

Rethinking Water Supply Through
Deep-Sea Desalination

A New Wave



Ana Schwab | Best Best & Krieger



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Tim Quinn | OceanWell

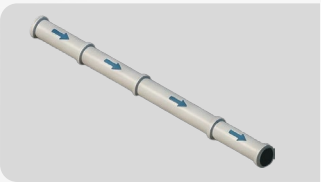
Presented by







Las Virgenes Municipal Water District | Water Metrics



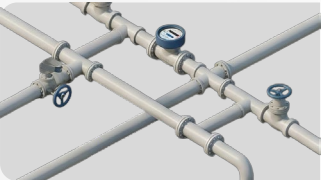
+460 mi

Distance LVMWD water travels



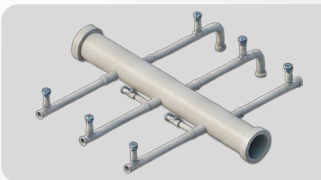
25

Portable Water Sotorage Tanks



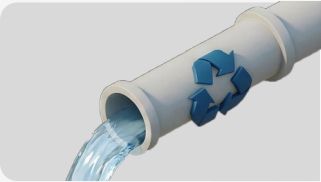
395 mi

Of potable water mains



19,892

Portable water service connections



68.6 mi

Recycled Water Mains

Las Virgenes Municipal Water District provides essential water and waste treatment services to roughly **70,000** people in western Los Angeles County.



