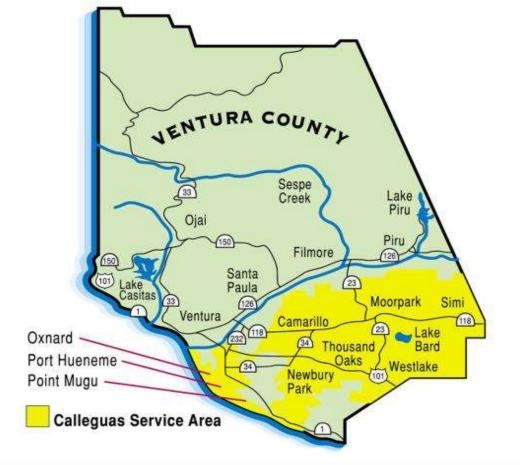
Calleguas Municipal Water District Member Agency Presentation to Metropolitan Water District Board of Directors



Calleguas MWD

- Formed in 1953 by local communities to develop supplemental water supplies
- Joined the Metropolitan Water District in 1960
- An imported water wholesaler (of primarily State Water) to 19 water agencies and cities serving about 670,000 people
- Governed by a five-member elected board
- Annual budget (2021): \$160M

• 70 employees





Calleguas is a SWP Dependent Agency

TUESDAY MORNING April 25 1972

Feather River water reaches faucets here

Water from Northern California streams should begin flowing through Camarillo faucets sometime today, according to Archie Hill, engineermanager of Calleguas Municipal Water District.

Calleguas began receiving the Feather River water from Metropolitan Water District Monday. First to get the new water-significantly softer than Colorado River water--was Simi Valley followed by Thousand Oaks. Water from the State Water Project began flowing into the Calleguas service area in 1972. 5 years following the introduction of water from the CRA.

Salinity presents challenges within the Calleguas service area, which includes the Calleguas Creek Watershed and Oxnard Plain.

Calleguas <u>only receives full-service treated water supplies</u> from Metropolitan.

Calleguas maintains a <u>single point of connection</u> with Metropolitan.

Single Point of Connection: Santa Susana Tunnel

HOW TO BUILD A 7000-FOOT TUNNEL THROUGH SANTA SUSANA MOUNTAINS

By Gerald Olsen, Editor ... Just how do you build a 7000foot tunnel through a mountain of rock?

This is the problem Simon Perliter, of the engineering firm of Pertiter and Soring, is facing. The firm has been hired by the Calleguas Municipal Water District to handle the engineering on the MWD water importation project.

Perliter is an old hand at tunnels having assisted in the building of many for the Metropolitan Water District.

This lunnel, 7000 feet long, will go through the Santa Susana Mountains and bring, life-glving water to the Calleguas district from the MWD.

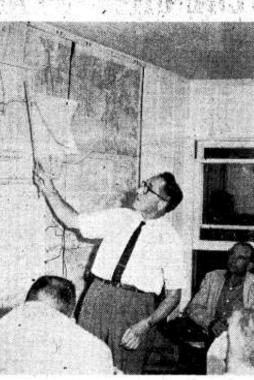
South of SP tunnel ... The tunnel will be built south of the existing Southern Pacific Railroad tunnel and south of Highway 101 that crosses Santa Susana Pass.

The SP tunnel was built in 1904 with timber strengthening and lined with concrete in 1922.

The hole for the Calleguas tunnet will be "driven" from the western side or western portal. The project will take 18 months to complete and require men working 16 hours per days.

