STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF DECEMBER 14-15, 2023
Prepared on November 22, 2023

ITEM NUMBER: **11**

SUBJECT: **Consideration of Waste Discharge and Water Reclamation Requirements for the Pure Water Soquel Groundwater Replenishment Reuse Project, Soquel Creek Water District, Proposed Order R3-2023-0033, Santa Cruz County**

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KEY INFORMATION

Discharger/Producer:	Soquel Creek Water District
Location:	Advanced Water Purification Facility is located at 2505 Chanticleer Ave., Santa Cruz; discharge will occur at three injection wells located in the Santa Cruz Mid-County groundwater basin[1]
Type of Discharge:	Advanced treated recycled water discharge to groundwater via three injection wells
Design Capacity:	Production of 1.67 million gallons per day (MGD)
Treatment:	Full advanced treatment using ozone pretreatment, membrane filtration, reverse osmosis, ultraviolet advanced oxidation processes, and post-treatment stabilization.

[1] Groundwater basin naming and numbering convention from the Department of Water Resources' Bulletin 118, the State of California's official publication on the occurrence and nature of groundwater in California. Bulletin 118 can be accessed via the Internet at the following link: https://water.ca.gov/programs/groundwater-management/bulletin-118. The Central Coast Water Board's *Water Quality Control Plan for the Central Coastal Basin* refers to the Santa Cruz Mid-County basin as Soquel Valley 3-1 (Table 2-4).

Disposal:	Membrane filtration wastewater and reverse osmosis concentrate will be discharged to the Pacific Ocean via the city of Santa Cruz's ocean outfall pursuant to proposed Order R3-2023-0001, NPDES CA0048194, *Waste Discharge Requirements for the City Of Santa Cruz Wastewater Treatment Facility*
Reclamation:	Advanced treated recycled water will be injected into the Santa Cruz Mid-County groundwater basin and later extracted for potable use by supply wells owned and operated by Soquel Creek Water District
Existing Orders:	None
ACTION:	**Consider adopting waste discharge and water reclamation requirements for the production and injection of advanced treated recycled water to the Santa Cruz Mid-County groundwater basin.**

SUMMARY

Soquel Creek Water District owns and operates the Pure Water Soquel Advanced Water Purification Facility (AWPF) and associated injection wells, monitoring wells, and conveyance pipelines, collectively referred to as the Pure Water Soquel project (Figure 1). The AWPF is located at 2505 Chanticleer Avenue in Santa Cruz, Santa Cruz County.

Soquel Creek Water District is responsible for providing potable water treatment and delivery services to its customers. Soquel Creek Water District constructed the Pure Water Soquel project to produce and discharge advanced treated recycled water into the Santa Cruz Mid-County groundwater basin. Project goals are to supplement natural recharge to the groundwater basin, help mitigate the impacts of seawater intrusion, and help provide water supply resiliency and reliability. A portion of the injected water will be extracted by Soquel Creek Water District's production wells for potable use.

The source water for the AWPF is secondary effluent from the city of Santa Cruz's (city) Wastewater Treatment Facility (WWTF). A portion of the secondary-treated wastewater that is currently discharged to the Pacific Ocean under the city's National Pollutant Discharge Elimination System (NPDES) permit will be delivered to the AWPF for further treatment to advanced treated recycled water standards and injected into the groundwater basin.

This staff report provides a summary of the project and proposed waste discharge and water reclamation requirements. The Fact Sheet in Attachment F of the proposed Order R3-2023-0033 (permit) (Attachment 1) provides additional details of permit requirements.