Tapia Water Reclamation Facility | 1964

Las Virgenes Reservoir | 1972





Las Virgenes Municipal Water District | Challenges

^ **74%**

Reduction in MWD
Allocation 2022

+100%

Import Drinking
Water

- State Water Project Dependent
- No Local Supply / No Groundwater

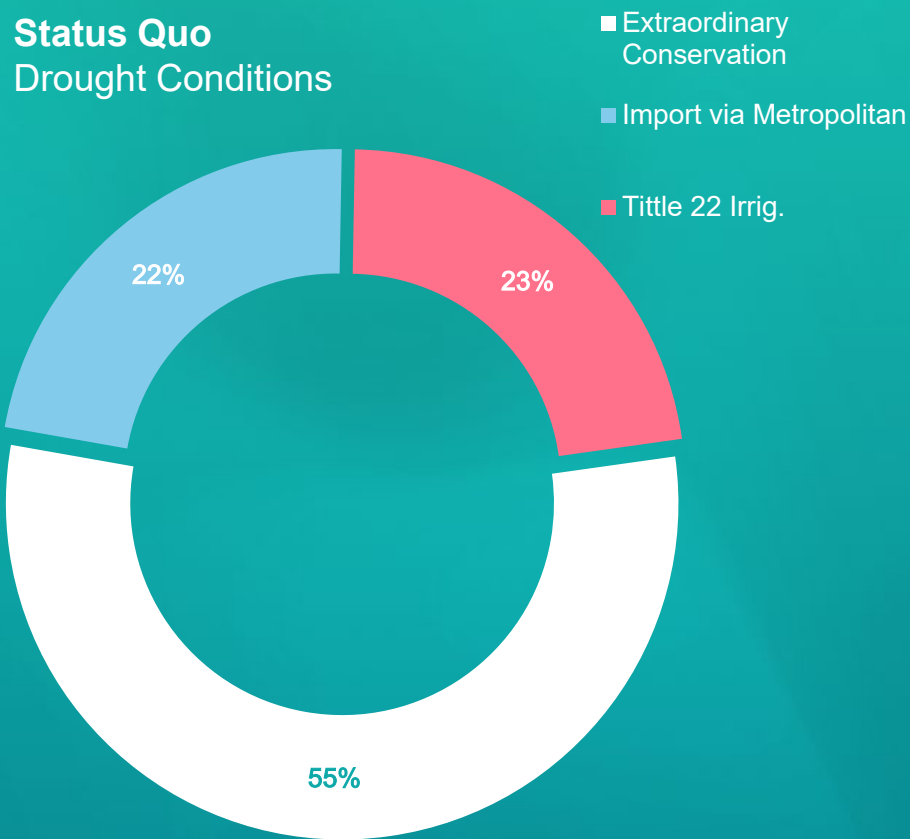




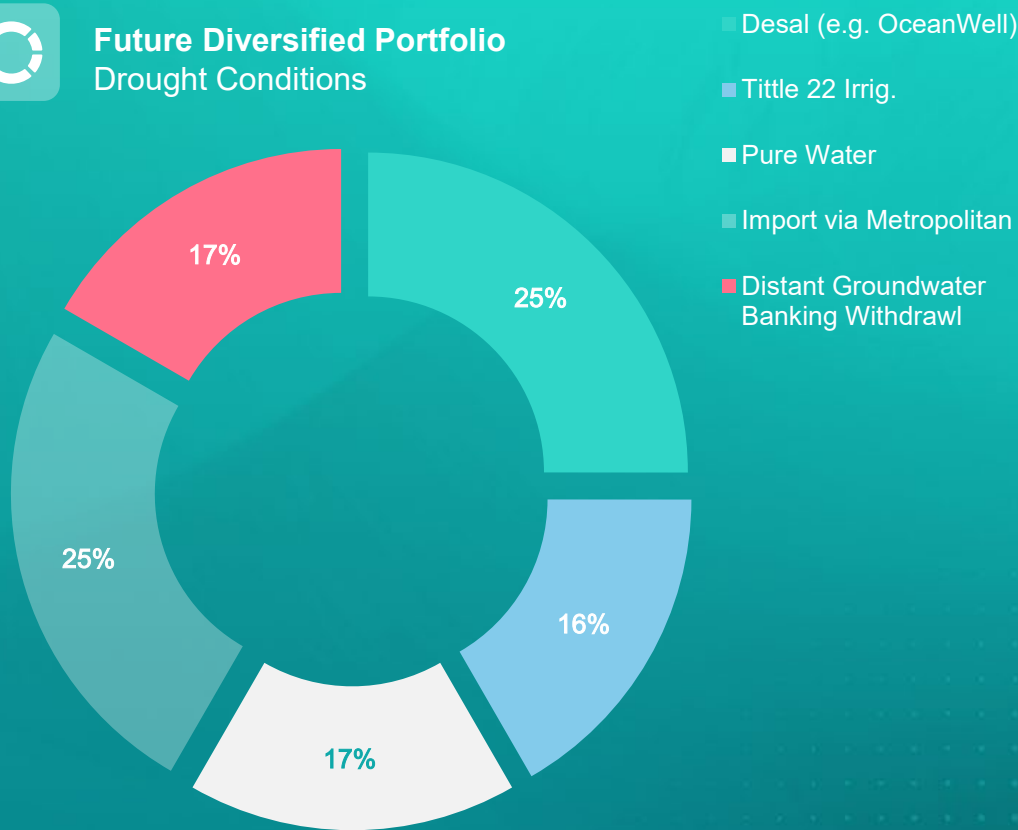
Las Virgenes Municipal Water District | Water Portfolio



Status Quo Drought Conditions



Future Diversified Portfolio Drought Conditions





The Technology

What if We Changed the Location of the Reverse Osmosis Process?

 **Concept of Natural Pressure**
to Reduce Energy Costs

 **Locate Where** There is Less
Organic Life

 **Leave the Salt and Sea Life**
in the Ocean

 **Subsea Reverse Osmosis**
(SRO)

 **Locate RO Facilities at**
Depth



Robert Bergstrom

Blue Water Farm

Natural Hydrostatic Pressure

1500' Deep - Free Energy Removes Salt

Purchased Energy Sends Only Fresh Water to Shore

Net Energy Savings 40%

Less Organic Life

No sunlight, no photosynthesis

Minimal Sea Life Mortality

Mild Brine

No Chemicals or solid waste

More Water

Scalable Tech - Start Small, Grow

Large

Pod Life – 30 years

Self Cleaning

4-Year Maintenance Periods





A Game Changing Technology

OceanWell Solution:

