

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
895 Aerovista Place, Suite 101
San Luis Obispo, California 93401

WASTE DISCHARGE REQUIREMENTS ORDER NO. R3-2008-0017
Waste Discharger Identification No. 3 420607119

For

SAND CITY DESALINATION PLANT
Monterey County

The California Regional Water Quality Control Board, Central Coast Region (Board), finds:

1. **Report of Waste Discharge.** On October 23, 2007, Kelly Morgan, City Administrator, submitted a Report of Waste Discharge in accordance with California Water Code §13260. The report was filed for authorization to discharge waste brine from Sand City's (hereafter Discharger) brackish water desalination plant (desal plant) to a disposal pipeline buried in beach sand near the Pacific Ocean.
2. **Owner and location.** The Discharger proposes to build and operate a brackish water desalination plant at Shasta Avenue in Sand City, California (see Attachment A).
3. **Purpose of Order.** To protect the Pacific Ocean's beneficial uses established in the *Water Quality Control Plan for the Central Coast Basin* (Basin Plan), this Order regulates the quality of the wastewater discharge from the desal plant. To do so, the Order limits the discharge's pollutants to concentrations established in the *Water Quality Control Plan for Ocean Waters of California* (Ocean Plan). The Order includes a monitoring and reporting program to evaluate the discharge's effect on surface water quality and groundwater quality.
4. **Purpose of desal plant.** The desal plant will provide up to 300 acre-feet-per-year (AFY) of potable water, which is 186 gallons per minute (gpm). The Discharger will use approximately 94 AFY, with the remaining 206 AFY available to help relieve water shortages caused by excessive withdrawals from local aquifers. At its ultimate estimated population, the Discharger will consume another 90 AFY from the desal plant.
5. **Desal plant water supply.** Two pairs of vertical supply wells approximately 200 feet inland from the shoreline will provide brackish water from the shallow aquifer in the beach sand formations. Flowrate will range from 465 gpm to 700 gpm at approximate TDS concentrations of 21,000 milligrams per liter (mg/L).
6. **Design of desal plant.** The desal plant will employ reverse osmosis (RO) technology to force potable water through semi-permeable membranes from the brackish supply water. The desal plant will filter the supply water upstream of the RO units to remove particulate matter. To prevent calcium deposits on the RO membranes, the Discharger will add anti-scalant to the brackish intake water and, to balance the production water's quality, add lime and carbon dioxide. The Discharger will then disinfect the potable water before distributing it for community use. Attachment B provides the desal plant's flow schematic.

7. **Desal plant waste discharge.** The desal plant will discharge waste brine from the brackish water desalination process. The brine discharge flowrate will not exceed 0.740 million gallons per day (mgd) with a maximum total dissolved solids (TDS) concentration of 34,800 mg/L at an average pH of 6.8. Seawater TDS typically equals approximately 35,000 mg/L, so the discharge will not degrade ocean waters after migrating through the beach sands from the disposal pipeline. After passing through cartridge filters, the discharge will be essentially free of bacteria.
8. **Disposal system.** The Discharger shall dispose of the waste brine to beach sands from a nearshore horizontal injection well approximately 500 feet long parallel to the beach completed in the sand formations less than 100 yards from the shore at an elevation 15 feet below mean sea level.
9. **Solid and chemical waste.** The desal plant generates no solid waste. The Discharger disposes of all other chemicals used to clean the RO membrane and to backflush filters to the sanitary sewer.
10. **Water bodies.** The Pacific Ocean lies 500 feet west of the facility. The depth to the shallow dune aquifer is approximately 50 feet below ground surface and groundwater generally flows west towards the Pacific Ocean. Groundwater in the shallow dune aquifer is a mixture of freshwater and seawater with a total dissolved solids concentration of approximately 22,000 mg/L.
11. **Hydrogeology.** A deeper groundwater aquifer is the 180-foot aquifer, and it generally flows west towards the Pacific Ocean. Due to inland extraction, groundwater sometimes flows inland. The concentration of total dissolved solids in the aquifer ranges from 25,000 to 30,000 mg/L.
12. **Surface water drainage.** There are no drainage courses at the facility. All storm water runoff drains into the dune sands around the facility.
13. **Adjacent Properties.** Land uses next to the proposed desal plant include one residence, several businesses, and State Highway 1. No person has objected to the construction and operation of the desal plant, the brackish water intake structure or the waste brine disposal structure.
14. **Beneficial uses.** The nearest water surface body is the Pacific Ocean, located approximately 500 feet west of the facility. The Basin Plan lists the following as beneficial uses of the Pacific Ocean:
 - a. Water contact recreation;
 - b. Non-contact water recreation, including aesthetic enjoyment;
 - c. Industrial water supply;
 - d. Navigation;
 - e. Marine habitat;
 - f. Shellfish harvesting;
 - g. Ocean commercial and sport fishing;
 - h. Preservation of rare, threatened and endangered species; and,
 - i. Wildlife habitat.
15. Present and anticipated beneficial uses of ground water in the vicinity of the discharge include:
 - a. Municipal & domestic water supply;
 - b. Agricultural water supply; and
 - c. Industrial use.

