



WATER PURIFICATION DEMONSTRATION PROJECT RESULTS

California Water Projects



Federal Water Projects

- Central Valley Project
- Coachella Canal
- All American Canal

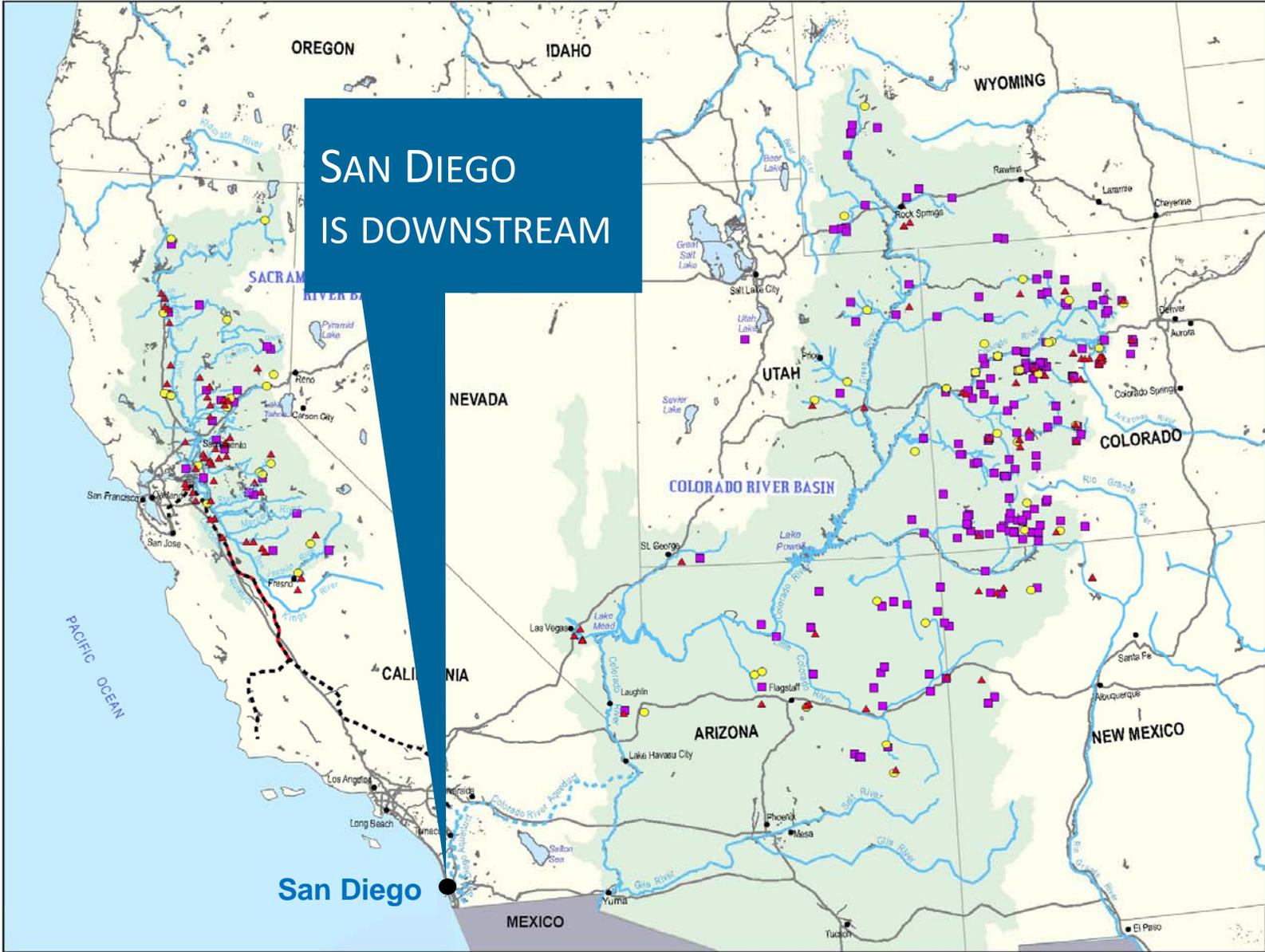
State Water Projects

Local Water Projects

- Mokelumne Aqueduct
- Hetch Hetchy Aqueduct
- Los Angeles Aqueduct
- Colorado River Aqueduct