- ✓ Drought Proof
- ✓ Climate Proof
- ✓ Substantial Energy Savings
- ✓ No Brine Problem
- ✓ Minimal Sea Life Mortality
- ✓ Modular, Start Small and Build Up
- ✓ 60-90% Reduction in Onshore Footprint
- ✓ Permittable and Buildable

1 Million

Gallons per day
(4,000 m³ per day)

Seawater
Intake

Seawater
Outfall



Natural hydrostatic
pressure

Freshwater
to shore





Developing the Market

Collaborative process in California

We are building a supportive coalition to address California's water crisis by gaining the support and influence of prominent figures and institutions throughout the state.

We are in active discussions with members from the groups listed here



Ocean Well's outreach meetings (excluding Politicians):

>100



Organizations

Environmental Organizations

Orange County Coastkeeper
LA Waterkeeper
California Coastal Protection Network
Natural Resources Défense Council
Environmental Défense Fund
The Nature Conservancy
Sierra Club of California
California Water Impact Network
California Coastkeeper Alliance
Save the Waves Coalition
California for Just Water

Municipal Water Districts

Monterey Peninsula Water Management District
One Water Monterey
Marina Coast Water District
Central Coast Water Authority
San Luis Obispo County
United Water Conservation District
Public Works Agency of Ventura County
Las Virgenes MWD
Calleguas Municipal Water District

Los Angeles Department of Water and Power
West Basin Municipal Water District
Eastern Municipal Water District
Santa Clarita Valley Water Agency
Elsinore Valley Water District
Municipal Water District of Orange County
Irvine Ranch Water District
Moulton Nigel Water District
City of San Diego
Inland Empire Utilities Agency
Metropolitan Water District

Government/ Public Agencies

California Ocean Protection Council
Pacific Fisheries Management Council
California State Lands Commission
California Coastal Commission
Regional Water Resources Control Boards
State Water Resources Control Board
Department of Natural Resources
Department of Défense
Department of the Navy
Environmental Protection Agency

Academic Institutions

UC Merced
UC Berkeley
Stanford University
UCLA
UC San Diego
UC Santa Cruz
Scripps Institute
UC Irvine
National Alliance for Water Innovation

Industry Coalitions

Western Growers Association
CalDesal
AltaSea- Port of Los Angeles
California Alliance for Jobs
California Building Coalition
Bay Area Council
California Farmers Union and California Dairy
California Farmers Union
Coastal Conservation Association of California (CCA CAL)



