

ESP UPDATE



Fall 2008 Edition



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The Emergency Storage Project is a system of reservoirs, interconnected pipelines, and pumping stations designed to make water available to the San Diego region in the event of an interruption in imported water deliveries.

The Emergency Storage Project is part of the San Diego County Water Authority's Capital Improvement Program to enhance and increase the operational flexibility of its water delivery system.

This newsletter is one way the San Diego County Water Authority is keeping communities like yours informed about the project's progress.

For more information, please call toll free

(877) 426-2010

or visit our website at


www.sdcwa.org

Emergency Storage Project – How Will the System Work?

When all components of the Emergency Storage Project are complete in 2012, the San Diego region will gain critical protection for its water delivery system. An earthquake, prolonged drought, or other natural disaster could cut off San Diego County's imported water supply, leaving some communities without water within three to four days. The Emergency Storage Project will provide 75 percent of the county's water needs for up to six months.

In an emergency, the northern half of the county will receive water stored in Olivenhain and Hodges reservoirs (see "Emergency Water Deliveries" map). New pump stations slated for construction in 2012 north of Fallbrook will deliver this water to the northernmost areas of San Diego County.

To the south, the San Vicente Pipeline will deliver water from San Vicente Reservoir to the Second Aqueduct. This water will flow north and south to provide for the southern half of the Water Authority's service area.

The Emergency Storage Project is nearly two-thirds complete. With more than 90,000 acre-feet of water in reserve, this new system will be the region's water supply insurance. If imported water supplies are cut off, the Emergency Storage Project will keep the water flowing in San Diego County. 

An acre-foot is approximately the amount of water two families of four use in one year.



Paying for Progress

Providing a "water insurance policy" for the region's \$163 billion annual economy and the 3 million people who live and work in San Diego County isn't free. With the cost of the Emergency Storage Project at slightly more than \$1 billion, it's natural to ask, "How is this huge, important project being funded?"

The Water Authority uses a mix of carefully considered financing methods to pay for the Emergency Storage Project. By financing the project, the Water Authority is able to spread out the cost over time, so people who will benefit from the project in the future also help pay for it.



See **PROGRESS** on page 2



San Diego County Water Authority

Capital Improvement Program

PROGRESS *continued from page 1*

The Water Authority's long-range financing plan includes the costs of major projects, calculated many years into the future. These projections prevent sudden or dramatic increases in charges to the Water Authority's member agencies. In fact, water customers and property owners have been helping to pay for the Emergency Storage Project since 1999.

The key financing methods currently used by the Water Authority for the Emergency Storage Project are two types of long-term debt: fixed rate and variable rate. These are similar to fixed and variable interest rate home mortgages.

The main revenue sources used to pay for this debt are:

- A fixed charge created specifically for the Emergency Storage Project, assessed to the Water Authority member agencies
- An Infrastructure Access Charge to the member agencies' customers, which is paid as part of the water bill
- A one-time System Capacity Charge for all new customers connecting to the Water Authority's system

Other funding sources for the Emergency Storage Project include property tax revenues, a Water Standby Availability Charge on property tax bills, and investment earnings.

These diversified sources of revenue provide a firm foundation to pay for the region's largest-ever water facilities project. 💧

Lake Hodges Construction Focuses on Concrete Work

There has been a tremendous amount of concrete work at the Lake Hodges Projects in recent months – and there's more to come!

What does \$1 billion provide?

- A six-month emergency supply of stored water that is not dependent on imported water deliveries.
- A pipeline transportation network that links previously unconnected reservoirs with the rest of the region.
- New operational flexibility to move water where it is needed in the county in an emergency.

The inlet-outlet structure, its connecting tunnel, and the pump station are all built with massive amounts of concrete. Over 818 tons of reinforced concrete will be used by the time the contractor finishes building the inlet-outlet structure. This concrete, underwater channel will draw water in and out of Hodges Reservoir.

The structure will be submerged at the bottom of the reservoir and will extend about 140 feet out from the shoreline at normal water levels. Although it will be well below the lake surface, a string of

buoys will alert boaters to keep a safe distance from the area.

The inlet-outlet structure will be connected to the pump station by a 200-foot-long concrete-lined tunnel. The tunnel is being excavated through hard rock by drilling and blasting, using smaller blasts than what was needed for earlier tunnel work at the site. Once the excavation is done by the end of 2008, the tunnel will be lined with reinforced concrete.