Bay-Delta

**SAN DIEGO
IS
DOWNSTREAM**

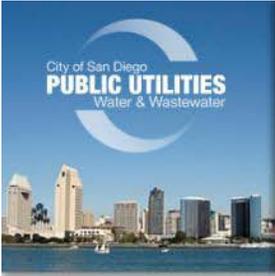


LEGEND

- ▲ 1.0+ MGD
- .5 - <1.0 MGD
- <.5 MGD
- FREEWAYS
- RIVERS
- COLORADO/SAN DIEGO AQUEDUCT
- - - SWP AQUEDUCT
- STATE-FEDERAL WATER PROJECT
- BASINS



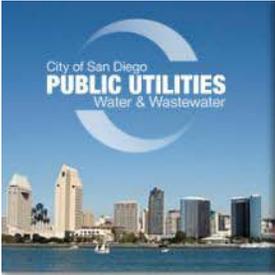
**Municipal Wastewater
NPDES Facilities**
Colorado River &
State Water Projects



WATER SUPPLY CHALLENGES

- Limited local supplies
- Increasing cost of imported water
- Pumping restrictions
- Recurring drought conditions
- Population growth
- Natural disasters





WHAT IS BEING DONE...

Regional:

Desalination



Local:

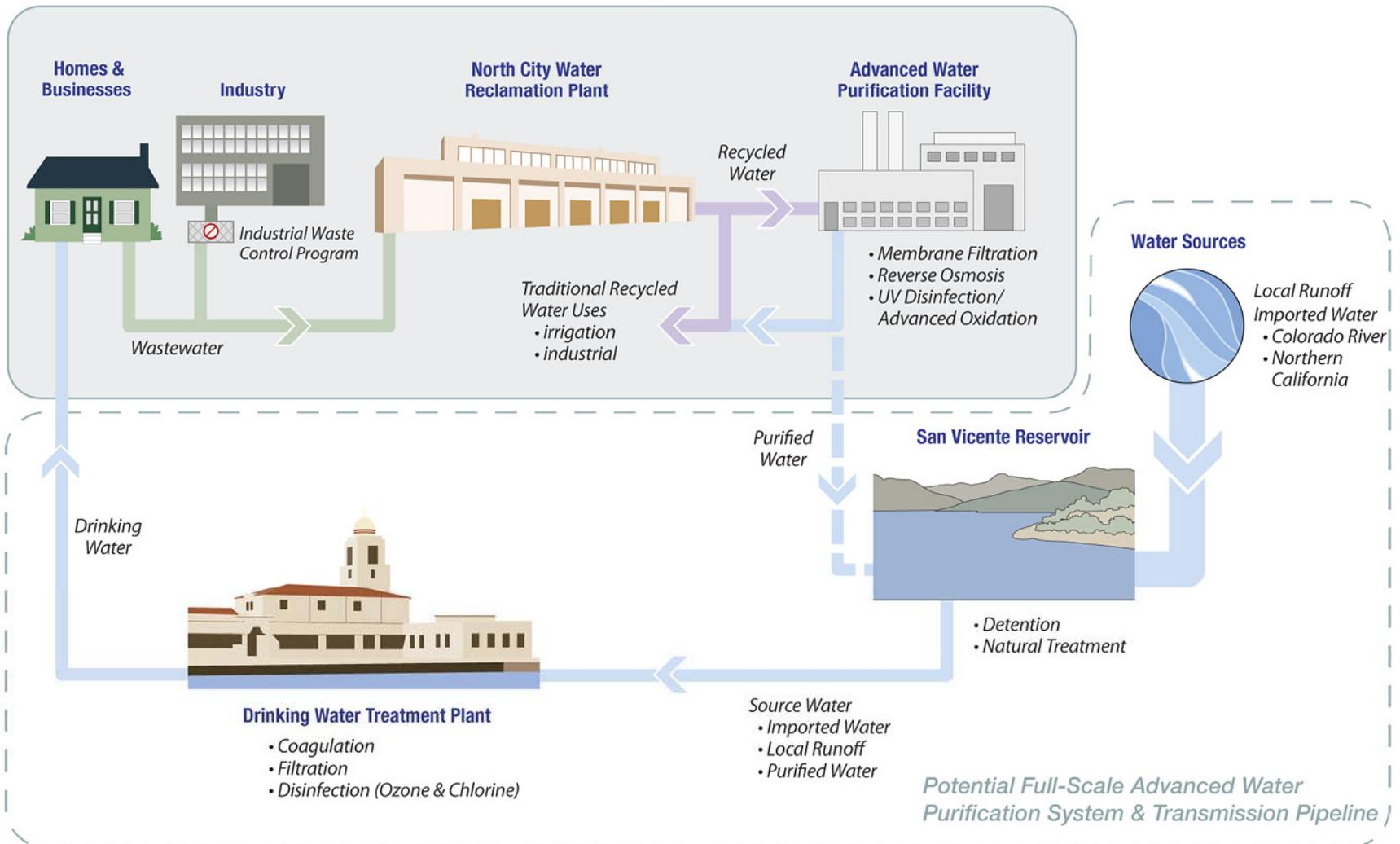
- Water Conservation
- Groundwater Development
- Recycled Water
- Water Purification

