

**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: 12

SUBJECT: Consideration of Waste Discharge Requirements for the City of Santa Cruz Wastewater Treatment Facility, Proposed Order R3-2023-0001, National Pollutant Discharge Elimination System (NPDES) Permit CA0048194, Santa Cruz County

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KEY INFORMATION

Discharger: City of Santa Cruz

Location: 110 California Street, Santa Cruz, Santa Cruz County

Type of Discharge: Secondary treated wastewater, which includes strainer backwash, microfiltration backwash, facility stormwater, hauled saline waste, and reverse osmosis concentrate and off-specification water from the Pure Water Soquel Advanced Water Purification Facility.

Permitted Flow: Monthly average dry weather flow 17 million gallons per day (MGD), 81 MGD (peak wet weather flow)

Treatment: Wastewater treatment includes screening, aerated grit removal, primary sedimentation, biological tower trickling filters, solids contact stabilization, secondary clarification, and disinfection with ultraviolet light.

Disposal: Treated wastewater and reverse osmosis concentrate from Pure Water Soquel project discharged to the Pacific Ocean (Monterey Bay National Marine Sanctuary) through existing 12,250-foot outfall with a 2,088-foot diffuser system at a depth of approximately 100 feet.

Reclamation: Production of disinfected tertiary recycled municipal wastewater for use onsite. Future offsite distribution and uses of this disinfected tertiary recycled water will be permitted separately. Secondary treated wastewater sent to Pure Water Soquel for further treatment and recycling, which is covered under a separate order.

Existing Orders: Order R3-2017-0030.

ACTION: Consider adopting waste discharge requirements for the City of Santa Cruz's Wastewater Treatment Facility

SUMMARY

This staff report provides an overview of the proposed revision of waste discharge requirements and reissuance of the existing National Pollutant Discharge Elimination System (NPDES) permit for the city of Santa Cruz Wastewater Treatment Facility (Facility). The Facility is a publicly owned treatment works that is owned and operated by the city of Santa Cruz (Discharger). The proposed order (Attachment 1) includes requirements that ensure the discharge of treated wastewater is protective of water quality and beneficial uses and that recycled water is treated to a standard that is protective of public health and the environment. Additional information and detail can be found in the fact sheet section of the proposed order.

DISCUSSION

Background

The Discharger owns and operates a wastewater treatment facility that treats wastewater from the city of Santa Cruz. The Facility receives domestic, commercial, and industrial wastewater collected from the city of Santa Cruz and Santa Cruz County Sanitation District. The Facility also treats dry weather flows from Neary Lagoon, septage from unsewered areas, and grease trap pumping. The Discharger currently discharges secondary-treated wastewater to the Pacific Ocean pursuant to Order R3-2017-0030, NPDES Permit CA0048194. The city of Scotts Valley adds its treated wastewater to the Discharger's effluent for combined disposal. The city of Scotts Valley's discharge is regulated under Order R3-2013-0001, NPDES Permit CA0048828.

An additional discharge through the Facility's ocean outfall will include reverse osmosis concentrate and off-specification water from the Pure Water Soquel project recently constructed by Soquel Creek Water District. Pure Water Soquel is a groundwater replenishment and seawater intrusion prevention project that involves conveying a portion of the Facility's disinfected secondary effluent for treatment by an advanced water purification facility. The Central Coast Water Board will consider regulating Pure Water Soquel under a separate order.

On July 27, 2022, the Discharger submitted a report of waste discharge (i.e., permit application) for a renewal of the order to cover the existing Facility's secondary treated effluent as well as changes to the composition of the waste discharged to Monterey Bay resulting from Pure Water Soquel. These new wastes include (1) reverse osmosis concentrate, (2) membrane filtration strainer backwash, and (3) membrane filtration backwash.

Non-potable reuse (NPR) water facilities will also be constructed at the Facility to provide the city of Santa Cruz with disinfected tertiary non-potable recycled water. This portion of the work is known as the Santa Cruz NPR Project, and is being constructed as part of improvements needed for Pure Water Soquel. The production of this tertiary treated recycled water and onsite use at the Facility is regulated by the proposed order. Future offsite distribution and use of recycled water will be permitted separately.

Compliance History

During the term of the previous permit, the Discharger violated the following effluent limitations: one violation of the settleable solids daily maximum, five violations of the total organic carbon (TOC) monthly average, three violations of the TOC percent removal monthly average, two violations of the TOC weekly average, and three violations of the total chlorine residual daily maximum. One of the TOC exceedances was determined to be subject to a mandatory minimum penalty, which was resolved through Expedited Payment Letter R3-2021-0025.

Proposed Order Considerations

The proposed order includes a comprehensive monitoring program tailored to the Facility and consistent with other similar ocean discharge facilities. The monitoring program is designed to collect water quality data to ensure the Facility performs effectively.