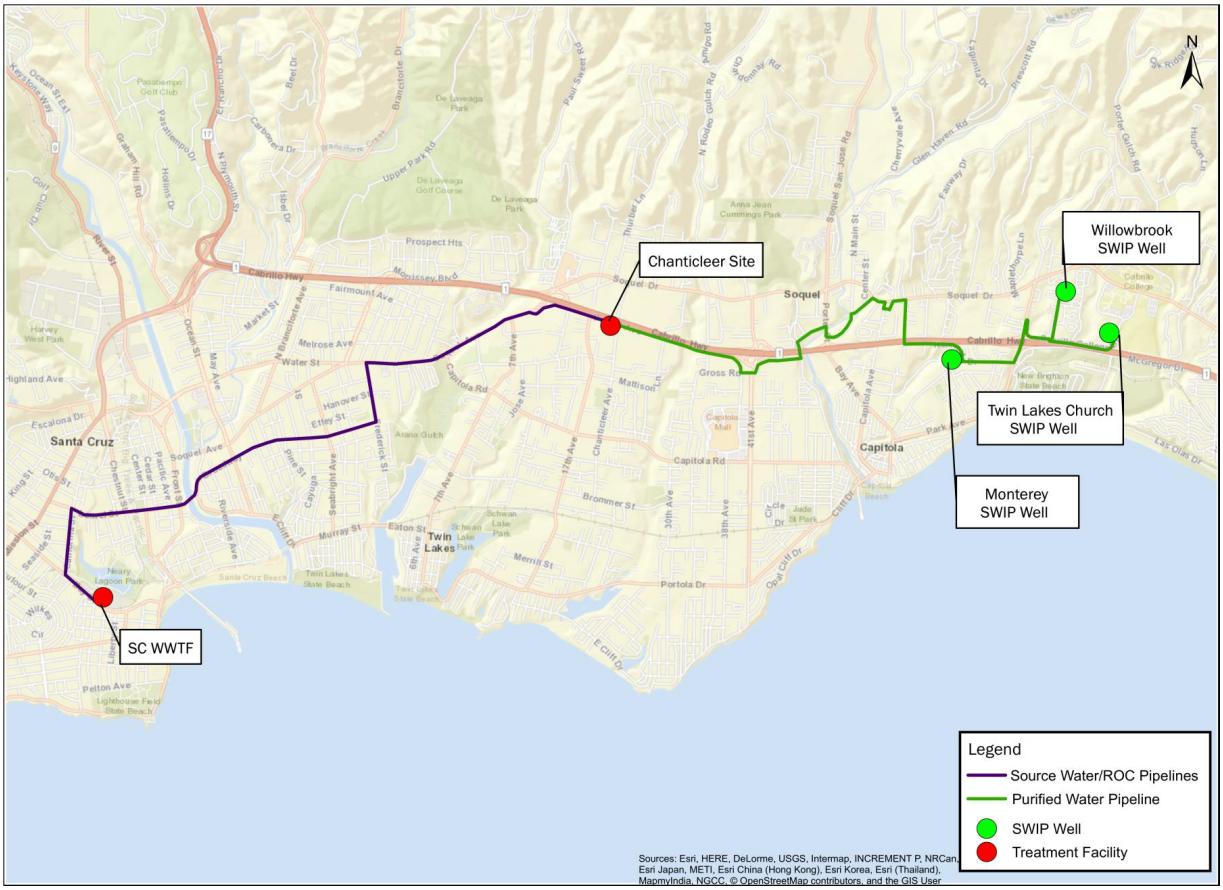

Figure 1. Map of the facilities involved with Pure Water Soquel. Raw wastewater is treated to secondary effluent standards at the city of Santa Cruz's WWTF then conveyed to the AWPF located on Chanticleer Avenue (Chanticleer Site). After further treatment at the AWPF, advanced treated recycled water is conveyed to one of the three sea water intrusion prevention (SWIP) injection wells for injection into the Santa Cruz Mid-County groundwater basin. Figure is from the *Final Pure Water Soquel Engineering Report* prepared for Soquel Creek Water District, March 2022.

DISCUSSION

Background

Soquel Creek Water District constructed the project to recharge the Santa Cruz Mid-County groundwater basin using advanced treated recycled water. Recharging groundwater using advanced treated recycled water is referred to as *Indirect Potable Reuse: Groundwater Replenishment-Subsurface Application* in title 22 of the California Code of Regulations (CCR). CCR title 22 refers to projects that perform indirect potable reuse as groundwater replenishment reuse projects.

Soquel Creek Water District currently provides potable water treatment and delivery services to its customers. Production wells owned by the Soquel Creek Water District and located downgradient from project injection wells will extract a mixture of advanced

treated recycled water and native groundwater for potable use. Groundwater modeling has estimated that the district's wells will extract 37 percent of the water injected over a 25-year timeframe. The remainder of the injected water will help to mitigate seawater intrusion. Details regarding the project facilities and discharges can be found in the Fact Sheet of the permit (permit Attachment F).