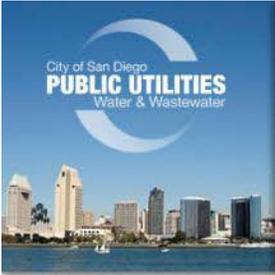
**SAN DIEGANS
WASTE
NO WATER**
ALL DAY. EVERY DAY.

City of San Diego's Water Purification Demonstration Project

Purification Process

Demonstration-Scale Project



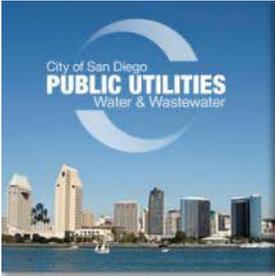


WATER PURIFICATION DEMONSTRATION PROJECT

COMPONENTS

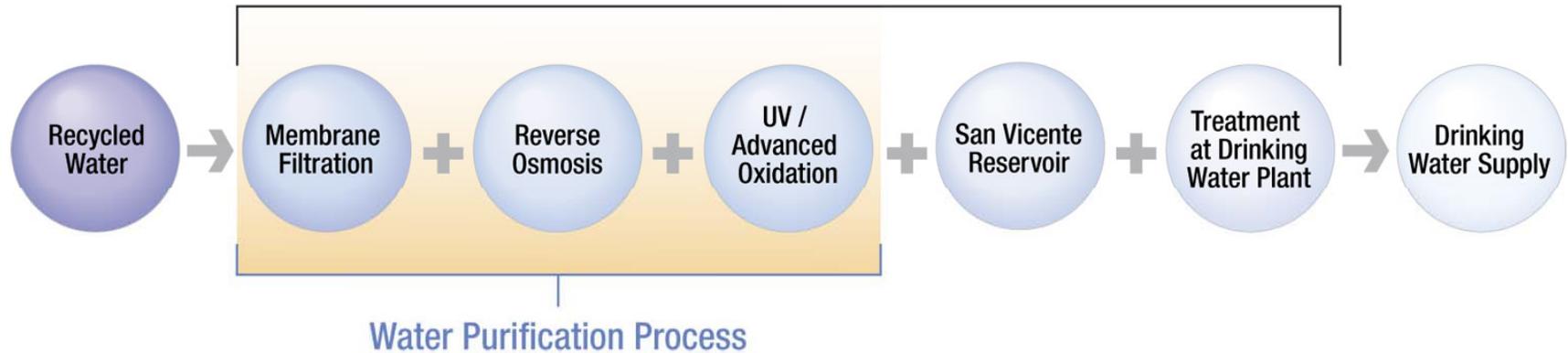
- Advanced Water Purification (AWP) Facility
- Independent Advisory Panel (IAP)
- San Vicente Reservoir Study
- Regulatory requirements
- Energy and cost analysis
- Public outreach & education program





