, and to the aqueducts that carry water from Northern California and the Colorado River.

That means Hodges, which is owned by the city of San Diego but serves customers of the Santa Fe Irrigation and San Dieguito Water districts, could be filled by imported water for the first time in its 87-year history.

The result, water authority spokesman John Liarakos said, will be greater water reliability in an emergency.

Yesterday, workers conducted two blasts to loosen granite and scrape away rocks, boring into the mountain and making the tunnel mouth visible.

It's delicate work performed with major machinery.

A large drilling rig that looks as if it drove off the set of a "Star Wars" movie bores a pattern of holes into the solid rock. Workers insert charges. The tunnel's opening is covered with a giant rubber mat. Then the area is cleared and the explosives are set off remotely.

The tunnel will be reinforced and lined as the workers progress, to protect them from falling rock.

Workers have penetrated 12 to 15 feet into the granite, leaving them about 5,800 feet to go. They will have to link with a hole that was bored about 500 feet into the rock from the eastern shore of Olivenhain Reservoir.

Right now the opening is level, but after it goes beneath Del Dios Highway the tunnel will begin to raise, eventually attaining a 19 percent grade to match the reservoir's opening, which is about 700 feet higher.

The job is hazardous, with a safety officer watching every move and directing workers and visitors out of harm's way.

"It's probably one of the most dangerous occupations there is, being a miner," said Gregg Degen, a construction manager.

Kiewit Pacific is the general contractor on the tunnel and pipe project, the same firm that built the \$200 million Olivenhain Dam.

The first blasts have been small and they will remain small until the tunnel extends beyond populated area, Degen said.

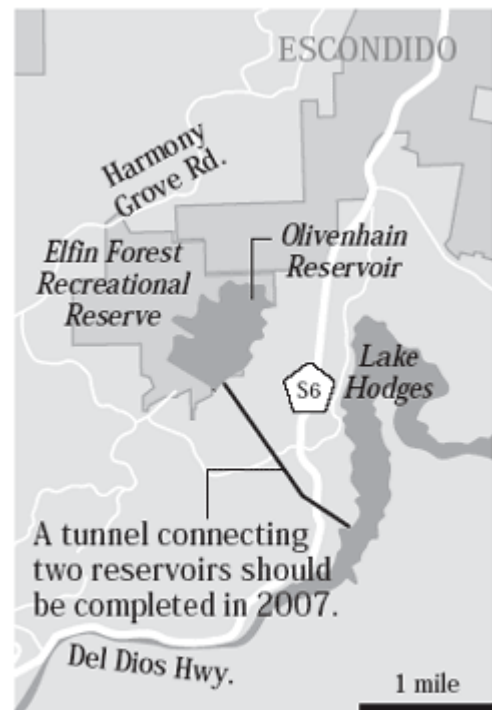
## Tunneling in

Construction has begun on a tunnel that will connect Lake Hodges with Olivenhain Reservoir.

The tunnel will be 1¼ miles long and about 14 feet wide.

The hole will encase a steel pipe about 12 feet in diameter.

The project will link Lake Hodges to aqueducts that bring in water from Northern California and the Colorado River for the first time in its 87-year history.



SOURCE: San Diego County Water Authority

UNION-TRIBUNE

He said the blasts have been calculated to minimize the effect above ground, and the water authority alerts people when each one is planned.

As the tunnel advances to sparsely populated area, the blasts will increase in intensity and be large enough to dislodge 10 feet of linear rock at a time, Degen said.

"We're expecting to finish the tunnel work in October, then from October until March 2007 they'll be putting in the steel lining," he said.

Water transfers would begin in 2008.

The pipe also will allow water to be transferred from Hodges to Olivenhain during wet years.

The project is part of the County Water Authority's \$939 million emergency storage project, a system of reservoirs, pipes and other systems to provide water if a catastrophe were to cut off supply.

The project's major components are:

- Olivenhain Reservoir, a joint project of the County Water Authority and the Olivenhain Municipal Water District, which added 8 billion gallons to the region's supply, enough to provide for 50,000 average families a year.
- A \$304 million, 11-mile pipe that will link San Vicente Reservoir in Lakeside to a north-south aqueduct near the Mercy Road/Interstate 15 interchange. That project is expected to be completed in 2008.
- Raising the 219-foot-high San Vicente Dam by 50 to 120 feet, adding millions of gallons of new capacity. That project is expected to begin after the San Vicente pipe is complete, and the project cost is not yet known.

---

■ Michael Burge: (760) 476-8230; [michael.burge@uniontrib.com](mailto:michael.burge@uniontrib.com)

[http://www.signonsandiego.com/uniontrib/20050903/news\\_1mi3pipe.html](http://www.signonsandiego.com/uniontrib/20050903/news_1mi3pipe.html)

utArticle050903LakeHodgesTunnelProject.doc