**The OceanWell Business Model
is Collaborative**



Direct Delivery Agencies

Las Virgenes MWD

Calleguas MWD

Los Angeles DWP

LA County District 29

Exchange Agencies

Burbank DWP

Upper San Gabriel Valley MWD

Santa Clarita Valley Water Agency

Total Capacity: About 60 MGD

Ventura

Santa Clarita Valley WA

Palmdale

Sim Valley

Calleguas MWD

Los Angeles DWP

Burbank DWP

Las Virgenes MWD

Upper San Gabriel Valley MWD

Santa Monica

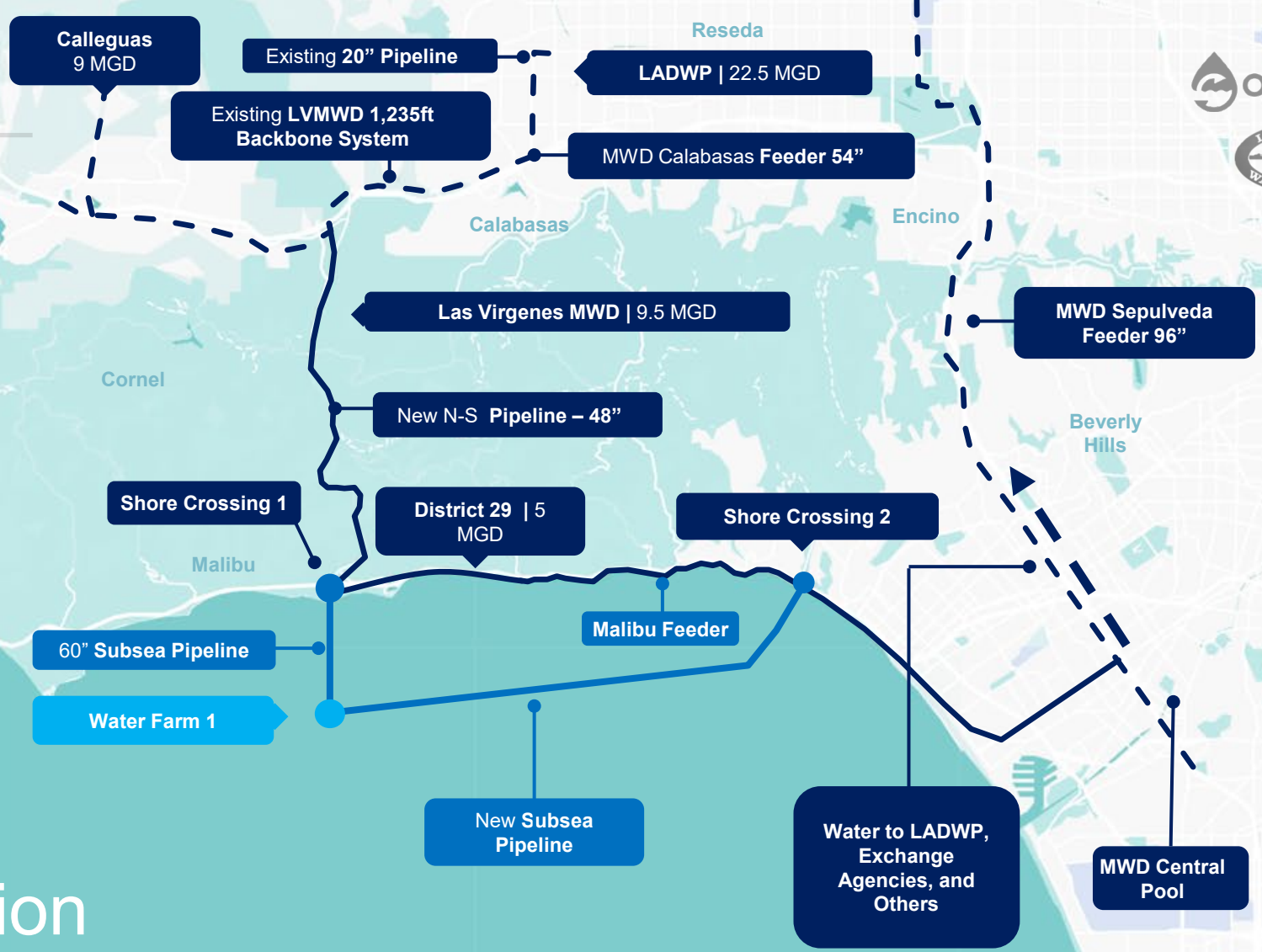
LA County District 29

Redondo Beach

Anaheim

Long Beach

 Total Population: 6,130,400 Served



Water Farm 1 Phased Construction

- Water farm
- Onshore conveyance
- Offshore conveyance

Onshore Construction

Begins in 2029



**Malibu Canyon
Pipeline**



**Rehab of Existing
Pipelines**



Interconnections



Power Stations



**Pressure Reduction
Facilities**



**Water Treatment
Facilities**



**MWD-OceanWell Work Group Created to
Integrate the Systems**

WATER FARM 1



5.2 Miles South of Malibu

About 15 Pods Initially

Grows to About 60 Pods