Water Purification Process

Multi-Barrier Water Purification Steps



Microfiltration & Ultrafiltration

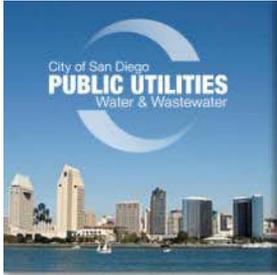


Reverse Osmosis



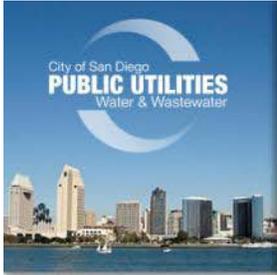
Ultraviolet Light / Hydrogen Peroxide





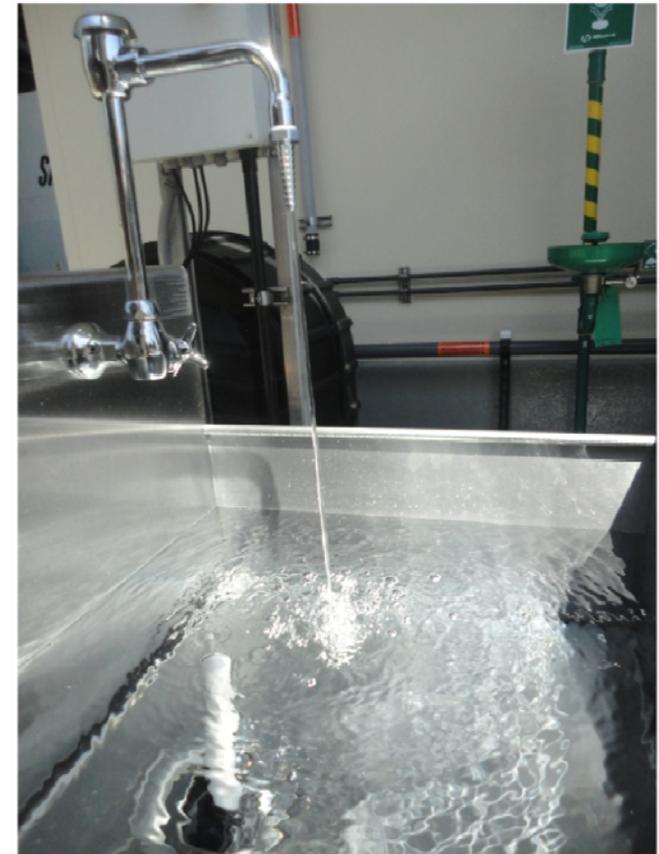
AWP FACILITY TESTING & MONITORING PLAN

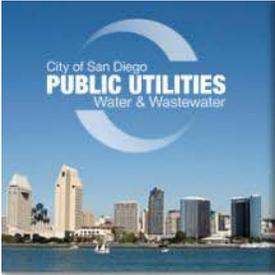
- Testing period August 1, 2011 to July 31, 2012
- Measured for 342 constituents and parameters in recycled water, purified water, and imported water
- Conducted 9,000 individual water quality laboratory tests
- Implemented continuous and daily monitoring before and after each treatment step to verify integrity of each treatment process
- Visit www.purewatersd.org for more information



AWP FACILITY TESTING & MONITORING RESULTS

- Purified water met all federal and state drinking water standards
- Lab tests plus continuous monitoring ensures only high quality water is produced
- Overall water quality was exceptional, comparable to distilled water
- Continuous and daily monitoring verified the integrity of the treatment process and equipment