The walls inside the pump station are nearly complete. The walls are lined with concrete and are three feet thick!

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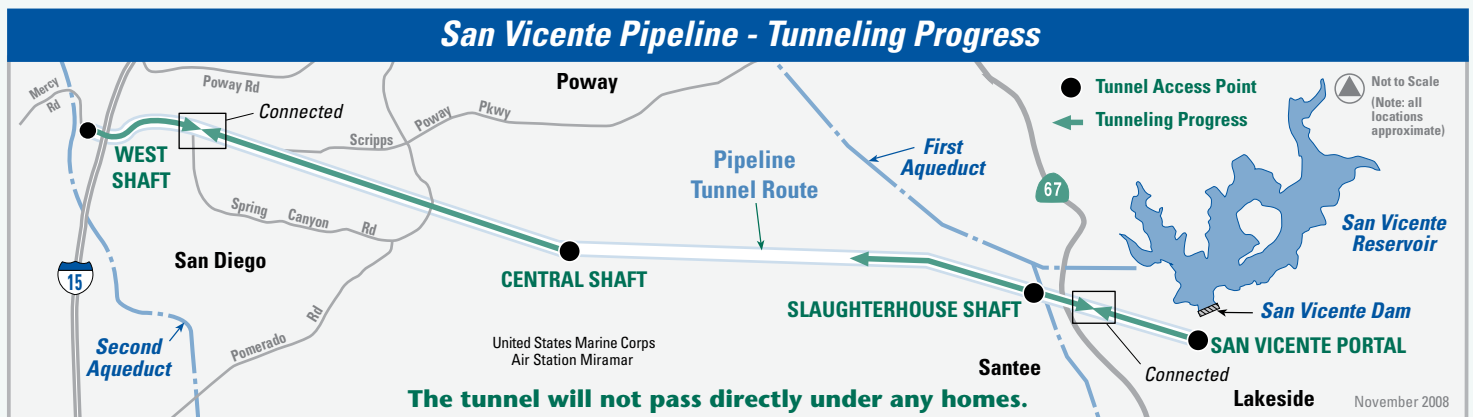


Large 50-foot-long pipe sections will create the San Vicente Pipeline.

More Than a Tunnel – San Vicente Pipeline Gets Pipe

For the last three years, the priority for the San Vicente Pipeline construction team has been tunneling through rock and earth. This month the focus shifts to pipe installation in the western half of the tunnel. Steel pipe sections 50 feet long and 8.5 feet in diameter will be lowered into the tunnel by a crane. Two segments at a time are hauled on a narrow sled inside the tunnel toward the West Shaft and installed from west to east. More than 1,000 pipe sections will be used to build the 11-mile pipeline.

In the eastern half of the tunnel, a tunneling machine continues working westward from the San Vicente Portal to excavate the remaining 2.5-mile tunnel stretch. This machine is in very hard rock, which has delayed the completion of the tunnel. All work for the pipeline is scheduled to be complete in 2010, when it will connect San Vicente Reservoir to the Water Authority's Second Aqueduct. 💧



The San Vicente Pipeline is an 11-mile tunnel and a large-diameter pipeline that will connect San Vicente Reservoir in Lakeside to the Water Authority's Second Aqueduct. The pipeline will function with other Water Authority facilities to provide water to the region in an emergency.

A Sneak Peek at San Vicente Dam Raise Construction

Construction of the Emergency Storage Project began in 1999 with the Olivenhain pipelines and dam. Ten years later, in spring 2009, construction of the last major component of the Emergency Storage Project will begin with the San Vicente Dam Raise.

The 220-foot-tall San Vicente Dam will be raised an additional 117 feet using roller-compacted concrete, which the Water Authority also used to build Olivenhain Dam. This type of concrete is as strong as conventional concrete, but is less expensive because it uses less water and cement, can be placed more quickly, and requires minimal curing time.

Construction of the four-year project is split into six construction phases to provide more opportunities for small construction companies to compete for part of the work. The construction phases are:

Test Quarry (Complete): In 2007, the Water Authority's contractor tested rock from the hillsides around the future San Vicente marina and determined it was suitable to use in the roller-compacted concrete mix. This means the contractor will not need to haul gravel to the project area, eliminating more than 100,000 truck trips.