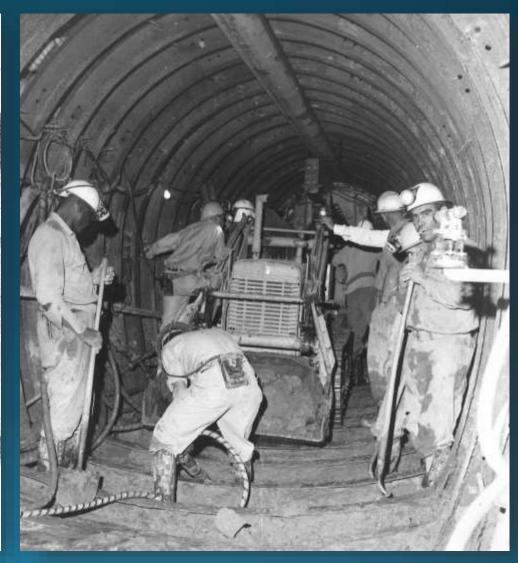
It will be driven by drilled holes into the rock, filling the holes with dynamite and blasting the rock which will be removed. About 17,000 yards of rock will be taken out of the tunnel.

25 Trains Per Day ... No blasting can take place



EXPLAINS TUNNEL ROUTE — Simon Perliter, of the engineer firm of Perliter and Soring, explains the route the water tunnel will take through the Santa Susana Mountains. The engineering firm is bandling the engineering on the \$22 million pipeline from MWD for the Calleguas Municipal Water District.

- Camarillo News Photo

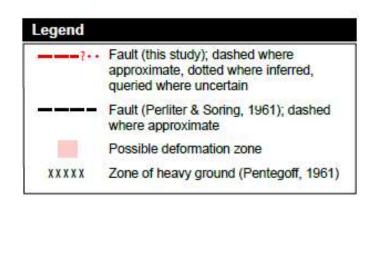


Santa Susana Tunnel

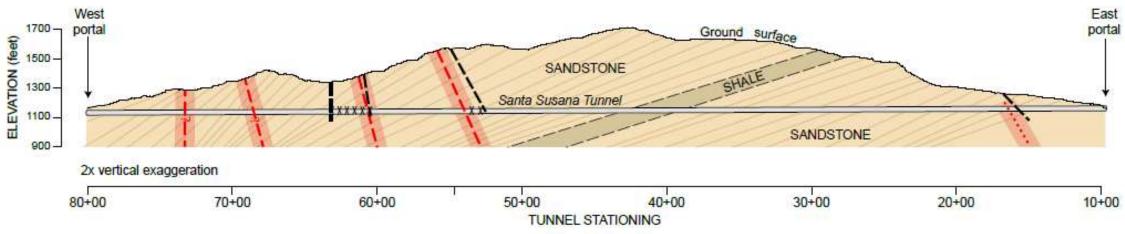
- 1.3 miles long and 96 inches in diameter
- Tunneled through sandstone with thin shale interbeds
- Conveys 100% of Calleguas' water into the service area
- Unreinforced concrete lining