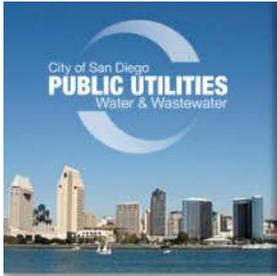




INDEPENDENT ADVISORY PANEL

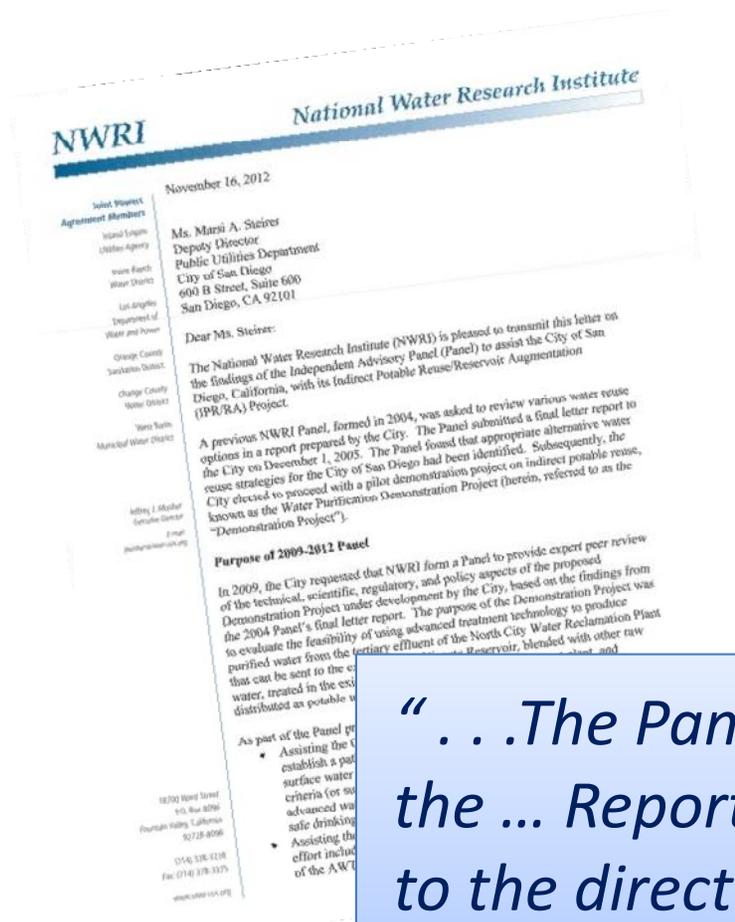
- Convened to provide expert peer review of the technical, scientific, and regulatory aspects of the Demonstration Project
- Requested by California Department of Public Health (CDPH)
- Provided feedback regarding
 - San Vicente Reservoir
 - AWP Facility
 - Proposed regulatory framework



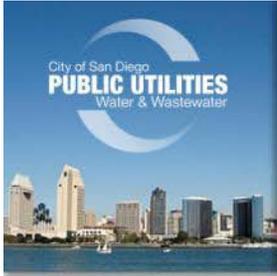


INDEPENDENT ADVISORY PANEL CONCLUSIONS

- Ten IAP meetings over three years
- IAP issued summary “letter of findings” November 16, 2012
- Unanimously concluded that the San Vicente Reservoir augmentation project would be a landmark development for indirect potable reuse and would contribute to San Diego’s water portfolio



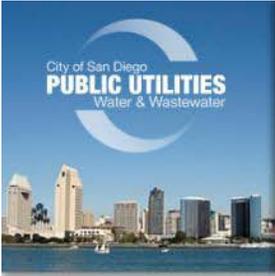
“...The Panel believes that the ... Report ... (is) responsive to the directives set forth by the City Council.”



SAN VICENTE RESERVOIR STUDY

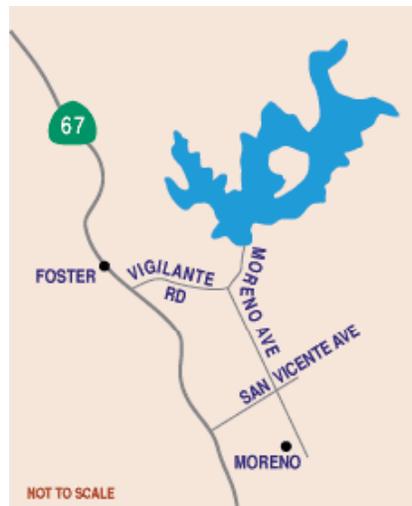
- Determine water quality effects of purified water in the reservoir
- Establish the retention time and dilution of purified water in the reservoir
- Secure regulatory approval from CDPH and San Diego Regional Water Quality Control Board