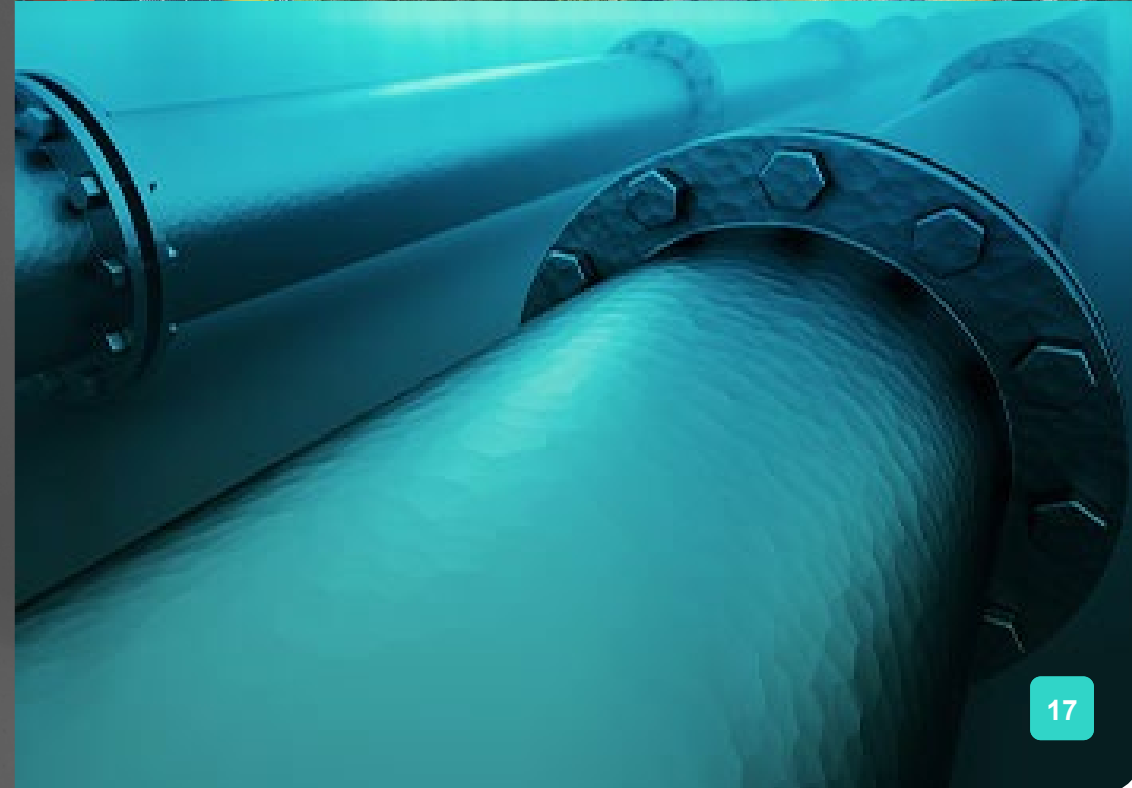
Subsea Pipelines

Phase 1:

- **About 7 Miles to Connect WF1** with Shore Crossing 1
- 60", Capacity 60 MGD

Phase 3:

- **About 14 Miles to Deliver Water at scale** to MWD Central Pool
- **Capacity TBD** Based on Demands in New Markets





Shore Crossing and landfall alternatives in Malibu

OceanWell

- ★ Malibu Pumphouse
- Malibu Landfall Options 2025 0721 | 0-0
- Pipeline Routes 3717

Environment

- Estuaries
- Kelp Canopy
- Rocky Reefs
- WDPA

?

Where we go from here?



Permit Requirements

Federal Permits

▪ NEPA Lead Agency	Prepares EIS
▪ Army Corps of Engineers	Navigation Impacts
▪ Environmental Protection Agency	NPDES Permit
▪ NOAA Fisheries	ESA & Noise Impacts

State Permits

CEQA Lead Agency	Prepares EIS
SWRCB	Water Quality
California Coastal Commission	Coastal Development Permit
State Lands Commission	Subsea Pipeline in State Waters
Local Government	Local Coastal Development Permit

Questions?



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