WEST

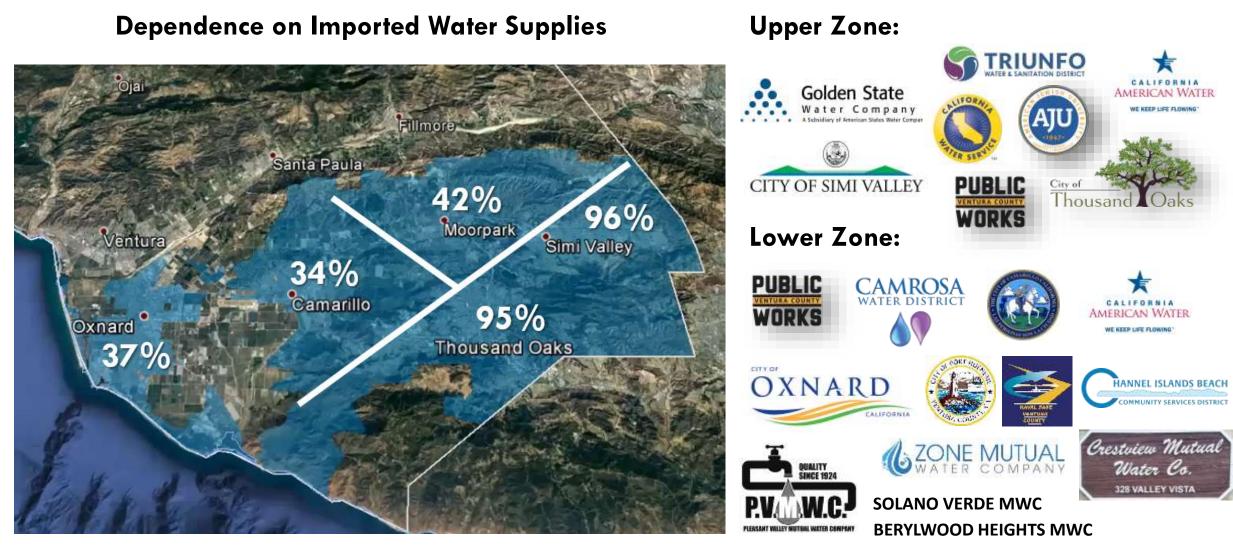


EAST



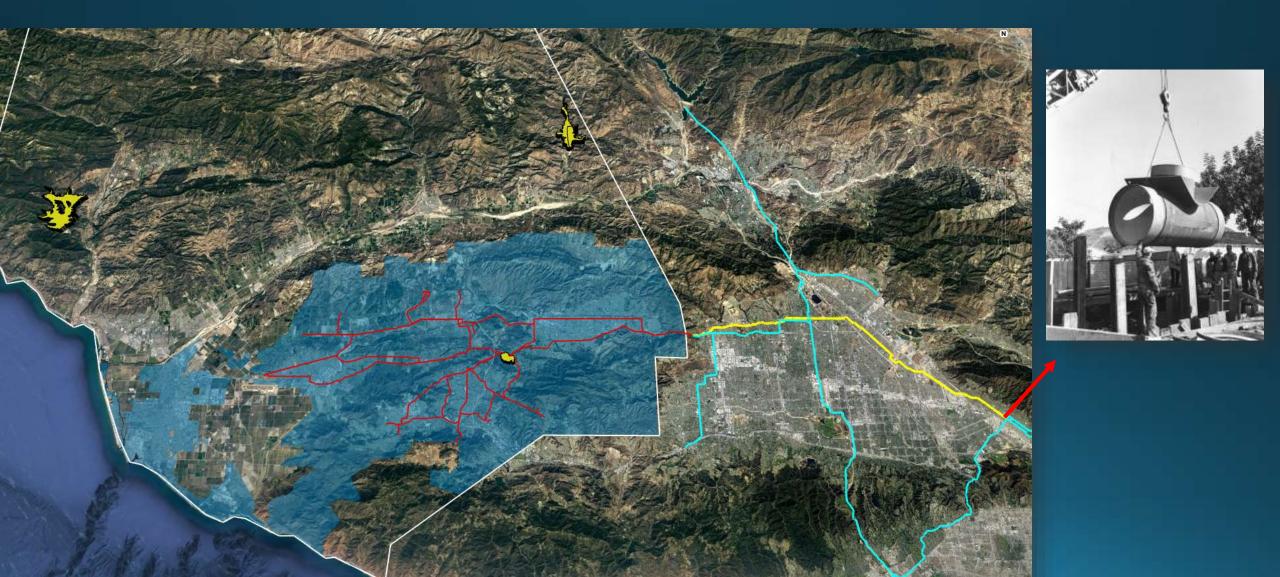
101°

Calleguas Purveyors



BUTLER RANCH MWC

Calleguas Distribution System



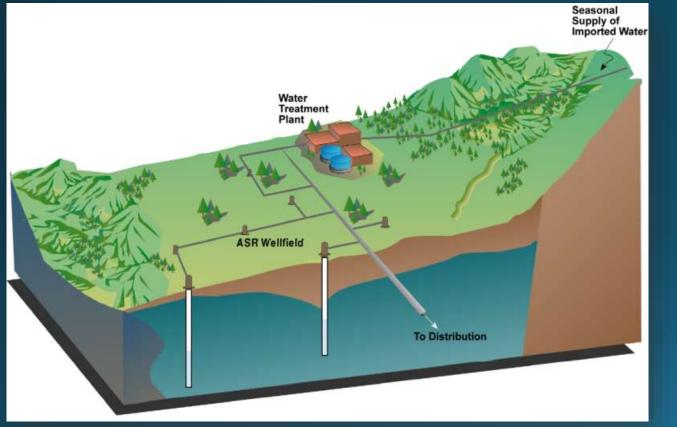
Calleguas Distribution System

Calleguas Distribution System Upper Zone 64% Demand Lower Pressures Limited Local Resources Grimes Canyon P Fairview PS Las Posas Region Simi Region East Portal Hydro Standsen PS Conejo Hydro Santa Rosa Hydro Springville Hydro Coneto Lindero Tank Springville Oak Park Region Tank Lindero PS Westlake Tank Camarillo Region 💧 Thousand Lower Zone Oaks Tank Sherwood PS 36% Demand Legend ٠ Newbury Park Tank **Higher Pressures Pressure Regulating Station** ٠ Sherwood Pump Station Local Groundwater Sources Vellfield torage Tank **Conejo Region** Hydroelectric Generator Flow Control Facility

- 2 significant points of storage for outages: Las Posas ASR and Lake Bard
- 130 miles of pipeline (78 to 14-inch diameter)
- 5 hydroelectric generators