Foundation Excavation: This phase will begin in spring 2009 and is expected to last about one year. It includes all the preparation work needed to start dam raise activities. The contractor will excavate down to the existing dam's foundation and will pour "dental" concrete in crevices. Similar to filling a cavity in teeth, crews will fill any cavities so the foundation for the dam is smooth and level. The contractor will also remove about two to three inches of the dry side of the dam, creating a good bonding surface for the new concrete. This work will not affect the integrity of the existing dam.

Dam Raise: Slated for early 2010 to 2012, this phase includes both concrete production and placement. Rock from the hillsides around the San Vicente marina will be mined and crushed, and a batch plant will be set up at the existing marina to mix the roller-compacted concrete.

Roller-compacted concrete is placed in stepped layers one to four feet high. Each layer is compacted with vibratory rollers similar to those used to build roads. The work will go around the clock, 24 hours a day, to create a strong bond between each layer.

The volume of roller-compacted concrete needed to raise the dam – 600,000 cubic yards – could fill a football field about 28 stories high.

This phase also includes constructing dam control facilities and a smaller 45-foot-tall saddle dam to elevate a low point between nearby hills to match the new dam height.

Bypass Pipeline: A new pipeline on higher land is needed to replace a city of San Diego pipeline that will be under water after the

expanded reservoir is filled. The pipeline is expected to be under construction from late 2011 through late 2012.

New Marina: During 2012, a new, expanded marina will be constructed. It will include 200 parking spaces, concession stations, six boat-launching lanes, restored shoreline beaches, an improved access road, and several features to ensure the reservoir is physically accessible to everyone.

Site Restoration: The final task will be replanting native habitat in areas where construction took place. This will start in early 2013 and should take about six months.

The Water Authority will begin to refill the reservoir with water in late 2012 or early 2013, as soon as the concrete-placing phase of the project is complete. Refilling the reservoir will take two to five years, depending on rainfall, water supply, and demand. The reservoir will reopen sometime between 2014 and 2017.

Completion of the San Vicente Dam Raise project will mark the conclusion of the entire 13-year Emergency Storage Project. 💧



Roller-compacted concrete was used to build Olivenhain Dam and will be used again to raise San Vicente Dam.

Environmental Review for Tijuana River Valley Wetlands Mitigation Nearly Complete



The Water Authority held a public hearing to collect comments on the environmental document.

The Water Authority's board of directors is scheduled to review the final Environmental Impact Report for the proposed Tijuana River Valley Wetlands Mitigation Project on December 18. This proposed wetlands project will create about 40 acres of native wetlands in the Tijuana River Valley to compensate for the construction of Water Authority projects, including the Emergency Storage Project. If the board certifies the environmental report, the project will be approved and construction is anticipated to begin in late 2009.

In August, the Water Authority held a public hearing to collect comments on the draft report from local community members. The final environmental report will include responses to those comments. For more information or to view the draft environmental document, visit the project website at www.sdcwa.org. Click on "Infrastructure," then "CIP," then "Tijuana River Valley Wetlands Mitigation Project." 💧



LAKE HODGES *continued from page 2*

The concrete provides stability, durability, and insulation for the structure. While only about 19 feet of the pump station will be visible above ground, it extends 120 feet underground.

The pump station will also contain two pump turbines that will generate electricity as water flows downhill from Olivenhain Reservoir into Hodges Reservoir. The turbines will also pump water uphill to Olivenhain Reservoir. 💧



The 48-inch diameter pipe inside the pump station connects to one of the two 28,000 horsepower pump turbines.

San Vicente Pumping Facilities Push Ahead

The San Vicente Pumping Facilities will move water from San Vicente Reservoir westward through the San Vicente Pipeline. The project is approximately 80 percent complete, and nearly a quarter of a mile of pipe now connects the pump station to the hilltop surge control tank. Crews recently finished reinforcing the surge control tank by wrapping steel cables around its exterior. Work is also under way on the roof of the pump station and on mechanical valves and piping inside the structure. The project is expected to be complete in summer 2009. 💧

*For more
information*

about the San Diego County Water Authority's
Emergency Storage Project,
please call toll free **(877) 426-2010**,
email **ESPinfo@sdcwa.org**,
or visit our website at: **www.sdcwa.org**.

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San Diego County
Water Authority

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The Water Authority is a public agency serving the San Diego region as a wholesale supplier of water. The Water Authority works through its 24 member agencies to provide a safe, reliable water supply to support the region's \$163 billion economy and the quality of life of 3 million residents.



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