The primary goal of the project is to mitigate seawater intrusion in support of achieving the sustainable management criteria outlined in the Santa Cruz Mid-County Groundwater Sustainability Plan.[2] The project will inject advanced treated recycled water primarily into the Purisima A aquifer, with a small portioFn going into the Purisima BC aquifer. This will help to mitigate seawater intrusion in the target injection aquifers (Purisima A and BC units) and also in the Purisima F and Tu aquifers, where no injection will occur, because the district will be able to increase municipal pumping in the target injection aquifers and reduce pumping in aquifers not receiving recycled water. The project will more broadly provide increased water supply reliability and resiliency for the groundwater basin. A conceptual cross-section of the aquifer units and target injection zones is shown in Figure 2.

The source water to the AWPF is secondary treated wastewater from the city of Santa Cruz's WWTF. The city will supply about 2.37 million gallons of treated wastewater per day to the project, and the district will return approximately 0.7 million gallons per day of wastewater produced by membrane filtration and reverse osmosis treatment units at the AWPF to the city for disposal to the Pacific Ocean. During startup of the AWPF, and in the event of a treatment failure at the AWPF after startup, all recycled water produced will be diverted prior to product water stabilization and conveyed to the city's WWTP until the district can demonstrate the recycled water meets applicable waste discharge and water reclamation requirements. All water returned to the city's WWTF will be discharged to the Pacific Ocean in accordance with the city's NPDES permit. Changes to the city's existing NPDES permit to include wastewater produced at the AWPF will also be considered at the December 14-15, 2023, Central Coast Regional Water Quality Control Board (Central Coast Water Board) meeting as a separate but related agenda item.

Soquel Creek Water District received financial assistance for the development of the Project from the Proposition 1 Groundwater Grant Program,[3] administered by the State Water Resources Control Board. In total, the district received $63,250,000 for planning and construction of the treatment facility, conveyance infrastructure, and injection and monitoring wells.

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[2] The Santa Cruz Mid-County Groundwater Sustainability Plan can be accessed online at the groundwater sustainability agency website at the following link: https://www.midcountygroundwater.org/sustainability-plan

[3] More information about the Proposition 1 Groundwater Grant Program can be found on the Internet at the following link: https://www.waterboards.ca.gov/water_issues/programs/grants_loans/proposition1/groundwater_sustainability.html

Rationale for Proposed Permit Requirements

The Central Coast Water Board developed the proposed permit requirements using the following resources:

- Information submitted in the *Final Pure Water Soquel Engineering Report*[4]
- Information submitted in the Pure Water Soquel Report of Waste Discharge[5]
- Recommendations for the water reclamation requirements in the State Water Resources Control Board (State Water Board) Division of Drinking Water's (DDW) letter titled *Conditional Acceptance of the Title 22 Engineering Report for Pure Water Soquel Groundwater Recharge and Replenishment Project, (4490006-701)*
- Water quality control plans, policies, and other available information

This permit incorporates applicable portions of the Basin Plan; regulations in CCR title 22, division 4, chapter 3, article 5.2 - *Indirect Potable Reuse: Groundwater Replenishment – Subsurface Application*; and the State Water Board's *Water Quality Control Policy for Recycled Water.*[6] The Fact Sheet in permit Attachment F contains additional background information and rationale for the proposed permit requirements.

In the future, a portion of the advanced treated recycled water may be used for irrigation of playing fields near the Twin Lakes Church. The non-potable use of advanced purified recycled water is not covered by this permit and will instead require separate regulatory coverage.