- 6 pump stations
- Salinity Management Pipeline



Las Posas Aquifer Storage & Recovery Project

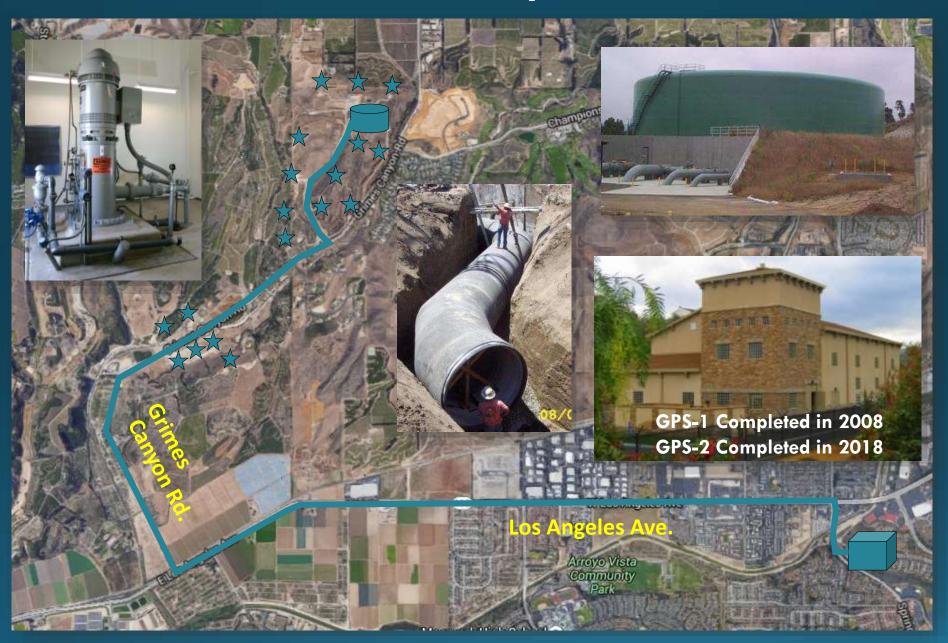


Metropolitan co-funded Las Posas ASR facilities and established Las Posas Groundwater Storage CUP in 1995.

Intended to increase Metropolitan's storage capacity and address system redundancy for Calleguas.

Las Posas Groundwater Storage CUP terminated in 2011 with Calleguas buy-out of Metropolitan's rights and interests in the program.

Las Posas ASR Project Facilities



Lake Bard and the Lake Bard Water Filtration Plant



Step 1 - Lake Step 2 -Osygenation **Zooplankton Screens** Small guantities of Water flows from the oxygen are injected lake-outlet tower into the cool depths of the lake to improve the taste and treatability of the

and then through fine screens which remove zooplankton tuch as copepeds. and daphnia.

Step 2

Step 7 - Disinfection

The plant can employ three

disinfectants: ozone, chiorine,

at the beginning of treatment.