16. **Monitoring Program.** MRP No. R3-2008-0017 is a part of the proposed Order. The MRP requires effluent monitoring to verify compliance with effluent limitations. The effluent monitoring includes the daily flow volume, maximum daily flow, mean daily flow, and TDS.
17. Monitoring reports are required quarterly for effluent monitoring.
18. **Sustainability.** The desal plant employs an energy recovery system wherein pressure exchange units transfer 90 percent of the pressure from the discharge stream back into the feed stream. The Discharger must then provide only ten percent of the pressure and energy needed to achieve the desired transfer of potable water across the membrane.
19. **Basin Plan.** The Water Quality Control Plan, Central Coastal Basin (Basin Plan) designates beneficial uses and water quality objectives to protect those uses, and sets forth implementation policies to comply with water quality objectives. It also incorporates statewide plans and policies by reference.
20. **California Environmental Quality Act (CEQA).** The issuance of waste discharge requirements is subject to the provision of the CEQA (Public Resources Code, Section 21000, et seq.) in accordance with Section 15101, Chapter 3, Title 14, of the California Code of Regulations. The Discharger certified an Environmental Impact Report (EIR) on October 11, 1995. The EIR identified potential adverse effects on water quality, and proposed mitigation measures which will avoid or substantially lessen the significant environmental effect that have been incorporated into this Order.
21. **California Coastal Commission.** On February 27, 2008, the California Coastal Commission (Commission) issued Coastal Development Permit (CDP) No. A-3-SNC-05-010 to the Discharger. The Permit allows the Discharger to build a desal plant and a potable water distribution system in Sand City. The potable water provided by the desalination plant will allow the pumping from the Carmel River and the Seaside Basin Aquifer to be reduced by up to 300 acre-feet-per-year (AFY) in the near future and by 94 AFY when Sand City is completely built out.
22. In accordance with Water Code section 13263(g), no discharge of waste into waters of the state, whether or not the discharge is subject to waste discharge requirements, creates a vested right to continue the discharge. All discharges of waste into waters of the state are privileges, not rights. A permit and the privilege to discharge waste into waters of the State are conditional upon the discharge complying with provisions of Division 7 of the California Water Code, the Basin Plan, the State Water Resources Control Board's Ocean Plan, and other applicable plans and policies of the State and Regional Water Boards. Compliance with this Order should ensure protection of waters of the state.
23. "Statement of Policy With Respect to Maintaining High Quality of Waters in California" (hereafter Resolution No. 68-16 or the "Antidegradation Policy") requires the Regional Water Board in regulating the discharge of waste to maintain high quality waters of the State (i.e., background water quality) until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the State or Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Resolution 68-16 requires that any discharge to existing high quality water be required to meet waste discharge requirements which will result in the best practicable treatment or control (BPTC) of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the state will be maintained. This Order requires the Discharger to

comply with applicable water quality control plans, by limiting the discharge effluent TDS concentrations not to exceed seawater.

24. On **July 21, 2008**, the Board notified the Discharger and interested agencies and persons of its intent to issue waste discharge requirements for the discharge and has provided them with a copy of the proposed Order and an opportunity to submit written views and comments.
25. After considering all comments pertaining to this discharge during a public hearing on October 16-17, 2008, this Order was found consistent with the above findings.

IT IS HEREBY ORDERED, pursuant to authority in Section 13263 of the California Water Code, that Sand City, its agents, successors, and assigns may discharge brine from the Sand City Coast Water District Desalination Plant, providing compliance is maintained with the following:

(Note: Other prohibitions and conditions, definitions, and the method of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated January 1984.)

Footnotes are listed to indicate the source of requirements specified. Requirement footnotes are as follows:

- | | | |
|-----|---|----------------------------|
| BP | - | Basin Plan |
| BPJ | - | Best Professional Judgment |
| CWC | - | California Water Code |

A. PROHIBITIONS

The following are prohibited:

1. Discharges not specifically regulated by this Order.^{BPJ}
2. Discharges of brine to locations other than specified by this Order (Attachment "A").^{BPJ}
3. Creation of a condition of pollution, contamination, or nuisance, as defined by Section 13050 of the California Water Code.^{CWC}
4. The discharge of radioactive substances.^{BP}

B. SPECIFICATIONS

Effluent Limitations

1. The brine discharge flowrate shall not exceed 740,000 gpd.^{BPJ}
2. The brine shall not have a pH of less than 6.5 or greater than 8.3.^{BP}
3. The brine discharge shall not contain more than 35,000 mg/L of total dissolved solids.^{BPJ}

C. PROVISIONS

1. Discharger shall comply with "Monitoring and Reporting Program (MRP) No. R3-2008-0017", as specified by the Executive Officer. The Executive Officer may modify MRP No. R3-2008-0017 if more information is needed to assess the discharge's effects on water quality.
2. The Discharger shall comply with all items of the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements," (also referred to as "Standard Provisions") dated January 1984.
3. Pursuant to Title 23, Chapter 3, Subchapter 9, of the California Code of Regulations, the Discharger must submit a written report to the Executive Officer no later than May 1, 2013, addressing:
 - a. Whether there will be changes in the continuity, character, location, or volume of the discharge; and,
 - b. Whether, in its opinion, there is any portion of the Order that is incorrect, obsolete, or otherwise in need of revision.