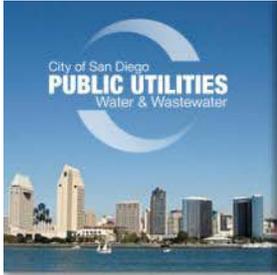




SAN VICENTE RESERVOIR STUDY RESULTS

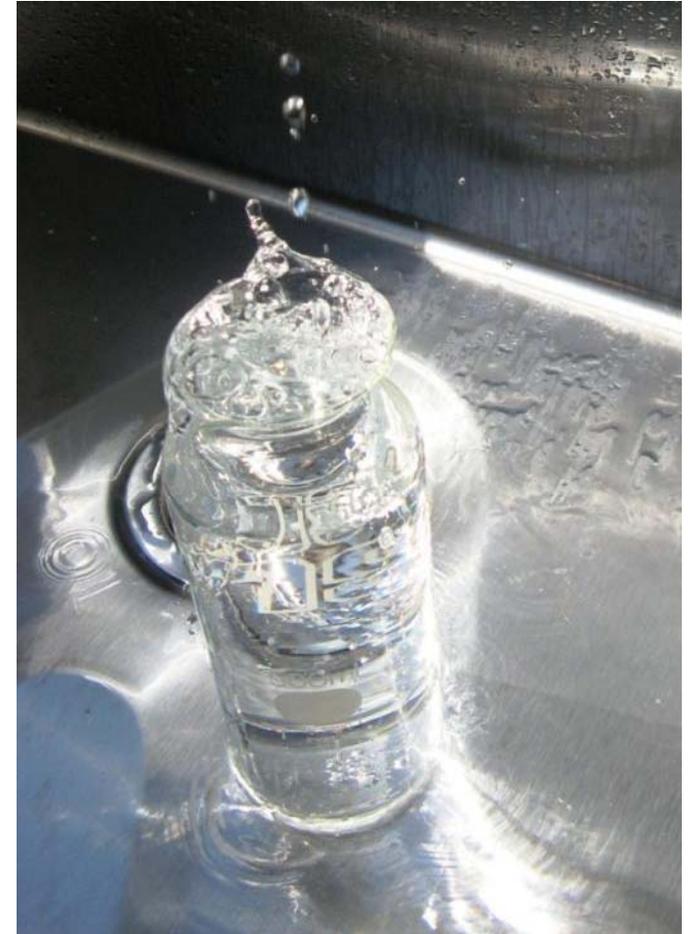
- Reservoir provides an environmental barrier that satisfies anticipated regulatory requirements
- Purified water will be diluted at least 200:1 under all anticipated reservoir operations
- Water quality in San Vicente will not be affected by adding purified water

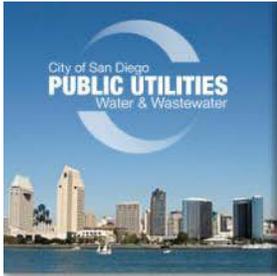




REGULATORY FRAMEWORK

- Regulatory agencies, CDPH, Regional Water Board, and County Dept of Environmental Health, attended IAP meetings
- Regulators commented on:
 - AWP Facility equipment
 - Testing & Monitoring Plan
 - San Vicente Reservoir Study





REGULATORY FRAMEWORK RESULTS

- California Department of Public Health (CDPH) concept approval letter 9/7/2012

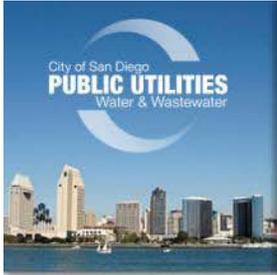


“Based on CDPH’s review of the City’s ... submittal ... CDPH approves the San Vicente Reservoir Augmentation Concept.”

- City received a letter of concurrence from the Regional Water Board on 2/12/2013



“The . . . Water Board, with concurrence from USEPA, strongly supports the efforts of the City to develop the San Vicente Reservoir Augmentation Project...”