To provide final disinfaction.

chlorine or chloramines are

added in the clearwells where

Step I - Ozone Disinfection Ozone is applied to the water at the beginning of the treatment process. A powerful unidant and disinfectant, ozone is used to oxidize and destroy pathogenic micro-organisms in the water. Ozone used at the plant is created onsite in two ozone generators using electricity and high-purity oxygen gas. Hydrogen peroxide may also be added for taste and oder control.

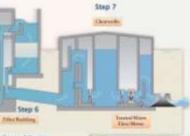
Step 4 - Coogulation After the water is oxidized. it enters a rapid mix unit where coagulant and polymer are dispersed into the water to condition small suspended solids for filtration. The chemicals allow the microscopic particles to attach and form larger, filterable particles called 'floc."

Step 5 - Flocculation The conditioned water enters two hydraulic flocculation pipelines. Here the water is gently mixed as it flows past vertical plates (haffles) placed at intervals in the pipes specifically designed for this purpose. The hydraulic energy of water passing through the pipes causes small suspended particles to collide and form filterable floc.

Step 4 Sugar Mi- Passe Ship: Step 1 Wastewater Recovery

Backwash water generated

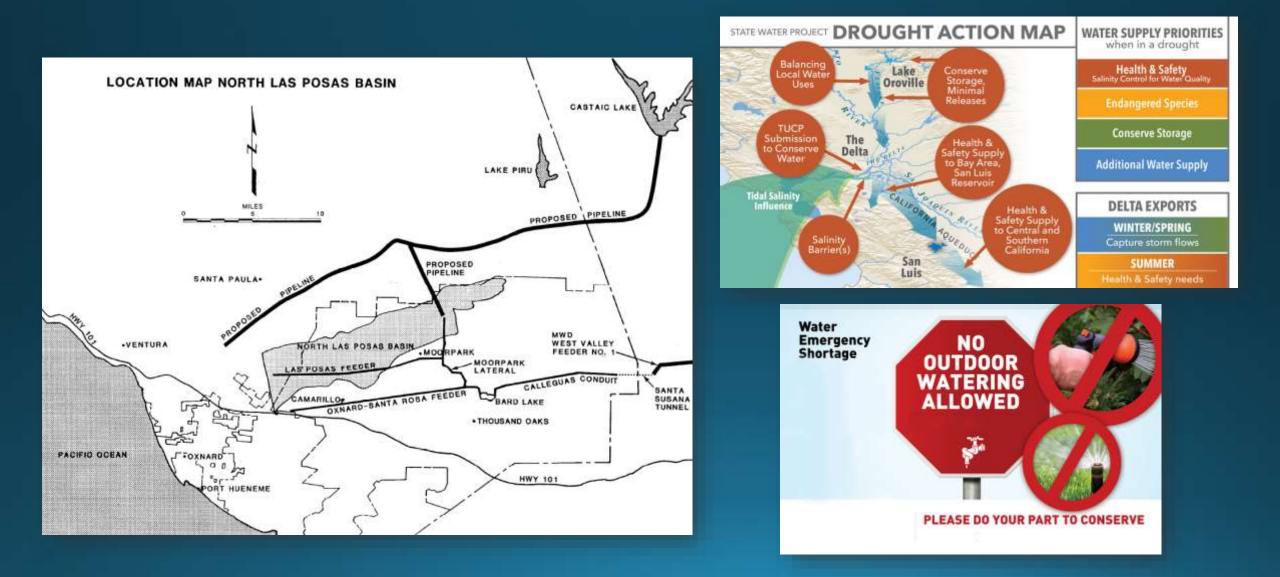
from cleaning the filters SCADA Control System flows to the washwater recovery basins where solids are allowed to settle. As they settle, solids are removed by a and chloramines. Ogone is added vacuum system and pumped to drying beds. The clarified water is seturned to Lake Bard. Settled solids collected in drying beds are allowed to reporting. dry before disposal.