[4] Submitted pursuant to title 22 section 60323
[5] Submitted pursuant to Water Code section 13260
[6] The Recycled Water Policy can be found at the following webpage: https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2018/121118_7_final_amendment_oal.pdf

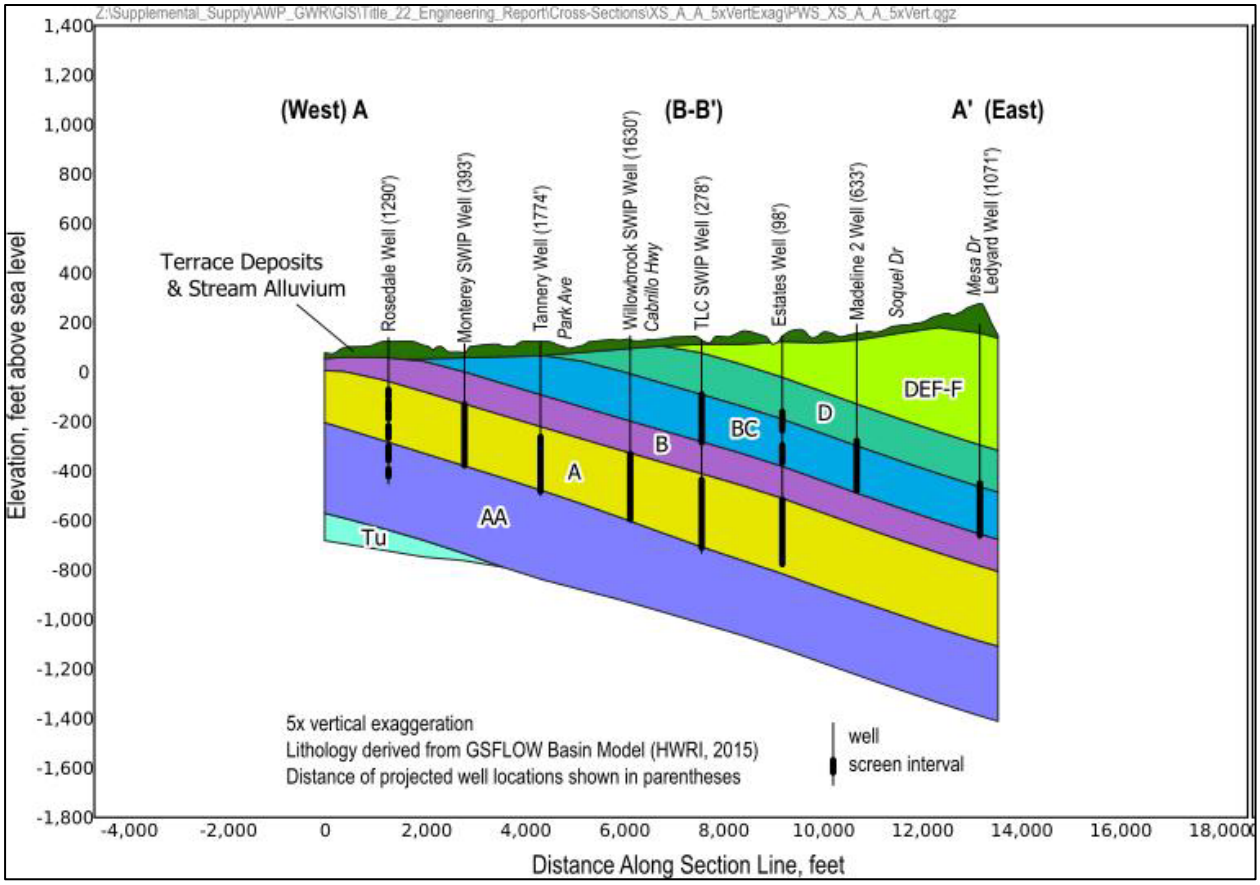

Figure 2. Conceptual cross-section showing the aquifer units of the Purisima formation where injection is proposed to occur (as shown by the SWIP wells – Monterey, Willowbrook, and TLC [Twin Lakes Church]) and where municipal production occurs (as shown by non-SWIP wells). Figure is from the Final Pure Water Soquel Engineering Report prepared for Soquel Creek Water District, March 2023.

Human Right to Water

Water Code section 106.3 establishes the policy that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. On January 26, 2017, the Central Coast Water Board adopted Environmental Justice and the Human Right to Water Resolution R3-2017-0004, which adopts the human right to water as a core value and affirms the realization of the human right to water and protecting human health as the Central Coast Water Board's top priorities. Consistent with the Water Code and Resolution R3-2017-0004, this permit promotes actions that advance the human right to water and discourages actions that delay or impede opportunities for communities to secure safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.