ENERGY & COST ANALYSIS

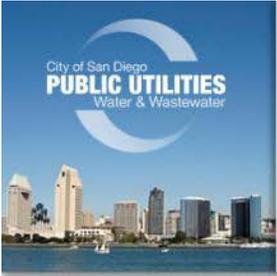
Energy:

- Energy consumption and greenhouse gas emissions of purified water delivered to San Vicente comparable to that of imported water
- Energy consumption and greenhouse gas emissions of purified water lower than ocean desalination

Cost:

- \$2,000 per acre-foot to produce and convey 15 mgd of purified water to San Vicente Reservoir

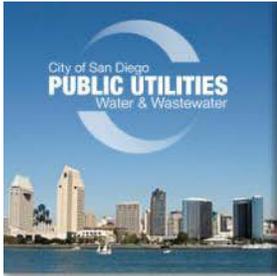




OPEN FOR TOURS - A SITE TO SEE



Register online at www.PureWaterSD.org

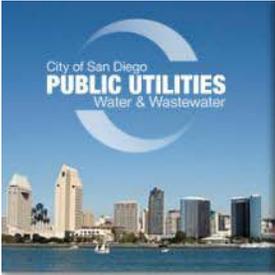


WRRC

WATER RELIABILITY COALITION



- BIOCUM
- Building Industry Association of San Diego
- Building Owners and Managers Association, San Diego Chapter
- Citizens Coordinate for Century 3
- Coastal Environmental Rights Foundation
- Empower San Diego
- Endangered Habitats League
- Environmental Health Coalition
- Equinox Center
- Friends of Infrastructure
- Industrial Environmental Association
- National Association of Industrial and Office Properties
- San Diego and Imperial Counties Labor Council
- San Diego Audubon Society
- San Diego Regional Economic Development Corporation
- San Diego Coastkeeper
- San Diego County Apartment Association
- San Diego County Taxpayers Association
- San Diego Business Leadership Alliance
- San Diego Regional Chamber of Commerce
- San Diego River Park Foundation
- Surfrider Foundation, San Diego Chapter
- Sustainability Alliance of Southern California
- Utility Consumers' Action Network



SUMMARY

ADVANCED WATER PURIFICATION FACILITY

Operated 12 months; produced water that met all state and federal standards

SAN VICENTE RESERVOIR STUDY

Satisfied all anticipated regulatory requirements

REGULATORY FRAMEWORK

Received conceptual approval for a full-scale project from CDPH & Regional Water Board

ENERGY & COST ANALYSIS

Determined energy use is comparable to imported water and costs \$2,000 per AF

EDUCATION & OUTREACH

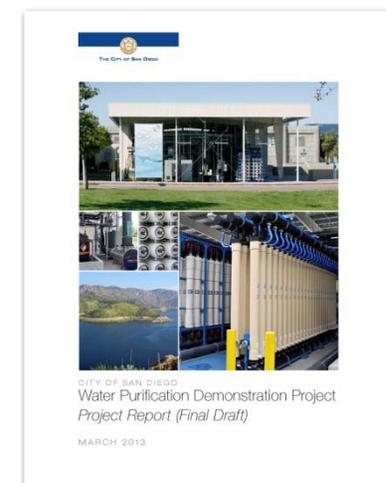
Increased understanding and approval of water purification

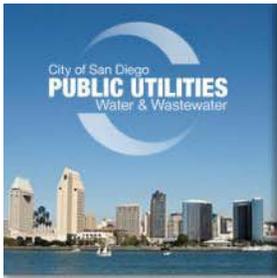
PROJECT REPORT

Adopted by City Council in April 2013

AND NOW WE'RE...

- Responding to directives set forth by City Council
- Continuing tours, presentations and events





INFORMATION

Visit: www.purewatersd.org
 Email: purewatersd@sandiego.gov
 Call: (619) 533-7572

Reports: purewatersd.org/projectreports

Public Utilities Water

WATER HOME GENERAL INFO LAKES AND RECREATION WATER & SEWER BILL/RATES WATER CONSERVATION RECYCLED WATER WATER QUALITY CAPITAL IMPROVEMENTS WATER REUSE

Water Home • Water Reuse • Water Purification Demonstration Project

Water Reuse

- Water Reuse Home
- Water Reuse Study
- Water Purification Demonstration Project
 - News and Publications
 - General Information
 - Public Involvement
 - Independent Advisory Panel
 - Links & Resources
 - Full-Scale Reservoir Augmentation

Project Objective

Evaluate the feasibility of using advanced treatment technology to produce water that can be sent to San Vicente Reservoir and later distributed as potable water.