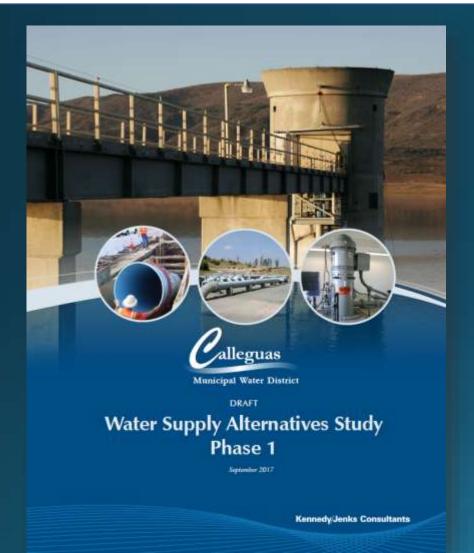
Water Quality Monitoring Plant control is provided by a supervisory control and data acquisition (SCADA) system that integrates monitoring and control of the plant facilities. Programmable logic controllers located throughout the plant are on-line analyzers. monitored by a supervisory personal computer at the Control Building to provide operational control and

Water is routed to an on-site laboratory from nine locations throughout the plant so that quality may be monitored routinely. Water guality is measured continuously by supplemented every four hours by operators who take samples at key points in the treatment process.

System Redundancy and Water Supply Challenges



Water Supply Alternatives Study



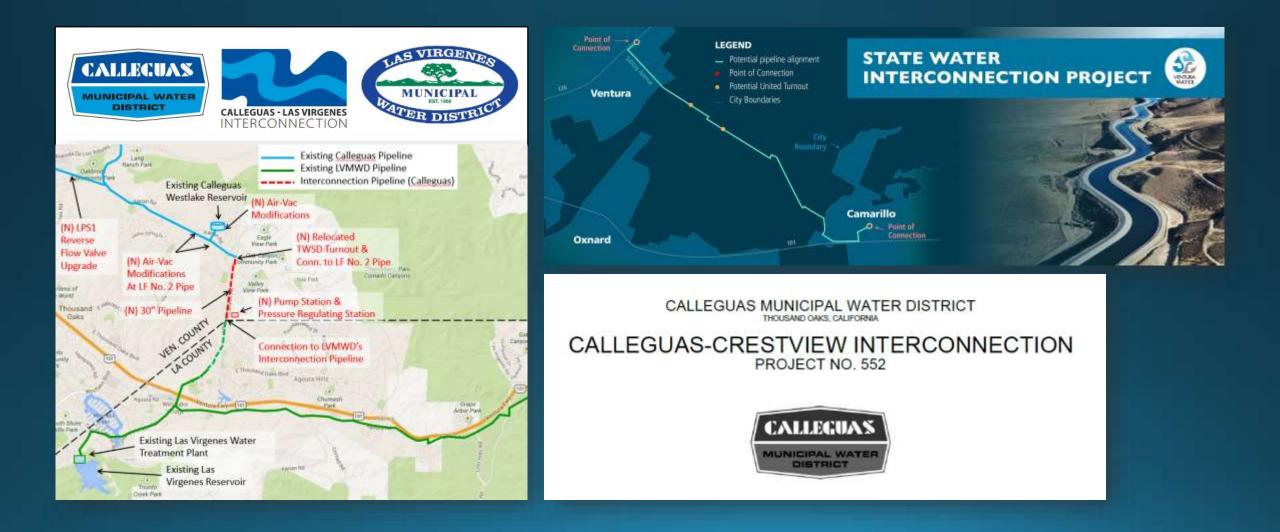
Evaluate and recommend ways to meet Calleguas' demands during an extended outage of imported supplies. Over 120 project concepts evaluated.

Key Question: "<u>How can we reduce demands and</u> <u>increase local supplies to meet our purveyor's needs</u> <u>in a 6-month outage?</u>"

Opportunities for collaboration outside of the traditional Calleguas network.

Original problem statement for the WSAS shifting to also address drought and long-term water supply reliability.

New System Interconnections



What does a "One Water Strategy" look like for Ventura County?



Thank You!

A. M