The proposed permit is consistent with Resolution R3-2017-0004 by authorizing the

production of recycled water for the purpose of indirect potable reuse to help improve water supply quality, reliability, and resiliency. The proposed permit ensures that best practicable treatment or control of the discharge is implemented to protect groundwater that serves as a source of drinking water. Operation of this facility, in compliance with the proposed permit, will not pose a significant threat to water quality.

Environmental Justice

Environmental Justice principles call for the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income in the development, adoption, implementation, and enforcement of all environmental laws, regulations, and policies that affect every community's natural resources and the places people live, work, play, and learn. The Central Coast Water Board implements regulatory activities and water quality projects in a manner that ensures the fair treatment of all people, including Underrepresented Communities. Underrepresented Communities include but are not limited to Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), Economically Distressed Areas (EDAs), Tribes, Environmentally Disadvantaged Communities (EnvDACs), and members of Fringe Communities.[7] Furthermore, the Central Coast Water Board is committed to providing all stakeholders the opportunity to participate in the public process and provide meaningful input to decisions that affect their communities.

In support of Environmental Justice, staff has evaluated the disadvantaged community status for Soquel Creek Water District and in areas overlying the injected water. There are two census block groups within Soquel Creek Water District's water service area that are considered DACs based on median household incomes. One of the DACs is located on the western edge of the district's service area boundary and has a population of 881. The second DAC is located between Highway 1 and the coast and has a population of 536.

Outside of Soquel Creek Water District's service area boundary but within the area of

[7] Disadvantaged Community: a community with an annual median household income that is less than 80% of the statewide annual median household income (Public Resources Code section 80002(e)); Severely Disadvantaged Community: a community with a median household income of less than 60% of the statewide average. (Public Resources Code section 80002(n)); Economically Distressed Area: a municipality with a population of 20,000 persons or less, a rural county, or a reasonably isolated and divisible segment of a larger municipality where the segment of the population is 20,000 persons or less with an annual median household income that is less than 85% of the statewide median household income and with one or more of the following conditions as determined by the department: (1) financial hardship, (2) unemployment rate at least 2% higher than the statewide average, or (3) low population density. (Water Code section 79702(k)); Tribes: federally recognized Indian Tribes and California State Indian Tribes listed on the Native American Heritage Commission's California Tribal Consultation List; EnvDACs: CalEPA designates the top 25 percent scoring census tracts as DACs. Census tracts that score the highest five percent of pollution burden scores but do not have an overall CalEnviroScreen score because of unreliable socioeconomic or health data are also designated as DACs (refer to the CalEnviroScreen 3.0 Mapping Tool or Results Excel Sheet); Fringe Community: communities that do not meet the established DAC, SDAC, and EDA definitions but can show that they score in the top 25 percent of either the Pollution Burden or Population Characteristics score using the CalEnviroScreen 3.0.

project impact there are additional DACs and SDACs. Within the Santa Cruz Mid-County basin, there is one SDAC with a population of 1,490 and two DACs with populations of 1,266 and 1,248, respectively. In addition, the neighboring Santa Cruz city service area includes multiple additional such communities, including an additional 10 SDACs (populations of 366; 433; 611; 664; 986; 1,170; 1,436; 2,090; 2,262; and 5,202) and an additional three DACs (populations of 1,416; 1,531; and 1,588). Implementation of the project will reduce groundwater stress and increase water supply reliability for all these communities.

Without the project, Soquel Creek Water District would be required to implement significant water use restrictions to limit basin extraction to no more than 2,300 acre-feet per year (AFY). As part of a study to evaluate the economic impacts of the project, titled *Estimating Benefits of the Pure Water Soquel Project*[8] (Haddad and Pratt, 2018), the authors calculated and analyzed the revenue change that would be necessary to reduce water use to 2,300 AFY, the maximum groundwater available if the project is not implemented. As described in the study, Soquel Creek Water District would have to set water prices such that total consumption is equal to the available supply. As documented in the study, to generate enough curtailment to comply with 2,300 AFY, the district would need to raise prices to nearly $12,000 per acre-foot until the basin was no longer in a state of overdraft. These rates would most impact DACs and SDACs, potentially driving these residents out of the community. The project will help with water affordability and avoid a disproportionate impact to DACs and SDACs.