Determine if the Demonstration Project provides evidence of viability for a full-scale IPR/RA project.

Water Purification Demonstration Project

City of San Diego's Water Purification Demonstration Project Purification Process

Phase 2 Demonstration-Scale Project

Phase 3 Full-Scale Advanced Water Purification System & Transmission Pipeline

As part of the City's water resource strategy, the **Water Purification Demonstration Project (PDF)** is examining the use of advanced water purification technology to provide safe and reliable water for San Diego's future. The Demonstration Project will determine the feasibility of a full-scale reservoir augmentation project, which would diversify San Diego's water supply, reduce its dependence on imported water and provide a safe source of drinking water for residents.

In an effort to keep San Diegans informed about this important project, free public tours of the Advanced Water Purification Facility are available, as well as project presentations to all interested groups and opportunities to learn more about the project at community events throughout San Diego. For more information, please call (619) 533-7572 or email purewatersd@sandiego.gov.

(No purified water will be added to San Diego's drinking water supply during this demonstration phase.)

Water Reuse Program Water Purification Demonstration Project

The City of San Diego • Public Utilities Department

Fact Sheet

The City of San Diego has limited local water sources and relies on importing approximately 85 to 90 percent of its water supply. In the past, importing water from the Colorado River and Northern California has been a low-cost, reliable option, but environmental stresses and court-ordered pumping restrictions have continued to reduce the amount of water that can be delivered to San Diego. These circumstances and the threat of further limitations on our water supplies have intensified the need for new sources of water. As part of the City's effort to provide a local and sustainable water supply, the Water Purification Demonstration Project is examining the use of advanced water purification technology to provide safe and reliable water for San Diego's future.

The Demonstration Project is the second phase of a process evaluating ways for the City to increase its use of recycled water. The first phase was the City's 2005 Water Reuse Study that identified reservoir augmentation as the preferred option for developing recycled water sources. The Demonstration Project will determine if reservoir augmentation is a feasible option for San Diego.

The project is a multi-step process that includes:

- Advanced wastewater treatment
- Advanced water purification
- Reservoir augmentation

FAQs

Does San Diego need more water?
 Water is critical to our quality of life. The City of San Diego imports approximately 85 to 90 percent of its water supply from Northern California and the Colorado River. Just the past five years, California has experienced a historic dry period and droughts on the Colorado River. In addition, EPA and regulatory decisions to produce end-of-use permits for the Sacramento-San Joaquin Delta have resulted in restrictions on the amount of water that can be imported from Northern California. Population projections predict the City will need more water in the next 30 to 40 years. Since San Diego is in the end of the imported water pipeline, and because an average of 30 inches of rain each year, we need to develop all possible local water supplies to secure a reliable supply of water for present and future residents and businesses in San Diego.

Why can't we just conserve more water?
 Using less water through conservation should always be the first step in protecting our local water supply. The City's conservation programs have helped reduce our dependence on imported water by saving more than 25,000 acre-feet of drinking water a year, which is enough to meet the needs of around 10,000 typical families for a year. However, while conservation is important, efforts to save water need to be combined with other sustainable strategies to meet San Diego's water needs in the future.

Doesn't the City already recycle water?
 Yes. The City of San Diego operates one of the most water recycling facilities capable of producing close to 45 million gallons a day of recycled water for irrigation and industrial purposes. However, using recycled water for irrigation or industrial purposes does not address the need for drinking water. The City's recycled water distribution system continues to expand, but it is not designed to provide drinking water. The City is examining the possibility of expanding the system to provide drinking water.

Other Questions...

Water Purification Demonstration Project INFORMATION CARD

Please check all that apply:

- I am interested in the Water Purification Demonstration Project as a reliable local water source.
- I would like a project representative to make a presentation to my organization.
- I would like to receive periodic updates about the Demonstration Project.
- I support the City of San Diego pursuing the Demonstration Project.

Please send information to:

Name: _____ Organization: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ E-mail: _____

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