Central Coast Water Board staff structured the proposed order in accordance with the statewide NPDES permit template. The following summarizes the significant differences between the proposed order and existing Order R3-2017-0030, which is also discussed in detail in the fact sheet section of the proposed order:

Accessibility updates. The State Water Resources Control Board (State Water Board) template for NPDES permits has been updated and revised to accommodate document accessibility needs associated with text styles and formatting to facilitate the use of document reader software for persons with visual impairments or learning disabilities. Most notably, there are numerous changes to table formatting and outline structures from the previous order.

Updated Facility, Owner, Contact Information, and Facility Name. The Facility has new contact information since the previous order. The proposed order updates the current contact information (Attachment F – Fact Sheet, Table F-1).

Updated references. Many guidance documents, policies, and orders referenced in the previous order have been updated, amended, or superseded since 2017. The proposed order includes updated citations and provides website links with direct access to the current references.

Recycled Water Production. The proposed order implements the Recycled Water Policy by supporting the production of recycled water and requiring volumetric reporting of wastewater and recycled water to the State Water Board.

Maps and Process Flow Diagrams. Attachments B and C consist of updated, higher quality maps for the area and process flow diagrams for the new Facility.

Order Findings. The proposed order (Findings, section 2) includes findings for Water Reclamation Requirements for Recycled Water Production and Use, Response to Climate Change, Human Right to Water, and Disadvantaged Community Status.

303(d) Listings. The U.S. EPA approved the State's 2020-2022 303(d) list of impaired waterbodies on May 11, 2022. The 2020-2022 303(d) list identifies the Pacific Ocean, from Point Ano Nuevo to Soquel Point, as impaired for dieldrin. A total maximum daily load (TMDL) for dieldrin applicable to the receiving waterbody has not yet been developed. The reasonable potential analysis for dieldrin was inconclusive; consequently, the proposed order retains effluent limitations for dieldrin contained in the previous order.

Reasonable Potential Analysis. At the time of development of the proposed order, the new advanced water purification facility was under construction. The worst-case water quality of the commingled discharge of reverse osmosis concentrate from the advanced water purification facility and disinfected secondary effluent was estimated using available historical water quality data and a range of potential discharge flow scenarios. The Central Coast Water Board conducted a reasonable potential analysis, which is an analysis that uses water quality data to assess potential impacts to water quality and establish water quality-based effluent limitations.

Effluent Limitation Changes. Effluent limitations for dichlorobromomethane; PAHs; DDT; 2,4,6-trichlorophenol; 2,4-dinitrophenol; 4,6-dinitro-2-methylphenol; di-n-butyl phthalate; and total cyanide have not been retained from the previous order. The elimination of these water quality-based effluent limitations is consistent with the exception to the Clean Water Act's anti-backsliding requirements expressed at section 402 (o)(2)(B)(i), which allows a reissued permit to include less stringent limitations when information is available that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and that would have justified the application of a less stringent effluent limitation at the time of permit issuance. In these circumstances, less stringent limitations (here, the removal of limitations) are based on new data that was generated during the term of the previous order and that demonstrates no

reasonable potential for discharge from the Facility to cause or contribute to exceedances of applicable water quality objectives for these pollutants. Therefore, effluent limitations for these pollutants from the previous order are not retained in the proposed order.

Pure Water Soquel (PWS) Project. Additional discharge through the Facility's ocean outfall will come from Soquel Creek Water District's groundwater replenishment and seawater intrusion prevention project, known as Pure Water Soquel, which includes an advanced water purification facility (AWPF) located at the corner of Chanticleer Avenue and Soquel Avenue (Chanticleer site). Pure Water Soquel involves conveying a portion of the Facility's disinfected secondary effluent to the AWPF. After treatment at the AWPF, the water will meet all requirements of a groundwater replenishment reuse project per California Code of Regulations title 22 and will be recharged into the Santa Cruz Mid-County groundwater basin. The Central Coast Water Board will regulate Pure Water Soquel under a separate order. Non-potable reuse (NPR) water facilities will also be constructed at the Facility to provide the city with disinfected, tertiary non-potable recycled water. This portion of the work is known as the Santa Cruz NPR Project, which is being constructed as part of Soquel Creek Water District's overall program efforts. The production of this recycled water is regulated by this order.

AWPF treatment processes at the Chanticleer site will begin in 2024 and consist of ozone pre-treatment, membrane filtration (MF), reverse osmosis (RO), and an ultraviolet (UV) light advanced oxidation process (AOP). When Pure Water Soquel is implemented, an average of up to 2.77 MGD will be diverted to the AWPF and the non-potable reuse facility, which will decrease the secondary effluent flow discharged to the ocean by the same amount. The AWPF will produce three waste residual streams that will be conveyed to the WWTF for discharge through the city's existing ocean outfall. These wastes include: (1) reverse osmosis concentrate (ROC), (2) membrane filtration strainer backwash, and (3) membrane filtration backwash. The blended waste residuals stream is referred to as the ROC Blend. This permit allows the discharge of ROC Blend from the AWPF along with disinfected secondary effluent. The beneficial reuse of this treated effluent will result in decreased ocean discharges and increased protection of water quality.

