

Overview

The Santa Clara Valley Water District (water district) is the primary water resources management agency for Santa Clara County and is responsible for meeting the county's water supply demands. To achieve this, the water district has plans to produce up to 45,000 acre-feet per year of highly purified water for potable reuse by the year 2025. This amounts to 14 billion gallons a year of new fresh water that's drought-proof. That's enough water to serve 130,000 households each year in Silicon Valley that we would not otherwise have.

The Silicon Valley Advanced Water Purification Center (SVAWPC), which opened in March of 2014, receives secondary-treated wastewater and uses microfiltration, reverse osmosis, and ultraviolet light disinfection to produce highly purified water that meets all California Primary and Secondary Drinking Water Standards.

The purified water produced by the SVAWPC is not currently used for potable (i.e., drinking) purposes, but instead is blended with tertiary-treated recycled water and used for a variety of non-potable purposes such as irrigation, cooling towers, and industrial applications.

The water district is considering expanding the SVAWPC as well as exploring constructing other similar facilities to produce additional purified water for potable purposes. This would most likely be accomplished through replenishment of the groundwater basin with purified water that is later pumped out of the ground and used for potable purposes.

As part of this effort, water district staff developed the Potable Reuse Demonstration Test Plan (Test Plan) in order to (1) provide systems monitoring and water quality testing data about the SVAWPC during its first two years of operation and (2) demonstrate that the SVAWPC meets the regulations for potable reuse in California which includes, but is not limited to, meeting all California Primary and Secondary Drinking Water Standards.



Potable Reuse Demonstration Test Plan

The Test Plan thoroughly investigated the performance of each component of the purification process (i.e., microfiltration, reverse osmosis, and ultraviolet disinfection) at the SVAWPC. The Test Plan demonstrated effective removal of all tested contaminants, such as:

1. industrial chemicals
2. pharmaceuticals
3. personal care products, as well as
4. biological pathogens, which are microorganisms that can cause illness (e.g., viruses, bacteria, and protozoa such as Giardia and Cryptosporidium)

The Test Plan produced a comprehensive water quality data set for future potable reuse applications, showcasing the water district's ability to reliably and consistently produce clean, safe drinking water when treating secondary-treated wastewater for potable reuse.

By the Numbers

For over a 15-month period....

284 different constituents tested every 3 months.

4,000 total water quality samples collected & analyzed.

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The Test Plan also included the evaluation of an additional treatment process, advanced oxidation, which was added to the ultraviolet disinfection treatment component and used for further testing production of purified water for potable reuse. Advanced oxidation works with the ultraviolet light treatment process and together these two processes provide robust disinfection and removal of contaminants of emerging concern.

Additionally, the purification processes (i.e., microfiltration, reverse osmosis, and ultraviolet disinfection) at the SVAWPC were subjected to a rigorous set of challenge tests through intentionally stressing each treatment process to determine whether it still performed as expected.

Finally, the treatment processes were monitored during the Test Plan period to get a better understanding of their operation over time and to identify key parameters (termed “Critical Control Points”) that can be used to monitor process performance.

An Independent Advisory Panel, comprised of six internationally known experts from government, academia, and consulting, reviewed the planning and execution of the Test Plan, including the results contained within the Test Plan Final Report. This report contains all data from the entire Test Plan as well as recommendations for future operation and design.

Key Results

- All purification processes at the SVAWPC exhibited excellent performance.
- Purification processes exhibited excellent removal of pathogens and contaminants of emerging concern, such as pharmaceuticals and endocrine disruptors.

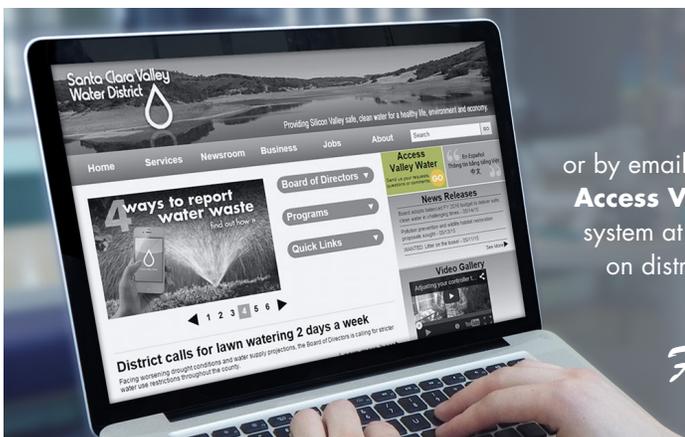
- Purified water produced by the SVAWPC with advanced oxidation meets or exceeds all California drinking water standards, including all potable reuse regulations for groundwater replenishment.
- New ways of monitoring were proven to accurately verify the removal of pathogens and contaminants.
- Critical Control Points, which are parameters that will ensure highest water quality, were identified.
- Staff gained valuable understanding of what design, operational, and monitoring changes will be important for the future production of purified water at the SVAWPC.

Ongoing Monitoring at the SVAWPC

The water district will incorporate components of the water quality monitoring done as part of the Test Plan into its ongoing water quality sampling program, continuing to gather information to support potable reuse efforts. The water district’s state-certified water quality laboratory, which is backed by a rigorous quality control program, will ensure that purified water produced by the SVAWPC is analyzed to the highest possible water quality standards.

The water district’s laboratory has the ability to monitor for 354 target contaminants and is continuously developing new test methods, using the best available technology, for contaminants of emerging concern. The water district’s laboratory will provide ongoing support for the potable reuse program.

For final report and glossary of terms, visit: <http://www.valleywater.org/TestPlan>



CONTACT US

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