



THE DPR COALITION

Implementation of Direct Potable Reuse:
An Analysis for California Water Utilities

Presentation of Proposed DPR Projects

San Francisco Public Utilities Commission (SFPUC)

Workshop #1
February 1, 2018
Los Angeles

NWRI

Potential Concepts

Project A (In-City)

- 2 mgd
- Direct-to-Distribution
- SFPUC Only (retail)
- Limited alternatives, space constraints, no water treatment plant within service area
- Opportunity to reduce discharge to Bay
- Online by 2040 to coincide with need



Potential Concepts

Project B (Regional)

- 6 mgd
- Surface water augmentation
- Silicon Valley Clean Water, CalWater, Redwood City, BAWSCA, San Mateo
- Demand/new customers
- Online by 2030
- Could be IPR, but may be insufficient residence time in the reservoir (~2 months)



Conceptual Pure Water Treatment Plant - Alignment 2

- San Andreas & Crystal Springs Reservoirs
- Other Lakes (San Mateo County)
- Purified Water Pipeline
- Reservoir Water Pipeline
- Harry Tracy Water Treatment Plant



Potential Concepts

Past and Ongoing Work

Experience

- Non-Potable Program in-city since 2012;
- Westside Enhanced Water Recycling Project includes RO treatment (in construction, will be online in 2021)

Pilot

- 1500 gpd DPR pilot at SFPUC HQ, starting in February 2018

Studies

- White Paper on Reuse Potential
- Feasibility studies with SCVWD and SVCW



Potential Concepts

Water Supplies and Blending

In-City

- Up to 81 mgd of surface water supplies from SFPUC's Regional Water System (85% Hetch Hetchy Reservoir, 15% local watersheds, on average)
- Groundwater (up to 4 mgd in 2022, currently up to 1 mgd)
- Recycled water and decentralized onsite reuse for non-potable demands

Regional

- Varies by service area; includes Regional Water System, groundwater and other surface water supplies