I, **Roger W. Briggs, Executive Officer**, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on October 16-17, 2008.

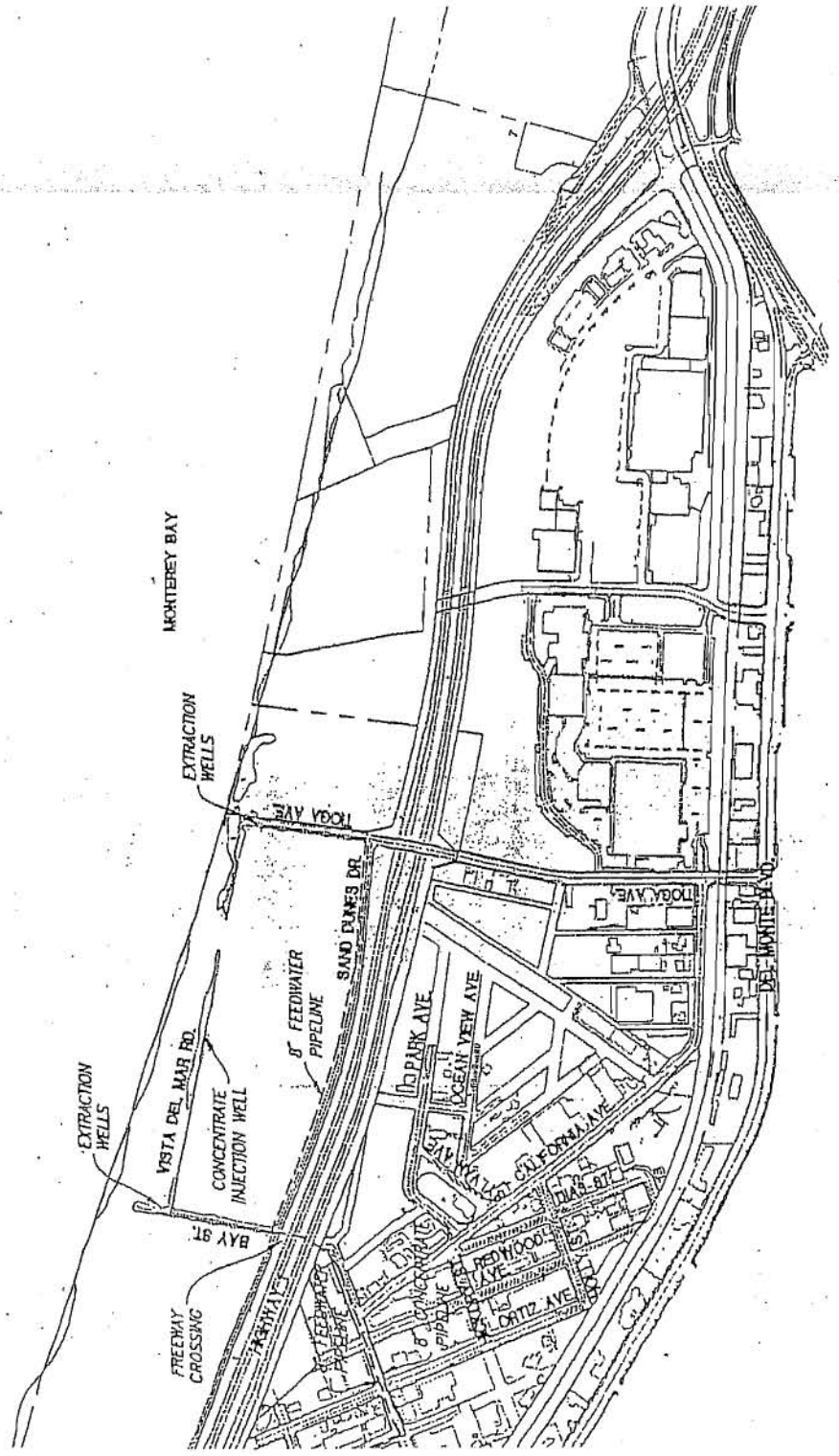
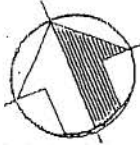
Roger W. Briggs
Executive Officer

ATTACHMENT "A"

GRAPHIC SCALE



(IN FEET)
1 Inch = 500 ft.



ATTACHMENT "B"