Multiple Dilution Scenarios. Under high secondary effluent flow conditions, the outfall and diffuser structure provides a minimum initial dilution of 139 to 1 (parts seawater to parts effluent), a figure that has been used to determine the need for water quality-based effluent limitations for the facility and to calculate those limitations if required.

The Discharger conducted a mixing zone analysis to characterize the minimum probable initial dilution when the commingled disinfected secondary effluent and ROC Blend are discharged through the city's existing ocean outfall. Flow Science modeled different ocean conditions that occur during each month of the year and secondary effluent flow discharge scenarios as part of the analysis, including peak

wet weather flows and daily average flows. Peak wet weather flow scenarios were evaluated for November through March, and average dry weather flows were evaluated for April through October. The AWPf is likely to have more consistent operating flows year-round, and so the maximum ROC Blend flows were evaluated for all months of the year. Considering these discharge flow scenarios, the lowest minimum initial dilution (Dm) model result of 150:1 was conservatively selected for the NPDES permit.

Climate Change Adaptation. The tertiary treated recycled water production and further treatment by Pure Water Soquel are significant climate change adaptations. In order for the Discharger to assess any other potential improvements, the proposed order (Other Special Provisions) includes the requirement for the Discharger to submit a Climate Change Response Hazards and Vulnerabilities Plan to the Central Coast Water Board Executive Officer describing the Discharger's long-term approach for identifying and addressing climate change hazards and vulnerabilities at the Facility, including all associated infrastructure (e.g., treatment facilities, conveyances to discharge points, discharge facilities).

Public Comment Period

The draft order was released for public comment on September 12, 2023, and comments were due by October 12, 2023. The comments received during the public comment period were from the city of Santa Cruz, Soquel Creek Water District, the State Water Board Division of Drinking Water, and Becky Steinbruner. The comments, staff responses, and descriptions of changes made to the draft order are provided as Attachment 2 to this staff report.

Human Right to Water

California Water Code section 106.3, subdivision (a) states that it is the policy of the State of California "that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitation purposes." On January 26, 2017, the Central Coast Water Board adopted Resolution R3-2017-0004, which affirms the realization of the human right to water and the protection of human health as the Central Coast Water Board's top priorities.

The proposed order incorporates requirements for the Facility to beneficially reuse treated effluent to improve water supply resiliency and to prepare for uncertainties in water resources due to the changing climate. The proposed order establishes effluent discharge limitations to protect the municipal and domestic supply (MUN) drinking water beneficial use and improve drinking water quality for those that depend on groundwater and surface waters as their drinking water source.

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.¹ Furthermore, the Central Coast Water Board is committed to providing all persons the opportunity to participate in the public process and provide meaningful input to decisions that affect their communities.

The proposed order regulates the production of recycled water and discharge of treated domestic wastewater. Using 2016-2020 census data, the California Department of Water Resources DAC Mapping Tool identifies 11 block groups in the city of Santa Cruz, including approximately 35 percent of the population, as disadvantaged communities. Operation of this publicly owned treatment works in compliance with the proposed order will not pose a significant threat to water quality and is therefore unlikely to impact DACs. The potential costs to the Discharger and associated communities related to the new requirements are outweighed by the benefits and supported by the water quality and beneficial use protection and restoration benefits, including the protection of public health. If impacts to surface water result from the discharges regulated by the proposed order, Central Coast Water Board staff will work with the discharger to rectify the water quality impacts and help facilitate outreach and education to inform affected communities and connect them with available resources.

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

¹ 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: a community that does not meet the established DAC, SDAC, and EDA definitions but can show that it scores in the top 25 percent of either the Pollution Burden or Population Characteristics score using the CalEnviroScreen 3.0.

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.

The proposed order aligns with the Climate Action Initiative's objectives and aligns with State Water Board Resolution 2017-0012. To take steps towards building climate change resiliency on the Central Coast, the proposed order increases water supply reliability as a climate adaptation strategy by supporting beneficial reuse of the Facility's treated effluent for municipal uses. The Discharger has identified and assessed the viability of beneficially reusing the Facility's treated effluent to achieve recycled water benefits identified in the State Water Board Recycled Water Policy. Including Pure Water Soquel, the Discharger plans to provide water for approved uses, diversify community water supplies, and mitigate the impacts of climate change. Additionally, to proactively plan for the future, the proposed order requires the Discharger to continue to identify and plan for hazards and vulnerabilities at the Facility including flooding, extreme temperature, and influent flow and loading fluctuations exacerbated by climate change.

CONCLUSION

Proposed Order R3-2023-0001 is a renewal of the existing NPDES permit for the Facility and incorporates wastes from the new Pure Water Soquel project. The proposed order has been drafted and prepared in compliance with the California Ocean Plan and state and federal guidance and regulations. The proposed order is protective of water quality, requires a monitoring and reporting program sufficient to demonstrate compliance with the proposed order's effluent limitations and other requirements, and supports efforts to produce and reuse recycled water.

RECOMMENDATION

Adopt Proposed Order R3-2023-0001

ATTACHMENTS

1. Proposed Order R3-2023-0001
2. Response to Comments

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