Potential Concepts

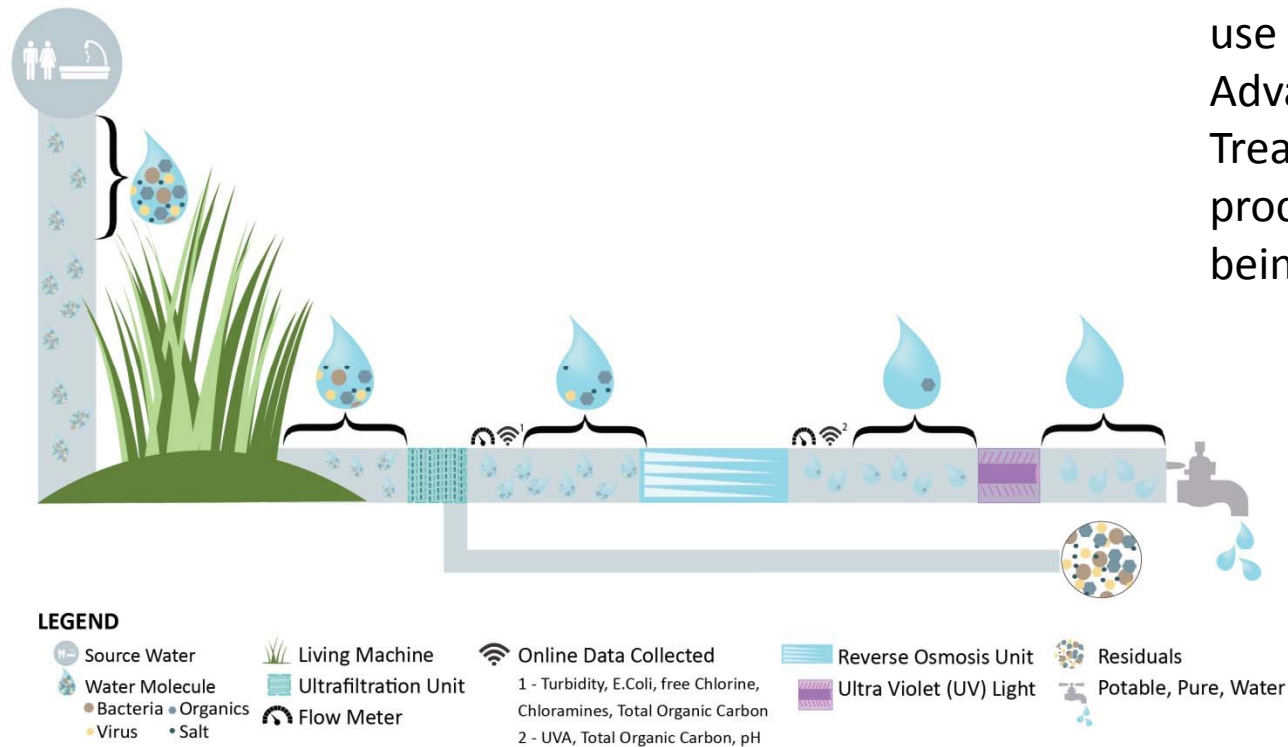
Engineering and Operations Topics

- Southeast Treatment Plant (SEP) was built in 1952 and receives 80% of the wastewater flows in SF
- SEP treats between 60 -250 mgd
- Current treatment includes screens, settling tanks, secondary treatment
- Currently piloting sidestream treatment for nutrient removal (Annamox)

Potential Concepts

Engineering and Operations Topics

Future DPR facility likely to use Full Advanced Treatment processes, as being piloted





Potential Concepts

Engineering and Operations Topics

- No water treatment plant In-City
- 24/7 monitoring will be required
- Staff training for operators is critical
- Sampling points and data will be required:
 - Pathogens
 - CECs
 - Other

Data from pilot will provide important feedback

Potential Concepts

Education and Outreach

- Critical
- Must start early and be ongoing
- Pilot facility will include outreach and tours beginning in March / April 2018

PureWaterSF

Decentralized Purified Water Research Project

The San Francisco Public Utilities Commission (SFPUC) is undertaking research to explore the possibilities for purified water use at the building level.

What is Purified Water?

Purified water is high-quality water that is produced from recycled water using the most advanced purification treatment processes available including microfiltration, reverse osmosis, and advanced oxidation with ultraviolet light. The water is produced to meet the highest quality standards, including State and Federal drinking water standards, so that it is suitable for a variety of uses.

Why Are We Doing This Research?

The SFPUC is a leader in the innovative and sustainable use of water in an urban setting. In September 2012, the Non-potable Water Ordinance was adopted, allowing for the collection, treatment, and use of alternate water sources for non-potable applications. That same year, the SFPUC installed a constructed wetland treatment system in its headquarters at 525 Golden Gate Avenue, marking a major milestone for on-site non-potable water reuse in San Francisco. Building on these efforts and responding to a growing interest in the use of purified water throughout California, this research project investigates the potential for producing purified water at a building scale with advanced treatment technology.

How Will the Research Project Work?

Currently, the SFPUC uses a constructed wetland system to treat the wastewater generated in its San Francisco headquarters building for toilet flushing. The Decentralized Purified Water Research Project will add an advanced water treatment system onto the existing wetland system to produce (approximately) 1,500 gallons per day of highly purified water. While the purified water will be treated to meet drinking water standards, it will not be used for drinking; instead the quality will be monitored, and then the water will be returned to the building's non-potable system for toilet flushing. The treatment process will be continually monitored using precise, real-time monitoring tools and product water samples will be tested regularly during the 9-month research project to determine the reliability of the treatment system. The results of the study will be used to help determine the feasibility of, and monitoring tools for, potable water reuse at the building scale. The project conclusions will be published and shared publicly.



Research Project Objectives

- Examine the potential to build off existing decentralized treatment to produce purified water.
- Use monitoring tools to provide continuous and real-time treatment system performance data.
- Provide data to the growing body of purified water research.

Research Project Timeline



How is the Research Project Being Funded?

The SFPUC is partnering with the **Water Research Foundation** and the **United States Bureau of Reclamation** to contribute to the growing body of research surrounding the development and use of purified water. The SFPUC is also working closely with the San Francisco Department of Public Health for this research.

PureWaterSF

Innovative Research Exploring the Possibilities for Purified Water

DRAFT December 2017