The economic analysis also found that without the project, 2,122 housing units would not be constructed, exacerbating a persistent problem of high housing costs and a lack of affordable housing. The economic analysis estimates that 2,122 housing units would not be constructed through 2035 due to a pending moratorium on new water connections should the project not be built, and additional water not secured. Blocking construction of new housing is a contentious social issue in the region.

Soquel Creek Water District's economic study also estimated that $47 million in commercial loss would occur each year through 2044. The lost jobs would likely be from the service industry that would be significantly impacted by the severe water restrictions and loss of tourism. The economically disadvantaged communities would be impacted by the loss of jobs if the project is not implemented.

The proposed permit supports environmental justice by authorizing the production and discharge of advanced treated recycled water, which will help ensure an affordable water supply for Soquel Creek Water District customers and those outside the district's

[8] The technical memorandum *Estimating Benefits of the Pure Water Soquel Project* can be accessed on Soquel Creek Water District's webpage at the following link: https://www.soquelcreekwater.org/DocumentCenter/View/385/Estimating-Benefits-of-the-Pure-Water-Soquel-Project-PDF

service area, including members of DACs and SDACs, who may be disproportionately affected by increasing potable water costs that would occur without the Project.

Climate Change

The Central Coast faces the threat and the effects of climate change for the foreseeable and distant future. To proactively prepare and respond, the Central Coast Water Board has launched the Central Coast Water Board's Climate Action Initiative, which identifies how the Central Coast Water Board's work relates to climate change and prioritizes actions that improve water supply resiliency through water conservation and wastewater reuse and recycling; mitigate for and adapt to sea level rise and increased flooding; improve energy efficiency; and reduce greenhouse gas production. The Climate Action Initiative is consistent with the Governor's Executive Order B-30-15 and the State Water Board's Climate Change Resolution 2017-0012.

Aligning with Resolution 2017-0012, this permit authorizes the production of recycled water for the purpose of indirect potable reuse to help offset demand on natural groundwater supplies, mitigate seawater intrusion, and support local water supply resiliency.

COMMENTS

During the 30-day public comment period from September 11 to October 11, 2023, the Central Coast Water Board received written comments on the proposed permit from Soquel Creek Water District and from 21 members of the public.

While preparing responses to public comments received on the proposed permit, Central Coast Water Board staff identified a discrepancy in the anticipated nitrate concentration of the advanced treated recycled water reported in Soquel Creek Water District's engineering report versus the concentration reported in the final antidegradation analysis technical report. While investigating the discrepancy in the reported nitrate concentration, Soquel Creek Water District identified a mistake in the chloride concentration reported in the title 22 engineering report and final antidegradation analysis. The Central Coast Water Board issued a notice on November 7, 2023, that included a description of the changes and provided 14 days for members of the public to provide comments on the changes. The Central Coast Water Board received written comments from 2 members of the public during this second comment period.

Comments and the Central Coast Water Board's responses are included in Attachment 2.

CONCLUSION

This proposed permit authorizes the production and injection of advanced treated recycled water to the Santa Cruz Mid-County groundwater basin, which will help mitigate seawater intrusion and provide water supply resiliency and reliability. The project will improve water quality and increase water supply resiliency.

RECOMMENDATION

Central Coast Water Board staff recommends the adoption of proposed Order R3-2023-0033.

ATTACHMENTS/LINKS

1. Proposed Order R3-2023-0033
2. Response to Comments
3. Notice of Changes and Opportunity to Comment (second comment period), including the following attachments:
    1. A direct transcription of the changes to the proposed Permit.
    2. Technical memorandum describing the discrepancy in nitrate. concentration, and the change to the anticipated chloride concentration.
    3. Revised final antidegradation analysis. Please use this link to view or download document: https://www.soquelcreekwater.org/DocumentCenter/View/2352/Revised-Final-Draft-PWS-Antidegradation-Report-110323
4. Final title 22 engineering report. Please use this link to view or download document: https://www.soquelcreekwater.org/DocumentCenter/View/2074/Pure-Water-Soquel-Engineering-Report-PDF
5. Title 22 engineering report errata sheet. Please use this link to view or download document: https://www.soquelcreekwater.org/DocumentCenter/View/2353/PWS-T22-ER-Errata-Sheet-11-3-23

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